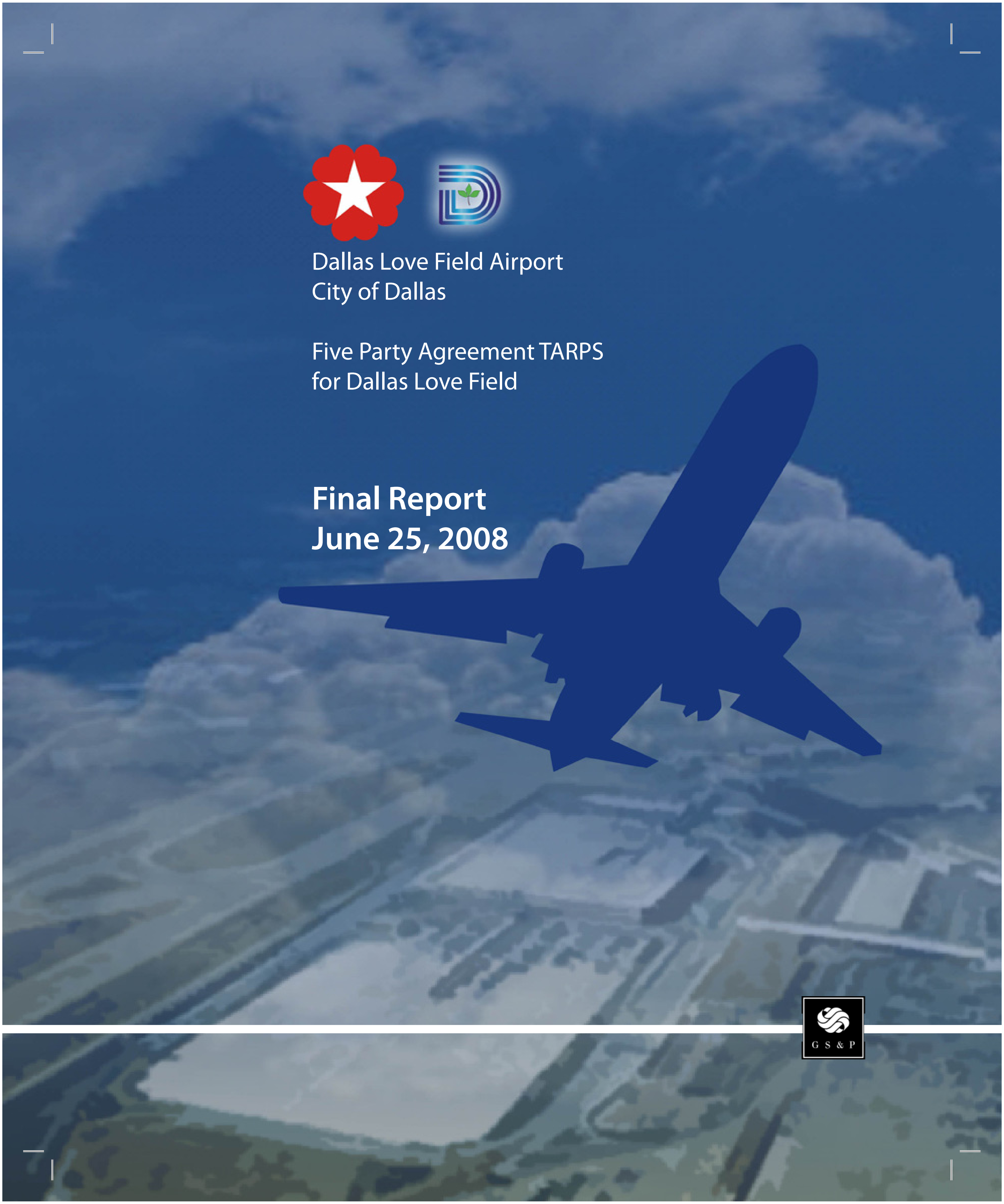
Dallas Love Field Airport
City of Dallas

Five Party Agreement TARPS for Dallas Love Field

Final Report
June 25, 2008



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Executive Summary

EXECUTIVE SUMMARY – LOVE FIELD TARPS

In July of 2004, the City of Dallas Department of Aviation contracted with Gresham, Smith and Partners (GS&P) to review the 2001 Airport Impact Analysis\Master Plan prepared by DMJM Aviation. The purpose of this review was to validate or recommend revisions to the terminal facility recommendations provided in the report, when this data was compared to post September 11, 2001 aircraft operations and passenger activity levels.

The Terminal Area Redevelopment Program Study (TARPS) and Revised Capital Improvements Program (C.I.P.) was subsequently developed to assist the City of Dallas in planning for future facility growth, and to determine the best practical use of Dallas Love Field within currently accepted Federal Aviation Administration (FAA) guidelines for facility development. The initial draft TARPS and Revised CIP report completed in April 2006 provided recommendations for facility improvements based on activity forecasts with the constraints on the terminal facility posed by the Wright and Shelby Amendments, along with the 2001 Airport Impact Analysis\Master Plan. However, the development of the Five Party Agreement (FPA) to repeal of the Wright Amendment led to the re-evaluation of the information and this report.

The proposed facility improvement scenarios presented within the Five Party Agreement TARPS and Revised C.I.P. report are based on both renovations of the existing terminal facilities and proposed replacement facilities. Both terminal facility scenarios are based on twenty (20) passenger gates that will support ten (10) aircraft operations each day. While the FPA TARPS and Revised CIP focuses on the impacts to the existing terminal facility, the scope included the following:

- Investigate environmental issues and documentation needed
- Verify traffic forecasts of 2001 Master Plan and 2006 Update
- Determine Facility Spatial, Landside Traffic and parking requirements
- Recommend Architectural Standards, Passenger Level of Service Standards and technical Design Standards
- Determine Layout of terminal and Support Facilities in Terminal Area
- Determine Conceptual Layout and potential cost ranges

The TARPS is presented in seven Chapters:

1. Inventory
2. Revised Activity Forecasts
3. Facility Requirements

4. Concept Development
5. Option C – Phasing, Implementation and Cost estimates
6. CAD Standards
7. Design Criteria Manual

This Executive Summary provides an overview of the highlights of the TARPS, including a recommended course of action.

SECTION 1 - INVENTORY

There were several major factors that initially limited proposed facility growth and improvement recommendations at Dallas Love Field, including the 1979 Wright Amendment, and modified 1997 Shelby Amendment, restricting non-stop commercial air carrier service between the Airport and points beyond Texas and seven states and the 2001 Airport Impact Analysis\Master Plan, which provided a constrained demand analysis limiting operations to a total of 334,000 aircraft operations per year, thirty-two (32) maximum gates and a 6 to 7 minute ground activity delay allowed per aircraft operation.

The Five Party Agreement, signed by the cities of Dallas and Fort Worth, Dallas-Fort Worth International Airport, Southwest Airlines and American Airlines, includes the following highlights:

- Through ticketing and one-stop connecting service immediately offered to destinations within the fifty United States and the District of Columbia
- Commercial air carrier service restrictions eliminated by the year 2014.
- The number of available gates would be reduced from 32 to 20 gates total.
    - Southwest Airlines – 16 gates
    - American Airlines – 2 gates
    - Continental Airlines – 2 gates
- The City must develop the Love Field Modernization program and invest a minimum of $150 million and a maximum of $200 million.

The inventory of existing materials, historical data and reports presented in the original 2001 Airport Impact Analysis\Master Plan and the update, the “2006 Dallas Love Field Impact Analysis Update in the Absence of the Wright Amendment”, provides a fairly accurate overview of the current terminal facility and constraints on the terminal facility. This information was utilized to form the foundation for the FPA TARPS and Revised C.I.P. activity forecast and programming requirements, facility utilization recommendations, revenue program recommendations, roadway and curbside system recommendations, air carrier gate utilization and commercial vehicle function and C.I.P. recommendations.

SECTION 2 – REVISED ACTIVITY FORECASTS

The Forecast Chapter reviews prior activity forecasts for DAL, including the previous master plan study and the FAA's most recent *Terminal Area Forecast* (TAF). The passage of the FPA effectively creates a "gate constrained" environment for DAL and limits the airport's growth potential to that of increased equipment capacity and number of turns per gate. Therefore traditional growth forecasting becomes constrained to the limitations of the facility both current and future as gate expansion is prohibited beyond 20 gates by the FPA. A new 20-gate constrained forecast has been developed and is used as a basis for forecasting proposed flight operations and the formulization of the facility impacts and needs to accommodate these flight operations.

By limiting the number of gates available to carriers serving DAL while removing all flight restrictions on carriers, the airport has become gate constrained with the number of gates driving the maximum capacity of the airport. This constraint can only be modified by two variables:

- Equipment: All equipment used in the calculations of enplanements was based on a Boeing 737-700 with 137 seats. Although American and Continental currently operate 50 seat Regional Jets, the forecast assumes greater demand for larger aircraft when all restrictions phase out in 2014.
- Turns per Gate: Contemporary logic suggests that most air carriers cannot make turns much faster than 20-25 minutes ground times. Ten turns-per-gate is indicative of 20-25 minutes ground time and very much inline with current Southwest Airlines operations at DAL. Fifteen turns-per-gate is indicative of closer to 15 minutes ground time and while presented as a scenario, it is not achievable on a consistent basis.
- By adjusting equipment size and/or turns-per-gate, DAL can manipulate the potential enplanements and operations at the Airport. However, with larger equipment can come slower turn time and therefore, for planning purposes, the 10 Turn-Per-Gate Forecast is presented as the design level forecast for DAL while under the Five Party Agreement.

The following Tables presents a summary of the Forecasts, including the FAA's Terminal Area Forecasts (TAF) and the 10 Turns-Per-Gate projected scenarios for enplaned passengers and air carrier operations, with the following conclusions:

- Consultation with airlines concerning these peak hour passenger levels indicate that they are within a reasonable range Love Field during the forecast period.

- FAA TAF validates the TARPS 10-turn per gate projection for post-Wright Amendment conditions. However, it assumes on-going growth rate, which fails to recognize physical constraint of 20 gates and practical operating constraint of 10 turns per gate, as limiting factors on growth.
- TARPS projection for 10 turns in 2014 constitutes the design level of passenger enplanements.

Table ES-1

Design Level Enplanement Forecasts

	Annual	**Peak Month**	**Average Day**	**Peak Hour**
Historical				
2006	3,439,050	311,032	10,033	1,164
		9.04%	31 Days	11.60%
TAF Projected				
2011	4,275,602	386,691	12,474	1,447
2016	5,889,779	532,679	17,183	1,993
2021	7,967,466	720,588	23,245	2,696
2025	8,653,965	782,675	25,248	2,929
10-Turn Projected				
2014	5,865,580	697,442	22,498	2,250
Compounded TAF Annual Growth Rate				
2006-2025	4.39%	4.39%	4.39%	4.39%

Sources: City of Dallas, Department of Aviation (historical annual activity)
FAA Terminal Area Forecast (projected annual air carrier activity)
Ricondo & Associates, Inc. (peak month and peak hour activity)
Gresham, Smith and Partners (update and turn project activity)
Prepared by: Ricondo & Associates, Inc, updated by Gresham, Smith and Partners

Table ES-2

Design Level Air Carrier Operations Forecasts

	Annual	Peak Month	Average Day	Peak Hour
Historical				
2006	86,887	7,798	252	26
		9.0%	31 Days	10.50%
Projected				
2011	95,978	8,614	278	29
2016	122,394	10,985	354	37
2021	153,449	13,772	444	47
2025	162,569	14,590	471	49
10-Turn Projected				
2014	135,400	12,152	392	43
Compounded TAF Annual Growth Rate				
2006-2025	3.39%	3.39%	3.39%	3.39%

Sources: City of Dallas, Department of Aviation (historical annual activity)
FAA Terminal Area Forecast (projected annual air carrier activity)
Ricondo & Associates, Inc. (peak month and peak hour activity)
Gresham, Smith and Partners (update and turn project activity)
Prepared by: Ricondo & Associates, Inc, updated by Gresham, Smith and Partners

SECTION 3 – FACILITY REQUIREMENTS

The existing landside facilities for Dallas Love Field that have been analyzed as part of the Five Party Agreement TARPS and Revised C.I.P. are limited to the main passenger terminal facility, terminal curbside, roadways, parking structures and vehicle rental facilities. The landside facilities requirements for a 20 gate constrained facility with 10 and 15 turns per gate on average, were developed. Growth rate of passenger traffic for DAL is assumed minimal as the capacity of the facility is constrained by the 20 gate limit. This growth rate may pose a significant impact to the existing facilities today, specifically in Level of Service (LOS) offered, economy of scale of operations, and operational efficiencies.

Level of Service (LOS) is a concept that has been formalized into industry accepted standards utilized by industry professionals and airports worldwide. The defining component of LOS is based on existing system capacity and how well that facility can handle its current as well as increased capacities at different time periods.

Quality of LOS varies from facility to facility and at different times of the day. With mandated security requirements impacting LOS in almost every aspect of facility capacity, new standards and methods for measuring LOS are being developed. The International Air Transport Association (IATA) has established recommended standards and the following information and references to LOS are based on the IATA standard.

Table ES-3

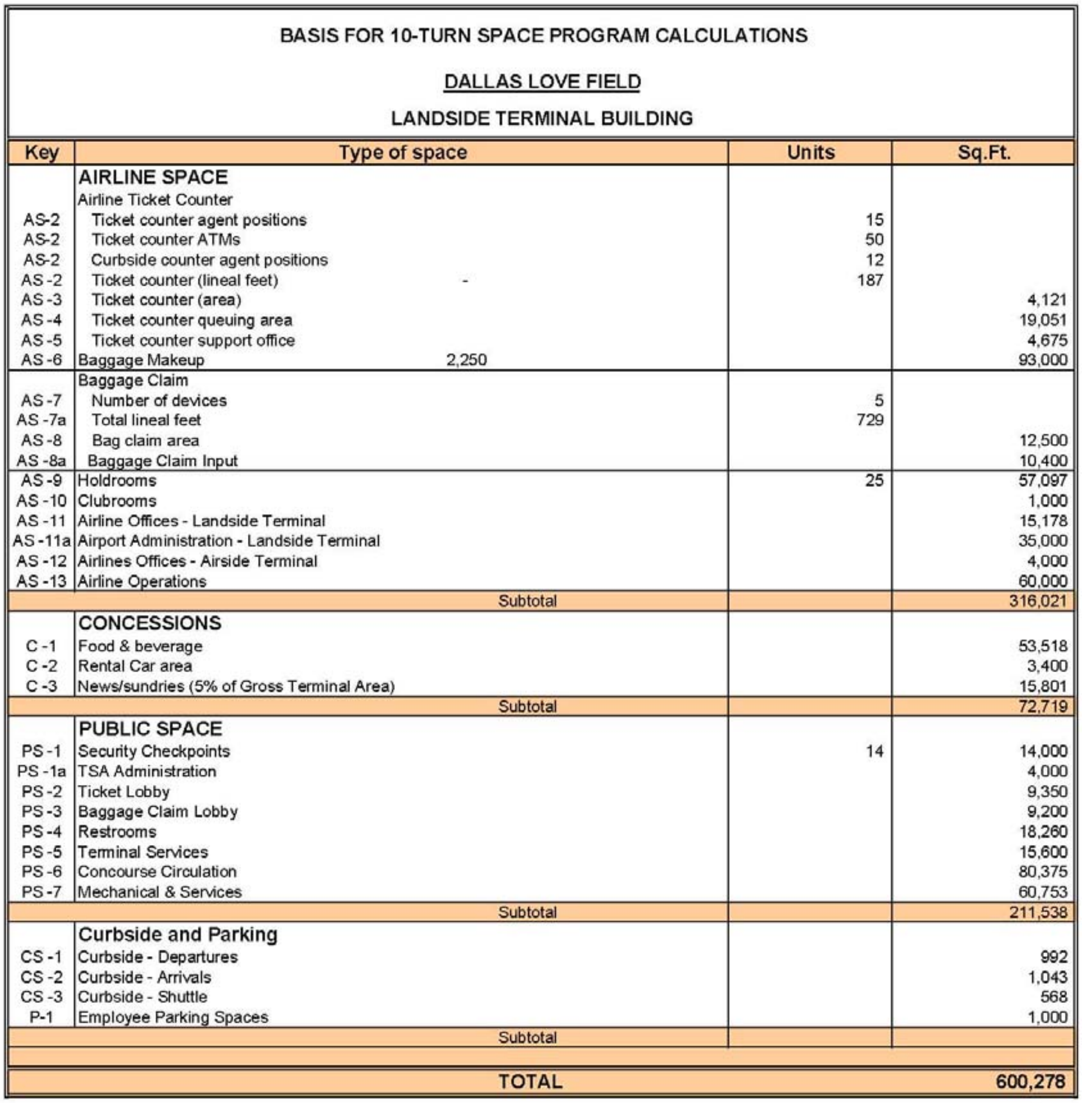
LOS	FLOWS	DELAYS	COMFORT
A – Excellent	Free	None	Excellent
B – High	Stable	Very Few	High
C – Good*	Stable	Acceptable	Good
D – Adequate*	Unstable	Acceptable for Short Periods	Adequate
E – Inadequate	Unstable	Unacceptable	Inadequate
F – Unacceptable	System Breakdown	Unacceptable	Unacceptable

***Note:** Level C = standard minimum, Level D = peak periods

As a comparison, LOS **A** means that passengers would be able to move freely through the terminal facility without experiencing any delays in their movements and feel comfortable in doing so and would incur high cots. LOS **E** implies passenger movements would be congested, uncomfortable and delays would be recognized as unacceptable, however costs incurred would be low. Level of Service C is recommended as the minimum design objective, as it denotes good service at a reasonable cost.

The DAL terminal facility requirements for the 20 gate constrained facility for 10 turns per gate were based on the inventory of existing spaces in the terminal facility and the revised forecasts. Through the use of empirical mathematical formulas for determining spatial requirements, combined with forecasted passenger loads for these critical years, new programs for facility space requirements have been created as depicted below. These proposed space requirements will result in a LOC C.

Table ES-4



BASIS FOR 10-TURN SPACE PROGRAM CALCULATIONS

DALLAS LOVE FIELD

LANDSIDE TERMINAL BUILDING

Key	Type of space	Units	Sq.Ft.
	AIRLINE SPACE		
	Airline Ticket Counter		
AS-2	Ticket counter agent positions	15	
AS-2	Ticket counter ATMs	50	
AS-2	Curbside counter agent positions	12	
AS -2	Ticket counter (lineal feet) -	187	
AS -3	Ticket counter (area)		4,121
AS -4	Ticket counter queuing area		19,051
AS -5	Ticket counter support office		4,675
AS -6	Baggage Makeup 2,250		93,000
	Baggage Claim		
AS -7	Number of devices	5	
AS -7a	Total lineal feet	729	
AS -8	Bag claim area		12,500
AS -8a	Baggage Claim Input		10,400
AS -9	Holdrooms	25	57,097
AS -10	Clubrooms		1,000
AS -11	Airline Offices - Landside Terminal		15,178
AS -11a	Airport Administration - Landside Terminal		35,000
AS -12	Airlines Offices - Airside Terminal		4,000
AS -13	Airline Operations		60,000
	Subtotal		316,021
	CONCESSIONS		
C -1	Food & beverage		53,518
C -2	Rental Car area		3,400
C -3	News/sundries (5% of Gross Terminal Area)		15,801
	Subtotal		72,719
	PUBLIC SPACE		
PS -1	Security Checkpoints	14	14,000
PS -1a	TSA Administration		4,000
PS -2	Ticket Lobby		9,350
PS -3	Baggage Claim Lobby		9,200
PS -4	Restrooms		18,260
PS -5	Terminal Services		15,600
PS -6	Concourse Circulation		80,375
PS -7	Mechanical & Services		60,753
	Subtotal		211,538
	Curbside and Parking		
CS -1	Curbside - Departures		992
CS -2	Curbside - Arrivals		1,043
CS -3	Curbside - Shuttle		568
P-1	Employee Parking Spaces		1,000
	Subtotal		
	TOTAL		**600,278**

SECTION 4 – CONCEPT DEVELOPMENT

Multiple alternative concepts were developed for meeting the challenges of future passenger demand at DAL. Although a new terminal site southeast of the existing terminal was examined, space limitations and added cost of new infrastructure made the concept not feasible. Given the constraints of the existing terminal facilities area and the Five Party Agreement, three approaches for meeting the passenger activity levels of a 20 gate constrained concourse with 10 turns per gate were selected for refined analysis. These three concepts allows economic re-use of portions of existing facility, however all three concepts exceed the $200 million cap set forth in the FPA. A summary of each of the concepts is presented below:

Concept A

- Renovate the existing West Concourse for Southwest Airlines - 16 gates.
- Renovate the existing North Concourse for American and Continental – 4 gates
- Enlarge concession space
- Ticketing and security screening enhancements
- Minimal enhancements to terminal building, bag claim, curbside and roadway
- Lowest cost option: $357 million

Concept B

- Renovate and expand West Concourse for Southwest – 12 gates
- Demolish North and East Concourses and rebuild in new location for Southwest, American and Continental - 8 Gates
- Build New Ticket Hall
- Terminal Renovation
- Bag Claim and Curbside Expansion
- Curbside Expansion
- Highest cost option: $608 million

Concept C

- Demolish East, North and West Concourses and replace with one double-loaded concourse - 20 gates
- New Ticket Hall
- Expanded Bag Claim and Curbside
- Terminal Renovation
- Layout efficiency contributes to passenger convenience and Level of Service “C”.

- Cost: $571 million

A Concept Development Performance Matrix depicted below summarizes the results of the comparative analysis.

Table ES - 5

Performance Requirements	Performance Target	Existing	Option A	Option B	Option C
Terminal Facilities					
Ticketing Counter Position	15	14	14	14	14
Self-Service Devices	50	24	49	49	49
Ticketing Curbside Positions	12	10	10	10	12
Bag Claim (area – sf)	12,500	19,000	19,000	23,400	23,400
Bag Claim (frontage – lf)	729	450	450	1000	1000
Passenger Security Checkpoints	14	7	12 to 14	12 to 14	12 to 14
EDS Screening Devices	10	9	8 to 9	10	10
Concessions	72,719	20,400	29,100	73,000	75,000
Gate Holdroom (avg. sf/gate)	2,250	1,835	1,835	2,250	2,250
Landside Facilities					
Arrivals Curb	1,043	660	300	600	600
Departures Curb	992	530	400	600	600
Commercial Curb	568	100	600	1000	1000

- Concept A meets / exceeds the targets for 3 of 12 terminals requirements
- Concept B meets / exceeds the targets for 7 of 12 terminal requirements
- Concept C meets / exceeds the targets for 8 of 12 terminal requirements

The Evaluation Matrix summarized below supports the Concept C as the preferred concept**.**

Table ES - 7

	Option		
	A	**B**	**C**
Implementation			
Time To Implement	5	2	3
Operational Complexity	2	1	4
Customer Inconvenience	2	1	4
Cost of Overall Program	5	2	3
Operations			
Operational Efficiency	4	3	5
Estimated Relative O&M Cost	2	4	5
Customer Convenience			
Curbside	2	4	4
Ticketing	2	4	4
SSCP	2	4	4
Holdrooms	2	5	5
Concessions and Amenities	2	5	5
Baggage Claim	4	4	4
Walk Distance	3	4	4
SUMMARY	**37**	**43**	**54**

Score Range = 1 – 5 **1= least desirable** **5= most desirable**

SECTION 5 – PHASING IMPLEMENTATION

Concept C

Option C was selected as the preferred expansion concept based on compliance with the Five Party Agreement and a 20 gate constrained concourse, facility requirements, and evaluation criteria relative to implementation, operational efficiency and passenger Level of Service (LOS). Development of the reconfigured terminal is proposed to be constructed in seven (7) phases and the conceptual drawings for all seven development phases are included in Chapter 5. Detailed phasing will be developed during the Design phase of the project.

SECTION 6 – CAD STANDARDS

CAD standard has been developed for the City of Dallas Love Field TARPS and Revised Capital Improvements Program to ensure consistency and uniformity. In compiling this standard, several existing standards were analyzed, to be used as a basis, including FAA-STD-002e, National Institute of Building Sciences National CAD Standard and the AIA Standard version 2. Revisions and modifications to these standards were made as required by updated software systems and DAL specific requirements. This standard is to be utilized for all projects started after the acceptance of this standard by the City of Dallas and Dallas Love Field Department of Aviation. The primary objectives of this manual are to:

- Establish consistent quality and uniformity in appearance of CAD products.
- Establish uniform procedures for document control.
- Establish a standard layering system.
- Establish file and sheet naming procedures.
-

Details of the CAD standards are included in Chapter 6

SECTION 7 – FACILITY DESIGN STANDARDS

This Facility Design Standards has been developed for the FPA TARPS and Revised C.I.P. In compiling this guideline, several existing design and construction standards were reviewed, including other airports. These standards are to be utilized for all projects started after the acceptance of this standard by the City of Dallas and Dallas Love Field Department of Aviation. These criteria shall cover the existing terminal building, terminal building support spaces, parking structures and any new additions to these areas. The primary objectives of this manual are to:

- Establish consistent quality and uniformity in construction and design.
- Establish uniform overall visual continuity.
- Establish standard construction details.
- Establish standard construction materials.

Building Code Analysis

Dallas Love Field was originally constructed in 1956 and the terminal facility has experienced growth and expansion of the facilities to accommodate increased passenger demand and related support facilities over the past 50 years. As this growth continued, various Occupancy Use and Construction Type classifications were utilized for the design and construction of the facilities. The City of Dallas has adopted newer governing building codes with City of Dallas amendments to those codes since 1956, the 1997 Uniform Building Code (UBC) was in effect at the time the original draft TARPS was begun. During the development of the draft TARPS, the 2000 International Building Code (IBC) was adopted. Comparisons between the 1997 UBC and 2000 IBC have been made to quantify general code requirements and differences between the two. It is important to note that the 2003 International Existing Building Code with Dallas Amendments, allowed the terminal facility to be classified under the previous code, which at the time was the 1997 UBC. Effective January 1, 2006, the City of Dallas adopted the 2003 International Building Code (IBC) as their governing code for all new and renovated construction within the jurisdiction of the City.

Chapter 1: Inventory

Chapter One

INVENTORY

SECTION 1.0 - OVERVIEW

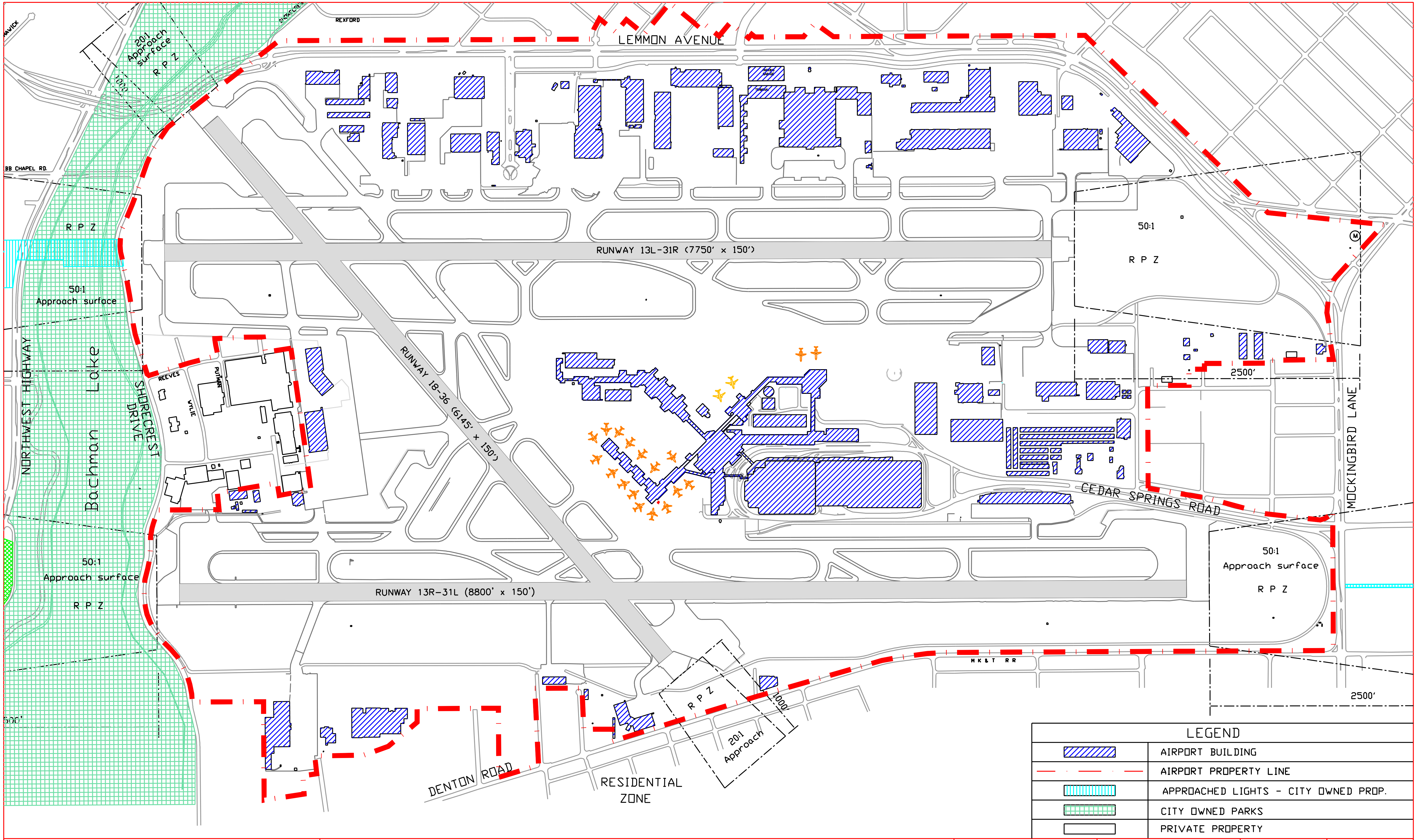
In July of 2004, the City of Dallas Department of Aviation contracted with Gresham, Smith and Partners (GS&P) to review the 2001 Airport Impact Analysis\Master Plan prepared by DMJM Aviation. The purpose of this review was to validate or recommend revisions to the terminal facility recommendations provided in the report, when this data was compared to post September 11, 2001 aircraft operations and passenger activity levels.

GS&P was then tasked with developing the Terminal Area Redevelopment Program Study (TARPS) and Revised Capital Improvements Program (C.I.P.), based on its findings and recommendations, to assist the City of Dallas in planning for future facility growth, and to determine the best practical use of Dallas Love Field within currently accepted Federal Aviation Administration (F.A.A.) guidelines for facility development. There were several major contributing factors that limited proposed facility growth and improvement recommendations:

The 1979 Wright Amendment, named after Congressman Jim Wright, restricted non-stop commercial air carrier service with aircraft exceeding 56 seats, from offering for sale or providing transportation between the Airport and points beyond Texas, Louisiana, Arkansas, Oklahoma, and New Mexico. Aircraft that had fewer then 56 seats for passenger travel were allowed to fly non-stop outside the limits defined by the Wright Amendment. Through ticketing was also restricted, and as a result, passengers were required to leave their originating aircraft to make connections, even if the originating aircraft was going to be the continuing service aircraft. Modified in 1997, the Shelby Amendment added the three additional states of Kansas, Mississippi, and Alabama to the list of state points exempt from the interstate restriction.

- A 1998 DOT Order and Circuit Court decision made it clear that the current law (Wright-Shelby Amendment) allowed operation of aircraft to any interstate point as long as the aircraft has 56 seats or fewer and weighs less than 300,000 pounds. Further, the operator of an aircraft with 56 or fewer seats is not subject to other Wright Amendment restrictions, such as the operation of through flights or selling connections.
- the 2001 Airport Impact Analysis\Master Plan provided a constrained demand analysis to determine the operational limits of the airfield, and its associated capacities and operations. The constrained demand analysis limited the airfield capacities and operations to a total of 334,000 aircraft operations per year (183,000 allocated to commercial air carriers), thirty-two (32) maximum available passenger boarding gates and a 6 to 7 minute ground activity delay allowed per aircraft operation.

The draft TARPS and Revised C.I.P. final report was completed in April 2006 and submitted to the City of Dallas for review and acceptance. This report was to provide recommendations for facility improvements based on revised activity forecasts for enplanement levels and operations for 2009, 2014 and 2024. The constraints on the terminal facility posed by the Wright and Shelby Amendments, along with the 2001 Airport Impact Analysis\Master Plan, were in full effect for the draft TARPS report. However, during this time period, the ongoing discussions relative to



DALLAS LOVE FIELD AIRPORT
TERMINAL AREA REDEVELOPMENT
PLAN AND REVISED CIP

OVERALL AIRPORT PLAN

CITY OF DALLAS
LOVE FIELD

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SHEET NUMBER:
FIGURE 1-1

DATE ISSUED:
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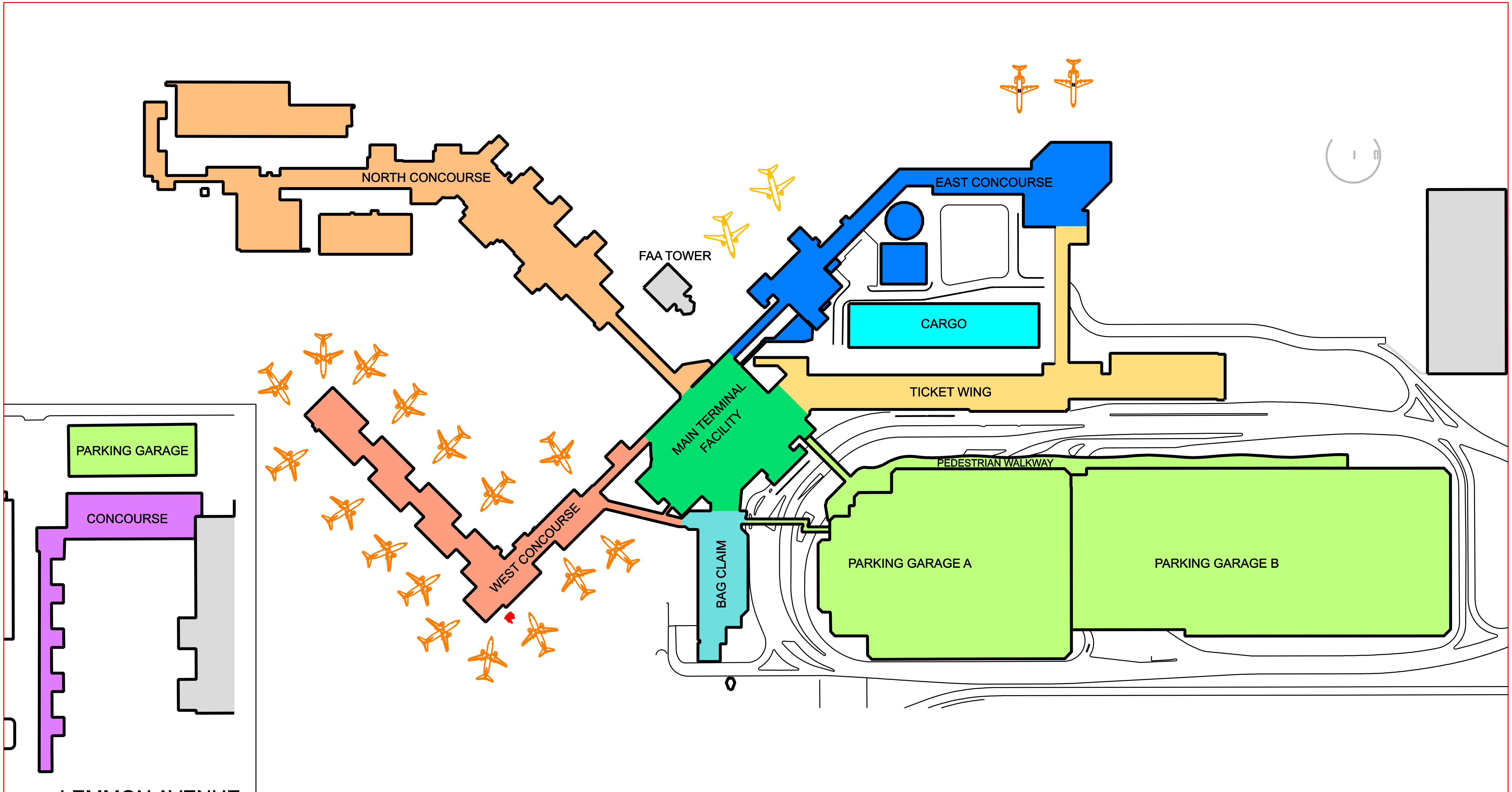

02 LEMMON AVENUE TERMINAL PLAN

01 CEDAR SPRINGS TERMINAL PLAN

DALLAS LOVE FIELD AIRPORT
TERMINAL AREA REDEVELOPMENT
PLAN AND REVISED CIP

EXISTING AIRPORT TERMINAL PLANS

PLAN NORTH

TRUE NORTH

CITY OF DALLAS
LOVE FIELD

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SHEET NUMBER:
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repeal of the Wright Amendment increased, and eventually this amendment was repealed in its entirety. This brought into question the pre-Wright Amendment facility improvement recommendations within the draft TARPS, leading to re-evaluation of the information presented and the development of the Five Party Agreement (FPA) Facilities Programming report.

Five Party Agreement

In September 2004, Tennessee's House of Representatives delegation introduced a bill that would allow for direct, non-stop commercial air carrier service from Dallas Love Field to Nashville, Tennessee. While this legislation did not pass, it was the catalyst to a strong movement to have the Wright Amendment repealed in its entirety. In November 2005, President George W. Bush approved and signed legislation permitting direct, non-stop commercial air carrier service from Dallas Love Field to Missouri. On July 15, 2006, a "Five Party Agreement" (FPA) was entered into by the cities of Dallas and Fort Worth, Dallas-Fort Worth International Airport, Southwest Airlines and American Airlines. The highlights of this agreement provided that:

- Commercial air carrier service serving Dallas Love Field could immediately offer through ticketing to destinations within the fifty United States and the District of Columbia
- Commercial air carrier service serving Dallas Love Field could immediately provide through ticketing, one-stop connecting service, allowing passengers to remain on an originating aircraft for a connection to a final destination
- Commercial air carrier service restrictions on carriers serving Dallas Love Field would be eliminated after eight years, or the year 2014. This would allow commercial air carriers to provide direct flight service to all destinations within the fifty United States and the District of Columbia

As soon as practicable, the number of available gates at Dallas Love Field would be reduced from 32 to 20 gates total, 16 gates would be leased by Southwest Airlines, 2 gates would be leased by American Airlines, and 2 gates would be leased by Continental Airlines. International commercial air carrier service would be limited to Dallas-Fort Worth International Airport. This five party agreement was presented to the United States Congress, accepted and executed into law by President George W. Bush on October 13, 2006. On October 17, 2006, one-stop through ticketed commercial air carrier service originating at Dallas Love Field began, signifying the eventual repeal of the Wright Amendment and its imposed restrictions had begun.

The repealing of the Wright and Shelby Amendments warranted that the facility recommendations provided in the 2006 draft TARPS and Revised C.I.P. be re-evaluated, taking into account the projected impacts of this event to the facility recommendations. The proposed facility improvement scenarios presented within the Five Party Agreement TARPS and Revised C.I.P. report are based on both renovations of the existing terminal facilities and proposed replacement facilities. Both terminal facility scenarios are based on twenty (20) passenger gates that will support ten (10) aircraft operations each day. While the FPA TARPS and Revised C.I.P. focuses on the impacts to the existing terminal facility, the report also discusses the impacts of projected increased aircraft operations to the environment, as well as anticipated vehicular traffic impacts on the current roadway and parking systems.

SECTION 1.1 – EXISTING TERMINAL FACILITIES ASSESSMENT

Historical Data and Baselines

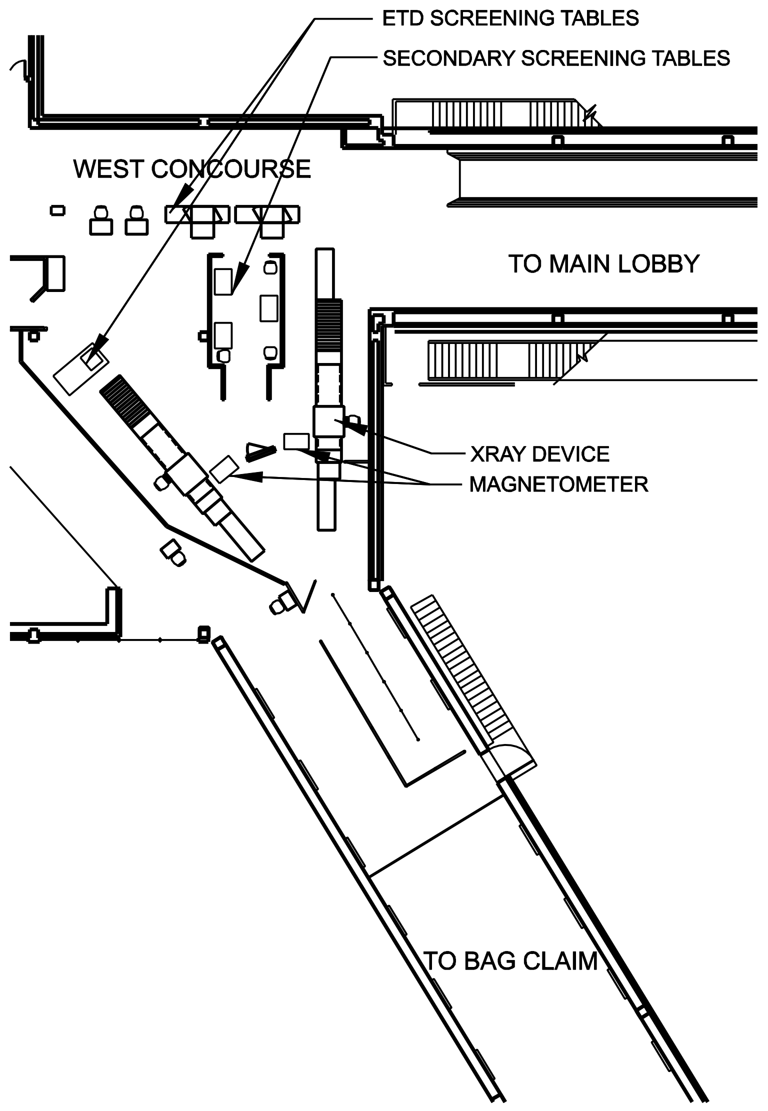
Prior to development of the draft TARPS and Revised C.I.P., a visual inventory and gathering of information, both verbal and written, relative to the existing terminal area was conducted. Information presented in the 2001 Airport Impact Analysis\Master Plan, as prepared by DMJM Aviation, was utilized where appropriate. On May 31, 2006, and prior to the Five Party Agreement, DMJM Aviation was contracted by the City of Dallas to provide an update to the original 2001 Airport Impact Analysis\Master Plan. This update, the “Dallas Love Field Impact Analysis Update in the Absence of the Wright Amendment”, was to provide anticipated impacts to Dallas Love Field based on the potential repealing of the Wright and Shelby Amendments. This information has been used as a supplement to the original Master Plan where necessary, when analyzing terminal area, airfield operation and environmental impacts.

Existing electronic documentation provided by the City of Dallas Department of Aviation was also utilized for compiling the terminal area drawings utilized throughout the FPA TARPS and Revised C.I.P.. It is important to note that referenced building square footages provided in the FPA TARPS and Revised C.I.P. and referenced in this report were based on gathered information and review of electronic documentation, and have not been surveyed and verified.

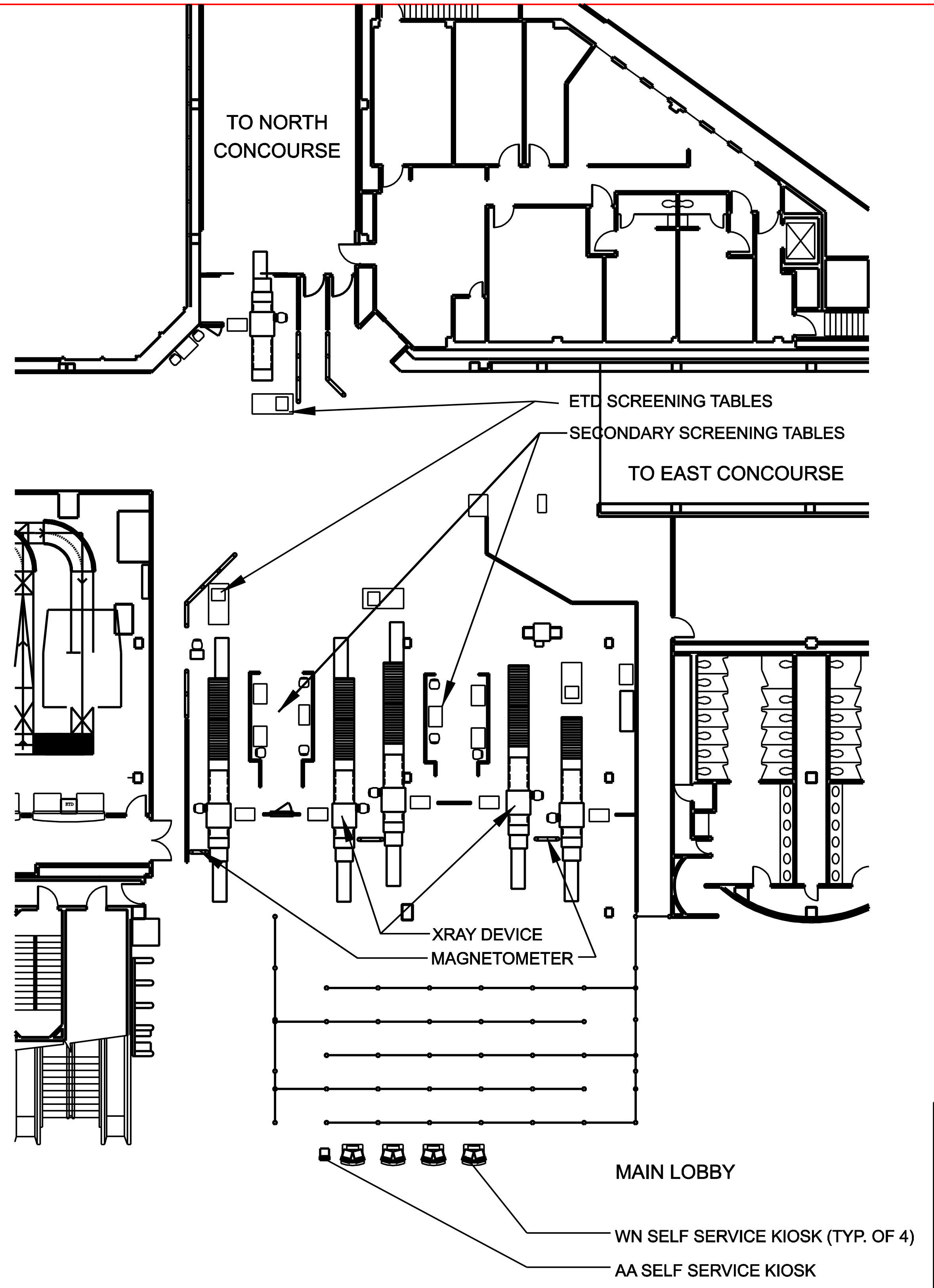
It should be noted that this historical information provides a fairly accurate overview of the current terminal facility and constraints on the terminal facility prior to the Wright and Shelby Amendments being repealed. This historical information has been utilized to define and clarify the terminal area impacted by the FPA TARPS and Revised C.I.P. and the defined impacted terminal area includes but is not limited to, the following facilities:

- Main Terminal Facility
- North, East and West Concourses
- Concessions Program
- Baggage Claim
- Car Rental Counters
- Ticket Wing
- Administrative Office Spaces
- Parking Structures
- Curbside
- Commercial Vehicle Functions
- Roadways
- Lemmon Avenue Terminal

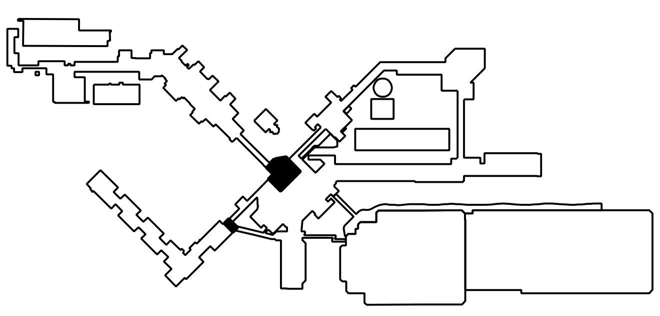
The inventory of existing materials, historical data and reports utilized in the draft TARPS form the foundation for the FPA TARPS and Revised C.I.P. activity forecast and programming requirements, facility utilization recommendations, revenue program recommendations, roadway



02 WEST CONCOURSE SECURITY CHECKPOINT



01 MAIN TERMINAL SECURITY CHECKPOINT



KEYPLAN

DALLAS LOVE FIELD AIRPORT
TERMINAL AREA REDEVELOPMENT
PLAN AND REVISED CIP

EXISTING AIRPORT SECURITY CHECKPOINTS

PLAN NORTH

TRUE NORTH

CITY OF DALLAS
LOVE FIELD

G S & P

SHEET NUMBER:
FIGURE 1-3

DATE ISSUED:
11.05

and curbside system recommendations, air carrier gate utilization and commercial vehicle function and C.I.P. recommendations.

AIRPORT LAYOUT

Figure 1-1 depicts the Overall Airport Plan for DAL. Figure 1-2 depicts the Existing Airport Terminal Area facilities that are referenced throughout this FPA TARPS and Revised C.I.P. and described in greater detail in the following section.

MAIN TERMINAL FACILITY

The Main Terminal Facility consists of one terminal building with three (3) concourses extending out from the building. Both retail and food service concessions are available landside in the terminal.

Main Lobby and Ticketing Areas

The main lobby of the existing terminal facility is centrally located within the building and serves as a portal for departing passengers to pass through to access the North, East and West Concourses. The lobby is approximately 80,000 gross square feet (gsf), and contains ticketing counters, landside concessions (food, beverage and retail), main passenger security checkpoint, restrooms, Business Center and general seating areas. There is also a dedicated baggage screening area in the eastern portion of the lobby, which is described in the Baggage System Overview below. Public access to the second level, City of Dallas Aviation Department administration offices, is provided by escalators and stairway in the lobby adjacent to the main passenger security checkpoint.

Access to the main lobby occurs at various locations, either from curbside or from the public parking structures. From the lower Arrivals Level at curbside adjacent to the Southwest Airlines curbside check-in location, access to the lobby is through utilization of a pedestrian ramp leading up to the lobby area. The pedestrian ramp also provides access to and from the lobby to the commercial vehicle lane on the lower access road for Airport and Car Rental shuttles and Parking Garage A. The lobby can be accessed from the upper Departures Level by walking down pedestrian ramps into the lobby.

From both public parking structures, pedestrian pathways are provided at the ground levels of both parking structures to the lower curbside area. There is an elevated pedestrian bridge providing access from Parking Structure A that leads to the West Concourse security checkpoint, bypassing the terminal lobby. The main lobby can also be accessed from Parking Structure B through the use of a series of moving walkways at level three of the garage that lead to a conditioned pedestrian bridge and escalator bank in the southeast portion of the lobby adjacent to Continental and American Airlines ticketing areas.

Southwest Airlines (SWA) departing passenger ticketing functions occur in two primary locations. On the west side of the Main Lobby, SWA utilizes approximately 13,500 gsf for ticketing operations. This includes Airline Ticketing Offices (ATO), outbound baggage belts, four (4) two position counters, one (1) one position counter and ten (10) self service kiosks for ticketing. Also, SWA utilizes four (4) self-service electronic ticketing kiosks located at the entry into the passenger security checkpoint.

Continental Express has approximately 1,200 gsf for ticketing and check-in operations in the Central Ticket Lobby on the east side of the lobby with one (1) two position counter and four (4) self services kiosks.

American Airlines / American Eagle has approximately 1,200 gsf for ticketing and check-in operations in the Central Ticket Lobby on the east side of the lobby with four (4) two position counter and two (2) self services kiosks.

Passenger Security Screening Checkpoints

The main passenger security screening checkpoint (PSSC) for the West Concourse is located in the Central Lobby adjacent to Southwest Airlines ticketing lobby. This PSSC is comprised of five (5) screening lanes, each with a dedicated magnetometer for pass through passenger screening, roller tables and x-ray devices for screening carry-on baggage and personal items. There are four (4) ETD resolution stations for secondary baggage screening as well as individual passenger screening stations for secondary screening, located in the Central Lobby security screening checkpoint, as shown in *Figure 1-3*. This checkpoint currently serves all airlines with the current layout being based on a TSA pilot program, in response to the events of September 11, 2001. Both the TSA and Southwest Airlines were primary contributors in the layout of the checkpoint, with passenger convenience being the primary concern, yet emphasizing security procedures and efficiencies.

Passengers opting to access the West Concourse via the conditioned passenger bridge from Parking Garage A can access the concourse through a single lane PSSC adjacent to Hudson News retail concessions and Gate Number 1. This checkpoint has two (2) magnetometers, two (2) x-ray devices for carry-on baggage and personal items, two (2) ETD resolution stations for secondary screening and one (1) dedicated station for secondary passenger screening as shown in *Figure 1-3*. This checkpoint is utilized primarily by SWA passengers, as a result of its proximity to the West Concourse.

There is a single lane PSSC at the entrance to the North concourse, across from the exit of the main PSSC. that is primarily utilized by SWA employees for access to and from the North Concourse. This lane has a magnetometer and baggage x-ray device.

Concourses and Gates

One objective of the FPA TARPS and Revised C.I.P. is to determine the spatial requirements of both the terminal and concourse based on the FPA while providing an a higher level of customer service to the passengers and tenants alike. While there are currently a total of thirty two (32) existing gates available in the terminal area, including the six (6) gates available at the Lemmon Avenue Terminal facility, the Five Party Agreement revised the maximum number of gates available for use to twenty (20) gates.

There are currently twenty (20) active gates in the terminal facility. Sixteen (16) of those active gates are utilized by Southwest Airlines in the West Concourse, while two (2) active gates are utilized by Continental Airlines and two (2) active gates are utilized by American Airlines in the East Concourse. *Figure 1-2* represents locations of the current active gate positions in the West and East Concourses.

The North Concourse is primarily utilized exclusively by Southwest Airlines for employee training at Southwest University. This concourse has the capability to be utilized for commercial air carrier service with a maximum of seven (7) gate positions. Utilization of this concourse would require renovations of the facility for the provisions of new passenger holdrooms, boarding gates with the addition of new jet bridges, supporting infrastructure and concessions.

Airport Traffic Control Towers (ATCT)

Currently at Dallas Love Field, there are four (4) control tower facilities located within the main terminal facility.

F.A.A. ATCT

There is one (1) active F.A.A. control tower used for the control of aircraft within the Aircraft Movement Area (AMA) and monitoring the surrounding airspace. Integral to the main terminal facility, there is a decommissioned F.A.A. control tower that that is currently utilized by Airport Operations Department for monitoring of the airport terminal area and security operations. The decommissioned tower provides the following spaces:

1. Third Level - Occupied by the Dallas Love Field Joint Venture
2. Fourth Level - Utilized by TSA for training and offices, Aviation Department offices and the soon to be relocated badging office and training room.
3. Fifth Level - elevator lobby for sixth floor and tower level access
4. Sixth Level – Tower breakroom
5. Tower Level – Aviation Department Operations

Ground Control Towers

There are two (2) ground control towers, one located at the East Concourse and one at the West Concourse. The East Concourse tower is presently not in use. The west ground control tower is utilized by SWA for controlling aircraft movements outside of the AMA to the ramp and gate area(s). Each ground control tower has third level employee break rooms and restroom facilities.

Terminal Facility Areas Defined

Currently, the Dallas Love Field terminal facility comprises of approximately 859,770 gross square feet. These areas included in the immediate terminal gross square foot area are the North, East and West Concourses, Ticketing Wing, Baggage Claim Wing, Central Lobby and various allocated office spaces throughout the terminal. These areas have been defined in the 2001 Airport Impact Analysis/Master Plan, as prepared by DMJM Aviation, and have been reproduced in this Section in *Table 1-1*. As some new areas have been defined or reconfigured in the Terminal Facility after the Airport Impact Analysis/Master Plan, these areas have been revised and identified in *Table 1-1*.

TOTAL ENCLOSED AREA by CONCOURSE in GROSS SQUARE FEET	
1. WEST CONCOURSE	
A. FIRST LEVEL	
1. Southwest Airlines	56,104
a. Operations Station Administration	6,977
b. Circulation	3,130
2. Mechanical	5,454
3. Circulation	1,926
a. Stair/Escalator	100
b. Elevator	**73,691**
Subtotal	
B. SECOND LEVEL	
1. Southwest Airlines	32,052
a. Holdrooms	207
b. Agent Work Area	17’-0”
c. Ticketing/Customer Service Counter Length	43’-0”
d. Ticketing/Customer Service Center Counter Length	2,025
E. Operations	808
F. Children Play area (Kidsport)	546
G.Storage	
2. Retail	
a. Restaurant/Food and Beverage	9,274
b. Hudson News	3,189
c. Star Polish	720
d. Wachovia (ATM’s)	4
e. Ackerley Advertising	74
f. Smarte Carte	56
g. Dallas Sports	715
h. Sunglass Hut	320
3. Security	1,879
4. Restrooms	4,241
5. Circulation	21,941
Subtotal	**78,094**
TOTAL WEST CONCOURSE	**151,785**

Table 1-1

2. TICKET WING	
A. FIRST LEVEL	
1. FAA Storage	1,154
2. American Airlines (Vacant)	
a. Operations and Station Administration	21,260
b. Circulation	5,973
3. Vacant	32,633
4. Retail	
a. Hudson News	1,520
b. Clean Team	2,051
5. Circulation	5,328
a. Stair/Escalator	1,629
b. Elevator	48
Subtotal	**71,956**
TOTAL TICKET WING	**71,956**
3. NORTH CONCOURSE	
A. FIRST LEVEL	
1. Southwest Airlines	
a. Southwest Airlines University (Training Facility)	66,437
b. Circulation	18,515
2. Comair/Delta Airlines (Vacant)	
a. Holdrooms	1,625
3.. Circulation	4,652
a. Stair/Escalator	3,438
b. Elevator	48
4. Mechanical	4,029
Subtotal	**98,744**
B. SECOND LEVEL	
1. Southwest Airlines	
a. Southwest Airlines University (Training Facility)	30,741
b. Circulation	18,773
Subtotal	**49,514**
TOTAL NORTH CONCOURSE	**148,258**

Table 1-1
(Continued)

4. EAST CONCOURSE (from Main Terminal to Continental)	
A. FIRST LEVEL	
1. Southwest Airlines	
a. Vacant	1,372
b. Circulation	148
2. Continental Airlines	
a. ATO	360
b. Counter Length	21'-6"
c. Baggage Claim	1,735
d. Outbound Baggage	165
e. Security Checkpoint	630
f. Storage	2,073
g. Restrooms	616
h. Circulation	2,269
3. Retail	
a. Northern Bank (ATM)	5
b. Smarte Carte	38
4. Circulation	8,682
a. Stair/Escalator	1,487
b. Elevator	48
5. Mechanical	9,260
6. American Airlines (Vacant)	
a. Outbound Baggage Area	2,133
Subtotal	**31,021**
B. SECOND LEVEL	
1. Continental Airlines	
a. Holdrooms	6,687
2. Retail	
a. Hudson News	90
b. Multi-Restaurant (Seating included)	755
Subtotal	**7,532**
TOTAL EAST CONCOURSE (from Main Terminal to Continental)	**38,533**

Table 1-1
(Continued)

5. EAST CONCOURSE (East of Continental)	
A. FIRST LEVEL	
1. American Airlines (Vacant)	
a. Agent Ticketing	134
b. Counter Length	60’0”
c. Counter Work Area	113
d. Operations and Administrative Offices	51,381
e. Vacant	30,875
f. Circulation	11,104
Subtotal	**93,607**
2. Circulation	
a. Stair/Escalator	3,042
b. Elevator	234
Subtotal	**3,276**
B. SECOND LEVEL	
1. American Airlines (Vacant)	8,204
a. Holdrooms	15,642
b. Circulation	45,103
c. Vacant	**68,949**
Subtotal	
B. THIRD LEVEL	
1. Ramp Control Mezzanine (Vacant)	367
Subtotal	**367**
B. FOURTH LEVEL	
1. Ramp Control Tower (Vacant)	310
Subtotal	**310**
TOTAL EAST CONCOURSE (East of Continental)	**166,509**

**Table 1-1
(Continued)**

6. CENTRAL LOBBY	
A. FIRST LEVEL	
1. Southwest Airlines	
a. Agent Ticketing	1,000
b. Operations/Offices	5,150
c. Outbound Baggage	7,076
d. Counter Length	116’-6”
e. Counter Work Area	291
2. TSA	
a. Operations/Offices	4,504
b. Bag Screening	2,544
3. Comair/Delta Airlines (Vacant)	
a. Agent Ticketing	214
b. Operations/Offices	1,119
c. Counter Length	28’-6”
d. Counter Work Area	100
4. Continental Airlines (Vacant)	
a. Agent Ticketing	121
b. Counter Length	17’-6”
c. Counter Work Area	61
5. Retail	
a. Pass Associates	369
b. WHS Specialties	720
c. Art Gallery	1,875
d. Hudson News	1,950
e. Multi-Restaurant, Inc.	
1. Food and Beverage	3,419
2. Storage	1,114
3. Operations	3,375
f. Smarte Carte	75
g. Bank of America (ATM)	8
h. Chase Bank (ATM)	6
i. Pay Phones	431
j. Frontiers of Flight Museum Office (Vacant)	1,967
6. Restrooms	1,806
7. Security/Police Station	3,227
8. Circulation	26,249
a. Stair/Escalator	1,026
b. Elevator	200
9. Security Checkpoint	7,775
10. Vacant	2,451
Subtotal	**80,229**

Table 1-1
(Continued)

B. SECOND LEVEL	
1. Mechanical	1,106
2. Restrooms	1,065
3. Multi-Restaurant, Inc.	
a. Support	5,219
4. Aviation Department Offices	10,551
5. Frontiers of Flight Museum (Vacant)	4,951
6. Southwest Airlines	
a. Pilot Briefing, lounge and Administration Offices	7,113
b. Circulation	1,913
Subtotal	**31,918**
TOTAL EAST MAIN LOBBY	**112,147**

Table 1-1
(Continued)

7. BAGGAGE CLAIM and CAR RENTAL WING	
A. FIRST LEVEL	
1. Circulation	8,735
a. Stair/Escalator	864
2. Southwest Airlines	
a. Baggage Service Office	226
3. Car Rentals	
a. Advantage Rent-A-Car	
1. Agent Ticketing / Counter Area	100
2. Counter Length	13’-6”
b. Thrifty Rent-A-Car	100
1. Agent Ticketing / Counter Area	13’-6”
2. Counter Length	100
c. Alamo Rent-A-Car	13’-6”
1. Agent Ticketing / Counter Area	100
2. Counter Length	13’-6”
d. National Rent-A-Car	
1. Agent Ticketing / Counter Area	100
2. Counter Length	13’-6”
e. Enterprise Rent-A-Car	100
1. Agent Ticketing / Counter Area	13’-6”
2. Counter Length	100
f. Dollar Rent-A-Car	13’-6”
1. Agent Ticketing / Counter Area	100
2. Counter Length	13’-6”
g. Avis Rent-A-Car	
1. Agent Ticketing / Counter Area	100
2. Counter Length	13’-6”
h. Budget Rent-A-Car	
1. Agent Ticketing / Counter Area	300
2. Counter Length	4
i. Hertz Rent-A-Car 1. Agent Ticketing / Counter Area	10,595
2. Counter Length	1,152
4. Retail	**22,750**
a. Smarte Carte	
b. Encore Technologies (Phone Card)	**22,750**
5. Baggage Claim (within positive claim area)	
6. Restrooms	
Subtotal	
TOTAL BAGGAGE CLAIM and CAR RENTAL WING	

Table 1-1
(Continued)

8. OFFICE TOWERS	
A. THIRD, FOURTH and FIFTH LEVELS	
1. Multi-Restaurant, Inc.	
a. Support	13,127
2. FAA	518
3. City of Dallas Aviation Department	
a. Fourth Level	912
b. Fifth Level	348
4. Love Shines	296
5. Badging Office and Training Room	2,080
6. Microburst Communications	470
7. Circulation	1,004
Subtotal	**18,755**
TOTAL OFFICE TOWERS	**18,755**
9. BASEMENT	
A. Multi-Restaurant, Inc.	475
1. Storage	
B. City of Dallas Aviation Department	5,742
1. Storage	12,917
2. Support	
C. Mechanical	6,220
1. West Concourse	8,912
2. East Concourse	2,295
3. Baggage Claim	4,288
4. North Concourse	7,030
5. Main Terminal	4,112
6. Ticket Wing	
D. Circulation	
1. Main Terminal	16,798
2. Ticket Wing	9,950
3. East Concourse	10,020
4. North Concourse	17,784
5. West Concourse	22,534
Subtotal	**129,077**
TOTAL BASEMENT AREA	**129,077**
TOTAL ENCLOSED GROSS SQUARE FEET (gsf)	**859,770**

Table 1-1
(Continued)

CONCESSIONS PROGRAM

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Main Terminal

The lower level, terminal landside available concessions includes a limited menu, with available selections by McDonald's, Pizza Hut, Chili's Too and Chili's To Go, and Cinnabon coffee. A freestanding Hudson News and In-Line Art Gallery comprise the retail offerings.

East Concourse

In the East Concourse, Gates 26 and 27 utilized by Continental Airlines offer one quickserve food and beverage unit and one newsstand. These airside concessions are available to Continental passengers.

West Concourse

The West Concourse, currently serving SWA, provides the largest volume of airside concessions of the two concourses. It serves gates 1 through 15. The majority of the retail and food service locations are in the West Concourse.

All sub-types of food service are available on the West Concourse, with offerings ranging from ice cream to a sitdown Chili's Too. Retail concessions include newsstand, and books.

North Concourse

Previously utilized primarily by SWA for employee training, the North Concourse can be developed for jet passenger service with passenger holdrooms and a supporting concessions program, if the concourse is converted into passenger gates.

Concession Unit Locations and Visibility

Landside

The landside zone incorporates some of the key principles for satisfying the needs of the meeter/greeter market. The Pizza Hut, McDonalds, Chili's Bar and Bites and Cinnabon Coffee units all offer café seating which allows the passenger and accompanying well-wisher to maintain visual connectivity with security.

Chili's Bar and Bites is the only casual dining concept landside. Also, of note, the Chili's has some visual connection to the escalators that bring passengers down to the baggage claim area. There is room for improving the visual connection to the baggage claim area itself. Meeter/greeters tend to want to wait in an area where they can make visual contact with their arriving passenger at the first moment possible. (This is why some meeter/greeters wait near the skybridge shortcut security.).

Due to its location, while having an interesting selection of art products, The Art Gallery has poor visibility which is reflected in its sales. Pizza Hut does not serve breakfast. Offering breakfast menu items should be considered.

The parking garage skybridge escalator core across from Hudson News retail concessions in the southeast lobby presents challenges to the placement of concession units. An option to consider would be to place vitrines or glass enclosed kiosks that advertise shops, products, and menu items of the terminal's concession program. While the landside concessions do not offer a wide range of drink products, and there are no visible vending machines for can or bottle drink products, a location beneath the escalator for vending machines should be considered.

West Concourse

The Hudson News retail concessions adjacent to Gate 1 have poor visibility as it is tucked behind security.

Although, the food court-style snackbars (Pizza Hut and Oasis Deli) are an efficient use of space, the units look tired and dated. The Antler Bar immediately adjacent to the snackbar is well designed. It offers only beverages and shrimp cocktails. Chili's Too, the only full service, sit down menu food and beverage concession, recently expanded into the food court adjacent to it, replacing the Hot Dog Construction Company with additional seating for increased capacity.

Only one Hudson News wall hugger unit serves the far end of the West Concourse, towards Gates 10 - 14. Consequently, this area of the concourse appears to be underserved with concessions. The play area at the end of Gate 12 should be relocated to a location that may be of lesser value to revenue generating amenities. This would provide potential space for additional revenue generating concessions.

East Concourse

At Gates 25 and 26, currently operated by Continental Airlines, there is a small snackbar with seating serving limited food, beer and other drinks. There is also a small news kiosk. At the American Airlines gates at the end of the east concourse, there is a small food and beverage concessions, as well as a small newsstand. The concessions provided at Continental's and American's gates are primarily to serve their respective customers at their gates.

Overall

Most units are not visible to approaching passengers. Storefronts neither pop out, nor use any type of blade signs. Storefront designs should be enhanced to maximize customer awareness and to increase capture.

Currently, DAL does not have an amenities signage program, meaning neither brochures nor directories are available. An amenities awareness program performs three functions. At the lowest level, it lets airport visitors find specific locations. At a higher level, it communicates to those same visitors that DAL is more than an airport; it is a shopping environment. And, at the highest level, it promotes an image of user-friendliness to airport visitors, the kind of image that encourages visitors to relax, dine and shop while awaiting their flight departure.

BAGGAGE SYSTEM FACILITIES

Curbside

The original curbside checked baggage screening function was located in a storefront enclosure beneath the elevated roadway adjacent to Southwest Airlines curbside check-in station *(Refer Figure 1-4).* The curbside screening of checked outbound baggage was a convenient option for SWA passengers, but performed as an inefficient stand alone lobby solution. Future accommodations for expansion of the dedicated screening space were constrained by both the overhead concrete structure and the surrounding concrete walls. The transporting of cleared baggage through the airport lobby is unsightly and creates an undesirable situation where an uncleared bag could accidentally be introduced onto the cart carrying cleared bags.

The curbside baggage screening operation has been relocated into the ticket lobby adjacent to Southwest Airlines ticket counters. Curbside checked baggage is shuttled from the SWA curbside counters, utilizing electric carts, to the EDS screening area. TSA personnel manually load checked baggage onto one of two (2) General Electric CTX 5500 EDS screening devices. Cleared baggage proceeds and is induced on an outbound belt delivering baggage to make-up carousels for delivery to departing aircraft. Suspect or alarmed baggage is placed on one of two (2) ETD screening tables for secondary screening. The bags are then re-induced to the system by being manually placed on the dedicated outbound baggage belt that is separate from the ticket counter outbound baggage belt and are transported to the SWA make-up baggage unit on the ramp side for outbound aircraft delivery.

Southwest Ticket Counter

The current checked baggage screening operation is located to the northeast of the existing SWA ticketing counters *(Refer Exhibit 1-4).* The outbound bags are checked-in and placed on the takeaway belt behind the ticket counter by Southwest Airline agents. The baggage is conveyed to a centralized screening room where two (2) General Electric CTX 5500 EDS devices and ETD screening tables are located. The bag continues into one of the CTX machines and is screened. Once the bag exits the CTX machine, the cleared bag is manually pushed by TSA personnel onto a roller table that leads to a single outbound takeaway belt. The bag is conveyed to the SWA single sloped plate make-up baggage unit on the ramp side for aircraft delivery.

If the bag is alarmed by the CTX 5500, it is placed on one of the adjacent ETD tables where TSA manually inspects the bag. Once the bag is cleared, it is placed on the outbound takeaway belt and delivered to the baggage make-up unit for aircraft delivery.

This basic system reportedly works very well, and redundancy is addressed with two inline CTX 5500's. At one time there was a pilot RFID program that was used to test tracking and sortation technologies. The equipment is no longer in service or intact.

Continental Ticket Counter

The outbound bags are checked-in and placed on the takeaway belt behind the ticket counter by Continental Express agents. The baggage is conveyed to a screening room where two (2) General Electric CTX 5500s EDS devices and ETD screening tables are located. The bag continues into the CTX machine and is screened. Once the bag exits the CTX machine, the cleared bag is manually pushed by TSA personnel onto a roller table that leads to a single outbound takeaway belt. The bag is conveyed to the Continental single sloped plate make-up baggage unit on the ramp side for aircraft delivery.

If the bag is alarmed by the CTX 5500, it is placed on one of the adjacent ETD tables where TSA manually inspects the bag. Once the bag is cleared, it is placed on the outbound takeaway belt and delivered to the baggage make-up unit for aircraft delivery.

American Airlines Ticket Counter

The outbound bags are checked-in and placed on the takeaway belt behind the ticket counter by American Airline / American Eagle agents. The baggage is conveyed to a screening room where two (2) General Electric CTX 5500s EDS devices and ETD screening tables are located. The bag continues into the CTX machine and is screened. Once the bag exits the CTX machine, the cleared bag is manually pushed by TSA personnel onto a roller table that leads to a single outbound takeaway belt. The bag is conveyed to the American Airline / American Eagle single sloped plate make-up baggage unit on the ramp side for aircraft delivery.

If the bag is alarmed by the CTX 5500, it is placed on one of the adjacent ETD tables where TSA manually inspects the bag. Once the bag is cleared, it is placed on the outbound takeaway belt and delivered to the baggage make-up unit for aircraft delivery.

CTX 2500 in the Lobby

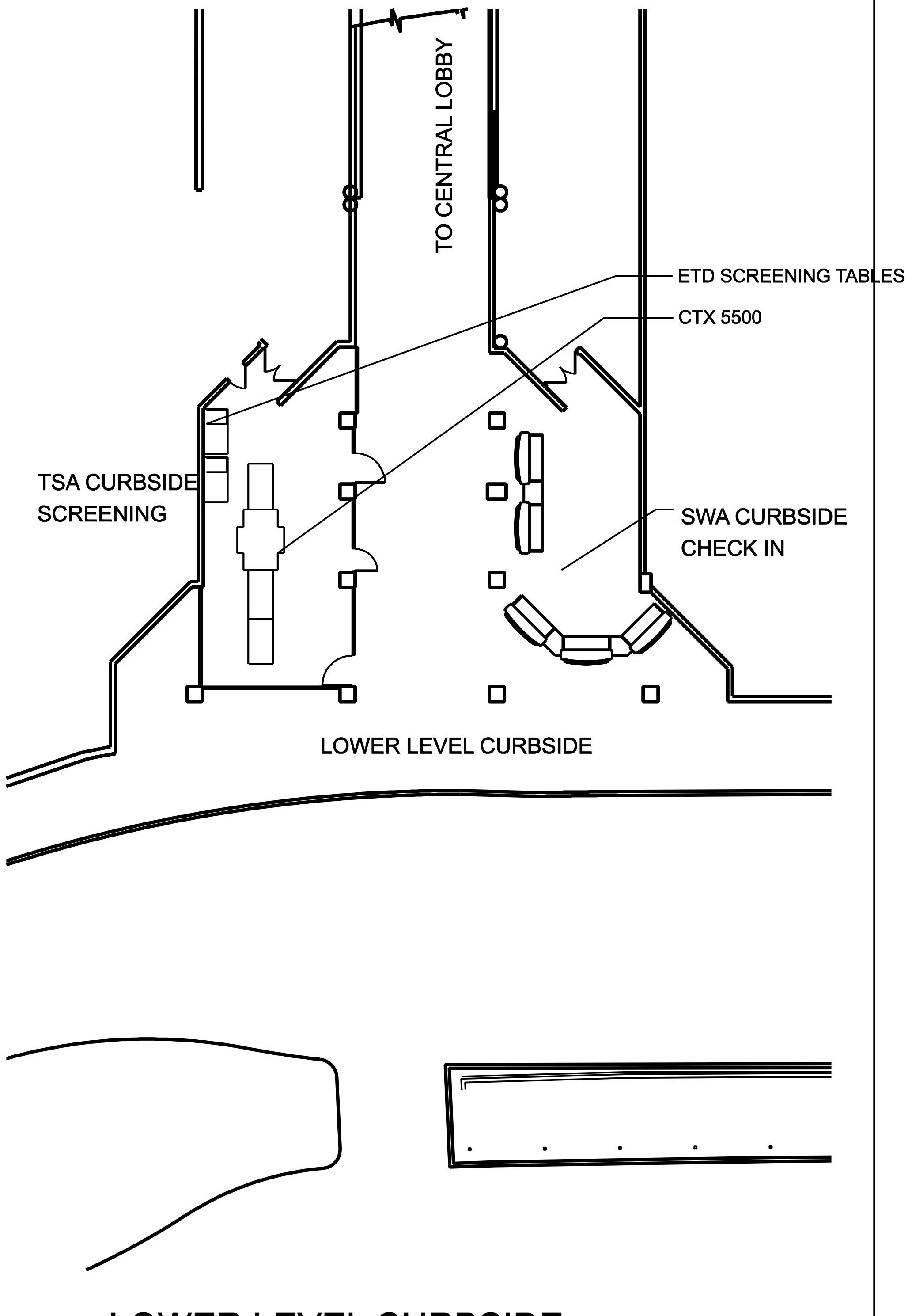
There is currently a General Electric CTX 2500 located in the main lobby behind the Hudson News concession space *(Refer Figure 1-4)*. It is currently utilized by TSA for overflow if any primary EDS device is being serviced and is not available, or if there is an over abundance of checked bags to be screened curbside.

FACILITY BUILDING SYSTEMS

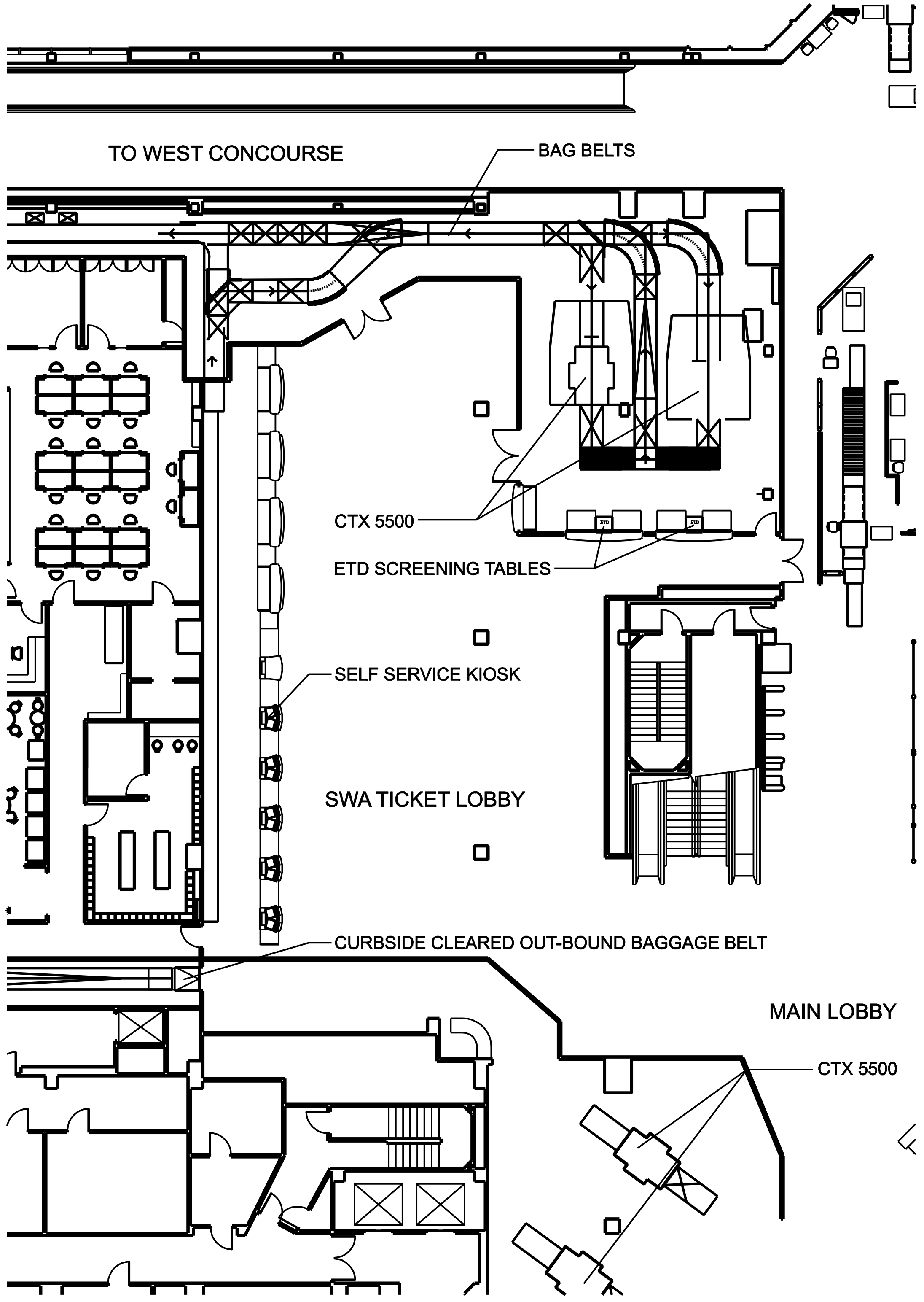
Electrical Power Systems

A study performed by Carter & Burgess in 1997 documented existing power distribution and emergency power generation systems in place at that time. That study also included recommendations for substantial replacement and upgrade of the systems, and most of that work was accomplished shortly thereafter, as documented in “Bid Package No. 2”.

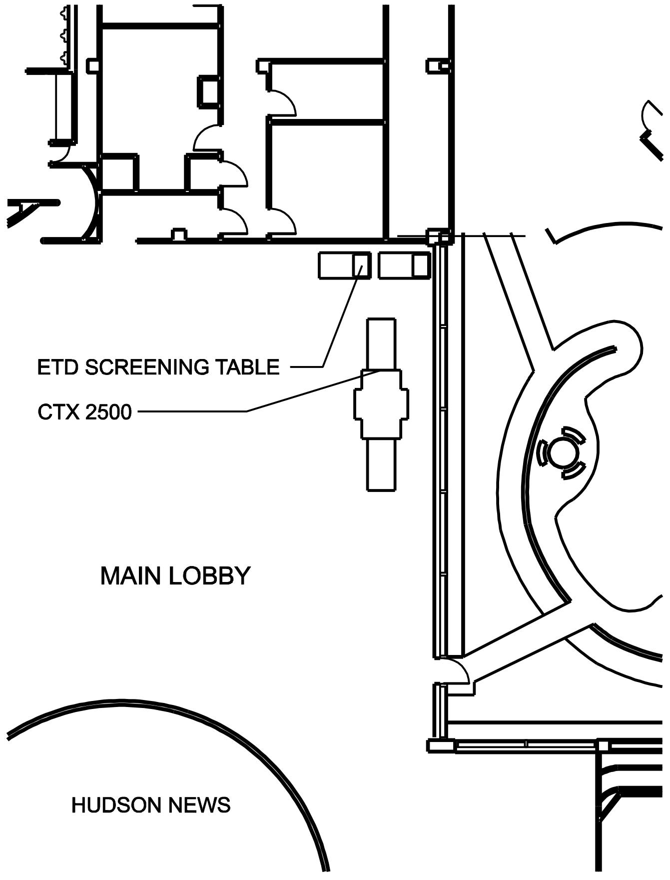
Therefore, the systems in place now represent that effort reflecting “state of the art” technology. Considerable thinking and analysis guided this work, resulting in a robust system that addressed major concerns, and provided an acceptable balance of reliability and capital investment.



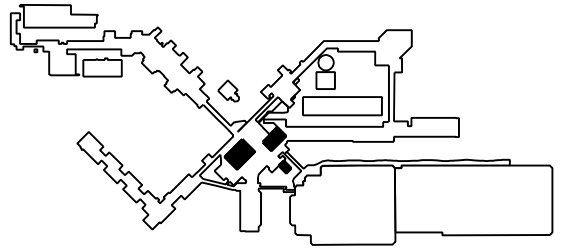
03 LOWER LEVEL CURBSIDE TSA SCREENING



02 MAIN TERMINAL CENTRAL TSA SCREENING



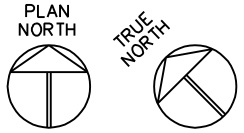
01 MAIN LOBBY SECONDARY TSA SCREENING



KEYPLAN

DALLAS LOVE FIELD AIRPORT
TERMINAL AREA REDEVELOPMENT
PLAN AND REVISED CIP

EXISTING AIRPORT BAGGAGE SCREENING



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SHEET NUMBER:
FIGURE 1-4

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11.05

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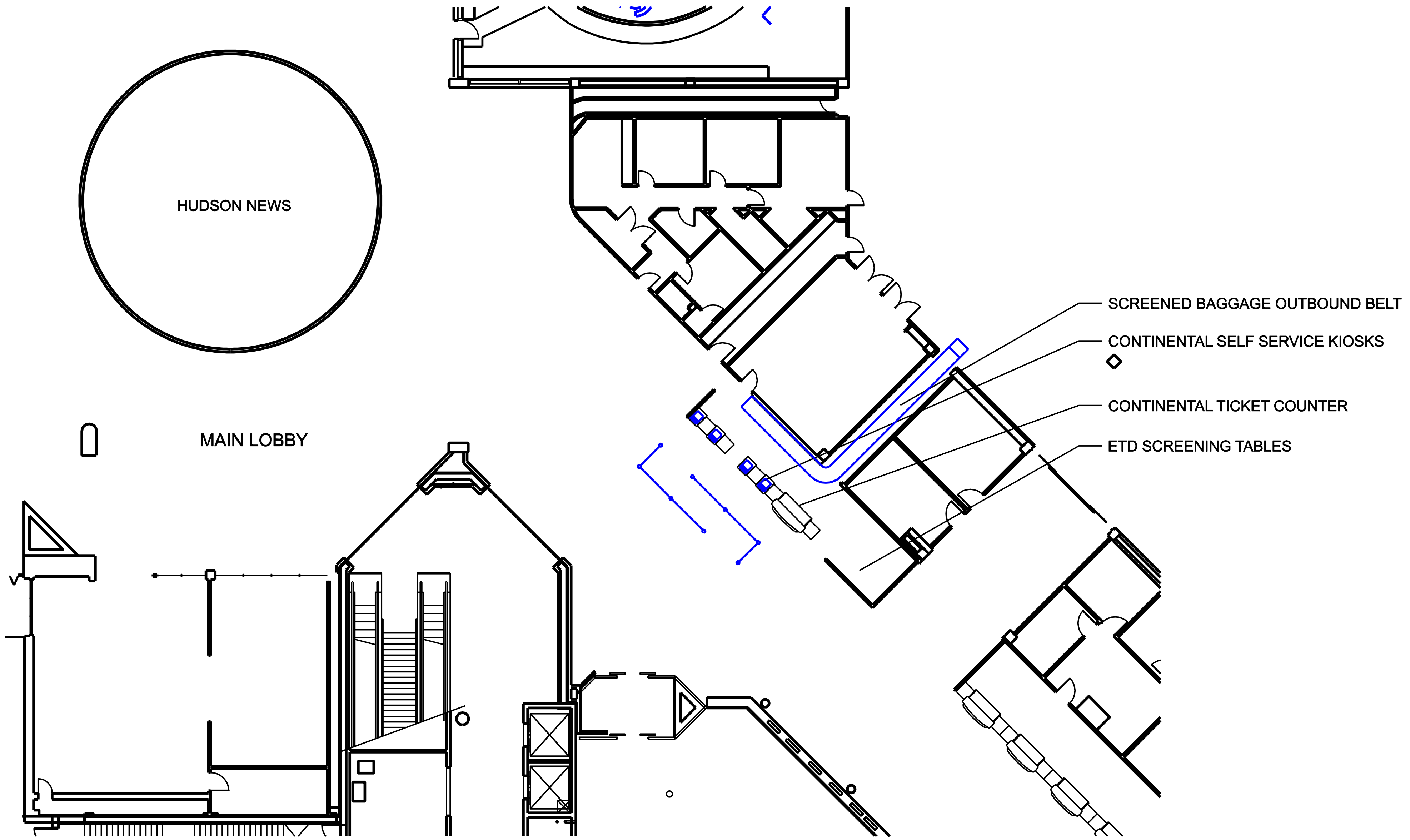
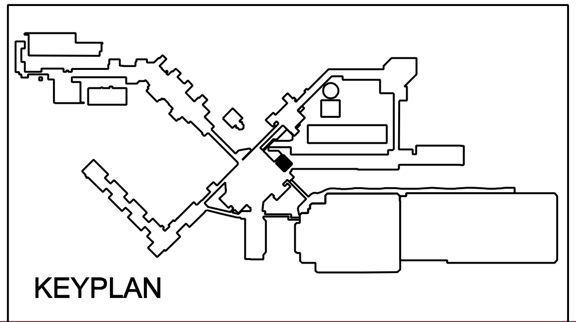
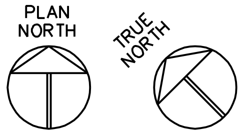


01 MAIN LOBBY CONTINENTAL TSA SCREENING



DALLAS LOVE FIELD AIRPORT
TERMINAL AREA REDEVELOPMENT
PLAN AND REVISED CIP

EXISTING AIRPORT BAGGAGE SCREENING

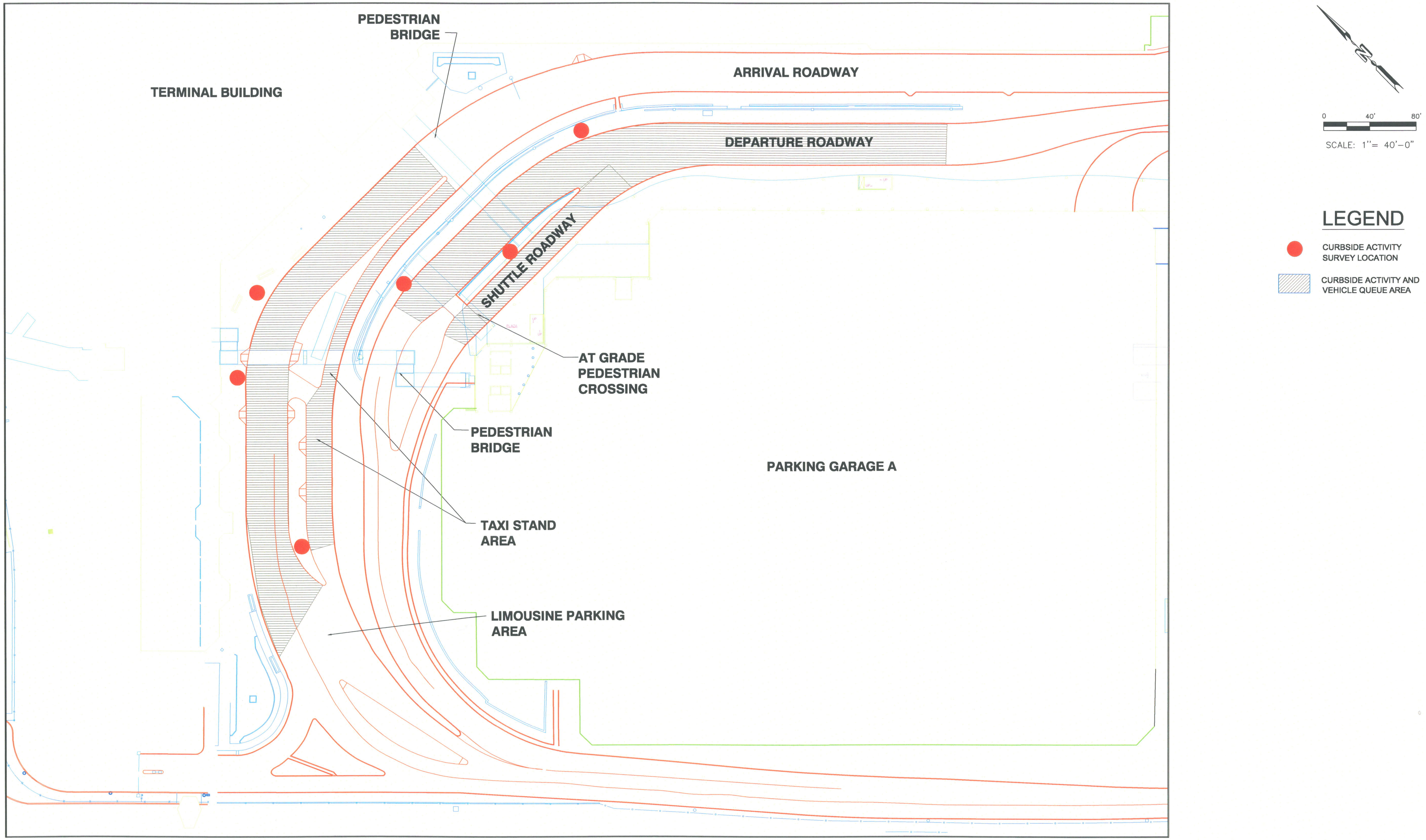


CITY OF DALLAS
LOVE FIELD

G S & P

SHEET NUMBER:
FIGURE 1-4A

DATE ISSUED:
4.06



DALLAS LOVE FIELD AIRPORT
TERMINAL AREA REDEVELOPMENT PLAN AND REVISED CIP

CURBSIDE ACTIVITY

PRELIMINARY NOT
AN APPROVED DRAWING

DOCUMENT IS FOR INTERIM REVIEW &
NOT INTENDED FOR CONSTRUCTION,
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ENGINEER OF RECORD:
DOUGLAS E. GUINN, P.E.
P.E. NO. 62192
DATE: 12/16/2004

LOPEZ GARCIA GROUP

CITY OF DALLAS
LOVE FIELD

G S & P

SHEET NUMBER:
FIGURE 1-5

DATE ISSUED:
12.04

The present study drew heavily from documentation related to "Bid Package No. 2", and from direct field observations and discussions with Airport management personnel.

Electrical Utility Services

The work performed in the 1997-1999 time-frame did not alter the utility services and transformer vault configurations. The terminal is served by two vaults, collocated above ground adjacent to the Boiler Room. Each vault is a "network" design, consisting of two 13.2kV-4160/2400VAC, 2000kVA transformers, and these are served via 15kV-class switchgear, so that each of the two services has the capability of being fed from a "normal" and an "alternate" utility feeder. Three utility feeders serve the site: one from Maple Substation, one from Colleyville substation and one from Denton Drive substation. These feeders are routed underground to the two vaults, which are constructed of brick, fire-rated walls. Each pair of transformers (2 x 2000kVA) within either respective vault is continuously connected on the lower voltage side for purposes of reliability; so the total normal capacity of a vault is not 4000kVA, but a value that allows one transformer to be out of service while the remaining one may operated in the overload range, based on the serving utility's standards. Data obtained for the City indicates the maximum KX demand to be 3111kw (1/12/05 period.) Thus the system is loaded at approximately 75% during peaks. Within each of the two vaults the electric utility company also has the capability of feeding either transformer from two of the three utility services, by means of motor-operated transfer switches, which is known as "primary selective" configuration; additionally, a "temporary" circuit between the two vaults would allow the feeder that is not present as either normal or alternate service to either vault, to be connected manually in a serious emergency or maintenance operation.

4160VAC Distribution System

Each of the two utility vaults serves a respective line-up of 5kV class switchgear. These two line-ups are located outside the vaults in the main boiler room, and are guarded by roll-up grating doors. The switchgear was manufactured by Square D; one of the largest such companies in the world, and represents the state-of-the-art. The switchgear is of the metal-clad type, and is rated for a short circuit withstand of 350mVA. Each of the two line-ups has a 2000Amp main circuit breaker, which protects a main bus that feeds a number of 1200Amp feeder circuit breakers that serve the numerous secondary substations around the terminal and elsewhere. The circuit breakers are Type VR, vacuum interrupter, draw-out type.

The present distribution/feeder system essentially only replaced or added to the original design configuration, and did not include any substantial alterations to the basic scheme.

Most of the major equipment and feeders were entirely replaced on a one for one basis, with additions as necessary to meet other load requirements. The basic system serving the West Concourse is a looped design, meaning that each substation can be served from either of two feeders, vis-à-vis pad-mounted type switchgear manufactured by S & C, located in the tunnels. For each of these substations both serving feeders originate from Vault No. 2's 5kV switchgear line-up. Service for the balance of the terminal originates at Vault No. 1's main switchgear, but the configuration is of the radial type, meaning each substation only has one serving feeder available. All of the substations are indoor line-ups, located strategically around the terminal areas. Square D is also the manufacturer of these substations, each of which consist of a 5kV Type HVL load interrupter switch on the incoming line, which feeds a cast-coil type step down transformer in the line-up, which is coupled to a 480/277VAC switchboard equipped with multiple molded-case circuit breakers having electronic tripping controls that afford maximum coordination of short circuit protection with other “downstream” protective devices to minimize the extent of power outages. Substation capacity ratings range from 300kVA up to 1500kVA.

Medium-voltage conductors used in the feeder circuits are 5kV class, copper conductor with copper tape shield, EPR insulation, Type MV-105. Terminations are as manufactured by Elastimold, and include load break type “elbow” terminations that allow removal of conductors while a circuit is energized if necessary.

The main 5kV switchgear and substations are equipped with Square D’s Power Logic power meters, for local read-out of voltage, amps, et cetera; however, although these have the capability of communicating via RS-485, the networking and software is not in place to allow remote monitoring.

Emergency Generation/Power Distribution System

The terminal areas’ critical loads are served via two emergency power systems, each having its own diesel generator: one system is powered by a 750kW generator set, and the other distribution system is backed-up by a 75kW set; both sets generate at 480/277VAC.

Numerous automatic transfer switches strategically located near electrical load centers throughout the terminal areas provide automatic transfer from normal power to generator power upon loss of normal voltage at a given ATS. Load categories that are on these systems include: critical and life safety lighting in all areas of the terminal, security and fire alarm/protection systems, various roll-up doors, airplane sewage pump, sewage ejector pump, elevators, baggage carousel and other functions that cannot be inoperable. The generators are manually started periodically for testing, but the “live” loads are not transferred over to the generator during such exercising.

Fire Alarm and Fire Protection Systems

The terminal area fire alarm system is manufactured and maintained by Simplex-Grinnell. The original system was installed in 1987 and has undergone successive upgrades over time, but presently is still a mix of original and new, with the goal being to have a state of the art addressable system. The present alarm system does not include voice evacuation instruction via a speaker system.

Along with the mechanical system upgrades, a new fire suppression system was installed. The installation was completed to meet current Fire Code requirements as well as to allow the terminal facility to have the ability to expand. Prior to the mechanical and fire protection upgrades, the terminal facility had reached its maximum, non-sprinklered size. The new system allows the DOA to consider facility expansion, if necessary.

Heating, Ventilation and Air Conditioning (HVAC) Systems

A series of projects beginning in 1998 provided for the upgrade of HVAC and associated electrical systems for the concourses. The extent of this work is documented in drawings prepared by Carter & Burgess. Generally speaking the projects involved replacing constant volume air handling units with variable air volume units, replacement of medium pressure ductwork between air handlers and terminal units, and replacement of these terminal units with variable volume units. The existing low-pressure ductwork was retained on the "downstream" side of the terminal units wherever possible.
A four pipe chilled/hot water distribution system is run to the air handlers from the Central Plant, via the tunnel/basement, to provide chilled and heating water to the respective coils in the new air handlers.

Outside air introduction was designed to meet industry standard, ASHRAE 62-89. The new air handlers are equipped with pre-filters, two-stage chemical filtration, and 85% final filters.

The Central Plant has four electric motor-driven centrifugal chillers and four cooling towers. Dedicated electrical substations provide power to this plant. The system includes a chilled water storage system and a heat exchanger to minimize electrical energy usage year-round.

A Direct Digital Control (DDC) system is provided for the entire facility. This system affords optimum control and monitoring of all water and air sub-systems and components.

SPECIAL SYSTEMS

Electronic Security System

The Department of Aviation recently began a replacement and upgrade of the existing Access Control System (ACS), including CCTV and Card Reader locations. The initial focus of the system replacement was a terminal area wide system ACS upgrade, to include the terminal facility and perimeter AOA fence access points. During the replacement process, numerous doors and frames, including associated egress hardware, were replaced or repaired.

The previous security system was an access control system, with supplemental CCTV monitoring cameras. The existing system was manufactured by Info graphics. The hardware is fifteen years old and nearing the end of its useful life expectancy. There were approximately 100 controlled portals in this facility. There are two access control workstations located inside the building. One location is in the Dallas Police Department Substation located in the airport. The second alarm monitoring workstation is located in the operations center. The badging station which is located at the operations center on the second floor Administration Office level, will soon be relocated to the fourth floor of the decommissioned ATC.

Utilizing the U.S. Army Corps of Engineers guide specifications as a system design guideline, a new ACS was designed and installed, replacing the existing, out-of-date system. Compared to the capacity and functionality of the ACS replaced, the capacity of the system was designed for controlling and monitoring a minimum of 1000 portals and 50,000 users (9,500 current badge holders), 75,000 expired badges, and retaining alarm and system transactions for a six month minimum on-line. Transactions and alarm histories are searchable using a long term data storage subsystem, specified as part of the ACS. Once completed, the ACS will provide Dallas Love Field with current technologies, allowing the system and its users ease and efficiency of operation, greater security area coverage and expandability into the future.

The system head end is two dedicated redundant servers. The system communicates via thin net on a stand alone 10 bases T network. The network system communications are monitored continuously for reliability and security of the airport. There are eight to ten ACU (field panels) located strategically around the airport building. Some of the ACU's are wired to capacity and require components for upgrades. The system is backed up by an uninterruptible power source and connected to emergency power. The ACU's are backed up by a local battery in each cabinet. There is an existing integration link with the Closed Circuit Television System to accomplish automatic camera call up with associated alarms.

CCTV

The Closed Circuit Television (CCTV) System is a matrix-based system manufactured by General Electric. There are approximately fifty cameras residing on the matrix. Twelve to fifteen of the cameras are pan, tilt, and zoom equipped. The balances of the cameras are fixed location cameras. The existing CCTV monitoring system and its related operator control equipment are capable of interfacing with the new ACS. The primary CCTV recording equipment is operated from the Airport Police Service Desk workstation operator console. There is some expandability of the system available, but exploring other options to upgrade would be viable. The current system is equipped with tape cassette back up for recording functions and in addition a sixteen channel digital video recorder is employed. The digital video recorder is manufactured by IONIC. The matrix is backed up by an uninterruptible power source and emergency power. The main CCTV monitoring location is a workstation located at the Dallas Police Department substation in the airport. There are two viewing monitors. A twelve-inch and a nine inch monitor. Neither monitor is quad screen enabled to provide multiple views. In the eighth floor airport operations center there is a four inch video monitor to view cameras. The system is for airport use exclusively at the present time

Public Address System

The Public Address system is manufactured by IED. The head end is located in the equipment room behind the second floor operations center. Speakers are located throughout the facility. Access to the head is accomplished via microphones located at the gates or through the liaison with inputs through the phone system. System drawings were unavailable indicating microphone locations, speaker placements, zoning of speakers, ambient microphone locations, zone tie box and all other associated equipment. The system is backed up by interruptible power source and the tie into the emergency power system needs to be verified.

Voice Evacuation Systems

The Voice Evacuation System is not associated with the Public Address System. Notification in emergencies is accomplished through local horns and strobes.

Voice Communication

The Voice Communication System in use by the airport is a Voice Over Internet Protocol or commonly called VOIP. This is the latest technology available and is working well. The digital telephone sets are connected to the network via category five unshielded twisted pair cabling to the desktop. The analog telephones set are connected to a Centrex switch with services provided by SBC. The VOIP servers are on an uninterruptible power source and connected to the emergency power system.

Airfield Lighting

The airfield lighting system operates on a stand alone network with its own dedicated server located on the second floor in the operations center and workstations located in the FAA work area and in the electrical shop located at the airport.

Noise Monitoring Systems

The noise monitoring system operates on a separate network with its own dedicated server with workstations located on the fifth and eighth floors of the airport. There is a web interface to the system as well.

Building Management

This stand-alone building management system employs an automatic notification and is not connected to any other IT system.

Premise Distribution System

The Premise Distribution System (PDS) is the system that all the special systems use to connect. Future planning decisions will require that this system be upgraded to be able to provide the bandwidth requirements for new technologies and provide connectivity. The premise distribution system at the airport is currently not very well established, as most of the special systems are stand alone and not consolidated. The PDS system is comprised of the physical pathways made up of conduits and or cable trays linking equipment rooms via fiber optic and copper cabling for connectivity. Equipment rooms need to be built out and spaced at recommended intervals to avoid end device locations being more than 300’-0” feet from an equipment room. These equipment rooms need to meet minimum environmental conditions for maximum performance of electronic gear. These minimum requirements will be identified in later documentation. Presently the PDS at Love Field is maintained by SBC as they installed most of the cabling and infrastructure over the years to serve the airport and the airports tenants. The airport owns a four inch duct equipped with multiple inner ducts and a one hundred and forty four strand fiber optic cable connecting the north main terminal concourse and the north field maintenance hangar on the north end of the airport property. The airport is served from the public switched network (SBC) by three diversified routes into the facility with a self-healing fiber optic ring fed from separate central office locations. This level of redundancy is very good and provides a great deal of flexibility and security if ever required. SBC extends all demarcation communication lines to the tenant spaces to provide telecommunication services to meet their individual requirements. The main distribution frame is located in the basement of the terminal.

Wireless communication

The wireless communication system is part of the premise distribution system and currently the only airport controlled wireless system is the 800-megahertz trunked radio system. This system is for the police and fire radio communications. It was identified to the team that there are some areas of the airport that the radio reception is inadequate and this will need to be addressed. The trunked radio system uses conventional antennas for signal propagation. One antenna location is at the top of the operations tower and the other location is in the basement tunnel for signal distribution. There is a wireless local area network installed for public use through two separate concessionaire vendors. There is no wireless local area network for exclusive airport use. Verizon is the only provider of extended cell telephone coverage within the airport with equipment installed on site. A new satellite dish to provide television reception is currently in the plans to be deployed in the first quarter of 2005. Radio station AM 1580 broadcasts airport information to the public and resides in the facility.

Multi Use Flight Information Display Systems

The Multi Use Flight Information Displays (MUFIDS) at Love field are operated by the airlines. The baggage information displays are owned and maintained by the airport. The content displayed on the monitors is provided by the tug driver input devices from the airlines. There are no dynamic visual displays currently provided by the airport.

Miscellaneous Systems

The following Special Systems are not deployed at Love Field at the present time. These systems need to be considered in the future planning process and an analysis of each system reviewed.

There is no Emergency Operations Center (EOC)
There is no Graphical Information System (GIS)
There is no Global Positioning System (GPS)
There is no Community Antenna Television System (CATV)
There is no centralized antenna farm with roof access
There is no communications grounding system

OTHER AIRPORT FACILITIES

Structured Parking

The terminal facility is served by two multi-level parking structures that are connected to the terminal with two conditioned pedestrian bridges. *(Refer Figure 1-2).*

Parking Structure A, which is the older of the two structures and immediately adjacent to the terminal, has four levels and contains approximately 3,036 vehicular parking spaces used for Short-Term Parking. The total area of this structure is approximately 261,250 gross square feet per level for a total area of 1,045,000 gross square feet. A conditioned pedestrian bridge provides access to the terminal at the upper West Concourse passenger security checkpoint

Parking Structure B, completed in 2003, is four levels and is connected to Parking Structure A. This structure is designated for Long Term Parking and provides approximately 4006 additional spaces for vehicular parking. Iis approximately 375,280 gross square feet per level for a total area of 1,501,120 gross square feet

A 1,500 foot long conditioned pedestrian walkway at the third level of Parking Structure B parallels the vacant ticketing wing of the existing terminal. The walkway leads to a conditioned pedestrian bridge that connects to the Central Lobby of the terminal via an escalator and elevator core. The vertical circulation core is located to the south of both Continental and American Airlines ticket counters.

The Lemmon Avenue Terminal facility has a structured five level parking structure that provides approximately 600 vehicular parking spaces. As the adjacent terminal facility is not currently being utilized for commercial jet service, the parking structure is being utilized by a local car dealership for storing new vehicles. The ground level of the facility is being utilized by a commercial limousine service for storage and maintenance operations.

Lemmon Avenue Terminal

The Lemmon Avenue Terminal is comprised of a self sufficient central terminal facility of approximately 80,000 gross square feet, with six gate positions. These gates are served by fixed bridges currently configured for serving DC-9 aircraft. There are ticketing and baggage claim areas capable of serving passengers for these gates, and passenger holdrooms for the gates. There are inbound and outbound baggage handling systems in place, although there currently is no provision for 100% checked baggage screening. In the central lobby, there is a PSSC lane with provisions for passenger and carry-on baggage screening. In addition, there is unfinished space allocated for concessions, car rental service counters, tenant office spaces and ramp support spaces for airline employee use. Access to this terminal facility is from Lemmon Avenue, which is east of the main terminal facility, across the airfield.

Cargo Facilities

The existing cargo facility, adjacent to the East Concourse and ticketing wing, provides approximately 37,000 gross square feet of usable storage space. It has through loading docks with service doors for delivery and pick-up of cargo by trucks or other commercial vehicles. The cargo facility and loading docks are accessed from Aviation Place. *(Refer Figure 1-2).*

SECTION 1.2 – EXISTING GROUND ACCESS FACILITIES

Terminal Curbside

The following is a description of the methodology utilized to conduct the Dallas Love Field Airport 2004 terminal curbside activity survey and a summary of the results of that survey.

Methodology

Quantitative and/or qualitative observations were made of the following functional elements of the terminal curbside activity:

- Passenger Vehicle/Taxi/ Shuttle Drop off and pick up
- Curbside Ticketing/Baggage Check

Each functional element of the curbside activity was observed on December 9, 2004 during morning and afternoon peaks, which were determined based on traffic studies from the 2001 Master Plan. Quantitative analysis included obtaining curbside volumes and dwell times. Qualitative analysis was limited to observing general levels of congestion and identifying particular activities that impacted curbside activity. *Figure 1-5* entitled “Curbside Activity”, shows the current layout of the Terminal curbside and locations from which the survey was executed.

Results

Passenger Vehicle/Taxi/Shuttle Drop off and Pick-up

The upper (departures) and lower (arrivals) curbs were observed during their respective peak periods. Counts, queues and dwell times were recorded by vehicle classification. The number of passengers utilizing the curbside ticketing/baggage check-in function was also recorded.

Upper Level Curb

The upper level roadway is divided into an inner and outer roadway separated by a raised median. The inner roadway (i.e., the lanes nearest the upper level terminal entrance) is comprised of three lanes. One lane is marked for active passengers pick up and two are marked as through lanes. The innermost lane is wider than the adjacent travel lanes to allow short-duration dwell while passengers load their luggage and exit the airport.

The upper level arrivals roadway also provides access to the loading dock area situated behind the westerly end of the terminal building. No significant traffic was observed during the afternoon peak hour for the loading dock area.

During the afternoon peak, parking enforcement was performed by five police officers on bicycles. A police car would occasionally flash lights at vehicles to keep them from parking for an excessive duration. Vehicles were observed stopping in the through lanes for a very few seconds when the inner lane was totally occupied. Vehicles stopped occasionally on the pedestrian cross walk blocking pedestrian movement. A tabulation of vehicle types, classification and curbside dwelling time are shown in *Table 1-19*

Approximately 73% percent of the vehicles using the Arrivals curb were passenger vehicles; 26% percent were taxis and the remaining were hotel/motel shuttles.

During the afternoon peak, the inner lane was completely utilized with 14 vehicles dwelling at the curb; the maximum observed was 16. The mean dwell time for vehicles was one minute and 18 seconds; the median dwell time was one minute and 15 seconds. The analysis indicates that the curbside is being used to its optimum capacity.

Table 1-19:
Peak Hour Upper and Lower Curb Use
Dallas Love Field Airport

Location And Time	Automobile	Taxi	Rental Car/ Shuttle	Hotel/Motel Courtesy Vehicle	Others
Upper Level					
(Arrival)	429	152	0	2	0
4 PM - 6 PM	73.6%	26.1%	0.0%	0.3%	0.0%
Lower Level (Departure)	156	94	308	4	1
4 PM - 6 PM	27.7%	16.7%	54.7%	0.7%	0.2%
Lower Level (Departure)	80	28	178	6	0
6 AM - 8 AM	27.4%	9.6%	61.0%	2.1%	0.0%

Lower Level Curb

The lower level Departures roadway is divided into an inner and outer roadway separated by a raised median. The inner roadway (i.e., the lanes nearest the lower level terminal entrance) is comprised of three lanes. One lane is marked for active passenger drop off and two are marked as through lanes. The innermost lane is wider than the adjacent travel lanes to allow for a short-duration dwell while passengers unload baggage.

The lower level roadway also provides access to the SWA curbside baggage check-in/ticketing counters situated at the entrance of the terminal building.

No parking enforcement was observed at this level during morning and afternoon peaks. Very few vehicles stopped in the through lanes during the morning peak hour, and then for only a short duration (generally less than 30 seconds) when the inner lane was totally occupied.

During the morning peak hour, approximately 28% percent of the vehicles using the departures curb were passenger vehicles; 10% percent were taxis and the remaining were hotel/motel and car rental company shuttles. During the afternoon peak hour approximately 28% percent of the vehicles using arrivals curb were passenger vehicles; 17 percent were taxis and the remaining were hotel/motel and car rental company shuttles.

During the morning peak hours the inner lane was occasionally completely utilized with a maximum of 6 vehicles dwelling at the curb. During the afternoon peak hours the inner lane was completely utilized with a maximum of 8 vehicles and the through lane was frequently blocked with a maximum of 4 vehicles.

In the morning peak hours, the mean dwell time for vehicles was one minute and 56 seconds; the median dwell time was one minute and 30 seconds. In the afternoon peak hours, the mean dwell time for vehicles was one minute and 50 seconds; the median dwell time was two minutes and 0 seconds.

Vehicles parked farther away from the entrance in some instances would park for a much longer duration. Occasionally vehicles are parked for longer times with hazard lights on and unattended. Vehicles stopped in the through lane predominantly during the 4:00 pm to 5:15 pm timeframe.

The higher dwell time can be attributed to the scenario wherein the vehicles dropping off passengers wait until they check-in their baggage, get a boarding pass and enter the terminal.

Vehicles stopped in the through lane five times (6:30 am, 7:12 am to 7:20 am and 7:36 to 7:39 am) during the morning peak.

Curbside Ticketing/Baggage Check

In the morning peak hour, only 2 check-in counters were utilized. In the afternoon peak hour, all the available curbside check-in counters (4) were used to serve passengers. In the afternoon, the maximum number of passengers in queue for check-in was approximately 8 persons. The total number of passengers utilizing ticketing/baggage curbside check-in during morning peak was 117 and 192 passengers during the afternoon peak.

Commercial Vehicle Operations

Shuttles

Currently, car rental shuttles pick-up and drop-off passengers at the lower level in the lane closest to Parking Structure A. There was no significant traffic of airport shuttles observed during the afternoon peak hour. Also in the afternoon, the shuttles would occasionally stop after they started to leave when hand signaled by passengers exiting the terminal. Pedestrian traffic during the afternoon peak in front of the shuttle drop-off was observed to be one of the factors contributing to the delayed start of the shuttles after picking up passengers. Rental car shuttle departures were controlled by an airport designated person.

It was observed that the shuttles stack end to end while waiting to pick-up and drop-off the passengers. In the morning peak hour between 6:00 am and 8:00 am, the maximum number of vehicles observed was 2, other than the usual capacity of 4 vehicles for the passenger waiting area. In the afternoon peak hour between 4:00 pm and 6:00 pm, the maximum vehicles observed were 5, other than the usual capacity of 4 vehicles for the passenger waiting area. Congestion for through vehicle traffic in this area was observed only during the afternoon peak hour.

For the morning peak hour, the mean dwell time was 30 seconds and median was 20 seconds. For the afternoon peak, mean dwell time for shuttles was found to be 1 min 11 seconds and the median dwell time was found to be 0 min 50 seconds.

Taxi Cabs and Limousines:

Currently, there are five (5) allocated parking spaces for limousines at the upper Arrivals level adjacent to the baggage claim area. The outer roadway is used as the cab stand area. The mean dwell time was found to be one minute and 38 seconds and the median dwell time was found to be one minute 38 seconds.

SECTION 1.3 – RELATED STUDIES

Baggage Claim Expansion and Renovation

During the drafting of the TARPS, the existing baggage claim lobby was comprised of four (4) circular sloped plate claim devices that deposit inbound baggage into the claim area from arriving aircraft. The bags are placed on inbound belts from the ramp area and delivered overhead to each device. During peak arrival times, these devices did not have the capacity to accommodate the amounts of baggage being placed on them.

In 2003 and 2004, the City of Dallas Department of Aviation and Southwest Airlines had been working towards a proposed baggage claim lobby design, which involved the expansion and renovation of the existing baggage claim lobby. The proposed design involved the replacement of the existing sloped plate baggage claim devices, with four (4) new flat plate baggage claim devices. The total capacity of the new planned baggage claim belts was to be approximately 476 lineal feet of belts.

This project also includes the expansion of the existing structure, new architectural finishes and a new mechanical plant. A new curbside canopy is also being added that will provide cover over the existing curbside lane adjacent to baggage claim.

This design and construction were completed in 2007 and is currently fully functioning, shared by all three airlines serving DAL. The completion of this project and its impacts on the existing terminal facility has been taken into account during the development of the FPA TARPS and Revised C.I.P., when facility recommendations are made.

2001 Airport Impact Analysis/Master Plan

Prior to 2001, DMJM Aviation was contracted with the City of Dallas Department of Aviation, to produce an Impact Analysis/Master Plan for Dallas Love Field. The intent of this study was to:

- analyze the existing terminal area facilities to determine what improvements may be necessary to maximize optimal use of the facilities
- provide an environmental overview of noise and ground access under future levels and characteristics of air traffic
- analyze the noise impact of future levels of air traffic
- analyze policy options relative to acceptable levels of air traffic demand and the allocation of existing and improved terminal facilities to accommodate that demand
- conduct this study under the market conditions defined by Federal Laws, including the Wright and Shelby Amendments

Source: City of Dallas Love Field Master Plan

While an emphasis of this study was focused on determining the maximum amount of aircraft operations and gate numbers at Dallas Love Field, recommendations for facility improvements were made relative to enplanement figures and aircraft activity prior to 2001, and forecasted into the 2020. The unfortunate events of September 11, 2001 impacted not only the aviation industry as a whole, but also impacted Dallas Love Field. Some of the recommendations made in the 2001 Impact Analysis/Master Plan have been impacted by these events. This study has been utilized as a reference for the draft TARPS and some of this information has been utilized for validation purposes.

2006 Dallas Love Field Impact Analysis Update

On May 31, 2006, and prior to the Five Party Agreement, DMJM Aviation was again contracted by the City of Dallas to provide an update to the original 2001 Airport Impact Analysis\Master Plan. This update, the "Dallas Love Field Impact Analysis Update in the Absence of the Wright Amendment", was completed prior to the repealing of the Wright and Shelby Amendments. The purpose of this report update and analysis was to assume anticipated aircraft activity and enplanement levels, based on generated proposed flight schedules and ground activity, post-Wright and Shelby Amendments, and the impacts these activities would have on the terminal area and facilities as a whole. The update takes into account impacts on the local economy, environment and surrounding areas.

This information has been utilized as a supplement to the other quantitative methods used in the FPA TARPS and Revised C.I.P. to determine terminal area impacts, both main terminal and the supporting infrastructure.

SECTION 1.4 – BUILDING CODE ANALYSIS

Dallas Love Field was originally constructed in 1956. Over the years since, the City of Dallas has adopted newer governing building codes with City of Dallas amendments to those codes.

Since 1956, the terminal facility has experienced growth and expansion of the facilities to accommodate increased passenger demand and related support facilities. As this growth continued, various Occupancy Use and Construction Type classifications were utilized for the design and construction of the facilities. While many codes have been adopted and utilized since 1956, the 1997 Uniform Building Code (UBC) was in effect at the time the original draft TARPS was begun. During the development of the draft TARPS, the 2000 International Building Code (IBC) was adopted. Comparisons between the 1997 UBC and 2000 IBC have been made to quantify general code requirements and differences between the two. It is important to note that the 2003 International Existing Building Code with Dallas Amendments, allowed the terminal facility to be classified under the previous code, which at the time was the 1997 UBC. Effective January 1, 2006, the City of Dallas adopted the 2003 International Building Code (IBC) as their governing code for all new and renovated construction within the jurisdiction of the City.

Architectural

Prior to the adoption of the 2000 International Building Code (IBC) by the City of Dallas, the governing code was the 1997 Uniform Building Code (UBC). It is assumed that the current Terminal Facilities were designed and built to the requirements of earlier codes. Certificates of Occupancy filed with the City of Dallas Building Inspections Department were provided for review and to determine the occupancy classifications of the various spaces in the terminal. The records provided for review did not reflect any information past the year 1981.

The Terminal Facility would be considered a mixed use occupancy, one that contains numerous occupancy uses and classifications. Current records indicate that the majority of the Certificates of Occupancy issued between 1981 and 2004 are classified as B Occupancies for business use. The B Occupancy classification has been used to classify office space, retail and food stores, stand alone food and beverage facilities, restroom renovations and additions and passenger security screening faculties. Records also indicate the A-3 Occupancy classification has been utilized by airlines for specific concourse areas and additions.

The Construction Type for the terminal was designated Type II-N per the requirements of the 1997 UBC. The 1997 UBC defines a Type II building as one that the structural elements, floors, walls and permanent partitions are constructed of non-combustible materials.

The combinations of Occupancy Use and Construction Type determine the overall size and height of the facility. Currently, the Terminal Facility has reached its overall size limit per the requirements of the 1997 UBC and would not be allowed to increase in size without the installation of an automatic fire suppression system. As an ongoing project, the Airport has been sequentially adding an automatic fire suppression system throughout the terminal facility. Once completed, the new system will allow for the building to potentially be unlimited in size.

The current building codes recently adopted by the City of Dallas are as follows:

- 2003 International Building Code with Dallas Amendments
- 2003 International Mechanical Code with Dallas Amendments
- 2003 International Plumbing Code with Dallas Amendments
- 2005 National Electrical Code with Dallas Amendments
- 2006 International Fire Code with Dallas Amendments
- 2003 International Energy Code with 2001 Amendments
- 2003 International Residential Code with Dallas Amendments
- 2003 International Existing Building Code with Dallas Amendments
- 1991 Americans with Disabilities Act (A.D.A.)

The 2003 International Existing Building Code allows for a building to be considered under the requirements of the previous building code (1997 UBC) if:

1. it was previously occupied or used for its intended purpose or if the building or structure was erected prior to the date of the adoption of the new building codes (2000 IBC)
2. it was completed for a period of not less than one (1) year. Otherwise the building will be governed by the recently adopted Dallas Building Code.

During the planning and recommendation portions of the FPA TARPS and Revised C.I.P., relative to the existing terminal facilities, these building codes and provisions will be considered and applied as appropriate in the facility recommendations.

Structural

The structural building code review for this Inventory consisted of a comparison between the 1997 Uniform Building Code (UBC) and 2000 International Building Code (IBC), with a focus on the minimum live load design requirements. The typical types of live loads utilized in an airport terminal facility and the minimum required design live loads by each code are as listed on the following page on *Table 1-20*:

Table 1-20: Typical Allowable Structural loads

Description	Min. Req'd Live Load For UBC-97 (psf)	Min. Req'd Live Load For IBC-2000 (psf)
Assembly areas Or lobbies	100	100
Exit Facilities Or Corridors	100	100
Offices	50	50
Stores	100	100 for first floor 75 for upper floors
Storage	125 for light 250 for heavy	125 for light 250 for heavy

As can be observed from the table above, the minimum required live loads are similar, with the exception of the specified design loads for the Stores classification, which includes Retail and Wholesale type uses. For Store use, the 1997 UBC is slightly more restrictive for upper floors, than the 2000 IBC.

The structural design criteria above would need to be utilized to determine the structural capacity of facility recommendations in the FPA TARPS and Revised C.I.P., specifically to determine effects on existing structural design requirements based on these recommendations. If a specific facility use recommendation in the TARPS is undertaken to locate a new use or reconfigure an existing use, a structural conditions assessment and analysis utilizing the 2000 IBC design criteria would need to be executed to determine if structural modifications would be necessary to accommodate the new use.

SECTION 1.5 – ACTIVITY STATISTICS

As part of the draft TARPS, known activity statistics for Dallas Love Field from 2000 to 2004 have been included below for reference. This information will be utilized as historical data during the forecasting and programming phases of the FPA TARPS and Revised C.I.P.

Passenger Statistics

Enplanements	2000	2001	2002	2003	2004
January	241,387	267,148	206,103	212,070	200,070
February	271,832	272,660	209,773	206,699	220,203
March	312,126	322,525	246,138	240,675	263,360
April	287,152	307,135	250,835	228,915	257,959
May	308,504	322,738	262,100	241,839	255,349
June	320,085	327,487	246,845	241,980	254,164
July	301,066	319,734	232,652	244,226	253,685
August	304,913	319,517	237,434	233,556	243,840
September	294,212	180,963	216,930	228,532	239,553
October	328,149	257,869	255,723	258,312	203,658
November	302,435	231,507	221,887	231,210	
December	270,262	220,931	225,051	227,540	
Total	**3,542,123**	**3,350,234**	**2,811,471**	**2,795,554**	**2,391,841**

Aircraft Activity

Activity	2000	2001	2002	2003	2004
January	20,430	20,122	20,281	19,701	19,874
February	20,514	18,615	18,445	18,534	18,834
March	21,846	21,365	20,883	21,039	22,246
April	20,797	21,065	21,319	21,231	21,774
May	21,818	21,716	21,266	21,392	22,175
June	21,364	22,052	20,313	19,955	20,038
July	21,069	23,056	20,424	21,255	20,731
August	23,476	22,695	20,953	20,368	21,116
September	22,457	16,152	20,507	21,176	22,220
October	22,945	20,702	20,868	23,631	21,391
November	20,769	18,258	20,921	19,848	
December	19,305	18,085	19,434	20,955	
Total	**256,790**	**243,884**	**245,564**	**249,085**	**210,399**

Source: City of Dallas Love Field

SECTION 1.6 – INVENTORY OF FINANCIAL, CONTRACTUAL AND REGULATORY CONDITIONS

Task Objectives

The objective of this task, Inventory of Financial, Contractual and Regulatory Conditions is to collect and review information regarding the Airport's financial operations to gain an understanding of the Airport's financial framework. The successful completion of this task is essential to the determination of the base case of the Financial Implementation Plan and its transition to the Financing Capacity Analysis. From an historical perspective, financial data was audited and gathered from 1999 – 2003, to establish DAL revenue and expenditures during this period. This audit was performed to determine the financial status of the airport, including cash flow and debt capacity, to determine the financial health of the airport, as well as to identify funding sources and implementation plans to obtain funds for facility development recommendations in the draft TARPS. While this information may not apply to funding mechanisms in the FPA TARPS and Revised C.I.P., this information does provide valuable insight into the financial capacity of the airport and potential resources for funding recommended facility improvements in the future.

Task Activities

Meetings/Interviews

To facilitate the completion of the inventory of financial, contractual and regulatory conditions at Dallas Love Field (DAL), Newton and Associates, Inc. (NAI) compiled a preliminary list of data and informational requirements necessary for task completion. The preliminary informational requirements were provided to the airport in advance of a January 7, 2004 meeting with airport management which allowed NAI the ability to interview airport staff, tour airport facilities, review related airport documents and collect information the airport had compiled in response to NAI's initial request.

On January 7, 2004, NAI visited Love Field and met with airport staff. The meetings with airport staff allowed NAI to gain a preliminary understanding of the airport's operating environment, financial structure, terminal and airfield facilities, management and financial and contractual documentation.

Document/Data Collection

1. Documents/Data Requested

NAI's informational requests, both prior to and after the January 7, 2004 meeting with airport staff, have included the following:

- Detailed historical (most recent five years actual) revenues and expenses
- Audited financial statements (most recent five years)
- Current airline contracts
- Most current airline rates and charges calculation package
- Parking concession/management agreement
- Rental car concession agreement, including off-airport RAC agreement/permit.
- Other tenant contracts/leases
- Existing terminal building drawing(s) depicting all productive space (public, airline, concession, leased, admin., mechanical) with applicable square footage for each
- PFC Application and FAA Record of Decision
- Bond official statement
- Bond ordinance
- Landing fee ordinance and calculation
- Most current airport layout plan (ALP)
- Debt service coverage calculations for outstanding revenue bonds (most recent three years) and any calculations made in connection with recent rating agency grade change

2. Documents/Data Received

In 2004, NAI had received revenue and expense data for FYs 1995 - 2003; excerpts from audited financial statements for FYs 1999 - 2003 and worksheets for FY2004; the current Southwest Airlines lease for terminal building premises; lease/agreement synopses for other airline terminal building premises, the parking concession agreement, the rental car concession agreement and other tenant agreements/leases; existing terminal building drawings; the airport's PFC application; the bond official statement; the bond ordinance and the landing fee ordinance.

Summaries of Key Documents

1. Financial

Historical Airport Expenses & Revenues

NAI is in receipt of the DOA's revenue and expense detail for DOA for the fiscal years ending September 30, 1995 through 2003. This information for the most recent five-year period will be utilized to identify historical trends in revenue and expense operations for the DOA cost center 7700.

The detailed financials are organized in the following departments: Administration (7710); Operations (7721); Field Maintenance (7722); Security (7723); Custodial Services (7724); Terminal Maintenance (7725); Inventory (7726); Dallas Executive Terminal Maintenance (7731); Dallas Executive Field Maintenance (7732); Debt Service (7750); and the Heliport (7752).

Historical Expenses

Operations, Maintenance and Repair Expenses ("OM&R") include Personnel Expenses, Supplies and Materials, Contractual and Other services, Refunds and Reimbursements, Debt Service and Miscellaneous expenses.

Historical Revenues

Operating Revenues include interest income and other operating revenue such as Interest, Rental Off Airport, Landing Fees, Concessions, Fuel Flowage Fees, Rental On Airport and Other.

a. Audited Financial Statements

The status of the audited financial information received is noted.

b. Series 2001 Airport System Revenue Bonds[1]

On or about May 8, 2001, the City issued its City of Dallas Airport System Revenue Bonds ("Series 2001 Bonds") in the principal amount of $59,385,000. Proceeds of the Series 2001 Bonds were used to fund in part the construction costs of a 4,000-space automobile parking garage to increase public parking capacity at the Airport. A portion of the proceeds was also used to fund a bond reserve fund and certain other costs of issuance.

The Series 2001 Bonds, which were issued pursuant to the general laws of the State of Texas and an ordinance (the "Ordinance") passed by the City Council, are special obligations of the City of Dallas (the "City"), payable, both as to principal and interest, solely from and secured by a first lien on and pledge of Net Revenues of the Airport System, specifically the Net Revenues of the Airport System remaining after deduction of current expenses of operation and maintenance. The City has not obligated itself to pay the Series 2001 Bonds from moneys raised or to be raised from taxation.

Interest on the Series 2001 Bonds is payable on October 1 and April 1 of each year, commencing April 1, 2001 and continuing through maturity in 2011. The average annual principal and interest requirement for fiscal years 2001 through 2011 is $7,666,050.

Pursuant to the Ordinance, the City has covenanted that it will at all times charge and collect for services rendered by the Airport System sufficient to pay all

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[1] According to the City of Dallas Official Statement, dated April 11, 2001, concerning the City of Dallas Airport System Revenue Bonds, Series 2001.

Operating and Maintenance Expenses of the Airport System to produce Net Revenues each fiscal year at least equal to 1.25 times the principal and interest requirements on all bonds outstanding on a parity with the Series 2001 Bonds the fiscal year in which such requirements are scheduled to be the greatest, to pay all other Airport System obligations and to establish and maintain the funds provided for in the Ordinance. The City has further covenanted that, if the Airport System should become legally liable for any other indebtedness, it will fix and maintain rates and collect charges for the services of the Airport System sufficient to discharge such indebtedness.

The City may issue additional revenue obligations payable from the Net Revenues which together with the Series 2001 Bonds shall be equally and ratably secured by a parity lien on and pledge of the Net Revenues of the Airport System, subject, however, to complying with certain conditions of the Ordinance: (i) an Officer's Certificate is delivered stating that, to the best of the knowledge of the designated Financial Officer executing the Officer's Certificate, the City is in compliance with all of the covenants contained in the Ordinance, is not in default in the performance and observance of any of the terms, provisions and conditions of the Ordinance, and the funds and accounts of the parity bonds then outstanding contain the amounts required to be therein; and (ii) an accountant signs a written certificate to the effect that the Net Revenues for the preceding year, or for the twelve consecutive months out of the fifteen months immediately preceding the dated date of such additional parity bonds, are at least equal to 1.25 times the average annual debt service requirements of the parity obligations to be outstanding after the issuance of the then proposed parity obligations.

2. Contractual

The summary below is based solely on the Southwest Airlines Company lease of terminal building premises, Love Field lease synopses and Ordinance No. 19677 of the Dallas City Code (Landing Fee Ordinance).[2]

a. Airline Terminal Lease(s)

In 1984, the City of Dallas and Southwest Airlines Co. ("Southwest") entered into a lease ("The Existing Love Field Lease") for airline gate and support space in the Love Field Terminal Building ("Terminal Building") at the Airport. In 2001, the City Council of the City of Dallas approved the Dallas Love Field Master Plan, which made recommendations that would affect all airlines operating at the Airport. As a result of the approved Master Plan, it was found to be in the best interest of the parties to terminate the Existing Love Field Lease and enter into a new lease. In 2001, the City and several airlines ("Lessees"),

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[2] Subsection (C), Section 5-31, "Fees Charged Commercial Aircraft," Chapter 5, "Aircraft and Airports," Dallas City Code, as amended.

including Southwest Airlines and American Airlines, entered into a new lease ("Lease") which provided for airline gate and support space in the Terminal Building and established new rental rates. The Lease commenced on August 1, 2001 and expires on July 31, 2011, unless a ten (10) year option is exercised by Lessee. Continental Airlines operates at Love Field under a month-to-month lease, which commenced on July 1, 1994 with an original ten-year term.

Airport Revenues

The Southwest Lease provides for four rent/charge categories, including terminal rentals, landing fees, security and public address system.

Terminal Lease Area

The Southwest Lease provides for revenues from the lease of passenger terminal premises comprised of certain spaces in and adjacent to the Terminal Building, including all fixtures, improvement and facilities therein ("Terminal Lease Area").

Southwest may not convert any portion of their Terminal Lease Area into gates as long as the City enforces against all users of Dallas Love Field a 32 gate limitation as defined in the Dallas Love Field Master Plan.

Under the Southwest Lease the Terminal Lease Area means certain spaces in and adjacent to the Terminal Building, including, without limitation, all fixtures, improvements and facilities therein. Rental rates for Southwest's Terminal Lease Area are established by schedule for the first and second year under the term of the Lease, after which rates are adjusted to reflect actual CPI increases at every three year interval of the Lease (commencing on the fourth anniversary of the commencement date), including option periods, provided no adjustment is greater than 12% of the rate in effect for the immediately preceding three year period. Terminal Building Common Use Space ("Common Use Space") rates are increased 10% annually for the first four years of the Lease and may adjust thereafter in the manner described for the Terminal Lease Area. Common Use Space rental is allocated on a 20/80 formula, with twenty percent (20%) of the total rental shared equally by all airlines using the space and (80%) of the total rental based on the proportion of the total number of enplaning passengers of each airline using the space to the total number of passengers enplaned by all airlines using the space.

Under the Southwest Lease the rental rates established for the portion of the North Concourse designated as Gates in the Master Plan are based on usage for a combination of training room facilities, office space and other support facilities. In the event the current usage is converted to accommodate commercial aircraft operations (at the City's or Southwest's request), the rental rate then applicable to such converted Gate or Gates shall be increased to the then applicable rental rate (including escalations) for those portions of the premises being similarly used.

Landing Fees

The Southwest Lease requires the Lessee to be responsible for the reporting and payment of the landing fee for each of its commercial operations at the airport, which landing fee is set by City ordinance and which ordinance and fee may be amended during the term of the Lease.

Security Fees

Under the Southwest Lease, the Lessee is responsible for necessary security costs incurred by the Lessor as a result of compliance with Federal Aviation Regulations (i.e. FAR Parts 107 and 108) pertaining to commercial air carriers.

Public Address Charges

Southwest is responsible for costs associated with the Public Address System, which costs shall be allocated on a 20/80 formula.

b. Airfield Landing Fee Ordinance

The current ordinance, effective September 23, 1987, provides for the landing fee to be $.35 per 1000 pounds per landing by a Stage 3 aircraft and $.55 per 1,000 pounds per landing by all other aircraft, including scheduled and miscellaneous non-scheduled landings, whether revenue or non-revenue (except for test, inspection, or ferry flights for aircraft maintenance only). All landing charges shall be based upon the certificated gross landing weight of the aircraft according to manufacturer's data. Under the ordinance, "Stage 3 aircraft" means aircraft described as Stage 3 aircraft in Federal Aviation Regulation Part 36 as of September 1, 1987.

c. Terminal Food, Beverage & Retail Merchandise Concessions

The airport has one primary Food & Beverage Concession Contract with Dallas Love Field Joint Venture. The original contract term was for five years, commencing July 1, 1996, with one five-year option, which has been exercised to extend the term to June 30, 2006. Rent comprises the greater of a stipulated minimum annual guarantee ("MAG") or a percentage of gross revenues. The gross revenues calculation differentiates between food and beverage types and sales level thresholds.

The airport's Retail Merchandise Concession Contract is with Hudson Retail – Dallas Joint Venture. The original contract term was for five years, commencing July 1, 1996, with one five-year option, which has been exercised to extend the term to June 30, 2006. Rent comprises the greater of a stipulated MAG or a percentage of gross revenues. The gross revenue calculation differentiates between merchandise types and sales level thresholds.

d. On Airport Rental Car Concessions

The airport has on-airport rental car concession contracts with nine companies, including Hertz, Avis, National, Alamo, Budget, Thrifty, Dollar, Enterprise and Advantage. All of the contracts have a five-year term, commencing on October 1, 2003 and expiring on September 30, 2008, and provide for rent payments of a stipulated MAG or 10% of gross sales, whichever is greater.

e. Public Automobile Parking

The airport's Parking Services Concession Contract is with Parking Company of America – Dallas, Inc. The contract has a five-year term, commencing on September 1, 2004 and terminating on August 31, 2009. Rent comprises the greater of a stipulated MAG or a percentage of net revenues.

f. Advertising Concession Contract

The airport's Advertising Concession Contract is with JCDecaux Airport, Inc., formerly Sky Sites, Inc. The contract has a five-year term, commencing on June 1, 2001 and terminating on May 31, 2006. Rent comprises the greater of a stipulated MAG or a percentage of gross sales.

3. Regulatory

a. International Air Transportation Competition Act of 1979 (Wright/Shelby Amendments)

Background

In 1968, the cities of Dallas and Ft. Worth entered into an agreement that created a joint venture whose purpose was to develop a new regional airport ("DFW") to replace each city's existing airports, including Love Field. The 1968 agreement provided that the cities would be co-owners of DFW and that a newly created Dallas/Fort Worth Regional Airport Board would manage the airport on their behalf.

To finance the new airport project, the cities of Dallas and Fort Worth passed the 1968 Regional Concurrent Bond Ordinance ("Bond Ordinance"), in which, among other things they agreed to take such steps as necessary, appropriate and legally permissible to provide for the orderly, effective phase-out of Love Field and other local airports of any and all certificated air carrier services and transfer such services to DFW.

The DFW Airport Board entered into an airport use agreement ("Use Agreement") with each of the eight certificated air carriers. In exchange for the benefits of being signatories, each airline agreed to provide air service exclusively to DFW to the extent required by the terms of the Bond Ordinance. Southwest Airlines was neither a federally certificated air carrier nor a signatory airline to the airport Use Agreement and expressed its intention to conduct its intrastate operations to Houston and San Antonio from Love Field.

Congress, to bring about new fare and route competition, deregulated the airline industry with the passage of the Airline Deregulation Act of 1978 ("Act"). The Act permitted unrestricted entry into air passenger markets and expressly prohibited states and their political subdivisions from enforcing a law, regulation or other provision related to a price, route or service of an air carrier.[3] Subsequent court decisions held that it was the intent of Congress in the Act to preempt restrictive agreements such as the Bond Ordinance and the Use Agreement; therefore the City of Dallas could not restrict flights into and out of Love Field.

Wright Amendment

Congress passes the Wright Amendment to the International Air Transportation Competition Act of 1979[4], permitting air carrier service between Love Field and points within the surrounding states of Texas, Louisiana, Arkansas, Oklahoma and New Mexico, provided that the air carrier did not permit through servicing or ticketing and did not offer for sale transportation outside these states. The Wright Amendment also permitted charter air transportation provided that the charters did not exceed 10 flights per month and permitted transportation provided by commuter airlines operating aircraft with a capacity of 56 passengers or less.

Shelby Amendment

On October 9, 1997, the Shelby Amendment[5], which amended the Wright Amendment, became law. The Shelby Amendment redefined the "commuter airlines" exception to include any aircraft, except aircraft exceeding gross weight of 300,000 lbs. reconfigured to accommodate 56 or fewer passengers if the total number of passenger seats installed does not exceed 56. All restrictions were lifted for jets for aircraft containing no more than 65 seats. The Shelby Amendment also expanded the number of states which could be served from Love Field by adding new flights to the states of Alabama, Kansas and Mississippi.

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[3] 49 USDA, Section 41713(b)(l) West Supp. (1999).
[4] Pub L. No. 96-192, § 29, 94 stat. 35, 48-49 (1980).
[5] Pub L. No. 105-66, § 337, 111 stat. 1425, 1447 (1997).

Five Party Agreement \ Post-Wright Amendment

In September 2004, Tennessee's House of Representatives delegation introduced a bill that would allow for direct, non-stop commercial air carrier service from Dallas Love Field to Nashville, Tennessee. While this legislation did not pass, it was the catalyst to a strong movement to have the Wright Amendment repealed in its entirety. In November 2005, President George W. Bush approved and signed legislation permitting direct, non-stop commercial air carrier service from Dallas Love Field to Missouri. On July 15, 2006, a "Five Party Agreement" (FPA) was entered into by the cities of Dallas and Fort Worth, Dallas-Fort Worth International Airport, Southwest Airlines and American Airlines. The highlights of this agreement provided that:

- Commercial air carrier service serving Dallas Love Field could immediately offer through ticketing to destinations within the fifty United States and the District of Columbia
- Commercial air carrier service serving Dallas Love Field could immediately provide through ticketing, one-stop connecting service, allowing passengers to remain on an originating aircraft for a connection to a final destination
- Commercial air carrier service restrictions on carriers serving Dallas Love Field would be eliminated after eight years, or the year 2014. This would allow commercial air carriers to provide direct flight service to all destinations within the fifty United States and the District of Columbia
- As soon as practicable, the number of available gates at Dallas Love Field would be reduced from 32 to 20 gates total
- International commercial air carrier service would be limited to Dallas-Fort Worth International Airport

This five party agreement was presented to the United States Congress, accepted and executed into law by President George W. Bush on October 13, 2007. On October 17, one-stop through ticketed commercial air carrier service originating at Dallas Love Field began, signifying the eventual repeal of the Wright Amendment and its imposed restrictions had begun.

b. Airport Improvement Program

In the development of methods ultimately adopted by the City, it is recommended that close attention be paid to the relevant laws and regulations bearing on the establishment of Airport user charges. Toward that end, the following synopsis of the existing Federal laws and regulations are being provided to identify their role on the financial and legal framework

Airports and Airways Improvement Act

The Airport and Airways Improvements Act (AAIA), among other things, requires airport proprietors to give certain assurances that they will comply with federal law and regulation in using the grant money and in operating the airport. Among these Asponsors assurances is the assurance that the airport operator will:

- make the airport available as an airport for public use on fair and reasonable terms and without unjust discrimination (Assurance 22);
- permit no exclusive aeronautical right to use of the airport (Assurance 23); and
- maintain a fee and rental structure, consistent with Assurances 22 and 23, for the facilities and services being provided the airport users that will make the airport as self-sustaining as possible under the circumstances existing at the particular airport (Assurance 24). (See *FAA Advisory Circular 150/5100-16A*, October 4, 1988.)

This latter assurance has been interpreted by the FAA as obligating airport proprietors to charge aeronautical users of the airport only reasonable fees and charges. It is these sponsors' assurances that have governed the traditional practice of airport proprietors in establishing land rentals over the years. Under these principles airports and the FAA have generally agreed that an airport operator must charge a land rental for lease or uses of airport land by private parties and that the land rental rate should bear a relation to the fair market value (AFMV) of the land. In general, airport proprietors have been advised by the FAA that a rental rate that was equal to 10% of the FMV of the land would be deemed reasonable by the FAA.

Anti-Head Tax Act

The Anti-Head Tax Act was enacted by Congress in reaction to a ruling by the United States Supreme Court that a head tax imposed on airport passengers was not illegal under then existing federal laws. This Act basically makes such a head tax illegal and was enacted in response to lobbying by the airline industry, but it reinforces the AAIA restriction against airport operators charging unreasonable fees and charges to airlines for their use of the airport. While this provision outlaws a head-tax (FAA authorized Passenger Facility Charges excepted), it does expressly permit airport operators to levy or collect reasonable rental charges from aircraft operators for using airport facilities. This Act does not address airport fees and charges imposed upon or collected from non-airline users.

FAA Authorization Act Of 1994

This Act was enacted following the Supreme Court decision in *Northwest Airlines v. Kent County*, 114 S. Ct. 855 (1994). It basically empowers the Secretary of Transportation (ASecretary) to evaluate the reasonableness of airport fees and charges Aimposed upon one or more air carriers. Prior to this Act, the FAA had no power to regulate the reasonableness of airport fees and charges to air carriers. Under this Act, either an air carrier or an airport operator may petition the Secretary to determine whether a particular fee is unreasonable. This Act does not by its terms address airport fees and charges imposed upon or collected from non-air carrier airport users. It does, however, require the Secretary to publish final regulations, policy statements or guidelines establishing...the standards or guidelines for determining whether a challenged fee is reasonable.

FAA Policy Regarding Airport Rates and Charges

On June 21, 1996 the Secretary of Transportation published his Final Policy as required by the FAA Authorization Act of 1994. (See Federal *Register*, Vol.61, No.121, pp. 31994-32022.) Together, the FAA Authorization Act and the Final Policy promulgated thereunder impose the Department as the judge and jury on questions arising between airport proprietors and aeronautical users of airports regarding the rates and charges imposed upon the aeronautical users at the airports.

The Final Policy sets out five guiding principles:

- Rates and charges for aeronautical users should preferably be established by negotiations between airport proprietors and aeronautical users.
- Rates and charges for aeronautical users must be fair and reasonable.
- Rates and charges may not be unjustly discriminatory.
- The fee structure should make the airport as self-sustaining as possible under the circumstances existing at the airport.
- All revenues generated at or by the airport must be used on or for the airport.

Obligations and Assurances

The Airport and Airways Improvements Act of 1982, among other things, requires airport proprietors to give certain assurances (Sponsors Assurances) that it will comply with Federal law and regulation in using FAA AIP grant funds and in operating the airport. The Airport Sponsor must comply with the Sponsors Assurances in the performance of grant agreements for airport development, airport planning, and noise compatibility program grants for airport sponsors. The Sponsors Assurances are required to be submitted as part of the project application by airport sponsors requesting funds under the provisions of Title 49, U.S.C., subtitle VII, as amended.

As of the date of this Report there are thirty-seven (37) Sponsors Assurances.[6] Among these Sponsors Assurances is the assurance that the airport operator will: (i) make the airport available as an airport for public use on fair and reasonable terms without unjust discrimination (Assurance 22); (ii) permit no exclusive aeronautical rights to use of the airport (Assurance 23); and (iii) maintain a fee and rental structure, consistent with Assurances 22 and 23, for facilities and services being provided to the airport users that will make the airport as self-sustaining as possible under the circumstances existing at the particular airport (Assurance 24).

c. Passenger Facility Charge Program

Pursuant to 14 CFR Part 158, airport sponsors (airport owners or operators) may apply to the FAA for authorization to impose a fee on every enplaning revenue passenger ("Passenger Facility Charge" or "PFC") at the sponsored airport and to use the revenues derived from any such PFC to pay the allowable costs of PFC eligible airport improvements.[7] The level of PFC which may be charged can vary from $1.00, $2.00, $3.00 or $4.50 depending upon the authorization requested by the sponsor and approved by the FAA. PFCs are collected by each airline which issues a revenue travel itinerary to a passenger and are remitted monthly to the airport sponsor, less a handling charge which the collecting airline is entitled to retain for compensation for it's collecting, handling and remitting the PFC revenue. The airline handling charge authorized by Part 158 is $0.12 per PFC.

Under Part 158, PFCs may be used to fund and finance the allowable costs (project costs and bond-associated debt service and financing costs) of airport-

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[6] A complete list and description of the Sponsors Assurances is accessible on the following FAA website: http://www.faa.gov/arp/pdf/assrnap.pdf.

[7] 14 CFR Part 158 limits the number of PFC's imposed on a passenger's single travel itinerary to two PFC's (two boardings) per one-way trip or two PFC's (two boardings) for each direction of a round-trip. Please consult 14 CFR Part 158.9 for other limitations which may apply to certain itineraries.

related projects which would be eligible to receive federal grant funding under the Airport Improvement Program and/or which preserve or enhance safety, capacity or security of the national air transportation system, or which reduce aircraft noise, furnish opportunities for enhanced competition between and among airlines and which have been approved for any such use by the FAA.

On October 27, 2003, the City submitted its first PFC application ("PFC Application No. 1") to the FAA to "Impose Only" a $3.00 PFC per scheduled revenue enplaned passenger at the Airport to be used for the PFC eligible portion of a proposed Light Rail Transit ("LRT") Station. The status of the PFC application remains unclear.

Pursuant to CFR 14 158.27, within thirty (30) days after receipt of an application by the FAA Airports Office, the FAA determines whether the application substantially complies with the requirements of CFR 14 158.25. Within this thirty (30) day period, the FAA is to provide the airport sponsor, in writing, with its determination of substantial completeness. Within one hundred and twenty days (120) after receipt of a PFC application, the FAA is to issue a final "Record of Decision" approving or disapproving the application. In the case of the City's PFC Application, this should have occurred around February 24, 2004. According to the FAA's website, as of September 30, 2004, the FAA has not approved the City's PFC Application.

Chapter 2: Revised Activity Forecasts

SECTION 2.0 – OVERVIEW

This chapter reviews prior activity forecasts for Dallas Love Field (DAL), including the previous master plan study (Master Plan) and the FAA's most recent *Terminal Area Forecast* (TAF) for DAL. This review will identify how activity at the Airport has been impacted by a nationwide economic recession, terrorist activities, and other factors since the Master Plan forecasts were prepared with a base year of 1999. Significant impacts will be identified and taken into account in any revisions to the Master Plan forecasts.

As mentioned in Chapter One, the "2006 Dallas Love Field Impact Analysis Update in the Absence of the Wright Amendment" was utilized as a supplement to the historical information presented in the 2001 Master Plan. The "Five Party Agreement" (FPA) described in detail in Chapter One requires the City of Dallas to reduce, as soon as practicable, the number of gates available for passenger air service at DAL to no more than 20 gates, with 16 gates to be leased by Southwest Airlines, 2 gates to be leased by American Airlines, and 2 gates to be leased by Continental Airlines.

The passage of the FPA effectively creates a "gate constrained" environment for DAL and limits the airport's growth potential to that of increased equipment capacity and number of turns per gate. Therefore traditional growth forecasting becomes constrained to the limitations of the facility both current and future as gate expansion is prohibited beyond 20 gates by the FPA. A new 20-gate constrained forecast will be used as a basis for forecasting proposed flight operations. This information will be utilized to formulate facility impacts and needs to accommodate these flight operations.

For the purposes of this report, confirmed historical enplanement data have been shown throughout for CY 2006 to establish historical enplanements and operations as a baseline. In Section 2.1, "Revised Activity Forecasts", the 2006 Master Plan Update is utilized as a basis to supplement the historical data presented through the use of new forecasted flight scheduling.

SECTION 2.1 – HISTORY AND ROLE OF THE AIRPORT

Passenger air service for the Dallas/Fort Worth metropolitan area is provided by DAL and Dallas-Fort Worth International Airport (DFW).

DAL provides nonstop service to 17 markets with a total of 167 daily flights. These markets include Albuquerque, Amarillo, Austin, Birmingham, El Paso, Harlingen/South Padre Island, Houston Hobby, Houston Intercontinental, New Orleans, Little Rock, Lubbock, Midland/Odessa, Oklahoma City, San Antonio, Kansas City, St. Louis and Tulsa. Chapter One provides an overview of the Wright Amendment and subsequent Shelby Amendment, , which prohibited operators of large aircraft from providing transportation between the Airport and points beyond Texas, Louisiana, Arkansas, Oklahoma, New Mexico, Kansas, Mississippi, and Alabama. The 2006 passage of the FPA immediately allowed airlines serving DAL to offer through ticketing to destinations within the 50 states and the District of Columbia, with the exception of international service. The allowance of through ticketing from DAL has allowed passengers using DAL to have access to the complete route structure of each carrier offering service from the airport.

However, DFW currently provides nonstop service to over 130 markets nationwide; as well as to international cities in Asia, Canada, the Caribbean, Central America, Europe, Mexico, and South America with a combined total of over 1,900 daily flights. DFW continues to serve as a hub for American Airlines, although Delta eliminated its hub at DFW on January 31, 2005.

As shown in *Table 2-1*, DAL's share of the Dallas system's enplanements ranged from a high of 11.5 percent to a low of 9.5 percent between 1990 and 2006 (a weighted average of 10.4 percent during this period). In recent years, its share steadily decreased from 10.8 percent in 2001 to 9.5 percent in 2005. The Airport's market share showed an increase in 2006 due to American Airlines and its commuter affiliate American Eagle beginning service in March 2006. In addition, the FPA effective in October 2006 allowed through ticketing and one-stop connecting service.

Table 2-1

Historical Dallas System Enplanements

Year	DAL		DFW		Dallas System		DAL Share of Dallas System
1990	2,878,543		24,257,732		27,136,275		10.6%
1991	2,805,788	-2.5%	24,087,172	-0.7%	26,892,960	-0.9%	10.4%
1992	2,948,535	5.1%	25,990,634	7.9%	28,939,169	7.6%	10.2%
1993	3,188,209	8.1%	24,827,365	-4.5%	28,015,574	-3.2%	11.4%
1994	3,412,858	7.0%	26,321,113	6.0%	29,733,971	6.1%	11.5%
1995	3,422,065	0.3%	28,245,423	7.3%	31,667,488	6.5%	10.8%
1996	3,538,761	3.4%	29,017,252	2.7%	32,556,013	2.8%	10.9%
1997	3,407,286	-3.7%	30,244,357	4.2%	33,651,643	3.4%	10.1%
1998	3,359,517	-1.4%	30,156,500	-0.3%	33,516,017	-0.4%	10.0%
1999	3,409,920	1.5%	30,000,064	-0.5%	33,409,984	-0.3%	10.2%
2000	3,542,123	3.9%	30,343,561	1.1%	33,885,684	1.4%	10.5%
2001	3,350,234	-5.4%	27,575,347	-9.1%	30,925,581	-8.7%	10.8%
2002	2,811,471	-16.1%	26,414,287	-4.2%	29,225,758	-5.5%	9.6%
2003	2,795,554	-0.6%	26,620,807	0.8%	29,416,361	0.7%	9.5%
2004	2,945,909	5.4%	28,063,035	5.4%	31,008,944	5.4%	9.5%
2005	2,949,256	0.1%	28,079,147	0.1%	31,028,403	0.1%	9.5%
2006	3,443,537	16.8%	28,627,749	2.0%	32,071,286	3.4%	10.7%

Compounded Annual Growth Rate

1990-2000	2.2%	2.3%	2.3%
2000-2004	-4.2%	-1.8%	-2.0%
2004-2006	8.4%	1.0%	1.7%
1990-2006	1.4%	1.1%	1.1%

Sources: City of Dallas, Department of Aviation
Dallas/Fort Worth International Airport
Prepared by: Ricondo & Associates, Inc. and updated by Gresham, Smith and Partners for 2004-2006

SECTION 2.2 – AIRLINES SERVING THE AIRPORT

Table 2-2 presents the historical passenger air carrier base at the Airport since 2001. As of September 2007, the Airport had scheduled passenger service provided by Southwest, ExpressJet (d/b/a Continental Express), and American Eagle (d/b/a American Airlines). Southwest is the only carrier that has continually operated at DAL since 1974, as this airline did not sign an agreement to shift its air service from DAL to DFW when it started service in January 1974. Specific points concerning DAL's historical air carrier base are presented below:

- **Southwest Airlines,** with the highest share of enplanements at DAL in 2006 (90.1 percent□), initiated its low-fare service at DAL in August 1971, providing flights to Houston (Hobby) and San Antonio. As of December 2007, Southwest provided nonstop service to 15 cities with a total of 137 daily departures, operating out of the West Concourse gates 1-15.

- **ExpressJet**, which accounted for 4.6 percent of enplanements at DAL in 2006, initiated service at the Airport in June 1998 with 10 daily nonstop flights to George Bush Intercontinental/Houston Airport (IAH), a major hub for Continental Airlines. As of December 2007, ExpressJet provided nonstop service to IAH with a total of 14 daily departures, operating out of the East Concourse gates 26 and 27.

- **Atlantic Southeast** (d/b/a Delta Connection), which initiated service at DAL in July 2000 with six daily nonstop flights to Atlanta, discontinued service at DAL in May 2003.

- **American and American Eagle**, which accounted for the remaining 5.3 percent of enplanements at DAL in 2006, initiated service at DAL in September 1998, and discontinued service at the Airport in September 2001. In March of 2006, American Airlines and American Eagle began providing nonstop service to Austin, Kansas City and St. Louis, using fleet mixes of regional jets and narrow body aircraft. American discontinued operating narrow body jet service in April 2007 and focused on American Eagle for regional jet service. American Eagle currently serves Austin and Kansas City with 16 daily departures, operating out of the East Concourse gates 30, 31 and 32.

- **Legend** initiated long-haul service from DAL to Los Angeles with five daily flights to Los Angeles, four daily flights to Washington DC, and one daily flight to Las Vegas in March 2000. Legend Airlines discontinued service at DAL in March 2001. Legend provided service outside the states associated with the Wright Amendment by operating reconfigured DC-9 aircraft with 56 first-class style seats.

Table 2-2

DAL Passenger Air Carrier Base

	1998	1999	2000	2001	2002	2003	2004	2005	2006
Passenger Air Carriers Currently Serving DAL:									
Southwest Airlines	●	●	●	●	●	●	●	●	●
Continental Airlines	●	●	●	●	●	●	●	●	●
American Airlines	●	●	●	●	●				●
American Eagle			●						●
Passenger Air Carriers No Longer Serving DAL:									
Atlantic Southeast			●	●	●	●			
Legend Airlines			●	●					
Other Airlines	●	●	●						

Sources : City of Dallas, Department of Aviation
Prepared by: Ricondo & Associates, Inc. and updated by Gresham, Smith and Partners for 2004-2007

SECTION 2.3 – HISTORICAL ENPLANEMENTS

DAL, classified by the FAA as a medium hub facility based on its percentage of nationwide enplanements, ranked 50th nationwide in total passengers enplaned and deplaned in CY 2006.[1] *Table 2-3* presents historical data on enplaned passengers at DAL and the nation from 1990 through 2006. As depicted in Table 2-3, passenger activity at DAL increased from approximately 2.9 million enplanements in 1990 to approximately 3.4 million enplanements in 2006. This increase represents a compounded annual growth rate of 1.4 percent during this period, compared to 3.0 percent growth nationwide. DAL's share of U.S. domestic enplanements decreased from 0.691 percent in 1990 to 0.521 percent in 2006, reflective of the lower compounded annual growth rate experienced at DAL as compared to the nation during this period.

Table 2-3

DAL and US Domestic Historical
Enplaned Passengers

Year	**DAL**		**U.S. Domestic**		**DAL Share of U.S. Enplanements**
1990	2,878,543		416,615,846		0.691%
1991	2,805,788	-2.5%	406,062,968	-2.5%	0.691%
1992	2,948,535	5.1%	425,153,939	4.7%	0.694%
1993	3,188,209	8.1%	436,297,113	2.6%	0.731%
1994	3,412,858	7.0%	475,599,477	9.0%	0.718%
1995	3,422,065	0.3%	492,467,084	3.5%	0.695%
1996	3,538,761	3.4%	522,426,104	6.1%	0.677%
1997	3,407,286	-3.7%	538,890,916	3.2%	0.632%
1998	3,359,517	-1.4%	552,317,335	2.5%	0.608%
1999	3,409,920	1.5%	573,211,943	3.8%	0.595%
2000	3,542,123	3.9%	599,910,469	4.7%	0.590%
2001	3,350,234	-5.4%	560,381,846	-6.6%	0.598%
2002	2,811,471	-16.1%	554,048,767	-1.1%	0.507%
2003	2,795,554	-0.6%	587,537,886	6.0%	0.476%
2004	2,945,909	5.4%	634,429,914	8.0%	0.464%
2005	2,949,256	0.1%	660,677,125	4.1%	0.446%
2006	3,443,537	16.8%	660,649,759	0.0%	0.521%

Compounded Annual Growth Rate

1990-2000	2.2%	3.8%
2000-2004	-4.2%	1.6%
2004-2006	8.4%	2.1%
1990-2006	1.4%	3.0%

Passenger activity at DAL decreased from approximately 3.5 million enplanements in 2000 to approximately 3.4 million enplanements in 2001, a decrease of 5.4 percent during this period,

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[1] *Federal Aviation Administration Enplaned Passenger Statistics*

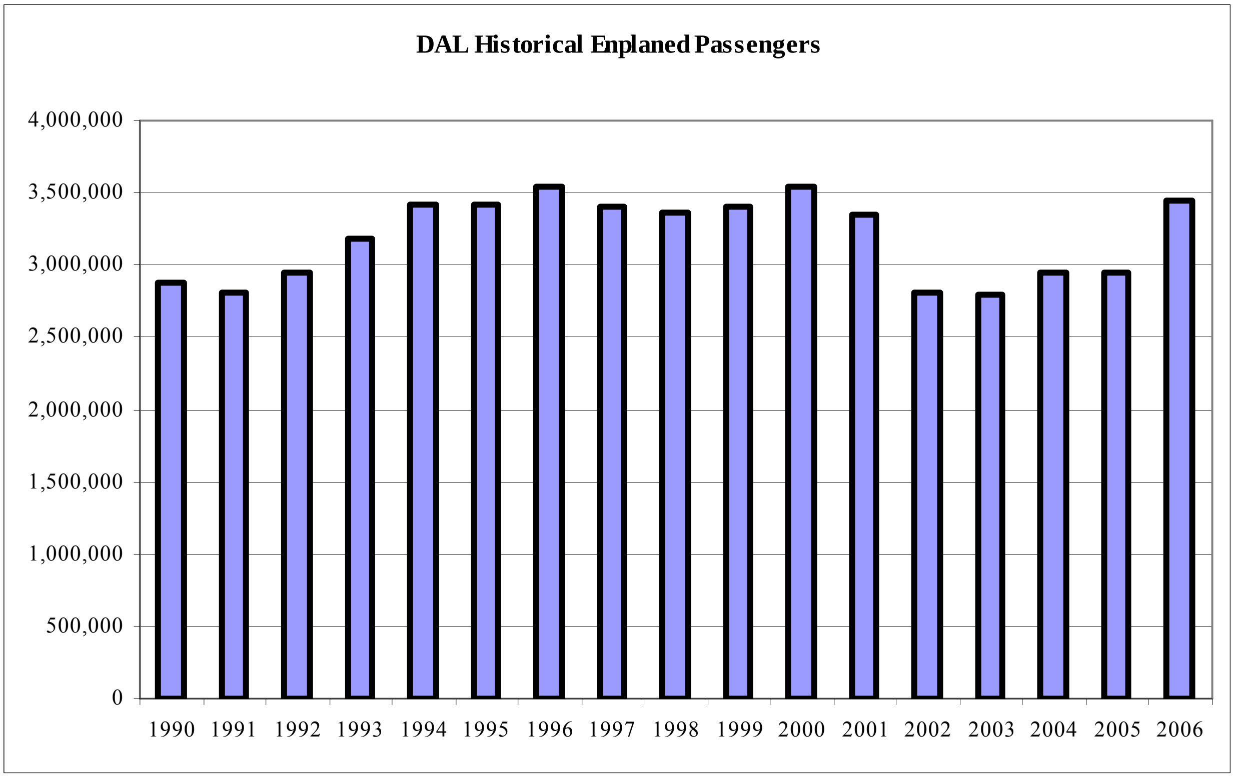
compared to the 6.6 percent decrease nationwide. Enplanements at DAL and nationwide continued to decrease in 2002 from 2001 levels by 16.1 percent and 1.1 percent, respectively. These significant decreases in activity during these two years were primarily due to the terrorist attacks of September 11, 2001 (hereinafter referred to as September 11) and the nationwide economic recession.

According to the FAA, aviation activity nationwide was already in a weakened state even before the events of September 11, 2001 and passenger demand had begun to decline in February 2001, primarily due to declining high-yield business traffic. In November 2001, the National Bureau of Economic Research officially announced that in March 2001, the U.S. economy had entered its 10th recession since the end of World War II. The loss of household wealth dampened consumer confidence and significantly reduced consumer spending. Air carrier finances turned negative in the first quarter of 2001. In addition to the direct impact on air travel, the events of September 11 accelerated the downturn in consumer spending on consumer goods and services, including spending on air travel.

Activity at DAL has shown signs of recovering from the effects of September 11 and the economic recession, as enplanements at DAL were relatively stable in 2003 compared to 2002 levels; and increased 5.4 percent in 2004 from 2003 levels. As seen nationwide, passenger traffic has continued to increase to pre-September 11 levels as evidenced by the 16.8 percent increase in enplanements from 2005 to 2006, a trend that is expected to continue with the loosening of flight restrictions by the signing of the Five Party Agreement.

Service at DAL has been historically dominated by Southwest, as this airline has accounted for more than 89 percent of enplaned passengers at DAL each year between 2000 and 2006. *Table 2-4* presents the historical share of enplanements by airline at DAL between 2000 and 2006. As shown, Southwest and ExpressJet were the only airlines operating at the Airport in 2004 and 2005, with Southwest accounting for approximately 96 percent of enplanements during this period. American Eagle and American Airlines began service again in 2006

Exhibit 2.1



Sources: City of Dallas, Department of Aviation (Airport Activity) & Bureau of Transportation Statistics (BTS), Research and Innovative Technology Administration (RITA), U.S. Department of Transportation (US DOT) (U.S. Domestic Activity)

Prepared by: Ricondo & Associates, Inc. and updated by Gresham, Smith and Partners for 2004-2007 and U.S. Domestic Activity

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Table 2-4

Enplaned Passengers by Airline

Actual Enplaned Passengers by Airline

	2000	2001	2002	2003	2004	2005	2006
Southwest	3,323,105	3,124,917	2,698,149	2,700,329	2,855,464	2,819,591	3,092,135
ExpressJet	115,766	110,688	84,538	84,630	90,124	129,442	158,653
American	62,745	72,716	-	-	-	-	129,063
American Eagle	19,145	-	-	-	-	-	59,199
Other Airlines[1]	21,362	41,913	28,784	10,595	-	-	-
Total	**3,542,123**	**3,350,234**	**2,811,471**	**2,795,554**	**2,945,588**	**2,949,033**	**3,439,050**

Actual Enplaned Passengers by Airline Percentage

Southwest	93.8%	93.3%	96.0%	96.6%	96.9%	95.6%	89.9%
Express Jet	3.3%	3.3%	3.0%	3.0%	3.1%	4.4%	4.6%
American	1.8%	2.2%	0.0%	0.0%	0.0%	0.0%	3.8%
American Eagle	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%
Other Airlines[1]	0.6%	1.3%	1.0%	0.4%	0.0%	0.0%	0.0%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

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[1] Consists of airlines no longer serving DAL

Sources: City of Dallas, Department of Aviation

Prepared by: Ricondo & Associates, Inc., updated for 2005 & 2006 by Gresham, Smith and Partners

SECTION 2.4 – AVIATION INDUSTRY

The Master Plan was completed in June 2001 with a base year of 1999. Originally, given the significant events that negatively affected the aviation industry since the completion of the original study, it was unlikely that future activity levels forecasted in the Master Plan would be realized during the years depicted in this study. The U.S. aviation industry was significantly negatively impacted, both in terms of levels of operations and workforce, as well as revenues and profitability, by a number of events that have occurred throughout this decade (e.g., September 11, the nationwide economic recession, the war with Iraq, the outbreak of the severe acute respiratory syndrome [SARS] virus in Asia and Canada in early 2003, the London aircraft bomb scares of 2006), and continues to be negatively affected by record-high oil prices. These events resulted in substantial financial losses in the aviation industry between 2001 and 2005, with cumulative net losses of $40 billion[2] and downgrades of airline financial ratings by the various rating agencies. These challenges led four out of the six U.S. Legacy carriers (US Airways, United, Delta and Northwest) into Chapter 11 bankruptcy between 2001 and 2005.

The Air Transportation Safety and System Stabilization Act, enacted following the events of September 11, provided an infusion of $5 billion in federal grants for direct losses incurred in recognition of the effects of the system shutdown resulting from the events of September 11 and their longer-term impact. In addition, $10 billion in government loan guarantees were authorized for qualified applicants.

With the enactment of the Aviation and Transportation Security Act in November 2001, the Transportation Security Administration (TSA) was created, which established different and improved security processes and procedures. As a result of these measures, fees and unfunded mandates added billions of dollars to the industry's annual costs.

On April 16, 2003, President Bush signed an aid package of approximately $3 billion for the airline industry, part of a larger Iraqi-war spending bill. The aid package also included a six-month waiver of security fees owed the government for the last six months of federal FY 2003.

The price of aviation fuel has increased dramatically in recent years, from an average price of approximately $0.788 per gallon in 2000 to more than $1.933 per gallon in 2006[3]. Some U.S. airlines have attempted to pass the higher fuel costs on to consumers in the form of fuel surcharges; however, many of these attempts have been unsuccessful as many airlines, particularly low-cost carriers, refused to match the increase. Other airlines were well-prepared and well-positioned with fuel hedges in-place; however, as fuel prices have continued to climb, the availability and affordability of these hedges has diminished greatly, leaving most carriers vulnerable to further price increases.

By late 2005/early 2006, under bankruptcy or the threat of bankruptcy protection, several of the major carriers began to see positive gains after focusing on down-sizing, cutting operating costs and improving productivity as part of their re-structuring efforts. The cost-cutting strategies mainly focused on labor force reduction, lower average wage rates, and productivity gains by introducing new technologies (e.g., internet ticket distribution, web check-in) and by moving capacity from domestic to international routes in an effort to improve aircraft utilization with increased stage lengths. Many airlines eliminated meals and pillows to reduce costs and reduced aircraft turn-around times to improve aircraft productivity.

By 2006, passenger traffic had rebounded to exceed pre-September 11 levels by over 14 percent. The U.S. industry as a whole posted an aggregate net profit of $3 billion[4]. Many of the restructuring efforts and cost-reductions began paying off, and the U.S. industry was expected to post a $4 billion net profit in 2007[5]. The industry also benefited from an improving revenue environment and from little or no growth in available capacity, available seat mile (ASMs) in U.S. domestic markets.

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[2] Source: US DOT Bureau of Transportation Statistics, Form 41 Airline Traffic and Financial Reports

[3] Source: US DOT Bureau of Transportation Statistics, Form 41 Airline Traffic and Financial Reports

[4] Source: Air Transport Association of America (ATA), 2007 Economic Report

[5] Source: J. Heimlich, "Outlook: Reaching for the Skies?", ATA, www.airlines.org., January 2007

Of particular interest to the relative health of future activity at the Airport, Southwest experienced its 34th consecutive year of profitability in 2006, often during periods that few if any other carriers were in the black. Southwest posted an annual net income of $499 million in CY 2006, compared to $484 million in CY 2005, and $215 million in CY 2004[6]. Much of Southwest's financial success, amid bleak numbers from other airlines, stems from their aggressive and extremely effective fuel hedging program. Other sustainable advantages that are part of Southwest's culture include their higher than average aircraft utilization rates, their lower operating costs per available seat mile, and their higher labor productivity than most other airlines. These factors, among others, help to explain why Southwest is able to consistently turn a profit despite the ups and downs experienced by the aviation industry as a whole.

SECTION 2.5 – ENPLANEMENT FORECAST COMPARISONS

Given the turnaround in the aviation industry and the anticipated results of the Five Party Agreement freeing Southwest Airlines and DAL from the restrictions of the Wright Amendment, it appears that the future activity levels forecasted in the Master Plan will be achievable. As shown in *Table 2-5*, the 2006 baseline forecast included in the Master Plan has DAL enplanements forecasted at approximately 3.7 million, compared to approximately 3.4 million that actually occurred (a difference of 7.2 percent). The compounded annual growth rate of 1.2 percent assumed in the Master Plan is reasonable (and less than the 6.0 percent forecasted by the FAA in its TAF for the Airport). Enplanements at DAL would have to increase at a 1.8 percent compounded annual growth rate between 2007 and 2020 to reach the levels forecasted in the Master Plan and 5.6 percent compounded annual growth rate between 2007 and 2020 to reach the levels forecast in the TAF. Given the current state of the aviation industry, the removal of Wright Amendment restrictions on air carriers currently serving the Airport, as well as Southwest Airline's plans to offer more non-stop destinations from their 16 gates at DAL, this rate of growth is expected to be achievable during this 14-year period under a baseline scenario.

As shown in *Table 2.5* and illustrated in *Exhibit 2.1,* the TAF prepared by the FAA for DAL is projecting substantial growth for DAL beginning in 2007 and throughout the phase-out of the Wright Amendment. The 3,243,589 enplanements forecast for 2006 for DAL is 195,461 enplanements below actual levels (i.e., within 5.7 percent). As discussed earlier, the 6.0 percent compounded annual growth rate included in the TAF is far greater than that forecasted in the Master Plan. This disparity can be explained by the fact that at the time the Master Plan was prepared DAL was under the significant restrictions of the Wright Amendment. Since the signing of the Five Party Agreement and phase-out of the Wright Amendment, the TAF has been revised upward to reflect the anticipated growth of enplanements at DAL, particularly by Southwest Airlines. The disparate rate of growth between these two forecasts is illustrated in *Exhibit 2.1.*

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[6] Source: Southwest Airlines Annual 10-K SEC filings

Table 2-5

Comparison of DAL Enplanement Forecasts

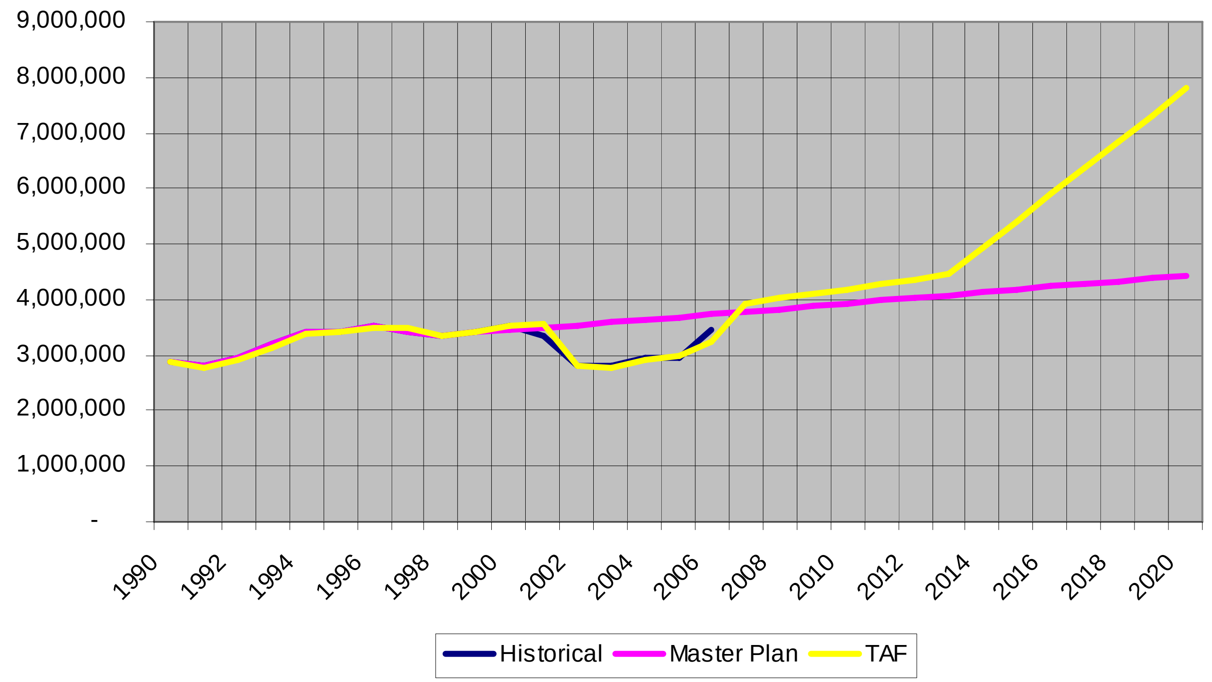
Historical	DAL Activity		2001 Master Plan			TAF	
1990	2,878,543		2,878,543			2,884,504	
1991	2,805,788	-2.6%	2,805,788		-2.6%	2,784,763	-3.6%
1992	2,948,535	4.8%	2,948,535		4.8%	2,906,753	4.2%
1993	3,188,209	7.5%	3,188,209		7.5%	3,116,776	6.7%
1994	3,412,858	6.6%	3,412,858		6.6%	3,381,024	7.8%
1995	3,422,065	0.3%	3,422,065		0.3%	3,418,261	1.1%
1996	3,538,761	3.3%	3,538,761		3.3%	3,504,959	2.5%
1997	3,407,286	-3.9%	3,407,286		-3.9%	3,481,830	-0.7%
1998	3,359,517	-1.4%	3,359,517		-1.4%	3,340,607	-4.2%
1999	3,409,920	1.5%	3,409,920		1.5%	3,415,785	2.2%
2000	3,542,123	3.7%	3,450,616	**F**	1.2%	3,544,454	3.6%
2001	3,350,234	-5.7%	3,491,798	**F**	1.2%	3,552,419	0.2%
2002	2,811,471	-19.2%	3,533,471	**F**	1.2%	2,820,122	-26.0%
2003	2,795,554	-0.6%	3,582,418	**F**	1.4%	2,783,787	-1.3%
2004	2,945,588	5.1%	3,632,043	**F**	1.4%	2,902,335	4.1%
2005	2,949,033	0.1%	3,682,355	**F**	1.4%	2,977,044	2.5%
2006	3,439,050	14.2%	3,730,697	**F**	1.3%	3,243,589	8.2%
Forecast							
2007			3,779,674		1.3%	3,931,263	17.5%
2008			3,829,294		1.3%	4,015,058	2.1%
2009			3,879,565		1.3%	4,100,736	2.1%
2010			3,930,496		1.3%	4,187,223	2.1%
2011			3,978,945		1.2%	4,275,602	2.1%
2012			4,027,991		1.2%	4,365,915	2.1%
2013			4,077,642		1.2%	4,458,208	2.1%
2014			4,127,905		1.2%	4,935,077	9.7%
2015			4,178,787		1.2%	5,412,256	8.8%
2016			4,230,400		1.2%	5,889,779	8.1%
2017			4,282,650		1.2%	6,367,854	7.5%
2018			4,335,545		1.2%	6,846,538	7.0%
2019			4,389,094		1.2%	7,325,626	6.5%
2020			4,443,304		1.2%	7,804,769	6.1%
Compounded Annual Growth Rate							
	1990-2000	2.0%			1.7%		2.0%
	2000-2006	-1.0%			1.3%		-2.0%
	2006-2020	NA			1.2%		6.0%

E = Estimate **F** = Forecast

Sources: City of Dallas, Department of Aviation (DAL Activity), FAA (TAF), DMJM (2001 Master Plan)

Prepared by: Ricondo & Associates, Inc., updated for 2004-2006 by Gresham, Smith and Partners

Exhibit: 2.1: Enplanement Comparisons



SECTION 2.6 – AIR CARRIER OPERATIONS FORECAST

Table 2-6 presents a comparison of air carrier operations forecasts for DAL. As shown, the Master Plan forecast that air carrier operations would decrease between its base year 1999 and 2005. This decrease was due to the assumption that, under the baseline scenario, only Southwest would be operating at DAL during the forecast period. However, air carrier operations increased in 2006 by 9.1 percent as a result of post-September 11 traffic increases and new service at DAL by both American Airlines and American Eagle. As also shown, the Master Plan assumed that air carrier operations would increase at a compounded annual growth rate of 0.6 percent between 2007 and 2020. Although this compounded annual growth rate appears reasonable, air carrier operations at DAL would have to increase at a 1.4 percent compounded annual growth rate between 2007 and 2020 to reach the levels forecast in the Master Plan. Having the same growth rate as the baseline enplanement forecast implies that average seat size and load factors stay constant during the forecast period. This assumption, although technically possible, is counter to typical forecasting methodology.

As also shown in *Table 2-6* and illustrated in *Exhibit 2.2*, the TAF is projected to be closer to the actual air carrier activity at DAL than the Master Plan. The TAF has been revised to represent the phasing out of the Wright Amendment in years 2007 through 2014. It is at year 2014 that the TAF growth crosses the projected growth of the Master Plan and continues a higher percentage growth factor than that of the Master Plan. The 97,377 operations forecast for 2006 for DAL is 10,490 operations higher than actual levels (i.e., within 10.7 percent), while the 83,423 operations forecast for 2006 in the TAF is 3,464 operations lower than the actual levels (i.e., within 4.1 percent). The TAF assumes that air carrier operations at DAL will increase at a compounded annual growth rate of 4.1 percent between 2007 and 2020. This assumption is reasonable given that Southwest dominates activity at the Airport and its aircraft fleet mixes would not expect to change significantly during the forecast period. Additionally, the 20-gate restriction imposed on DAL as part of the Five Party Agreement constrains both Southwest and the airport's growth potential outside of utilizing larger equipment and increasing the turns per gate. As a result, DAL's number of seats per departure is expected to remain relatively constant throughout the forecast period; with increases in turns per gate throughout the forecast period to a maximum of 10 turns per gate in 2014. As a result, the TAF forecasts are assumed valid for use in this study as the baseline forecasts of air carrier operations for DAL.

Table 2-6

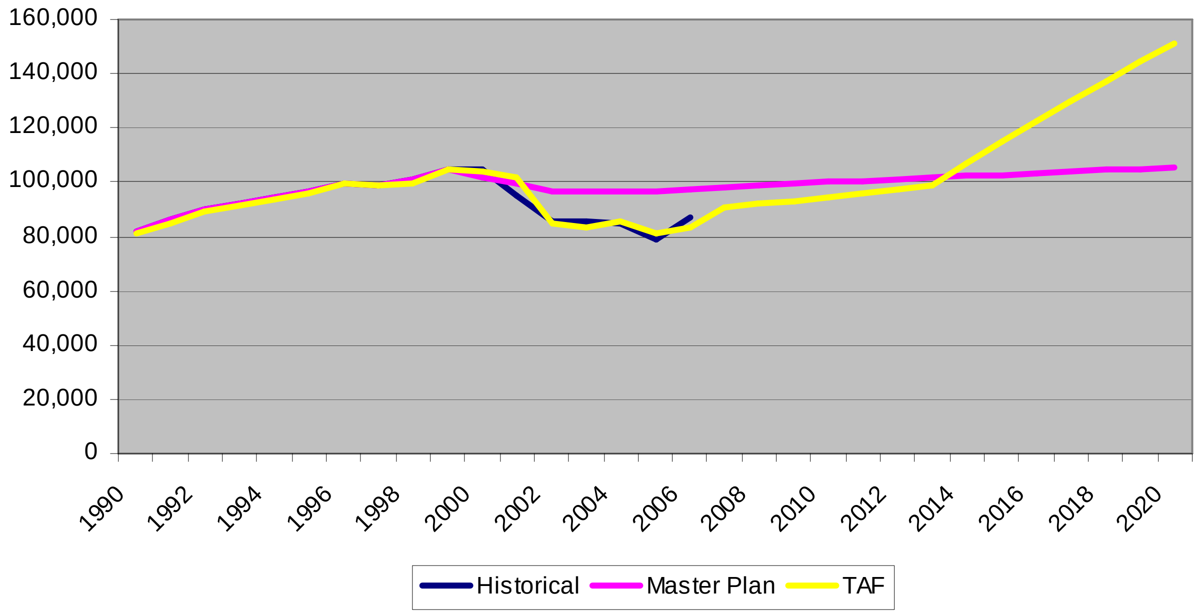
Comparison of Air Carrier Operations Forecasts

Historical	DAL Activity		2001 Master Plan			TAF	
1990	82,023	-	82,023		-	80,894	-
1991	86,437	5.1%	86,437		5.1%	85,145	4.99%
1992	89,807	3.8%	89,807		3.8%	89,174	4.52%
1993	92,185	2.6%	92,185		2.6%	91,658	2.71%
1994	94,408	2.4%	94,408		2.4%	93,501	1.97%
1995	96,414	2.1%	96,414		2.1%	95,553	2.15%
1996	99,571	3.2%	99,571		3.2%	99,508	3.97%
1997	98,457	-1.1%	98,457		-1.1%	98,735	-0.78%
1998	100,960	2.5%	100,960		2.5%	99,209	0.48%
1999	104,623	3.5%	104,623		3.5%	104,393	4.97%
2000	105,024	0.4%	101,919	**F**	-2.7%	104,046	-0.33%
2001	95,420	-10.1%	99,286	**F**	-2.7%	101,571	-2.44%
2002	85,617	-11.4%	96,720	**F**	-2.7%	84,566	-20.11%
2003	85,373	-0.3%	96,720	**F**	0.0%	83,209	-1.63%
2004	85,088	-0.3%	96,720	**F**	0.0%	85,618	2.81%
2005	79,022	-7.7%	96,720	**F**	0.0%	80,794	-5.97%
2006	86,887	9.1%	97,377	**F**	0.7%	83,423	3.15%
Forecast							
2007			98,038		0.7%	90,593	7.91%
2008			98,703		0.7%	91,911	1.43%
2009			99,373		0.7%	93,247	1.43%
2010			100,048		0.7%	94,603	1.43%
2011			100,583		0.5%	95,978	1.43%
2012			101,121		0.5%	97,373	1.43%
2013			101,662		0.5%	98,790	1.43%
2014			102,205		0.5%	106,873	7.56%
2015			102,752		0.5%	114,732	6.85%
2016			103,287		0.5%	122,394	6.26%
2017			103,825		0.5%	129,881	5.76%
2018			104,366		0.5%	137,209	5.34%
2019			104,910		0.5%	144,391	4.97%
2020			105,456		0.5%	151,249	4.53%
Compounded Annual Growth Rate							
1990-2000		2.4%			2.1%		2.5%
2000-2006		-3.5%			-0.8%		-4.0%
2004-2020		NA			0.6%		4.1%

E =Estimate **F** =Forecast

Sources : City of Dallas, Department of Aviation (DAL Activity), DMJM (2001 Master Plan) and FAA (Terminal Area Forecast)
Prepared by: Ricondo & Associates, Inc. and updated by Gresham, Smith and Partners for 2004-2007

Exhibit 2.2: Air Carrier Operations Comparison



SECTION 2.7 – DESIGN LEVEL FORECASTS

In addition to forecasting annual activity levels at DAL, it was necessary to forecast design level activity, defined herein as activity during the peak hour of an average day in a 20-gate constrained facility. This 20-gate peak hour was also compared to the activity during the peak hour of an average day in the peak month (PMADPH) based on historical and TAF data. Historical ratios of peak month passengers to annual passengers at DAL were analyzed. Using historical passenger data obtained from Airport records, October was found to typically be the peak month for a given year. Based on monthly passenger data from 2000 to 2006 (omitting 2001), October accounted for approximately 9.0 percent to 9.3 percent of annual passenger enplanements at DAL. For purposes of these analyses, the peak month percentage of 9.0 percent for 2006 was used to derive peak month enplanements at the Airport. This ratio was assumed to remain constant through the forecast period.

The Five Party Agreement, as signed into law by President Bush provides for no more than 20 gates at DAL. With a limit of 20 gates at DAL and the dominant carrier (Southwest) already pushing close to 10-turns per gate, the forecasts became an exercise in determining the maximum number of turns per gate that an individual carrier could turn in a day coupled with equipment size and load factor. Unlike standard methodologies used in forecasting annual activity levels, the 20-gate constrained facility provides for a growth constrained facility model. The constrained methodologies that were used to develop the design level forecasts are described below:

- The number of peak month, average day enplaned passengers for DAL was calculated by dividing peak month enplanements by 31 days.

- Peak hour enplaned passengers for DAL were estimated based on an analysis of the Airport's scheduled aircraft seats during an average day in November 2006. Based on this analysis, the peak hour for scheduled seats at the Airport accounted for 11.6 percent of the average daily seats. This percentage was applied to peak month, average day enplanements to derive PMADPH enplanements at DAL

- An aircraft "turn" is defined as an originating flight or the departure portion of a through-flight.

- The 2006 Master Plan Update flight schedule (baseline flight schedule) was used as the basis to forecast the two future flight schedules and contains the following unlinked arrivals and departures:
  - Southwest – 135 arrivals and 135 departures
  - American – 16 arrivals and 19 departures
  - Continental – 16 arrivals and 17 departures

- Arrivals and departures from the baseline flight schedule were linked based on the following minimum ground times:
  - Southwest – 20-25 minutes
  - American and Continental – 25 minutes

- This linked flight schedule was gated in GatePlan software in order to determine gate availability by time of day to accommodate growth.

- Flights were added to the baseline flight schedule in order to reach the two future activity levels – 10 and 15 average turns per gate.

- Peak hour enplaned passengers for DAL were estimated based on an analysis of the Airport's scheduled aircraft seats during the peak hour operations for the baseline schedule, an average schedule of 10 turns per gate, and an average schedule of 15 turns per gate.

Based on these methodologies and resultant ratios, peak hour passenger activity is projected to increase from 1,164 enplanements in 2006 to 2,929 in 2025, as presented in *Table 2.7.*[7] As a comparison to the TAF forecasts, the forecasted enplanements based on a 20-gate terminal with 10 and 15 turns per gate are included in Table 2.7. The 10 turn per gate projections for 2014, the year that all former Wright Amendment restrictions will be lifted, fall in line with the 2014 TAF projections; whereas the 15 turn per gate represents the absolute maximum enplanements that the 20-gate restricted terminal can manage without larger aircraft, larger

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[7] Consultation with Southwest concerning these peak hour passenger levels indicate that they are within a reasonable range for DAL during the forecast period.

load factors or removal of the restrictions. The 15 turn per gate projections also match up with the TAF 2025 projections.

Table 2-7

Design Level Enplanement Forecasts

	Annual	Peak Month	Average Day	Peak Hour
Historical				
2006	3,439,050	311,032	10,033	1,164
		9.04%	31 Days	11.60%
TAF Projected				
2011	4,275,602	386,691	12,474	1,447
2016	5,889,779	532,679	17,183	1,993
2021	7,967,466	720,588	23,245	2,696
2025	8,653,965	782,675	25,248	2,929
10-Turn Projected				
2014	5,865,580	697,442	22,498	2,250
15-Turn Projected				
2014	8,798,380	747,260	24,105	2,411
Compounded TAF Annual Growth Rate				
2006-2025	4.39%	4.39%	4.39%	4.39%

Sources: City of Dallas, Department of Aviation (historical annual activity)
FAA Terminal Area Forecast (projected annual air carrier activity)
Ricondo & Associates, Inc. (peak month and peak hour activity)
Gresham, Smith and Partners (update and turn project activity)
Prepared by: Ricondo & Associates, Inc, updated by Gresham, Smith and Partners

Similar methodologies were used to derive air carrier operations at DAL:

- During 2006, the peak month of operations accounted for 9.0 percent of the annual operations. This percentage was assumed to remain constant during the forecast period.

- Average daily air carrier aircraft operations were then calculated by dividing peak month data by 31 days.

- Peak hour air carrier operations for the Airport were estimated based on a review of the Airport's scheduled aircraft operations during an average day in the peak month. The peak period for scheduled air carrier operations was approximately 5:30 p.m. to 6:30 p.m. with 10 departures and 15 arrivals, or 25 total operations. Based on this analysis, the peak hour for air carrier operations accounted for 10.5 percent of the average daily operations. It was assumed that this percentage of scheduled airline operations during the peak hour would remain constant during the forecast period.

Based on these methodologies and resultant ratios, peak hour air carrier operations are projected to increase by 43 operations during the forecast period, based on the 10-Turn projected forecast and as presented in *Table 2-8.*

Table 2-8

Design Level Air Carrier Operations Forecasts

	Annual	Peak Month	Average Day	Peak Hour
Historical				
2006	86,887	7,798	252	26
		9.0%	31 Days	10.50%
Projected				
2011	95,978	8,614	278	29
2016	122,394	10,985	354	37
2021	153,449	13,772	444	47
2025	162,569	14,590	471	49
10-Turn Projected				
2014	135,400	12,152	392	43
15-Turn Projected				
2014	206,209	18,507	597	52
Compounded TAF Annual Growth Rate				
2006-2025	3.39%	3.39%	3.39%	3.39%

Sources: City of Dallas, Department of Aviation (historical annual activity)
FAA Terminal Area Forecast (projected annual air carrier activity)
Ricondo & Associates, Inc. (peak month and peak hour activity)
Gresham, Smith and Partners (update and turn project activity)
Prepared by: Ricondo & Associates, Inc, updated by Gresham, Smith and Partners

SECTION 2.8 –GROWTH SCENARIO

As discussed earlier, the baseline forecast included in the Master Plan assumed that Southwest would be the only carrier serving DAL. All other passenger airlines serving the Dallas/Fort Worth metropolitan area would operate at DFW. However, DAL is served today by Express Jet as well as American Eagle. Included in the changes to DAL since the Master Plan was completed is the adoption of the Five Party Agreement limiting the number of gates at DAL to 20 and freeing DAL from all limitations of the Wright Amendment by the year 2014.

By limiting the number of gates available to carriers serving DAL while removing all flight restrictions on carriers, the airport has become gate constrained with the number of gates driving the maximum capacity of the airport. This constraint can only be modified by two variables:

- Equipment: All equipment used in the calculations of enplanements was based on a Southwest Airlines 737-700 with 137 seats.

- Turns per Gate: Contemporary logic suggests that most air carriers cannot make turns much faster than 20-25 minutes ground times. Ten turns-per-gate is indicative of 20-25 minutes ground time and very much inline with current Southwest Airlines operations at DAL. Fifteen turns-per-gate is indicative of closer to 15 minutes ground time and while presented as a scenario, the reality of a carrier turning a narrow-body jet in this time frame is highly suspect.

By adjusting equipment size and/or turns-per-gate, DAL can manipulate the potential enplanements and operations at the Airport. However, with larger equipment can come slower turn time and therefore, for planning purposes, the 10 Turn-Per-Gate Forecast is presented as the design level forecast for DAL while under the Five Party Agreement.

SECTION 2.9 – SUMMARY OF HISTORICAL FORECASTS

Table 2-9 and *Table 2-10* present a summary of the baseline, 10 Turns-Per-Gate, and 15 Turns-Per-Gate growth scenarios for enplaned passengers and air carrier operations, respectively, at DAL for 2014 - 2025.

Table 2-9

Summary of Enplanement Forecasts Scenarios

	TAF Baseline	10 Turn Per Gate	15 Turn Per Gate
Historical			
2006	3,439,050	3,439,050	3,439,050
Forecast			
2011	4,275,602	4,638,314	5,530,616
2014	4,935,077	5,865,580	8,708,380
2016	5,889,779	6,244,005	8,993,473
2021	7,967,466	7,925,089	9,287,900
2025	8,653,965	8,798,380	9,591,965
Compounded Annual Growth Rate 2006-2025	3.17%	3.21%	3.38%

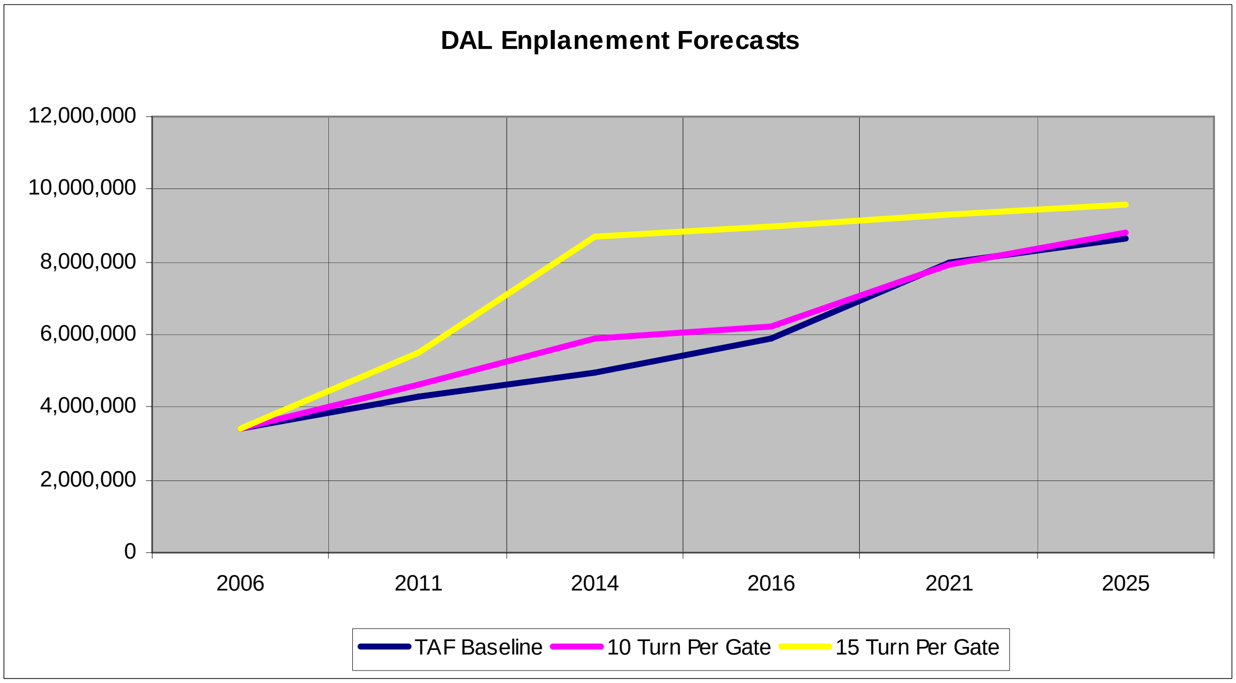
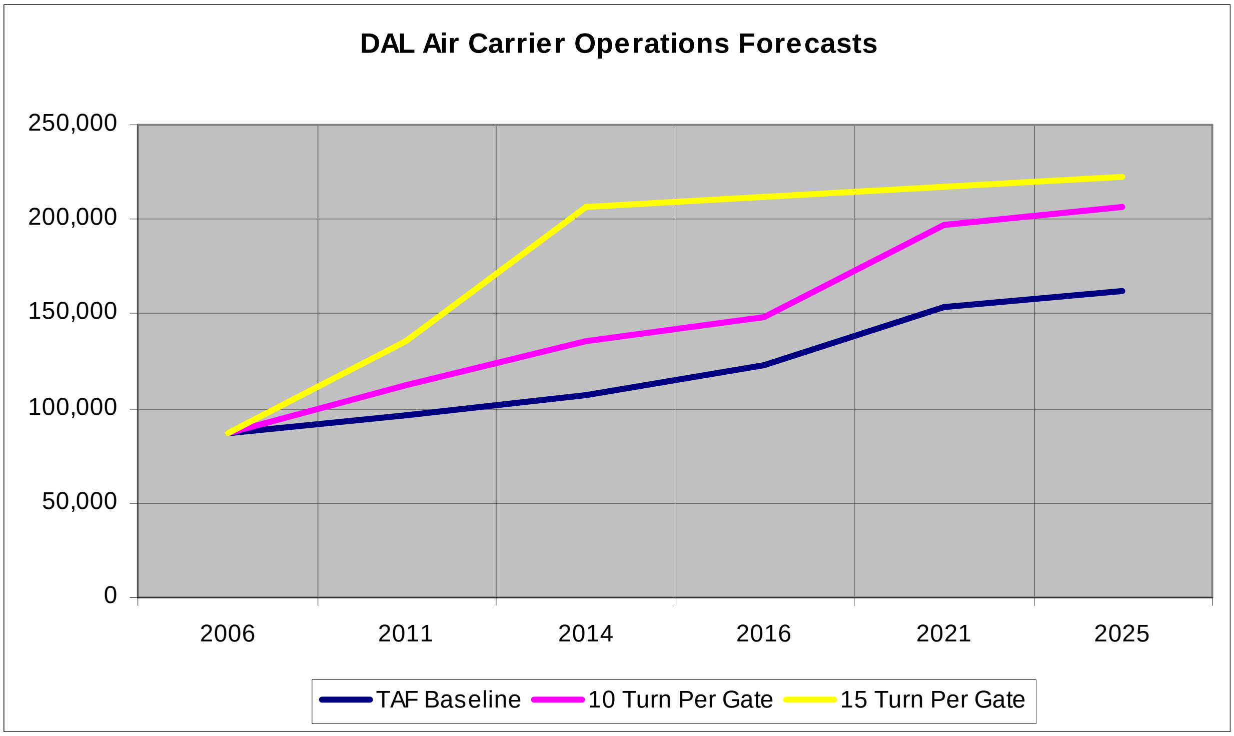


Table 2-10

Summary of Air Carrier Operations Forecasts Scenarios

	TAF Baseline	10 Turn Per Gate	15 Turn Per Gate
Historical			
2006	86,887	86,887	86,887
Forecast			
2011	95,978	111,958	136,113
2014	106,873	135,400	206,209
2016	122,394	148,722	211,388
2021	153,449	197,234	216,698
2025	162,569	206,209	222,141
Compounded Annual Growth Rate			
2006-2025	2.45%	3.05%	3.20%



SECTION 2.10 – APPENDIX FORECAST DATA

The baseline schedule in *Figure 2-0* was generated and provides the baseline schedule throughout a projected number of daily and peak hour operations, which takes into account the current gate turn schedule. From the baseline schedule, the gate operations are increased to a 10 turn per gate average, as reflected in *Figure 2-1,* with the baseline schedule being adjusted accordingly to reflect this operational increase. *Figure 2*-2 shows the baseline schedule impacts when a 15 turn per gate average operational scenario occurs. The 15 turns per gate average scenario has been provided for reference purposes only for a "what if" condition for maximum aircraft gate turn operations. It should be noted that a "gate turn" is defined as an originating flight or the departure portion of a through-flight.

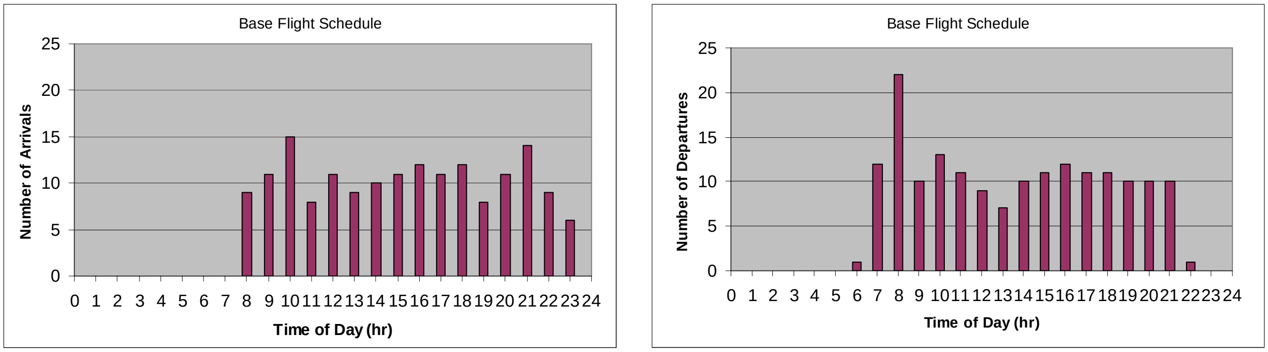


Figure 2.0: Baseline Flight Schedule

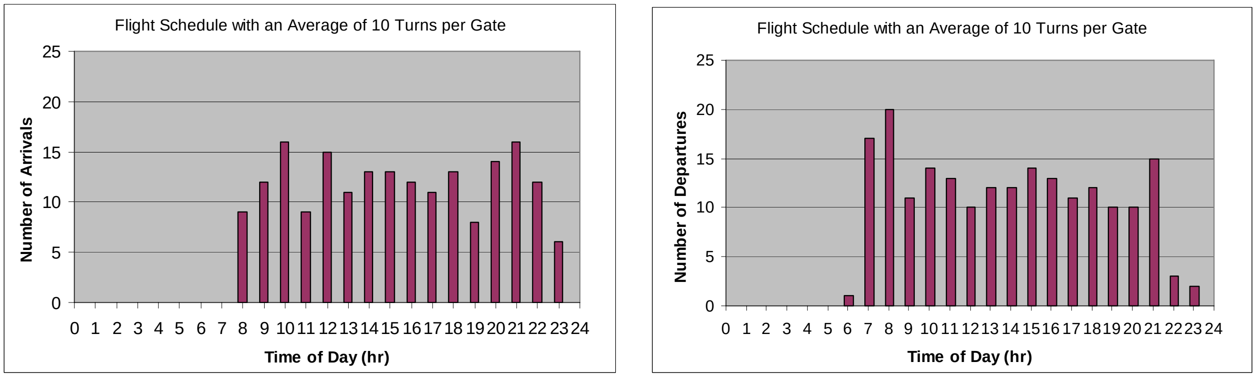


Figure 2.1: Flight Schedule with 10 Turns per Gate on Average

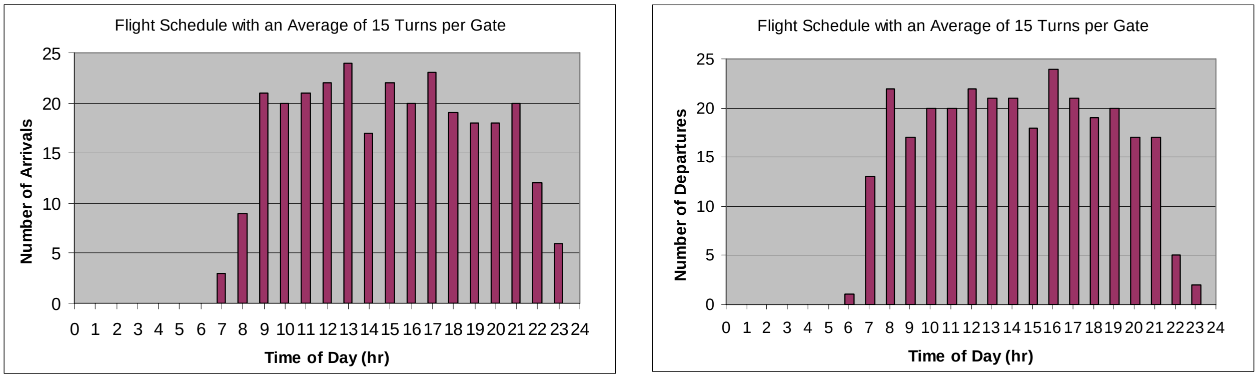


Figure 2.2: Flight Schedule with 15 Turns per Gate on Average

Prepared by: TransSolutions

The gate plots are presented below as *Figures 2-3 and 2-4*, and graphically represent the gate scheduling forecast for operations of flight scheduling for an average 10 and 15 gate turn scenario. Appendix C includes Tables which represent the same future flight scheduling in tabular presentation.

Figure 2.3: Gate Plot 10 Gate Turn

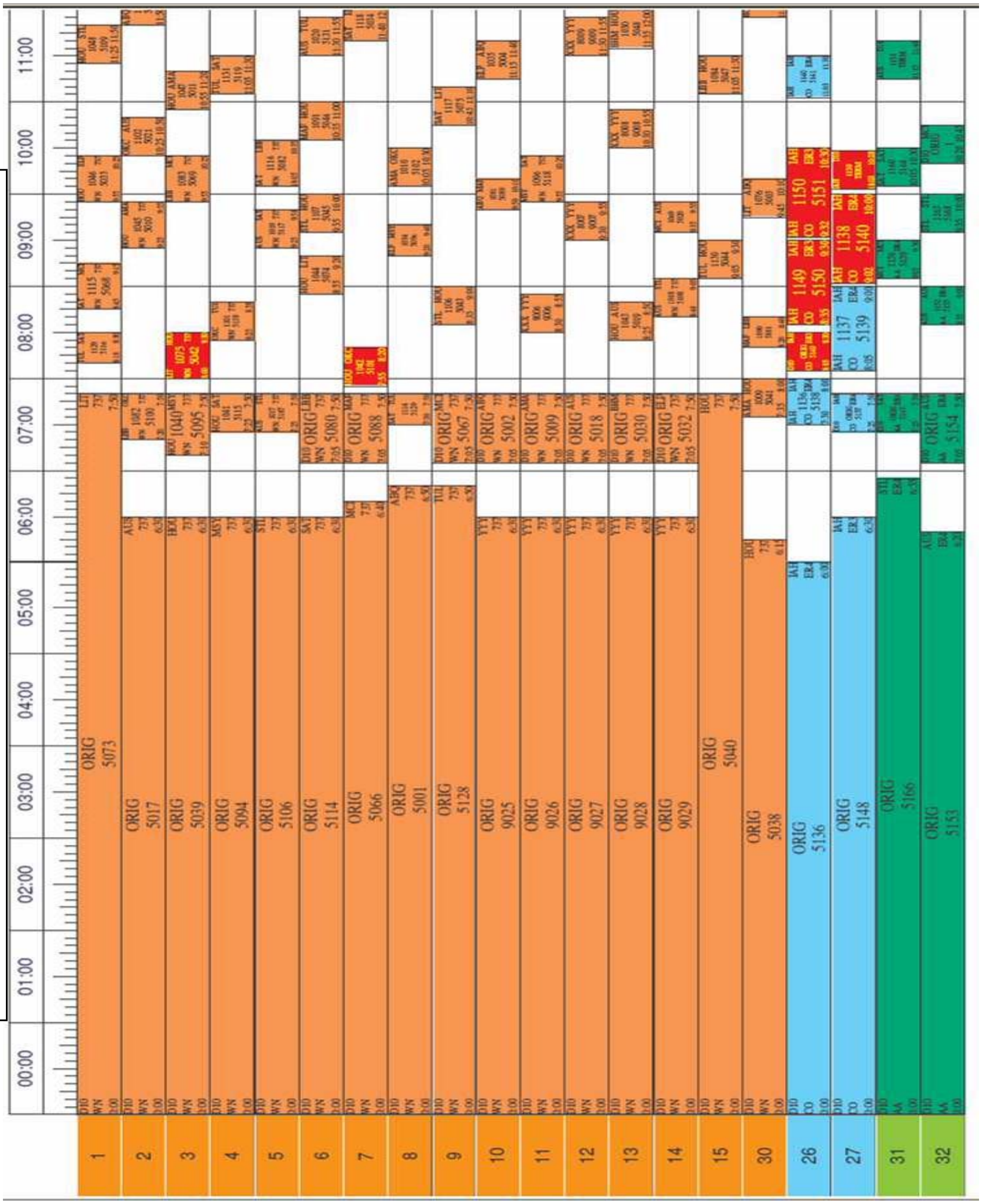
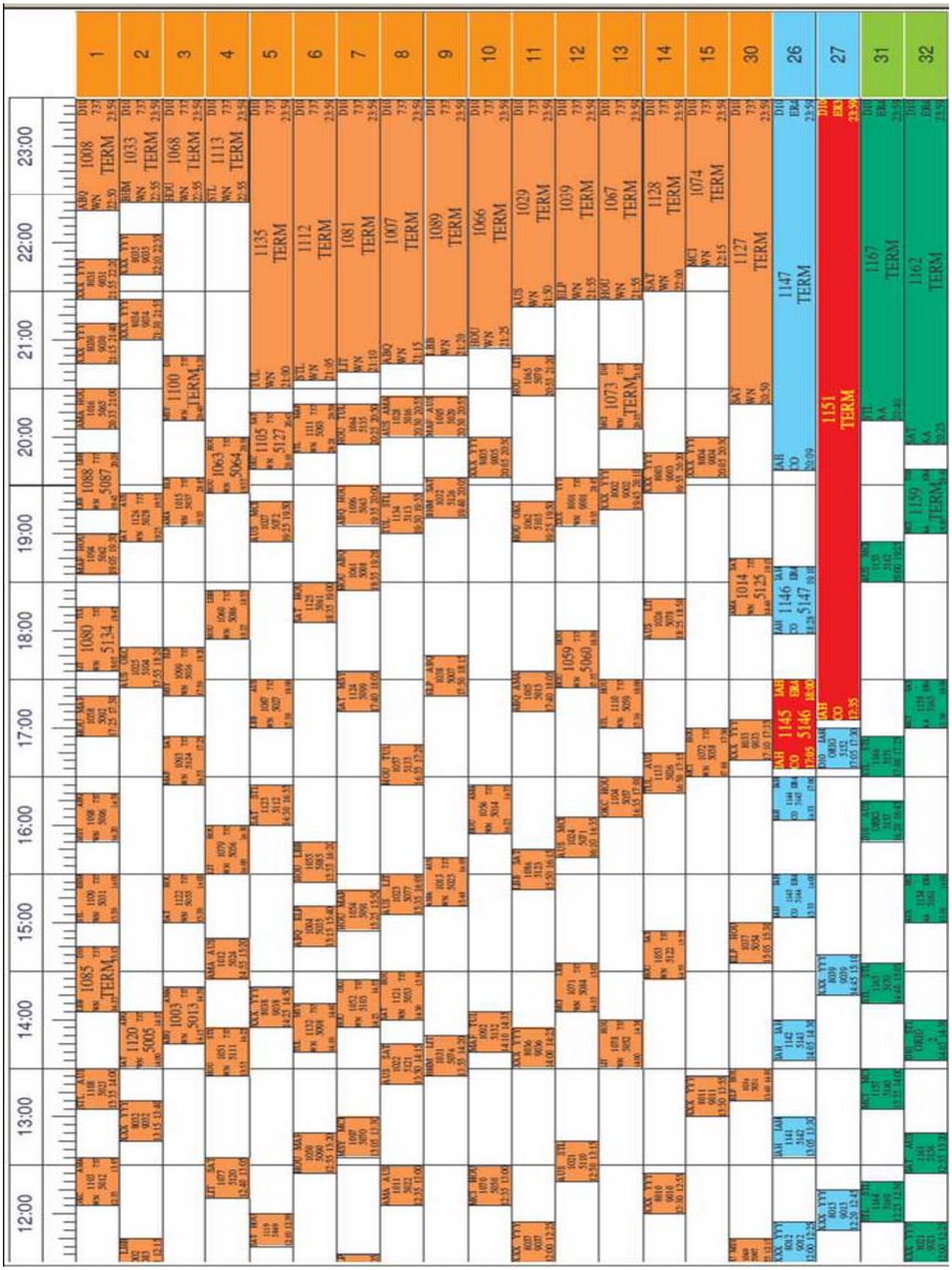


Figure 2.3: Gate Plot 10 Gate Turn Cont'd



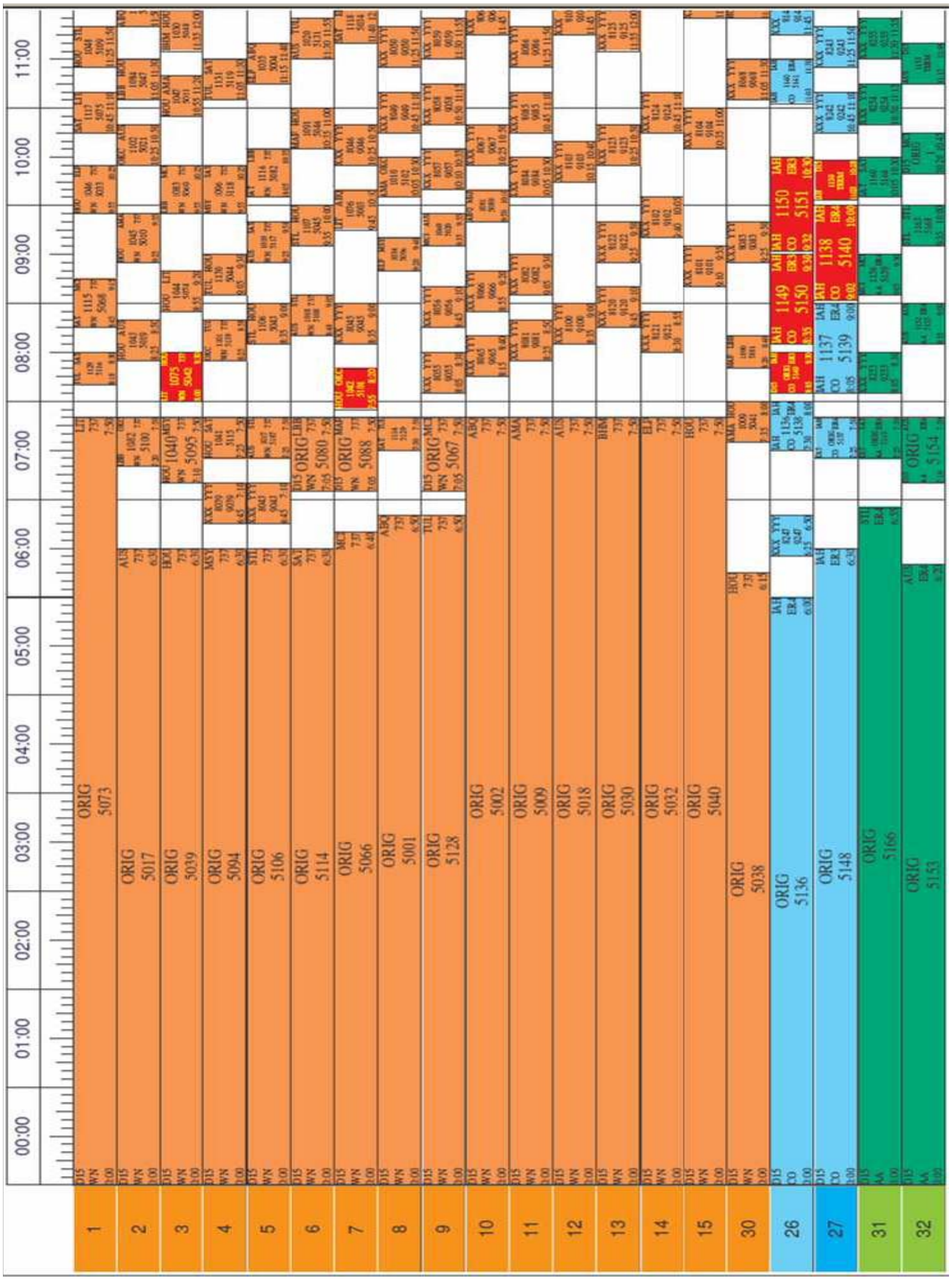
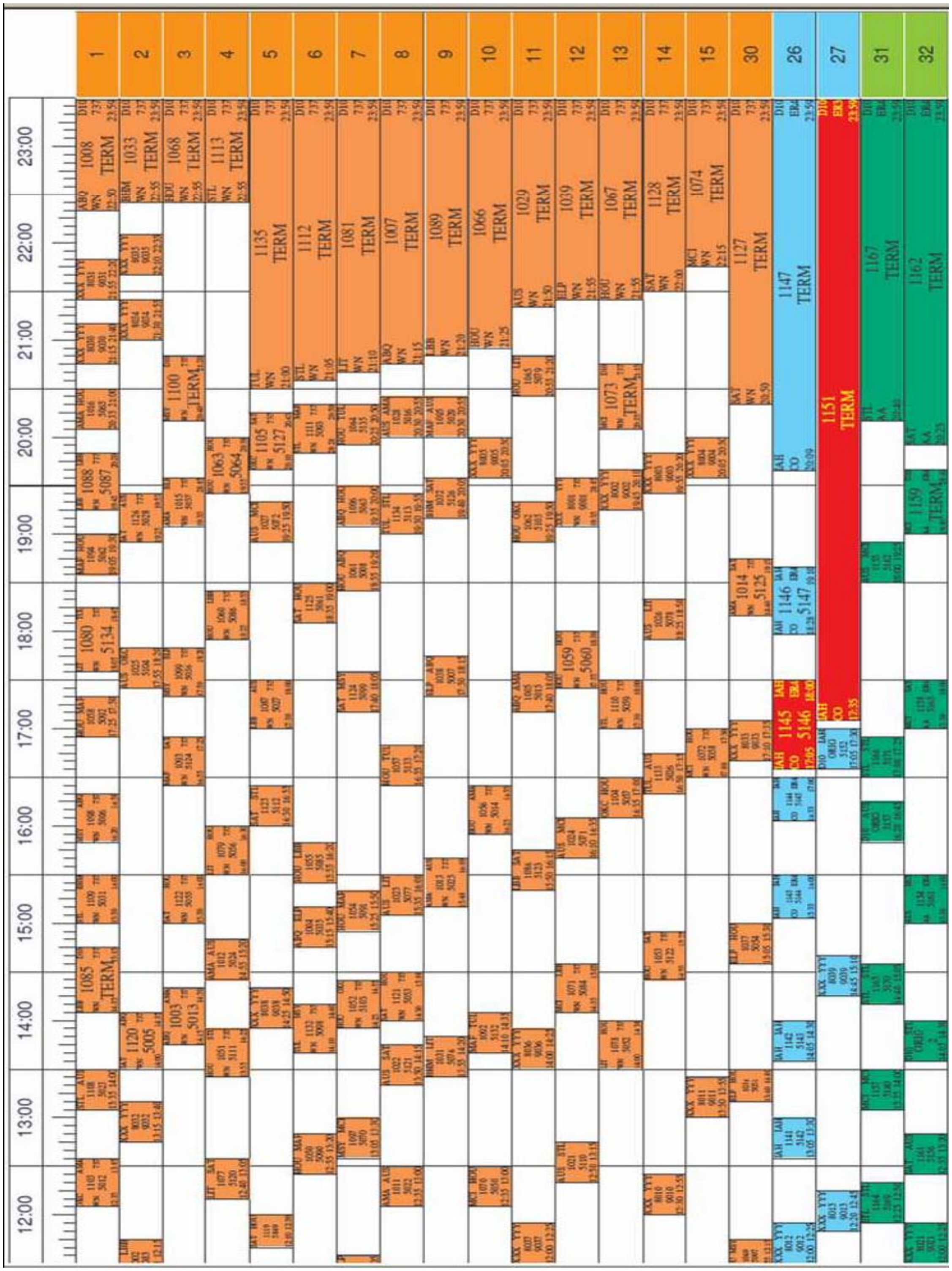


Figure 2.4: Gate Plot 15 Gate Turn

Figure 2.4: Gate Plot 15 Gate Turn Cont'd



Chapter 3: Facility Requirements

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SECTION 3.0 - OVERVIEW

The existing landside facilities for Dallas Love Field that have been analyzed as part of the Five Party Agreement TARPS and Revised C.I.P. are limited to the main passenger terminal facility, terminal curbside, roadways, parking structures and vehicle rental facilities. Chapter One, “Inventory”, provided an overview of the existing facilities including defined areas of the terminal, square foot areas, concessions programs, baggage system facilities, building systems and ground access facilities. In Chapter Two, “Forecasts,” historical data was reviewed pertaining to passenger enplanements and flight operations. Using the 2006 Master Plan Update, the TAF and the restrictions put into place by the Five Party Agreement as a supplement to the historical activity levels forecast, this information has been utilized to develop a revised activity forecast for a 20 gate constrained concourse with 10 and 15 turns per gate on average.

This chapter presents an analysis of requirements for landside facilities using the information gathered in Chapters One and Two as a basis to develop facility requirements for a 20 gate constrained facility with 10 and 15 turns per gate on average. Growth rate of passenger traffic for DAL is assumed minimal as the capacity of the facility is constrained by the 20 gate limit. This growth rate may pose a significant impact to the existing facilities today, specifically in Level of Service (LOS) offered, economy of scale of operations, and operational efficiencies. Impacts to the facility can be recognized as reflected in the “Space Requirements” section of this chapter. Included in the facilities requirements analysis are recommendations for the following:

- Determination of Level of Service (LOS) for the Terminal Facility
- Transportation Security Administration (TSA) Screening Requirements
- Enabling Projects Space Requirements
- Roadway, Curbside, and Parking Facilities

The information contained in this chapter will be utilized for development of landside concepts for the 10 and 15 turns per gate forecast on a 20 gate constrained facility, which will provide recommendations for the facility enhancements necessary to accommodate the forecasted growth.

SECTION 3.1 – DETERMINATION of LEVEL of SERVICE

Level of Service Defined

Level of Service (LOS) is a concept that has been in existence since the 1970’s. Over the years, this concept has been formalized into industry accepted standards utilized by industry professionals and airports worldwide. The defining component of LOS is based on existing system capacity and how well that facility can handle its current as well as increased capacities at different time periods. Since September 11, 2001, there has been a movement in the industry to redefine LOS, taking into account mandated security screening processes, now part of the system, and ever evolving airline business models.

Capacity is relative to the ability of a given facility to process flows (dynamic), or the ability of the facility to store capacity (static). This analysis will focus on movement of passengers and baggage into (enplaned) and out of (deplaned) the system.

Quality of LOS varies from facility to facility and at different times of the day. With mandated security requirements impacting LOS in almost every aspect of facility capacity, new standards and methods for measuring LOS are being developed. The International Air Transport Association (IATA) has established recommended standards for measuring the quality of LOS and these are included in the IATA Airport Development Reference Manual, Ninth Edition, 2004 publishing date. This standard, while developed in Europe, is used as a reference to defining LOS in the United States. The following information and references to LOS are based on the IATA standard.

The quality of LOS, as defined by IATA, is measured in six categories, as follows in *Table 3-1*:

Table 3-1

LOS	FLOWS	DELAYS	COMFORT
A – Excellent	Free	None	Excellent
B – High	Stable	Very Few	High
C – Good*	Stable	Acceptable	Good
D – Adequate*	Unstable	Acceptable for Short Periods	Adequate
E – Inadequate	Unstable	Unacceptable	Inadequate
F – Unacceptable	System Breakdown	Unacceptable	Unacceptable

***Note:** Level C = standard minimum, Level D = peak periods
Source: IATA Airport Development Reference Manual, Ninth edition, 2004
Prepared By: Gresham, Smith and Partners

As a comparison, LOS A means that passengers would be able to move freely through the terminal facility without experiencing any delays in their movements and feel comfortable in doing so. LOS quality E implies passenger movements would be congested, uncomfortable and delays would be recognized as unacceptable.

Level of Service C is recommended as the minimum design objective, as it denotes good service at a reasonable cost. Level of Service A is seen as having no upper bound. Passengers manage to avoid experiencing a level of service lower than C unless forced to.

Once a target LOS quality level has been established for a facility, the criteria for capacity validation and measurement can be evaluated. LOS should be reviewed and utilized for peak hour operating periods, with spatial requirements being based on these criteria. It is possible for different areas of a terminal facility to have different LOS criteria based on operations and functionality. The following IATA LOS Space Standards *(Tables 3-1 through 3-5)* have been established in the “Airport Development Reference Manual, Ninth Edition” for general guidance in determining terminal space sizes relative to LOS:

Table 3-2

Ticketing Lobby/Passenger Check-in LOS

QUEUE WIDTH	NUMBER OF BAGS	SQUARE FOOT PER PASSENGER PER LOS				
		A	**B**	**C**	**D**	**E**
4’-0”	Few	18.30 sq.ft.	15.00 sq.ft.	12.91 sq.ft.	11.84 sq.ft.	9.69 sq.ft.
	More	19.37 sq.ft	16.14 sq.ft.	14.00 sq.ft.	12.92 sq.ft.	11.84 sq.ft.
4’-7”	High	24.75 sq.ft.	20.45 sq.ft.	18.30 sq.ft.	17.22 sq.ft.	16.14 sq.ft.
	Heavy	28.00 sq.ft.	24.75 sq.ft.	21.52 sq.ft.	20.45 sq.ft.	19.38 sq.ft.

Source: IATA Airport Development Reference Manual, Ninth edition, 2004
Prepared By: Gresham, Smith and Partners

Table3-2 represents guidelines for establishing queuing areas at airline ticketing counters based on the quality of LOS desired. As an example, if an LOS of Level C at peak hour had been established for ticket counter queues utilizing 4’-0” wide queuing aisles and passengers are carrying more baggage than the average passenger, then 14.00 sq.ft. of queue space would be dedicated to each passenger anticipated at peak hour.

Table 3-3

Baggage Claim Area

	SQUARE FOOT PER PASSENGER PER LOS				
	A	**B**	**C**	**D**	**E**
Ft^2/Occupant	30.00 sq.ft.	21.53 sq.ft.	18.30 sq.ft.	14.00 sq.ft.	10.76 sq.ft.

Source: IATA Airport Development Reference Manual, Ninth edition, 2004
Prepared By: Gresham, Smith and Partners

Table 3-3 represents criteria to be utilized as guidelines for determining the size of areas for baggage claim halls. If an LOS B is desired for the baggage claim hall(s), then 21.53 sq.ft. of area should be dedicated to each passenger claiming bags anticipated at peak hour.

Table 3-4

Holdroom Areas

	MAXIMUM OCCUPANCY RATE (% OF CAPACITY)				
	A	**B**	**C**	**D**	**E**
	40%	50%	65%	80%	95%

Note: Assumes 18.30 sq.ft./passenger sitting and 12.92 sq.ft./passenger standing
Source: IATA Airport Development Reference Manual, Ninth edition, 2004
Prepared By: Gresham, Smith and Partners

Table 3-4 represents guidelines for establishing holdroom areas based on the load factor of the largest anticipated aircraft serving that holdroom. As shown in *Table 3-4*, to accomplish the criteria for a holdroom designed to a LOS C, and using a Boeing 737-300 aircraft with an 80% load factor with 80% of the passengers seated and 20% of the passengers standing, the holdroom seating area serving that aircraft would be sized as follows:

Total Aircraft Seats: 137 seats (all economy, six per row)
80% Load Factor: 110 passengers
Passengers in Holdroom: 110 passengers
Passengers Seated: (110 passengers x 80%) x 18.30 sq.ft. = 1,610 sq.ft.
Passengers Standing: (110 passengers x 20%) x 12.92 sq.ft. = 284 sq.ft.
Total Required Area: 1,894 sq.ft. / 65% = 2,914 sq.ft required

Since 2,914 sq.ft. are required to accommodate 110 enplaning passengers, exclusive of space that must be allocated for the gate counter units and passenger queuing space, the net holdroom seating area for this gate at peak hour would need to be 2,914 sq.ft. to meet the LOS C guideline.

Table 3-5

Circulation and Waiting Areas

	SQUARE FOOT PER PASSENGER PER LOS				
	A	**B**	**C**	**D**	**E**
	29.06 sq.ft.	24.75 sq.ft.	20.45 sq.ft.	16.14 sq.ft.	10.76 sq.ft

Source: IATA Airport Development Reference Manual, Ninth edition, 2004
Prepared By: Gresham, Smith and Partners

Table 3-5 represents guidelines for determining area requirements for circulation and waiting areas. Using LOS D for discussion and a meeter/greeter waiting area that is capable of holding 100 persons at peak hour, then 100 persons x 16.14 sq.ft. = 1,614 sq.ft. required to accommodate those persons in a Level D environment, as opposed to 2,906 sq.ft. required for LOS A.

The IATA guidelines provided in *Tables 3-1 through 3-5* have been provided for reference purposes. As a method for establishing LOS criteria for DAL, the space requirements provided in Section 3.3 take into account industry standards utilized in commercial airports in the United States in addition to LOS C requirements. This criteria has been utilized to identify the current LOS at DAL, as well as to establish future LOS goals and objectives.

Current Dallas Love Field LOS

After review of the inventory of existing facilities provided in Chapter One, and comparing the existing terminal areas to those provided in Section 3.3 "Space Requirements", the current LOS provided at the Airport would be considered a low level LOS D or high level LOS E. The variance between the two levels would be contingent upon peak hour functions and passenger flow during those peak hours.

Target Dallas Love Field LOS

Based upon review of the existing terminal facility, and considering the size constraints of the facility and the functionality of the airport serving intrastate commercial air carrier service, a LOS C would be a realistic target for Dallas Love Field. This would accommodate peak hour passenger flow comfortably, and provide satisfactory off peak LOS.

SECTION 3.2 – TSA SCREENING REQUIREMENTS

Overview

Dallas Love Field has been on the forefront of passenger and checked baggage screening processes and protocols through participation in government sponsored pilot programs for screening equipment and procedures. The following information identifies the current screening functions and protocols in operation today and future considerations for new technologies or more efficient screening procedures.

Passenger Screening Requirements

As discussed in Chapter One, there are currently five passenger security checkpoint lanes in the Main Lobby and two lanes adjacent to the West Concourse utilized by passengers coming from Garage A to the terminal via the conditioned pedestrian walkway bridge. The total number of existing passenger security checkpoint lanes provided in the terminal facility to date is seven.

Using the 20-gate, ten turns per gate numbers provided in Chapter Two, there is an insufficient number of passenger security checkpoint lanes to accommodate maximum growth on this gate constrained facility. At this point, seven additional lanes would be required to accommodate the increase in enplaned passenger growth.

The passenger security screening equipment technologies currently in use have been assumed to be utilized with this recommended growth strategy. As newer technologies and protocols are developed in the future, these recommendations need to be re-evaluated to determine if the current technologies are applicable, or the recommendations need to be adjusted to accommodate future technologies.

Checked Baggage Screening Requirements

The current checked baggage screening systems and protocols in place at DAL were developed by Southwest Airlines (WN), American Airlines (AA), Continental Airlines (CO), Transportation Security Administration (TSA) and the City of Dallas Department of Aviation (DOA); refer to Chapter 1 for additional information. Currently, there are three locations where checked baggage screening occurs:

1. Curbside: The curbside baggage screening operation has been relocated into the ticket lobby adjacent to Southwest Airlines ticket counters. Curbside checked baggage is shuttled from the WN curbside counters, utilizing electric carts, to the EDS screening area. TSA personnel manually load checked baggage onto one of two General Electric CTX 5500 EDS screening devices. Cleared baggage proceeds and is induced on an outbound belt delivering baggage to make-up carousels for delivery to departing aircraft. Suspect or alarmed baggage is placed on one of two ETD screening tables for secondary screening. The bags are then re-induced to the system by being manually placed on the dedicated outbound baggage belt that is separate from the ticket counter outbound baggage belt and are transported to the WN make-up baggage unit on the ramp side for outbound aircraft delivery.

2. WN Ticket Counters: Checked baggage at the WN ticket counters are placed by an agent onto the outbound baggage takeaway belt that delivers the bag(s) to a screening room in the north end of the WN ticket lobby. The bag is diverted to one of two General Electric CTX-5500 EDS devices for Level One screening. If the bag clears, it is manually pushed onto a roller table to an outbound bag belt that delivers the bag to the outbound make-up device. If a bag requires Level Two screening, it is removed from the EDS device and placed onto an ETD table for screening. Once cleared, it is placed on the outbound baggage belt and delivered to the make-up device.

3. Continental Express and American Airlines: Continental Express and American Airlines currently have ticketing and check-in operations in the eastern portion of the Central Lobby. Both airlines place checked baggage on their respective outbound baggage belts, that deliver these bags to an EDS screening area located behind the ticket counter backwall.

The checked baggage equipment technologies currently in use have been assumed to be utilized with the gate constrained growth strategy. As newer technologies and protocols are developed in the future, these recommendations need to be re-evaluated to determine if the current technologies are applicable, or the recommendations need to be adjusted to accommodate future technologies.

SECTION 3.3 – SPACE REQUIREMENTS

Overview

The DAL terminal facility requirements for the 20 gate constrained facility (both 10 and 15 turns per gate) were based on the inventory of existing spaces in the terminal facility and the revised forecast provided in Chapter Two. Through the use of empirical mathematical formulas for determining spatial requirements, combined with forecasted passenger loads for these critical years, new programs for facility space requirements have been created. This information will be utilized in Chapter Four, "Concept Analysis", where graphical representations of these programmatic impacts on the existing facility will clearly distinguish today's spatial capacities as well as the requirements for the future facility.

10 Turns per Gate

Table 3-6

BASIS FOR 10-TURN SPACE PROGRAM CALCULATIONS

DALLAS LOVE FIELD

ESTIMATES OF FACILITY REQUIREMENTS

AVERAGE DAY PEAK MONTH PEAK HOUR ACTIVITY

INTERNATIONAL PASSENGER SERVICE	International local enplaned passengers	0
	International local deplaned passengers	0
	International transfer passengers	0
	International transfer enplanements	0
	International transfer deplanements	0
	International local deplanements	0
	International transfer deplaning passengers	0
	Total	0
INTERNATIONAL OPERATIONS	International aircraft departures	0
	International aircraft arrivals	0
DOMESTIC PASSENGER SERVICE	Domestic local enplaned passengers	2,250
	Domestic local deplaned passengers	1,620
	Domestic transfer enplanements	450
	Domestic transfer deplanements	324
AIRCRAFT FLEET MIX	Aircraft Mix:	
	ERJ145	4
	ERJ135	1
	B737	20
DOMESTIC OPERATIONS	Domestic aircraft departures	25
	Domestic aircraft arrivals	18

Table 3-7

BASIS FOR 10-TURN SPACE PROGRAM CALCULATIONS

DALLAS LOVE FIELD

AVERAGE DAY PEAK MONTH PEAK HOUR ACTIVITY

Methodology/Assumptions

Ref Key		Variable	Unit	Total	Unit
AS -1	Airline Ticket Counter- Landside Terminal Domestic PAX (Peak One Hour Processing Period)	2,250	pax		
	Agent processing time per pax	2.85	minutes		
	Percent of PAX going to ATO	72%			
	Domestic Agent Positions			77	Positions
	Total Domestic Agent Positions			**77**	**Positions**
AS -2	Self Service Devices (SSDs)				
	Number of Domestic agent positions	77	positions		
	Percentage of Agent Position	19%			
	Percentage of SSDs	65%			
	Percentage of Curbside Positions	16%			
	Number of Domestic agent positions			15	Positions
	Number of SSD positions			50	Positions
	Number of Curbside positions			12	Positions
	Ticket counter length per SSD position	2.5	ft.		
	Total length of SSD positions			**125**	**ft.**
AS -3	Area for SSDs				
	Depth of SSD positions	3	ft.		
	Area for SSDs			375	sq.ft.
AS -3	Depth of area for access to SSDs	15	ft.		
	Area for access to SSDs			1,876	sq.ft.
AS -2	Total Length of Ticket Counter				
	Length of ticket counter per agent (2.75 ft. counter + 1.5 ft. well)	4.25	ft.		
	Total length of Ticket Counter			62	ft.
	Total length of Ticket Counter + SSDs			**187**	**ft.**
AS -3	Ticket Counter Work Area				
	Depth of ticket counter work area	10	ft.		

	Total Area Ticket Counter Work			**1,870**	**sq.ft.**
AS -4	Ticket Counter and SSD Queuing Area				
	Depth of counter and SSD queue area (LOS C)	14	sq.ft./PAX		
	Total Area Ticket Counter and SSD Queuing			**19,051**	**sq.ft.**
AS -5	Ticket Counter Support Office				
	Depth of counter office area	25	ft.		
	Total Area Ticket Counter Support Office			**4,675**	**sq.ft.**
PS -2	Ticket Lobby				
	Depth of counter lobby area	50	ft.		
	Total Area Ticket Lobby			**9,350**	**sq.ft.**
AS -6	Airline Baggage Makeup				
	Number of aircraft departures @ peak hour			25	Departures
	Area per makeup device per departures	3360	sq,ft.		
	Area for baggage makeup			84,000	sq.ft.
	Number of explosives detection devices	10	devices		
	Area per device	900	sq.ft.		
	Area for explosives detection devices/TSA space			9,000	sq.ft.
	Total Area Baggage Makeup			**93,000**	**sq.ft.**
PS -3	Baggage Claim Area				
	Reverse Capacity Analysis				
	Carousels	9	units		
	PLF per Unit (if applicable)	180	plf		
	Total Linear Frontage	1620	plf		
	Estimated Time to Clear Devices	30	minutes		
	Frontage per PAX	1.5	l.f.		
	10 min Peak PAX Capacity	360	PAX		
	Peak Hour Frontage Capacity	2160	PAX		
	Capacity Analysis				
	Peak Hour Deplaning PAX	1620	PAX		
	% PAX Checking Bags	60	%		
	Peak Hour Termminating PAX	972	PAX		
	Estimated Time to Clear Devices	30	minutes		
	Frontage per PAX	1.5	l.f.		
	Total Linear Frontage Required	729	PLF		
	PLF per Unit (if applicable)	180	PLF		
	Carousels Required	5	Units		
AS -7	No. of devices	5			
	Total Lineal Feet				
	Tiers of bags	1	tiers		
	Total lineal feet			729	l.f.
	Uses per device in peak hour	1	uses		
AS -7a	Total lineal feet			729	l.f.
	Width per device	20	ft.		

	Width for end devices-21'x2	0	ft.		
	Total width of claim area			20	ft.
	Length of a 180 l.f. device, 20' wide	80	ft.		
	Clearance from device-21'x 2	0	ft.		
	Total length			80	ft.
	Area for baggage cart return				
	Width of return corridor	10	ft.		
	Length of corridor	50	ft.		
	Number of corridors	9	corridors		
	Area of baggage cart returns			4,500	sq.ft.
AS -8	**Total Area Baggage Claim**			**12,500**	**sq.ft.**
AS -8a	Area for Baggage Claim Input				
	Device length	80	ft.		
	Percent public	0%			
	Input length	80	ft.		
	Number of devices	5	devices		
	Input length	400	ft.		
	Width of input area (including traffic aisle)	26	ft.		
	Total Area Baggage Claim Input			**10,400**	**sq.ft.**
PS -3	Baggage Claim-Public Lobby				
	Length of device plus clearance	92	ft.		
	Width of circulation area (LOS C)	20	ft.		
	Total Area Baggage Claim Lobby			**9,200**	**sq.ft.**
C -2	Rental Car Area				
	Number of agencies	5	agencies		
	Length of counter per agency	20	ft.		
	Total length of counter	100	ft.		
	Depth of queue area	14	ft.		
	Depth of work area	10	ft.		
	Depth of office area	10	ft.		
	Total depth of car rental area	34	ft.		
	Total Area Car Rental			**3,400**	**sq.ft.**
PS -5	Ticketing Area-Terminal Services				
	Assumes:				
	Enplaned pax using terminal services	25%			
	Space required per pax	20	sq.ft		
	Number of enplaning local passengers			2,250	pax
	Number of enplaning transfer passengers			450	pax
	25% of Passengers			675	pax
	Area for Terminal Services			13,500	sq.ft.
	Courtesy vehicle storage				
	Number of vehicles	4	carts		
	Area per cart	150	sq.ft.		
	Area for courtesy vehicles			600	sq.ft.

	Wheelchair storage				
	Number of wheelchairs stored	50	units		
	Area per wheelchair	10	sq.ft.		
	Number of storage areas	3	units		
	Area for wheelchair storage			1,500	sq.ft.
	Total Area Terminal Services			**15,600**	**sq.ft.**
PS -4	Restrooms-Landside & Airside Terminal				
	Assumes:				
	Percent of persons using restrooms	15%			
	Space per person	20	sq.ft		
	Enplaning passengers			2,250	pax
	Well-wishers	5%			
	Total persons			2,363	persons
	Total times % of persons using restrooms			354	persons
	Area for ticketing level Restrooms			7,080	sq.ft.
	Assumes:				
	Percent of persons using restrooms	30%			
	Space per person	20	sq.ft		
	Deplaning passengers			1,620	pax
	Meeter-greeter	15%			
	Total persons			1,863	persons
	Total times % of persons using restrooms			559	persons
	Area for baggage claim level Restrooms			11,180	sq.ft.
	Total Area Restrooms			**18,260**	**sq.ft.**
PS -7	Mechanical & Services				
	Assumes 10% of total area				
	(excluding this category of space)				
	Area of building	539,525	sq.ft.		
	Percent of building area	10%			
	Mechanical & Services subtotal			53,953	sq.ft.
	Passenger terminal service area				
	(enclosed area only)				
	Warehouse area	5,500	sq.ft.		
	Airport maintenance facility	1,000	sq.ft.		
	Truck Dock work aisle	300	sq.ft.		
	Service area subtotal			6,800	sq.ft.
	Total Area Mechanical & Services			**60,753**	**sq.ft.**
PS -6	Concourse circulation-Airside Terminal				
	Assumes:				
	Width	25	ft.		
	ADG II aircraft (Embraer 145)	66	ft.		
	Average wingspan+25' clearance	91	ft.		
	Aircraft positions	4	aircraft		

	Total area of concourse circulation			9,100	sq.ft.
	Assumes:				
	Width	25	ft.		
	ADG II aircraft (Embraer 135)	66	ft.		
	Average wingspan+25' clearance	91	ft.		
	Aircraft positions	1	aircraft		
	Total area of concourse circulation			2,275	sq.ft.
	Assumes:				
	Width	25	ft.		
	ADG III aircraft (B737-700)	113	ft.		
	Average wingspan+25' clearance	138	ft.		
	Aircraft positions	20	aircraft		
	Total area of concourse circulation			69,000	sq.ft.
	Total Area of All Concourse Circulation			**80,375**	**sq.ft.**
AS -9	Holdrooms-Airside Building				
	Assume:				
	ADG II aircraft (Embraer 145)	50	seats		
	Load factor	0.8			
	Passengers/aircraft	50	pax		
	12' ticket lift counter+6' circulation	18	ft.		
	Queue depth	25	ft.		
	Area for counter and queue			450	
	Deplaning corridor width	5	ft.		
	Deplaning corridor depth	20	ft.		
	Deplaning corridor area			100	
	Passengers seated	70%			
	Passengers standing	30%			
	Space per seated passenger	20	sq.ft.	700	
	Space per standing passenger	13	sq.ft.	195	
	Total area of holdroom			1,445	
	LOS C Factor	65%		778	
	Total LOS C Holdroom			2,223	
	Number of aircraft	4	Aircraft		
	Total Area-Holdrooms-Airside			5,780	
	Assume:				
	ADG II aircraft (Embraer 135)	37	seats		
	Load factor	0.8			
	Passengers/aircraft	30	pax		
	12' ticket lift counter+6' circulation	18	ft.		
	Queue depth	25	ft.		
	Area for counter and queue			450	
	Deplaning corridor width	5	ft.		

	Deplaning corridor depth	20	ft.		
	Deplaning corridor area			100	
	Passengers seated	70%			
	Passengers standing	30%			
	Space per seated passenger	20	sq.ft.	414	
	Space per standing passenger	13	sq.ft.	115	
	Total area of holdroom			1,080	
	LOS C Factor	65%		581	
	Total LOS C Holdroom			1,661	
	Number of aircraft	1	Aircraft		
	Total Area-Holdrooms-Airside			1,080	
	Assume:				
	ADG III aircraft (B737-700)	137	seats		
	Load factor	80%			
	Passengers/aircraft	110	pax		
	12' ticket lift counter+6' circulation	18	ft.		
	Queue depth	25	ft.		
	Area for counter and queue			450	
	Deplaning corridor width	5	ft.		
	Deplaning corridor depth	20	ft.		
	Deplaning corridor area			100	
	Passengers seated	70%			
	Passengers standing	30%			
	Space per seated passenger	20	sq.ft.	1,534	
	Space per standing passenger	13	sq.ft.	427	
	Total area of holdroom			2,512	
	LOS C Factor	65%		1,353	
	Total LOS C Holdroom			3,864	
	Number of aircraft	20	Aircraft		
	Total Area-Holdrooms-Airside			50,237	
	Total Area - All Holdrooms - Airside - LOS C	**25**	**Aircraft**	**57,097**	**sq.ft**
AS -10	Airline Clubs-Landside Terminal				
	Assume:				
	Number of clubs	1			
	Area per airline clubroom	1,000	sq. ft.		
	Total Area Clubrooms			**1,000**	**sq.ft**
AS -11	Airline Offices-Landside Terminal				
	Assumes:				
	Number of airlines	3	airlines		
	Landside Offices - 200 sq.ft./ATO position	12,928	sq. ft.		
	BSO Office - 125 sq.ft/arriving flight in peak hour	2,250	sq.ft.		
	Total Area Offices - Landside			**15,178**	**sq.ft.**
AS -12	Airline Offices-Airside Terminal				

	Assumes:				
	Number of gates	20	gates		
	Area per gate	200	sq.ft.		
	Total Area Offices - Airside			**4,000**	**sq. ft.**
AS-11a	Airport Administration - Landside Terminal				
	Assumes:				
	Airport administrative offices	35,000	sq. ft.		
	Total Area Administrative Offices - Landside			**35,000**	**sq. ft.**
PS -1	Security-Landside Terminal				
	Assumes:				
	Domestic enplaned passengers	2,250	pax		
	Total number of persons			2,250	persons
	Persons/hour/security station	160	persons		
	Number of security stations			14	stations
	Space per station	1,000	sq. ft.		
	Total Area for Security Checkpoint			**14,000**	**sq. ft.**
PS -1a	Security-Landside Terminal				
	Assumes:				
	TSA administrative offices	1,600	sq. ft.		
	Search areas	400	sq. ft.		
	Support/file storage/break room/toilets	1,333	sq. ft.		
	Internal circulation corridors (20% area)	667	sq. ft.		
	Total Area TSA Administration			**4,000**	**sq. ft.**
AS -13	Airline Operations-Airside Terminal				
	Assumes:				
	Footprint of concourse building	20%			
	Length of building	1,500	ft.		
	Width of building	200	ft.		
	Area of building footprint			300,000	sq. ft.
	Total Area Operations - Airside			**60,000**	**sq. ft.**
C -1	Food & Beverage Facilities-Landside Terminal				
	Local peak hour departing passengers	2,250	pax		
	Number of well-wishers (5% departing passengers)	113	persons		
	Local peak hour arriving passengers	1,620	pax		
	Number of meeters/greeters (15% arriving passengers)	243	persons		
	Total number of persons	4,225	persons		
	Percent dwelling for 120 minutes	5%			
	Percent dwelling for 90 minutes	12%			
	Percent dwelling for 60 minutes	30%			
	Percent dwelling for 30 minutes	53%			
	Percent using food concessions	5%			
	Percent using bar/beverage concessions	2%			

	Food patrons/pk hr	211	patrons		
	Bar/beverage patrons/pk hr	85	patrons		
	Area per patron/food concession	45	sq.ft.	9,507	sq.ft.
	Area per patron/beverage concession	40	sq.ft.	3,380	sq.ft.
	Total Area-Food & Beverage - Landside Terminal			**12,887**	**sq.ft.**
C -1	Food & Beverage Facilities-Airside Terminal				
	Local peak hour departing passengers	2,250	pax		
	Local peak hour arriving passengers	1,620	pax		
	Transfer peak hour arriving passengers	324	pax		
	Transfer peak hour departing passengers	450	pax		
	Total number of persons	4,644	persons		
	Percent dwelling for 120 minutes	0			
	Percent dwelling for 90 minutes	0			
	Percent dwelling for 60 minutes	0			
	Percent dwelling for 30 minutes	1			
	Percent using food concessions	0			
	Percent using bar/beverage concessions	0			
	Food patrons/pk hr	697	patrons		
	Bar/beverage patrons/pk hr	232	patrons		
	Area per patron/food concession	45	sq.ft.	31,344	sq.ft.
	Area per patron/beverage concession	40	sq.ft.	9,287	sq.ft.
	Total Area-Food & Beverage - Airside Terminal			**40,632**	**sq.ft.**
CS -1	Curbside - Departures				
	Existing Departure Curb Length (feet)	690	ft.		
	Peak Hour Enplaning PAX	2,250	PAX		
	% of PAX using private vehicles	72%			
	# of PAX using private vehicles	1,620	PAX		
	% of PAX arriving in private vehicles using the curb	70%			
	# of PAX arriving in private vehicles using the curb	1,134	PAX		
	Visitor ratio of vistors to PAX	0.05	Visitors/PAX		
	# of Visitors	57	Visitors		
	Occupants/Vehicle and dwell time at curb				
	Person/Vehicle	1.5	PAX/Vehicle		
	Vehicle Dwell Time	3.00	Minutes		
	Number of Private Vehicles Drop-Off Slot	20	Vehicles/hour/ drop-off slot		
	Vehicle Slots Required	40	Slots		
	Required arrivals curb length (25 feet/slot)	992	lf.		
	Total Departure Curb Length - Landside Terminal			**992**	**lf.**
CS -2	Curbside - Arrivals				
	Existing Arrivals Curb Length (feet)	820	ft.		

	Peak Hour Deplaning PAX	1,620	PAX		
	% of PAX using private vehicles	72%			
	# of PAX using private vehicles	1,166	PAX		
	% of PAX arriving in private vehicles using the curb	70%			
	# of PAX arriving in private vehicles using the curb	816	PAX		
	Visitor ratio of vistors to PAX	0.15	Visitors/PAX		
	# of Visitors	122	Visitors		
	Occupants/Vehicle and dwell time at curb				
	Person/Vehicle	1.5	PAX/Vehicle		
	Vehicle Dwell Time	4.00	Minutes		
	Number of Private Vehicles Drop-Off Slot	15	Vehicles/hour/ drop-off slot		
	Vehicle Slots Required	42	Slots		
	Required arrivals curb length (25 feet/slot)	1,043	lf.		
	Total Arrivals Curb Length - Landside Terminal			**1,043**	**lf.**
CS -3	Curbside - Shuttle - Taxi				
	Existing Shuttle Curb Length (feet)	110	ft.		
	Peak Hour Deplaning PAX	2,250	PAX		
	% of PAX using shared ride	9%			
	# of PAX using shared ride	203	PAX		
	% of PAX arriving in shared ride	100%			
	# of PAX arriving in shared ride	203	PAX		
	Visitor ratio of vistors to PAX	-	Visitors/PAX		
	# of Visitors	-	Visitors		
	Occupants/Vehicle and dwell time at curb				
	Person/Vehicle	1.25	PAX/Vehicle		
	Vehicle Dwell Time	5.00	Minutes		
	Number of Private Vehicles Drop-Off Slot	12	Vehicles/hour/ drop-off slot		
	Vehicle Slots Required	14	Slots		
	Required arrivals curb length (25 feet/slot)	338	lf.		
	Total Taxi Curb Length - Landside Terminal			**338**	**lf.**
CS -4	Curbside - Shuttle - Bus				
	Existing Shuttle Curb Length (feet)	110	ft.		
	Peak Hour Deplaning PAX	2,250	PAX		
	% of PAX using shared ride	18%			
	# of PAX using shared ride	405	PAX		
	% of PAX arriving in shared ride	100%			
	# of PAX arriving in shared ride	405	PAX		
	Visitor ratio of vistors to PAX	-	Visitors/PAX		
	# of Visitors	-	Visitors		
	Occupants/Vehicle and dwell time at curb				
	Person/Vehicle	5.0	PAX/Vehicle		

	Vehicle Dwell Time	5.00	Minutes		
	Number of Private Vehicles Drop-Off Slot	12	Vehicles/hour/ drop-off slot		
	Vehicle Slots Required	7	Slots		
	Required arrivals curb length (30 feet/slot)	203	lf.		
	Total Bus Curb Length - Landside Terminal			**203**	**lf.**
CS -5	Curbside - Shuttle - Limousine				
	Existing Shuttle Curb Length (feet)	110	ft.		
	Peak Hour Deplaning PAX	2,250	PAX		
	% of PAX using shared ride	1%			
	# of PAX using shared ride	23	PAX		
	% of PAX arriving in shared ride	100%			
	# of PAX arriving in shared ride	23	PAX		
	Visitor ratio of vistors to PAX	-	Visitors/PAX		
	# of Visitors	-	Visitors		
	Occupants/Vehicle and dwell time at curb				
	Person/Vehicle	2.0	PAX/Vehicle		
	Vehicle Dwell Time	5.00	Minutes		
	Number of Private Vehicles Drop-Off Slot	12	Vehicles/hour/ drop-off slot		
	Vehicle Slots Required	1	Slots		
	Required arrivals curb length (30 feet/slot)	28	lf.		
	Total Limousine Curb Length - Landside Terminal			**28**	**lf.**
P-1	Employee Parking				
	Employee Parking Spaces Required	1000			
	Existing Employee Parking Spaces Available	530			
	Employee Parkings Surplus or (Deficit)	(470)			
	Total Employee Parking			**1000**	**spaces**

Table 3-8

BASIS FOR 10-TURN SPACE PROGRAM CALCULATIONS

DALLAS LOVE FIELD

LANDSIDE TERMINAL BUILDING

Key	Type of space	Units	Sq.Ft.
	AIRLINE SPACE		
	Airline Ticket Counter		
AS-2	Ticket counter agent positions	15	
AS-2	Ticket counter ATMs	50	
AS-2	Curbside counter agent positions	12	
AS -2	Ticket counter (lineal feet) -	187	
AS -3	Ticket counter (area)		4,121
AS -4	Ticket counter queuing area		19,051
AS -5	Ticket counter support office		4,625
AS -6	Baggage Makeup 2,250		93,000
	Baggage Claim		
AS -7	Number of devices	5	
AS -7a	Total lineal feet	729	
AS -8	Bag claim area		12,500
AS -8a	Baggage Claim Input		10,400
AS -9	Holdrooms	25	57,097
AS -10	Clubrooms		1,000
AS -11	Airline Offices - Landside Terminal		15,178
AS -11a	Airport Administration - Landside Terminal		35,000
AS -12	Airlines Offices - Airside Terminal		4,000
AS -13	Airline Operations		60,000
	Subtotal		316,021
	CONCESSIONS		
C -1	Food & beverage		53,518
C -2	Rental Car area		3,400
C -3	News/sundries (5% of Gross Terminal Area)		15,801
	Subtotal		72,719
	PUBLIC SPACE		
PS -1	Security Checkpoints	14	14,000
PS -1a	TSA Administration		4,000
PS -2	Ticket Lobby		9,350
PS -3	Baggage Claim Lobby		9,200

PS -4	Restrooms		18,260
PS -5	Terminal Services		15,600
PS -6	Concourse Circulation		80,375
PS -7	Mechanical & Services		60,753
	Subtotal		211,538
	Curbside and Parking		
CS -1	Curbside - Departures		992
CS -2	Curbside - Arrivals		1,043
CS -3	Curbside - Shuttle		568
P-1	Employee Parking Spaces		1,000
	Subtotal		
	TOTAL		**600,278**

15 Turns per Gate

Table 3-9

BASIS FOR 15-TURN SPACE PROGRAM CALCULATIONS

DALLAS LOVE FIELD

ESTIMATES OF FACILITY REQUIREMENTS

AVERAGE DAY PEAK MONTH PEAK HOUR ACTIVITY

INTERNATIONAL PASSENGER SERVICE	International local enplaned passengers	0
	International local deplaned passengers	0
	International transfer passengers	0
	International transfer enplanements	0
	International transfer deplanements	0
	International local deplanements	0
	International transfer deplaning passengers	0
	Total	0
INTERNATIONAL OPERATIONS	International aircraft departures	0
	International aircraft arrivals	0
DOMESTIC PASSENGER SERVICE	Domestic local enplaned passengers	2,519
	Domestic local deplaned passengers	2,340
	Domestic transfer enplanements	504
	Domestic transfer deplanements	468
AIRCRAFT FLEET MIX		
	Aircraft Mix:	
	ERJ145	5
	ERJ135	1
	B737	22
DOMESTIC OPERATIONS	Domestic aircraft departures	28
	Domestic aircraft arrivals	26

Table 3-10

BASIS FOR 15-TURN SPACE PROGRAM CALCULATIONS

DALLAS LOVE FIELD

AVERAGE DAY PEAK MONTH PEAK HOUR ACTIVITY

Methodology/Assumptions

Ref Key		Variable	Unit	Total	Unit
AS -1	Airline Ticket Counter- Landside Terminal Domestic PAX (Peak One Hour Processing Period)	2,519	pax		
	Agent processing time per pax	2.85	minutes		
	Percent of PAX going to ATO	72%			
	Domestic Agent Positions			86	Positions
	Total Domestic Agent Positions			**86**	**Positions**
AS -2	Self Service Devices (SSDs)				
	Number of Domestic agent positions	86	positions		
	Percentage of Agent Position	19%			
	Percentage of SSDs	16%			
	Percentage of Curbside Positions	65%			
	Number of Domestic agent positions			16	Positions
	Number of SSD positions			56	Positions
	Number of Curbside positions			14	Positions
	Ticket counter length per SSD position	2.5	ft.		
	Total length of SSD positions			**140**	**ft.**
AS -3	Area for SSDs				
	Depth of SSD positions	3	ft.		
	Area for SSDs			420	sq.ft.
AS -3	Depth of area for access to SSDs	15	ft.		
	Area for access to SSDs			2,100	sq.ft.
AS -2	Total Length of Ticket Counter				
	Length of ticket counter per agent (2.75 ft. counter + 1.5 ft. well)	4.25	ft.		
	Total length of Ticket Counter			70	ft.
	Total length of Ticket Counter + SSDs			**210**	**ft.**
AS -3	Ticket Counter Work Area				
	Depth of ticket counter work area	10	ft.		

	Total Area Ticket Counter Work			**2,100**	**sq.ft.**
AS -4	Ticket Counter and SSD Queuing Area				
	Depth of counter and SSD queue area (LOS C)	14	sq.ft./PAX		
	Total Area Ticket Counter and SSD Queuing			**21,329**	**sq.ft.**
AS -5	Ticket Counter Support Office				
	Depth of counter office area	25	ft.		
	Total Area Ticket Counter Support Office			**5,250**	**sq.ft.**
PS -2	Ticket Lobby				
	Depth of counter lobby area	50	ft.		
	Total Area Ticket Lobby			**10,500**	**sq.ft.**
AS -6	Airline Baggage Makeup				
	Number of aircraft departures @ peak hour			28	Departures
	Area per makeup device per departures	3,360	sq,ft.		
	Area for baggage makeup			94,080	sq.ft.
	Number of explosives detection devices	10	devices		
	Area per device	900	sq.ft.		
	Area for explosives detection devices/TSA space			9,000	sq.ft.
	Total Area Baggage Makeup			**103,080**	**sq.ft.**
PS -3	Baggage Claim Area				
	Reverse Capacity Analysis				
	Carousels	9	units		
	PLF per Unit (if applicable)	180	plf		
	Total Linear Frontage	1,620	plf		
	Estimated Time to Clear Devices	30	minutes		
	Frontage per PAX	1.5	l.f.		
	10 min Peak PAX Capacity	360	PAX		
	Peak Hour Frontage Capacity	2,160	PAX		
	Capacity Analysis				
	Peak Hour Deplaning PAX	2,340	PAX		
	% PAX Checking Bags	60	%		
	Peak Hour Termminating PAX	1,404	PAX		
	Estimated Time to Clear Devices	30	minutes		
	Frontage per PAX	1.5	l.f.		
	Total Linear Frontage Required	1,053	PLF		
	PLF per Unit (if applicable)	180	PLF		
	Carousels Required	6	Units		
AS -7	No. of devices	6			
	Total Lineal Feet				
	Tiers of bags	1	tiers		
	Total lineal feet			1,053	l.f.
	Uses per device in peak hour	1	uses		
AS -7a	Total lineal feet			1,053	l.f.
	Width per device	20	ft.		

	Width for end devices-21'x2	0	ft.		
	Total width of claim area			20	ft.
	Length of a 180 l.f. device, 20' wide	80	ft.		
	Clearance from device-21'x 2	0	ft.		
	Total length			80	ft.
	Area for baggage cart return				
	Width of return corridor	10	ft.		
	Length of corridor	50	ft.		
	Number of corridors	9	corridors		
	Area of baggage cart returns			4,500	sq.ft.
AS -8	**Total Area Baggage Claim**			**14,100**	**sq.ft.**
AS -8a	Area for Baggage Claim Input				
	Device length	80	ft.		
	Percent public	0%			
	Input length	80	ft.		
	Number of devices	6	devices		
	Input length	480	ft.		
	Width of input area (including traffic aisle)	26	ft.		
	Total Area Baggage Claim Input			**12,480**	**sq.ft.**
PS -3	Baggage Claim-Public Lobby				
	Length of device plus clearance	92	ft.		
	Width of circulation area (LOS C)	20	ft.		
	Total Area Baggage Claim Lobby			**11,040**	**sq.ft.**
C -2	Rental Car Area				
	Number of agencies	5	agencies		
	Length of counter per agency	20	ft.		
	Total length of counter	100	ft.		
	Depth of queue area	14	ft.		
	Depth of work area	10	ft.		
	Depth of office area	10	ft.		
	Total depth of car rental area	34	ft.		
	Total Area Car Rental			**3,400**	**sq.ft.**
PS -5	Ticketing Area-Terminal Services				
	Assumes:				
	Enplaned pax using terminal services	25%			
	Space required per pax	20	sq.ft		
	Number of enplaning local passengers			2,519	pax
	Number of enplaning transfer passengers			504	pax
	25% of Passengers			756	pax
	Area for Terminal Services			15,120	sq.ft.
	Courtesy vehicle storage				
	Number of vehicles	4	carts		
	Area per cart	150	sq.ft.		
	Area for courtesy vehicles			600	sq.ft.

	Wheelchair storage				
	Number of wheelchairs stored	50	units		
	Area per wheelchair	10	sq.ft.		
	Number of storage areas	3	units		
	Area for wheelchair storage			1,500	sq.ft.
	Total Area Terminal Services			**17,220**	**sq.ft.**
PS -4	Restrooms-Landside & Airside Terminal				
	Assumes:				
	Percent of persons using restrooms	15%			
	Space per person	20	sq.ft		
	Enplaning passengers			2,519	pax
	Well-wishers	5%			
	Total persons			2,645	persons
	Total times % of persons using restrooms			397	persons
	Area for ticketing level Restrooms			7,940	sq.ft.
	Assumes:				
	Percent of persons using restrooms	30%			
	Space per person	20	sq.ft		
	Deplaning passengers			2,340	pax
	Meeter-greeter	15%			
	Total persons			2,691	persons
	Total times % of persons using restrooms			807	persons
	Area for baggage claim level Restrooms			16,140	sq.ft.
	Total Area Restrooms			**24,080**	**sq.ft.**
PS -7	Mechanical & Services				
	Assumes 10% of total area				
	(excluding this category of space)				
	Area of building	596,014	sq.ft.		
	Percent of building area	10%			
	Mechanical & Services subtotal			59,601	sq.ft.
	Passenger terminal service area				
	(enclosed area only)				
	Warehouse area	5,500	sq.ft.		
	Airport maintenance facility	1,000	sq.ft.		
	Truck Dock work aisle	300	sq.ft.		
	Service area subtotal			6,800	sq.ft.
	Total Area Mechanical & Services			**66,401**	**sq.ft.**
PS -6	Concourse circulation-Airside Terminal				
	Assumes:				
	Width	25	ft.		
	ADG II aircraft (Embraer 145)	66	ft.		
	Average wingspan+25' clearance	91	ft.		
	Aircraft positions	5	aircraft		

	Total area of concourse circulation			11,375	sq.ft.
	Assumes:				
	Width	25	ft.		
	ADG II aircraft (Embraer 135)	66	ft.		
	Average wingspan+25' clearance	91	ft.		
	Aircraft positions	1	aircraft		
	Total area of concourse circulation			2,275	sq.ft.
	Assumes:				
	Width	25	ft.		
	ADG III aircraft (B737-700)	113	ft.		
	Average wingspan+25' clearance	138	ft.		
	Aircraft positions	22	aircraft		
	Total area of concourse circulation			75,900	sq.ft.
	Total Area of All Concourse Circulation			**89,550**	**sq.ft.**
AS -9	Holdrooms-Airside Building				
	Assume:				
	ADG II aircraft (Embraer 145)	50	seats		
	Load factor	0.8			
	Passengers/aircraft	50	pax		
	12' ticket lift counter+6' circulation	18	ft.		
	Queue depth	25	ft.		
	Area for counter and queue			450	
	Deplaning corridor width	5	ft.		
	Deplaning corridor depth	20	ft.		
	Deplaning corridor area			100	
	Passengers seated	70%			
	Passengers standing	30%			
	Space per seated passenger	20	sq.ft.	700	
	Space per standing passenger	13	sq.ft.	195	
	Total area of holdroom			1,445	
	LOS C Factor	65%		778	
	Total LOS C Holdroom			2,223	
	Number of aircraft	5	Aircraft		
	Total Area-Holdrooms-Airside			7,225	
	Assume:				
	ADG II aircraft (Embraer 135)	37	seats		
	Load factor	0.8			
	Passengers/aircraft	30	pax		
	12' ticket lift counter+6' circulation	18	ft.		
	Queue depth	25	ft.		
	Area for counter and queue			450	
	Deplaning corridor width	5	ft.		

	Deplaning corridor depth	20	ft.		
	Deplaning corridor area			100	
	Passengers seated	70%			
	Passengers standing	30%			
	Space per seated passenger	20	sq.ft.	414	
	Space per standing passenger	13	sq.ft.	115	
	Total area of holdroom			1,080	
	LOS C Factor	65%		581	
	Total LOS C Holdroom			1,661	
	Number of aircraft	1	Aircraft		
	Total Area-Holdrooms-Airside			1,080	
	Assume:				
	ADG III aircraft (B737-700)	137	seats		
	Load factor	80%			
	Passengers/aircraft	110	pax		
	12' ticket lift counter+6' circulation	18	ft.		
	Queue depth	25	ft.		
	Area for counter and queue			450	
	Deplaning corridor width	5	ft.		
	Deplaning corridor depth	20	ft.		
	Deplaning corridor area			100	
	Passengers seated	70%			
	Passengers standing	30%			
	Space per seated passenger	20	sq.ft.	1,534	
	Space per standing passenger	13	sq.ft.	427	
	Total area of holdroom			2,512	
	LOS C Factor	65%		1,353	
	Total LOS C Holdroom			3,864	
	Number of aircraft	20	Aircraft		
	Total Area-Holdrooms-Airside			50,237	
	Total Area - All Holdrooms - Airside - LOS C	**26**	**Aircraft**	**58,542**	**sq.ft**
AS -10	Airline Clubs-Landside Terminal				
	Assume:				
	Number of clubs	0			
	Area per airline clubroom	1,000	sq. ft.		
	Total Area Clubrooms			**-**	**sq.ft**
AS -11	Airline Offices-Landside Terminal				
	Assumes:				
	Number of airlines	3	airlines		
	Landside Offices - 200 sq.ft./ATO position	14,473	sq. ft.		
	BSO Office - 125 sq.ft/arriving flight in peak hour	2,250	sq.ft.		
	Total Area Offices - Landside			**16,723**	**sq.ft.**
AS -12	Airline Offices-Airside Terminal				
	Assumes:				

	Number of gates	20	gates		
	Area per gate	200	sq.ft.		
	Total Area Offices - Airside			**4,000**	**sq. ft.**
AS-11a	Airport Administration - Landside Terminal				
	Assumes:				
	Airport administrative offices	35,000	sq. ft.		
	Total Area Administrative Offices - Landside			**35,000**	**sq. ft.**
PS -1	Security-Landside Terminal				
	Assumes:				
	Domestic enplaned passengers	2,519	pax		
	Total number of persons			2,519	persons
	Persons/hour/security station	160	persons		
	Number of security stations			16	stations
	Space per station	1,000	sq. ft.		
	Total Area for Security Checkpoint			**16,000**	**sq. ft.**
PS -1a	Security-Landside Terminal				
	Assumes:				
	TSA administrative offices	1,600	sq. ft.		
	Search areas	400	sq. ft.		
	Support/file storage/break room/toilets	1,333	sq. ft.		
	Internal circulation corridors (20% area)	667	sq. ft.		
	Total Area TSA Administration			**4,000**	**sq. ft.**
AS -13	Airline Operations-Airside Terminal				
	Assumes:				
	Footprint of concourse building	20%			
	Length of building	1,500	ft.		
	Width of building	200	ft.		
	Area of building footprint			300,000	sq. ft.
	Total Area Operations - Airside			**60,000**	**sq. ft.**
C -1	Food & Beverage Facilities-Landside Terminal				
	Local peak hour departing passengers	2,519	pax		
	Number of well-wishers (5% departing passengers)	126	persons		
	Local peak hour arriving passengers	2,340	pax		
	Number of meeters/greeters (15% arriving passengers)	351	persons		
	Total number of persons	5,336	persons		
	Percent dwelling for 120 minutes	5%			
	Percent dwelling for 90 minutes	12%			
	Percent dwelling for 60 minutes	30%			
	Percent dwelling for 30 minutes	53%			
	Percent using food concessions	5%			
	Percent using bar/beverage concessions	2%			

	Food patrons/pk hr	267	patrons		
	Bar/beverage patrons/pk hr	107	patrons		
	Area per patron/food concession	45	sq.ft.	12,006	sq.ft.
	Area per patron/beverage concession	40	sq.ft.	4,269	sq.ft.
	Total Area-Food & Beverage - Landside Terminal			**16,275**	**sq.ft.**
C -1	Food & Beverage Facilities-Airside Terminal				
	Local peak hour departing passengers	2,519	pax		
	Local peak hour arriving passengers	2,340	pax		
	Transfer peak hour arriving passengers	468	pax		
	Transfer peak hour departing passengers	504	pax		
	Total number of persons	5,831	persons		
	Percent dwelling for 120 minutes	0			
	Percent dwelling for 90 minutes	0			
	Percent dwelling for 60 minutes	0			
	Percent dwelling for 30 minutes	1			
	Percent using food concessions	0			
	Percent using bar/beverage concessions	0			
	Food patrons/pk hr	875	patrons		
	Bar/beverage patrons/pk hr	292	patrons		
	Area per patron/food concession	45	sq.ft.	39,358	sq.ft.
	Area per patron/beverage concession	40	sq.ft.	11,662	sq.ft.
	Total Area-Food & Beverage - Airside Terminal			**51,020**	**sq.ft.**
CS -1	Curbside - Departures				
	Existing Departure Curb Length (feet)	690	ft.		
	Peak Hour Enplaning PAX	2,519	PAX		
	% of PAX using private vehicles	72%			
	# of PAX using private vehicles	1,814	PAX		
	% of PAX arriving in private vehicles using the curb	70%			
	# of PAX arriving in private vehicles using the curb	1,270	PAX		
	Visitor ratio of vistors to PAX	0.05	Visitors/PAX		
	# of Visitors	63	Visitors		
	Occupants/Vehicle and dwell time at curb				
	Person/Vehicle	1.5	PAX/Vehicle		
	Vehicle Dwell Time	3.00	Minutes		
	Number of Private Vehicles Drop-Off Slot	20	Vehicles/hour/ drop-off slot		
	Vehicle Slots Required	44	Slots		
	Required arrivals curb length (25 feet/slot)	1,111	lf.		
	Total Departure Curb Length - Landside Terminal			**1,111**	**lf.**
CS -2	Curbside - Arrivals				
	Existing Arrivals Curb Length (feet)	820	ft.		

	Peak Hour Deplaning PAX	2,340	PAX		
	% of PAX using private vehicles	72%			
	# of PAX using private vehicles	1,685	PAX		
	% of PAX arriving in private vehicles using the curb	70%			
	# of PAX arriving in private vehicles using the curb	1,179	PAX		
	Visitor ratio of vistors to PAX	0.15	Visitors/PAX		
	# of Visitors	177	Visitors		
	Occupants/Vehicle and dwell time at curb				
	Person/Vehicle	1.5	PAX/Vehicle		
	Vehicle Dwell Time	4.00	Minutes		
	Number of Private Vehicles Drop-Off Slot	15	Vehicles/hour/ drop-off slot		
	Vehicle Slots Required	60	Slots		
	Required arrivals curb length (25 feet/slot)	1,507	lf.		
	Total Arrivals Curb Length - Landside Terminal			**1,507**	**lf.**
CS -3	Curbside - Shuttle - Taxi				
	Existing Shuttle Curb Length (feet)	110	ft.		
	Peak Hour Deplaning PAX	2,519	PAX		
	% of PAX using shared ride	9%			
	# of PAX using shared ride	227	PAX		
	% of PAX arriving in shared ride	100%			
	# of PAX arriving in shared ride	227	PAX		
	Visitor ratio of vistors to PAX	-	Visitors/PAX		
	# of Visitors	-	Visitors		
	Occupants/Vehicle and dwell time at curb				
	Person/Vehicle	1.25	PAX/Vehicle		
	Vehicle Dwell Time	5.00	Minutes		
	Number of Private Vehicles Drop-Off Slot	12	Vehicles/hour/ drop-off slot		
	Vehicle Slots Required	15	Slots		
	Required arrivals curb length (25 feet/slot)	378	lf.		
	Total Taxi Curb Length - Landside Terminal			**378**	**lf.**
CS -4	Curbside - Shuttle - Bus				
	Existing Shuttle Curb Length (feet)	110	ft.		
	Peak Hour Deplaning PAX	2,519	PAX		
	% of PAX using shared ride	18%			
	# of PAX using shared ride	453	PAX		
	% of PAX arriving in shared ride	100%			
	# of PAX arriving in shared ride	453	PAX		
	Visitor ratio of vistors to PAX	-	Visitors/PAX		
	# of Visitors	-	Visitors		
	Occupants/Vehicle and dwell time at curb				
	Person/Vehicle	5.0	PAX/Vehicle		

	Vehicle Dwell Time	5.00	Minutes		
	Number of Private Vehicles Drop-Off Slot	12	Vehicles/hour/ drop-off slot		
	Vehicle Slots Required	8	Slots		
	Required arrivals curb length (30 feet/slot)	227	lf.		
	Total Bus Curb Length - Landside Terminal			**227**	**lf.**
CS -5	Curbside - Shuttle - Limousine				
	Existing Shuttle Curb Length (feet)	110	ft.		
	Peak Hour Deplaning PAX	2,519	PAX		
	% of PAX using shared ride	1%			
	# of PAX using shared ride	25	PAX		
	% of PAX arriving in shared ride	100%			
	# of PAX arriving in shared ride	25	PAX		
	Visitor ratio of vistors to PAX	-	Visitors/PAX		
	# of Visitors	-	Visitors		
	Occupants/Vehicle and dwell time at curb				
	Person/Vehicle	2.0	PAX/Vehicle		
	Vehicle Dwell Time	5.00	Minutes		
	Number of Private Vehicles Drop-Off Slot	12	Vehicles/hour/ drop-off slot		
	Vehicle Slots Required	1	Slots		
	Required arrivals curb length (30 feet/slot)	31	lf.		
	Total Limousine Curb Length - Landside Terminal			**31**	**lf.**
P-1	Employee Parking				
	Employee Parking Spaces Required	1000			
	Existing Employee Parkings Spaces Available	530			
	Employee Parkings Surplus or (Deficit)	(470)			
	Total Employee Parking			**1000**	**spaces**

Table 3-11

BASIS FOR 15-TURN SPACE PROGRAM CALCULATIONS

DALLAS LOVE FIELD

LANDSIDE TERMINAL BUILDING

Key	Type of space	Units	Sq.Ft.
	AIRLINE SPACE		
	Airline Ticket Counter		
AS-2	Ticket counter agent positions	16	
AS-2	Ticket counter ATMs	56	
AS-2	Curbside counter agent positions	14	
AS -2	Ticket counter (lineal feet) -	210	
AS -3	Ticket counter (area)		4,620
AS -4	Ticket counter queuing area		21,329
AS -5	Ticket counter support office		5,250
AS -6	Baggage Makeup 2,519		103,080
	Baggage Claim		
AS -7	Number of devices	6	
AS -7a	Total lineal feet	1,053	
AS -8	Bag claim area		14,100
AS -8a	Baggage Claim Input		12,480
AS -9	Holdrooms	26	58,542
AS -10	Clubrooms		-
AS -11	Airline Offices - Landside Terminal		8,280
AS -11a	Airport Administration - Landside Terminal		35,000
AS -12	Airlines Offices - Airside Terminal		4,000
AS -13	Airline Operations		60,000
	Subtotal		340,152
	CONCESSIONS		
C -1	Food & beverage		67,294
C -2	Rental Car area		3,400
C -3	News/sundries (5% of Gross Terminal Area)		17,008
	Subtotal		87,702
	PUBLIC SPACE		
PS -1	Security Checkpoints	16	16,000
PS -1a	TSA Administration		4,000
PS -2	Ticket Lobby		5,200
PS -3	Baggage Claim Lobby		11,040

PS -4	Restrooms		24,080
PS -5	Terminal Services		17,220
PS -6	Concourse Circulation		89,550
PS -7	Mechanical & Services		66,294
	Subtotal		233,384
	Curbside and Parking		
CS -1	Curbside - Departures		1,111
CS -2	Curbside - Arrivals		1,507
CS -3	Curbside - Shuttle		636
P-1	Employee Parking Spaces		2,933
	Subtotal		
	TOTAL		**661,238**

SECTION 3.4 – PUBLIC PARKING ASSESSMENT AND REQUIREMENTS

OVERVIEW

Gresham, Smith and Partners performed a high level planning assessment of future public parking requirements at DAL. The future parking space requirements that are included in the text, tables, and exhibits are intended for planning purposes only to determine whether the parking garage will provide adequate capacity to accommodate the increased passenger volume associated with future terminal improvements.

Appendix D outlines the methodology and results of the analysis performed. The tables and exhibits present supporting data and results of the public parking demand and capacity assessment at the Airport.

Summary of Findings

Garages A and B are more than sufficient to serve existing demand. The existing facilities are also sufficient to accommodate future design day demand. Additional spaces would have to be provided to supplement the garages to meet future absolute peak day demand. The timing of the need for new spaces is dependent on the rate at which demand increases, which is in turn dependent on the rate at which activity (specifically originating passenger activity) increases at the Airport. Future demand is also dependent on other factors like the split between different types of travel (i.e., business vs. leisure) and economic factors (i.e., parking rates, airline ticket fares) that may or may not change the profile of demand in the future.

In the interim, increasing the capacity of Garage A could increase revenues and potentially customer convenience by eliminating the need for short-term parkers to use the cheaper and slightly more remote Garage B when Garage A is full. Increasing the capacity in Garage A for this purpose would also delay the need to increase capacity in Garage B or build additional facilities as overall demand increases.

The following Table summarizes the findings of parking requirements.

Table 3-16

Public Parking Requirements

		Baseline		Future[1]	
	Capacity	Demand	Requirements[2]	Demand	Requirements[2]
Design Day[3]					
Garage A	2,980	2,822	2,980	3,301	3,470
Garage B	4,000	2,232	2,350	2,611	2,750
Total	6,980	5,054	5,330	5,912	6,220
Surplus/(Deficit)			1,650		760
Absolute Peak Day					
Total	6,980	6,076	6,080	7,107	7,110
Surplus/(Deficit)			900		(130)

Notes:

1/ The growth factor applied was 17%

2/ Requirements were rounded up to the nearest ten spaces

3/ Service factors of 5% were applied to both parking facilities to calculate design day requirements but were not applied to calculate absolute peak day requirements

Source: Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.

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Chapter 4: Concept Development

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Chapter Four

CONCEPT DEVELOPMENT

SECTION 4.0 - OVERVIEW

This chapter utilizes the information gathered in Chapters One, Two and Three as a basis for developing alternative facility concepts for a 20 gate constrained concourse as indicated by the Five Party Agreement and as a supplement to the historical activity levels forecast. Peak period and daily passenger activity levels are generated assuming an average of 10 turns per gate.

Summary of Requirements

Table 4-1 summarizes the facility requirements for key functional areas of the terminal and support facilities. These requirements are based on average day/peak month/peak hour passenger activity. The objective of the concept development process is to meet or exceed the facility requirements shown in Table 4-1. As the concept development process evolved, the actual size and configuration of the alternative concepts were modified to meet the needs of both the passengers and the airlines serving DAL.

Table 4-1
TARPS Facility Requirements – (20 Gates/10 Turns)

Facility	**Existing Facilities**	**TARPS Requirements**
Passenger Processing		
Ticketing Agent Positions	24	15
Ticketing Curbside Positions	10	12
Ticketing Self-Service Device (SSDs) Positions	10	50
Total Ticketing Positions	48	77
Baggage Claim (l.f.)	450	729
Baggage Claim Devices	4	5
Security Processing		
Security Checkpoint Lanes	7	14
Explosive Detection System (EDS) Devices	9	10
Concession Space (s.f.)	20,400	72,719
Curbside Facilities (l.f.)		
Arrivals Curb	820	1,043
Departures Curb	690	992
Commercial Curb	110	568
Employee Parking Spaces (Option C only)		1,000
Dept. of Public Safety (s.f.) – (Option C only)		15,000

As shown in Table 4-1, all key facilities require expansion to meet future demand. It should be noted that standard ticket counter agent positions can be converted to SSD positions as needed to accommodate changing passenger characteristics..

Multiple alternative concepts were developed for meeting the challenges of future passenger demand at DAL. Given the constraints of the existing terminal facilities area and the Five Party Agreement, three approaches for meeting the passenger activity levels of a 20 gate constrained concourse with 10 turns per gate were conceptually developed and analyzed. These alternatives represent the three fundamental approaches to airport expansion and rehabilitation:

Option A – Minimal Impact

A minimal impact concept reduces the magnitude of affect each phase of improvement places on operations. However, this philosophy typically results in extended construction schedules and near-term solutions for issues that must be addressed again in the future. This methodology is most often used to marginally increase capacities or extend the life of an existing system for the near-term. This development option is primarily an upgrade with most of the improvements focused on facilities used by Southwest (WN). This option does not provide a strong level of service for many facilities, upgrade the DAL gateway, or provide efficient operations.

At DAL, this alternative would modify the existing terminal facility footprint while maintaining the overall functional layout to provide additional area for passenger processing, concession expansion and increased flow efficiency. The concept would also rehabilitate existing areas as necessary to increase passenger Level of Service (LOS).

Option B – Hybrid of Impact and Efficiency

A hybrid approach reduces the magnitude of affect that each phase of improvement places on operations incrementally reconfiguring existing operations to consolidate activity, promote processing efficiency and provide flexibility for future capacity. However, this philosophy typically results in extended construction schedules and near-term solutions for issues that must be addressed again in the future. This methodology is most often used to increase capacities and extend the life of an existing system while providing a significant increase in capacity.

At DAL, this alternative would modify the existing terminal facility footprint by demolishing the East Concourse and existing the North Concourse. This alternative would provide additional area for passenger processing, concession expansion and increased flow efficiency. The concept would also rehabilitate existing areas as necessary to increase passenger Level of Service (LOS).

Option C – New Construction with Maximize Efficiency

A maximum efficiency concept incrementally reconfigures existing operations to consolidate activity, promote processing efficiency and provide flexibility for future capacity increases. This philosophy typically results in higher costs, and greater short-term impacts on existing operators. However, incremental development of new facilities provides enabling projects that allow overnight transitions, decreasing impacts to passengers, and provides inherent flexibilities throughout the development program.

At DAL, this option reconfigures the terminal and concourse areas to more efficiently utilize available area on the airfield, consolidate functional areas for all stakeholders to create future flexibility for changes in technology, market share and security requirements, and increase passenger LOS and circulation efficiency.

Comparative Evaluation

The key functional areas for each alternative are described and graphically depicted in this chapter. The following sections identify the location of new and/or expanded facilities as well as the ability of each concept to meet the facility requirements outlined in Chapter Three. This chapter concludes with an evaluation and comparison of the concepts based on their ability to meet the future facility/performance requirements. An evaluation matrix ranks the concepts on implementation impacts, operational efficiency and passenger LOS. A recommendation for selection of a preferred concept resulting from these evaluation criteria is given at the end of this section.

SECTION 4.1 – OPTION A

Option A incrementally increases capacity in those areas of greatest need; concessions, ticketing and curb efficiency, for each passenger activity level utilizing the existing operational layout. This concept expands existing functional areas in the terminal and west concourse to maximize retail opportunities and respond to changing ticketing characteristics and demand. Additionally, Option A recommends modifications to the curb to increase efficiency and promote a higher passenger LOS. The proposed layout is depicted in Figure 4-1.

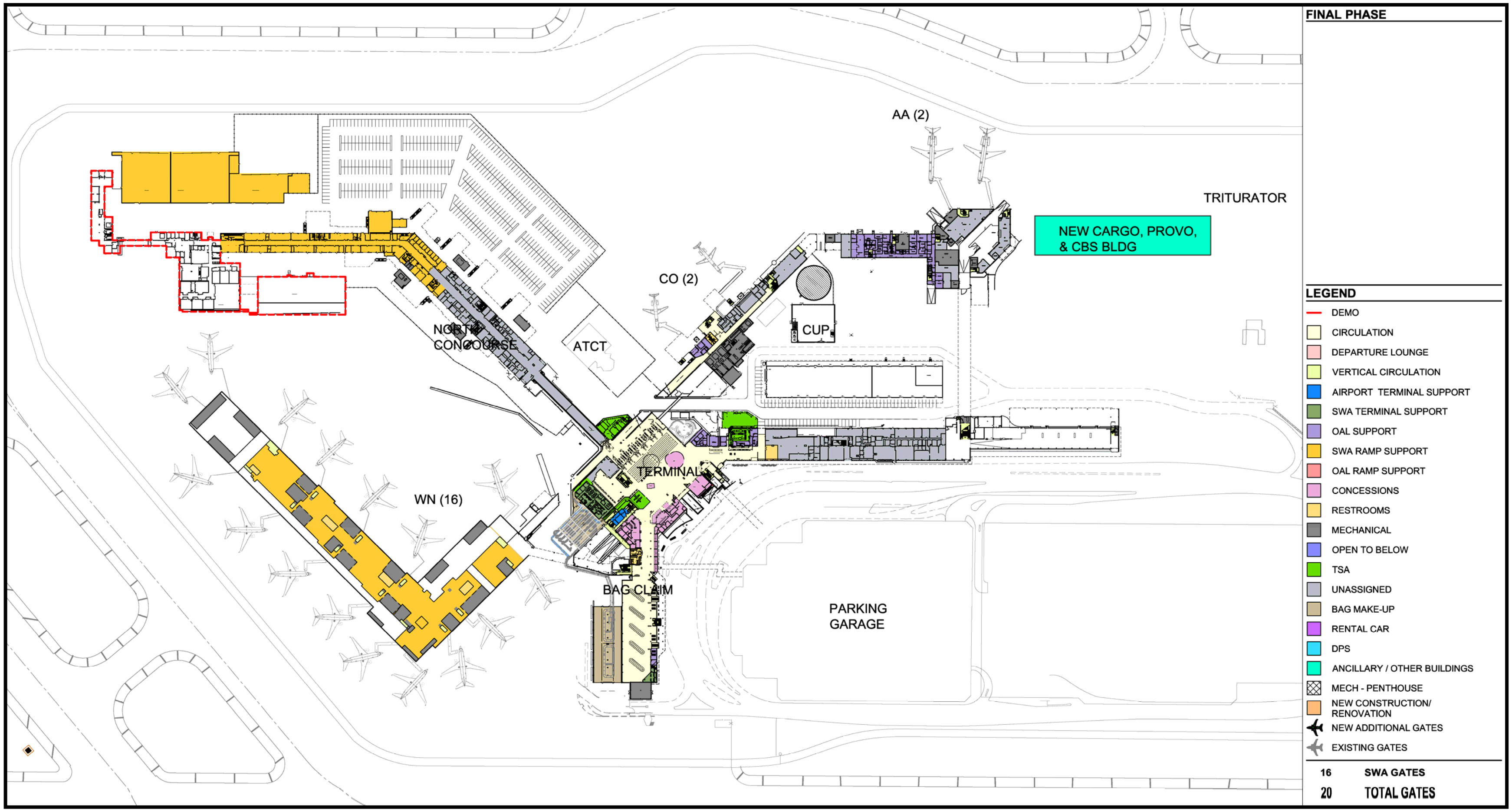
Passenger Processing

Ticketing Area Concept Development

Currently there are 48 ticketing positions for three airlines; Southwest Airlines (WN), American Airlines (AA), and Continental Express (CO). These positions include 14 ticket counter agent positions, 10 curbside check-in positions (WN only), and 24 Self-Service Devices (SSD). The existing ticketing positions currently meet the peak period requirements for the terminal. However, increased overall passenger volumes and consistent passenger demand throughout the day resulting from a 10-turn scenario exceed the capacity of the existing ticketing positions, even as Internet Check-in services become more prevalent.

To meet the forecast need, 26 SSD stations and two curbside positions must be added to the existing totals. For Option A, WN would add SSDs in their existing ticket counter area and in the main lobby. AA and CO would add SSDs to the current location. AA and CO would each add a curbside check-in position. Figure 4-2 identifies the location for additional SSDs and curbside positions.

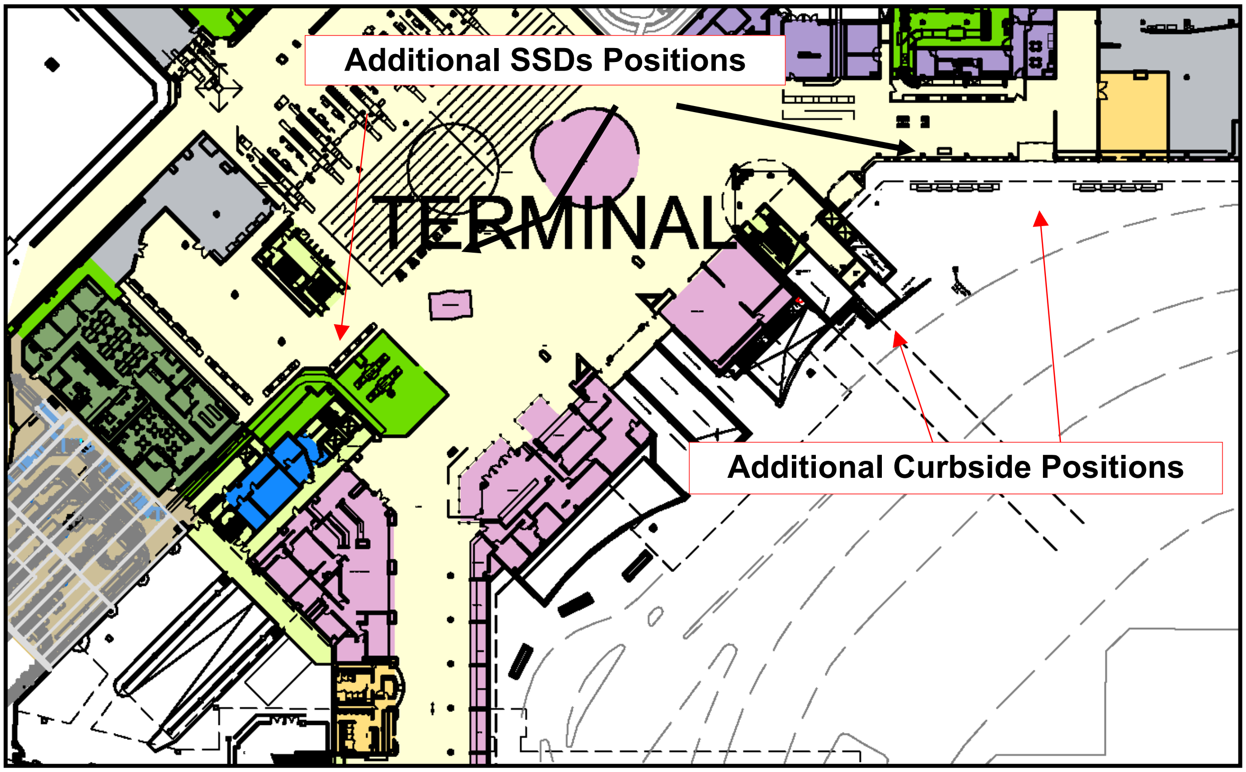
Figure 4-1
Terminal Development Option A



Source: Corgan Associates, Inc., 2008

Prepared by: Ricondo & Associates, Inc., March 2008

Figure 4-2
Additional SSDs and Curbside Positions – Option A

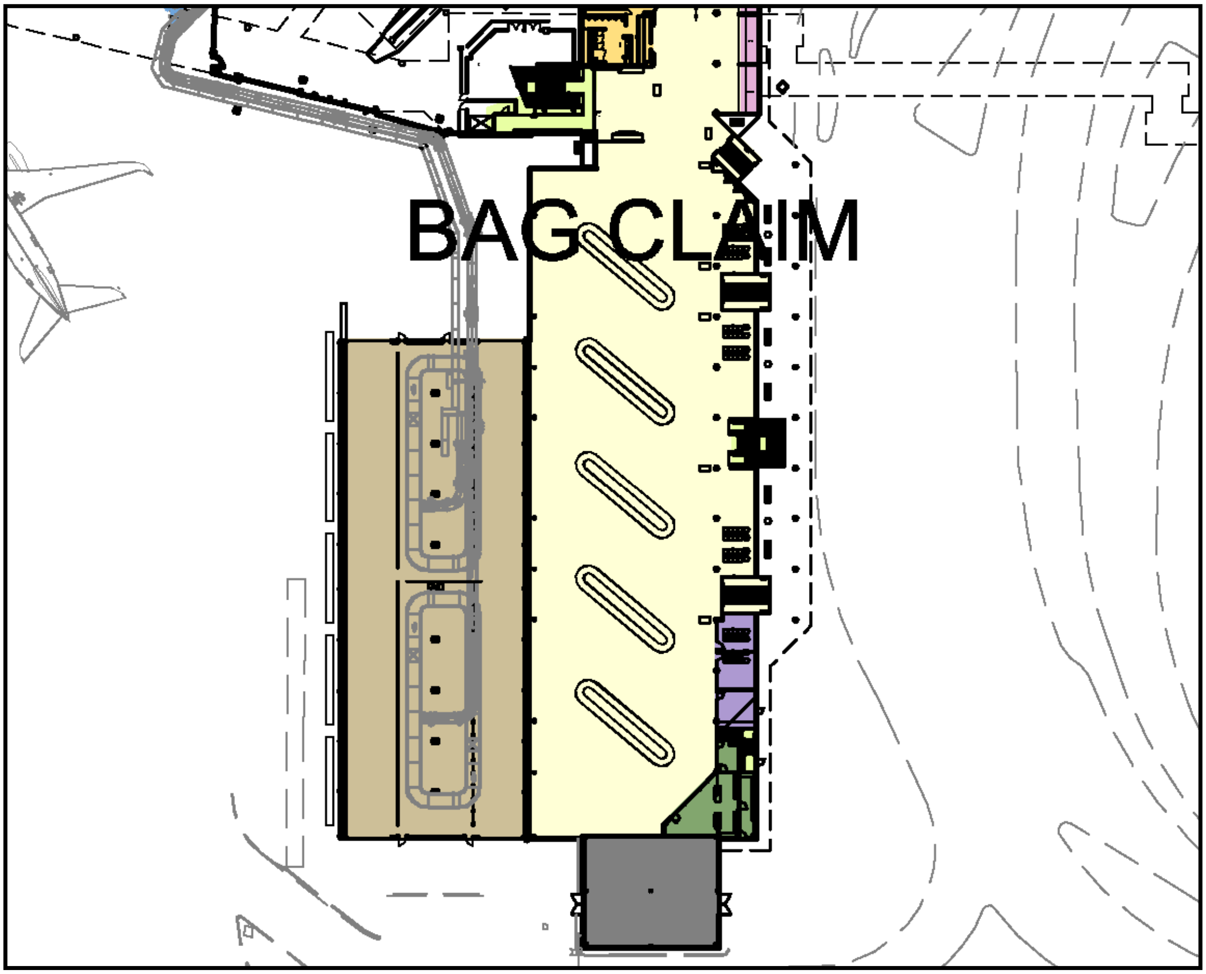


Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Baggage Claim Concept Development

The Dallas Love Field terminal facility currently has four baggage claim devices with a total frontage of 450 linear feet. The facility requirements analysis indicates that the average peak hour passenger activity for a 20-gate/10-turn facility will require approximately 729 l.f. of presentation frontage. Figure 4-3 shows the proposed baggage claim expansion plan for Option A. As shown in Figure 4-3, the baggage claim area is reconfigured to allow for five new devices configured at a 45 degree angle to allow for larger carousels and more efficient circulation.

Figure 4-3
Baggage Claim Expansion – Option A



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

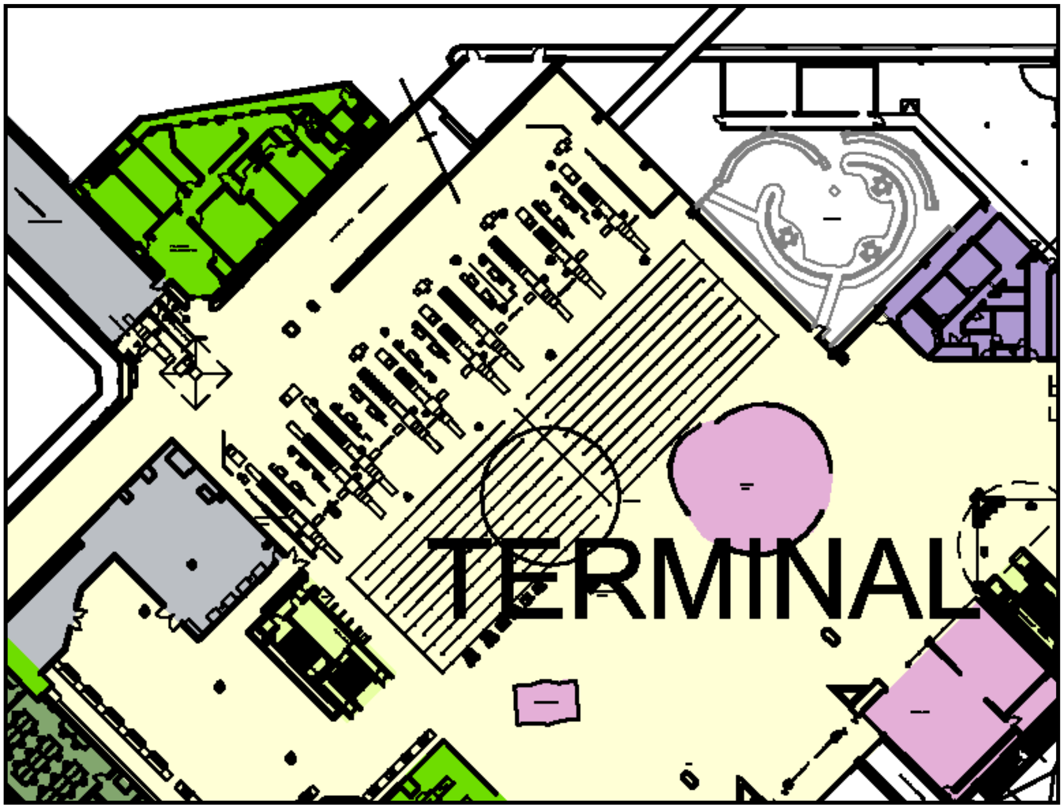
Security Processing

Passenger Screening Concept Development

As discussed in Chapter One, there are currently five passenger security checkpoint lanes in the Main Lobby and two lanes adjacent to the West Concourse utilized by passengers coming from Garage A to the terminal via the conditioned pedestrian walkway bridge. The total number of existing passenger security checkpoint lanes provided in the terminal facility is seven.

As indicated in Table 4-1, seven additional lanes are required to accommodate the forecasted peak hour passenger demand. To accommodate future demand, Option A expands the passenger security checkpoint in the main lobby from five to ten lanes as shown in Figure 4-4. With the two lanes that currently exist in the West Concourse, the total checkpoint lanes for Option A would be 12. Due to space constraints of the existing main lobby, Option A provides only 12 of the required 14 checkpoint lanes.

Figure 4-4
Main Lobby Passenger Checkpoint – Option A



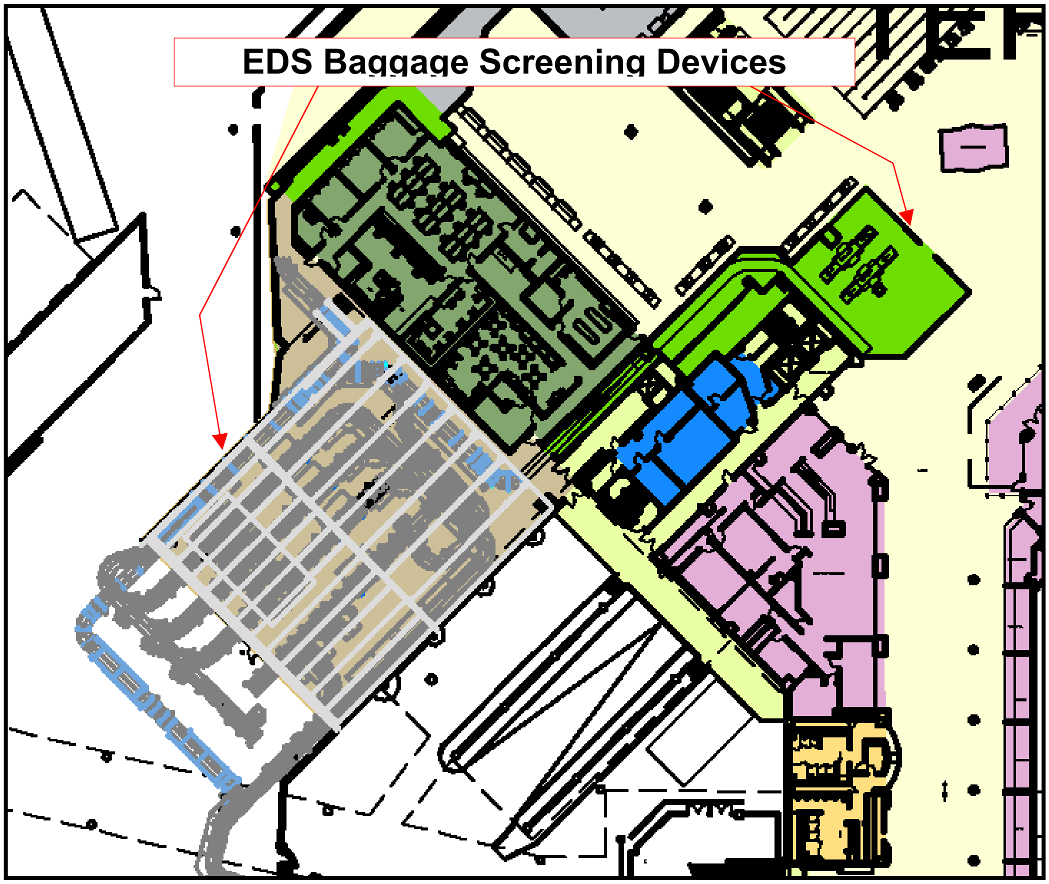
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Baggage Screening Concept Development

Currently, there are nine Explosive Detection System (EDS) machines in operation at DAL for screening checked baggage. Five EDS machines are located behind the existing airline ticket counters, three machines are located in the main lobby, and one machine is located at curbside.

Table 4-1 identifies an EDS requirement of ten machines to process increasing passenger baggage volumes. Where possible, EDS machines should be consolidated to make the TSA's screening operation more efficient. The EDS improvements for Option A are only for WN and are shown in Figure 4-5. This new configuration is associated with the WN ticketing/baggage check-in operations and the EDS machines have been placed directly behind the ticket counters and SSDs machines. Curbside baggage screening will be induced, in the lobby, to the new WN EDS matrix.

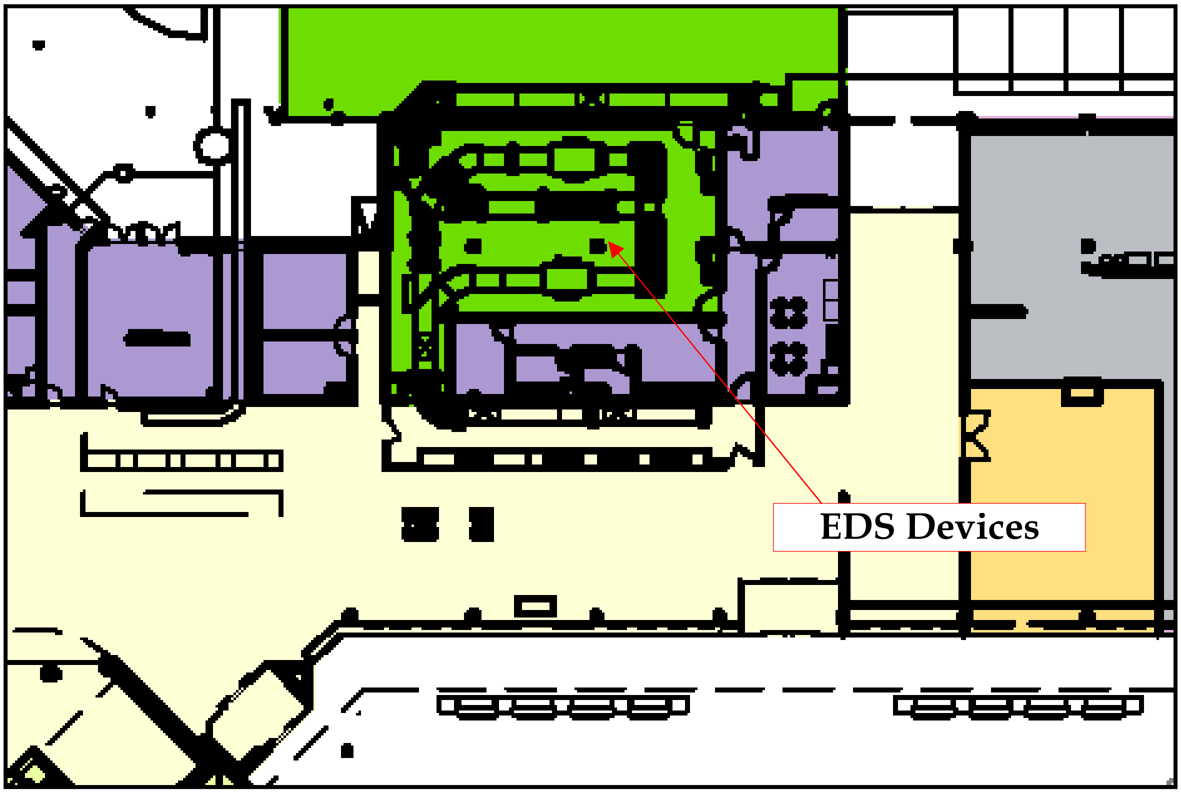
Figure 4-5
WN EDS Screening Devices – Option A



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 4-6 depicts the existing checked baggage screening configuration for AA and CO passengers. EDS machines have been placed directly behind the ticket counters.

Figure 4-6
AA & CO EDS Screening Devices – Option A



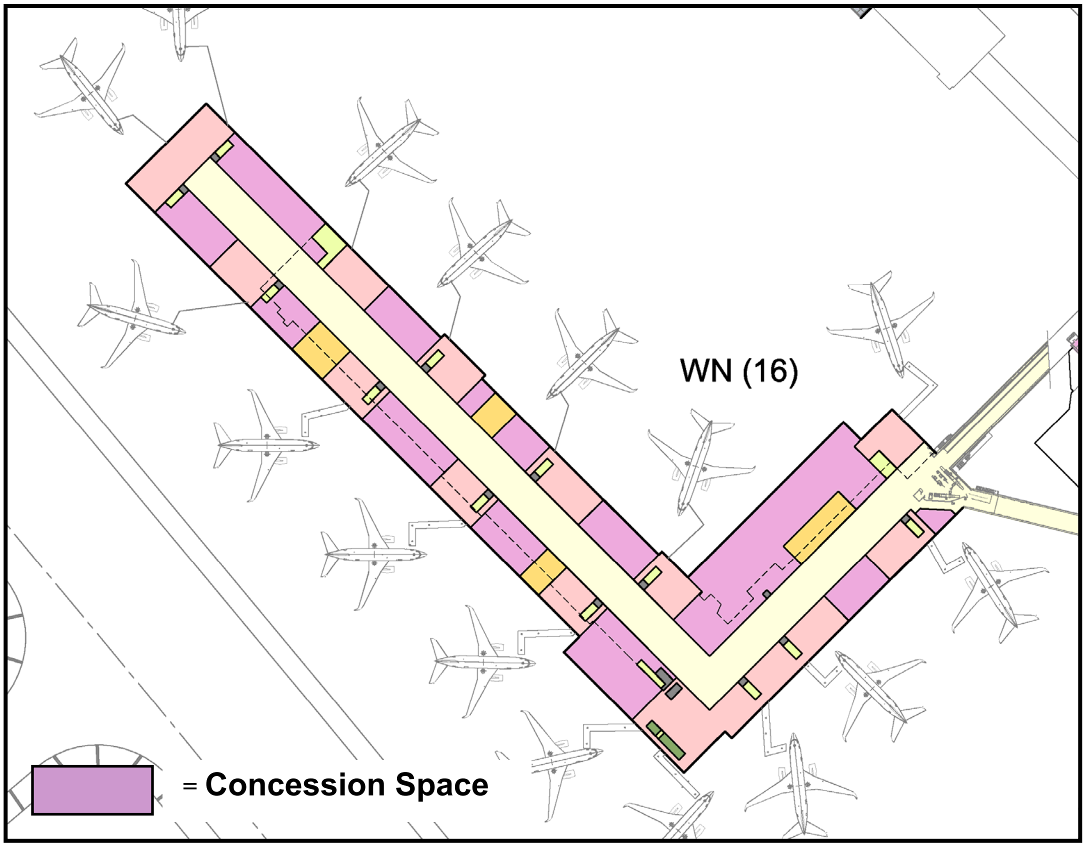
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Concessions

As shown in Table 4-1, the current concession program for DAL totals 20,400 s.f. of the terminal area. The existing concession spaces are located in main terminal core and the East and West Concourses. To meet the TARPS concession requirement of 72,719 s.f., Option A requires a significant amount of footprint to be added to the terminal. The determination of the best location for the various types of concessions requires further study as part of a comprehensive concessions program. Figures 4-7 to 4-9 show where concessions space is planned for the Option A.

Figure 4-7 illustrates how the concessions space is incorporated into the entire length of the West Concourse. The majority of the Airport's concession space is planned for the West Concourse because 16 of the Airport's 20 gates are located in this concourse. Additionally, these gates are occupied by Southwest, which utilizes a fleet of B-737 aircraft. The combination of location and fleet mix results in a significantly higher number of peak hour and daily passengers in the West Concourse than other areas of the terminal. All concession space in the West Concourse is located beyond the security checkpoint.

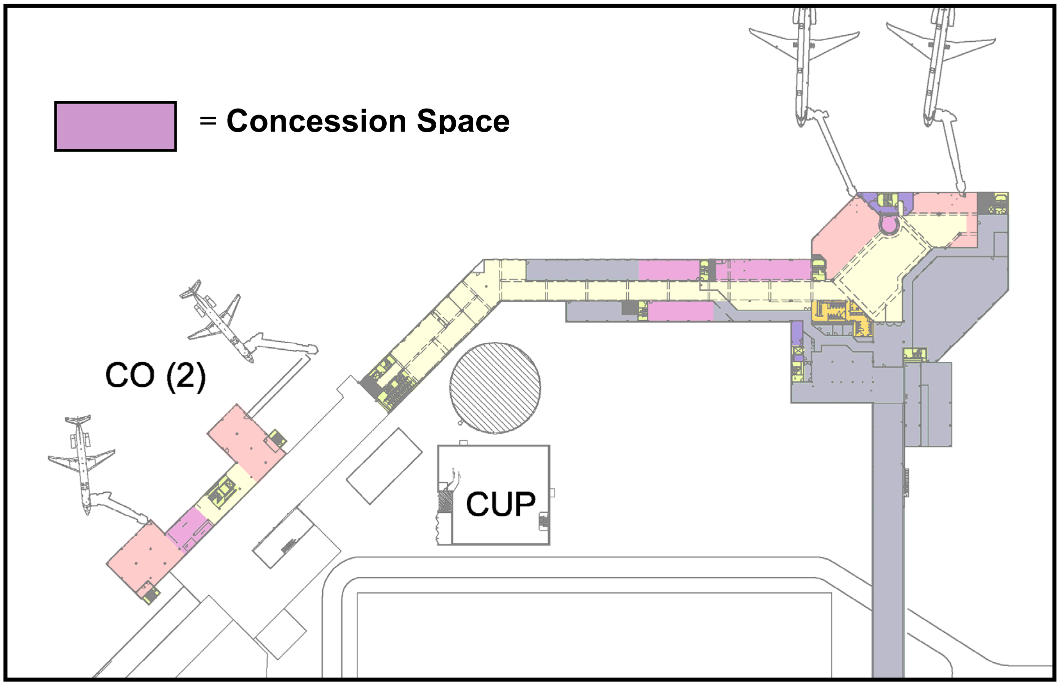
Figure 4-7
Concession Space (West Concourse) – Option A



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

As shown in Figure 4-8, the concession space for the East Concourse is located adjacent to the existing aircraft gates. The East Concourse serves four gates configured for regional aircraft which typically consist of 50 and 70 available seats each. The concession program in the East Concourse is relatively small as a result of fewer gates and a smaller fleet mix, resulting in fewer peak and daily passenger demand. All concession space in the East Concourse is located beyond the security checkpoint.

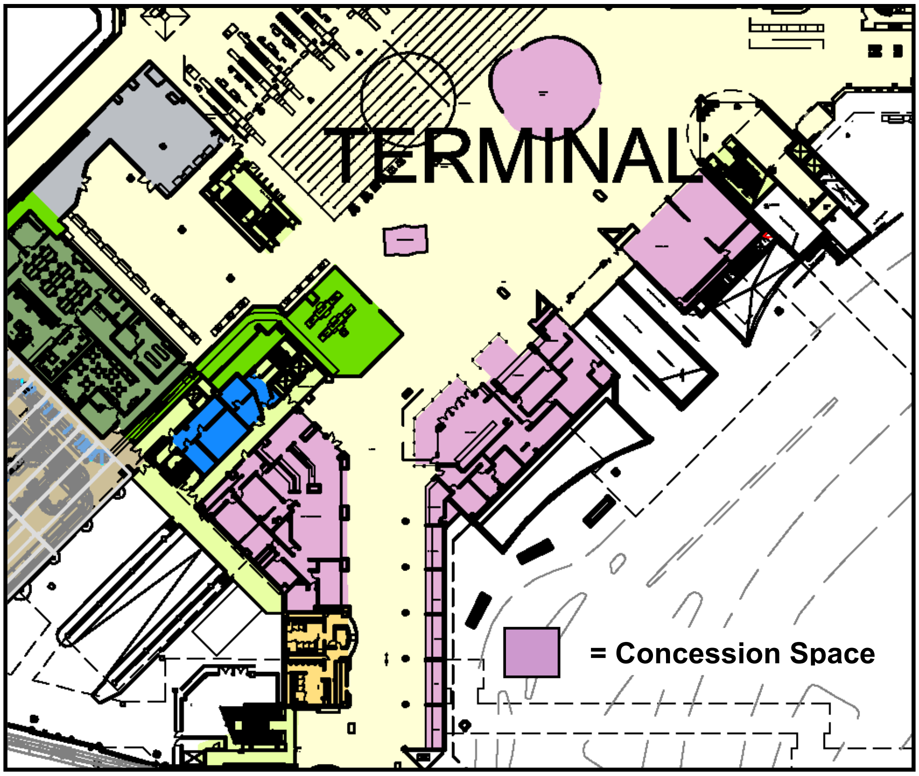
Figure 4-8
Concession Space (East Concourse) – Option A



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

The concessions plan for the main terminal lobby area is shown in Figure 4-9. All concession space in the main terminal area is located in public areas. This concession space is used by meeters and greeters, departing passengers prior to security screening, airport visitors, and airport/tenant employees.

Figure 4-9
Concession Space (Main Terminal Lobby Area) – Option A



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Curbside Facilities

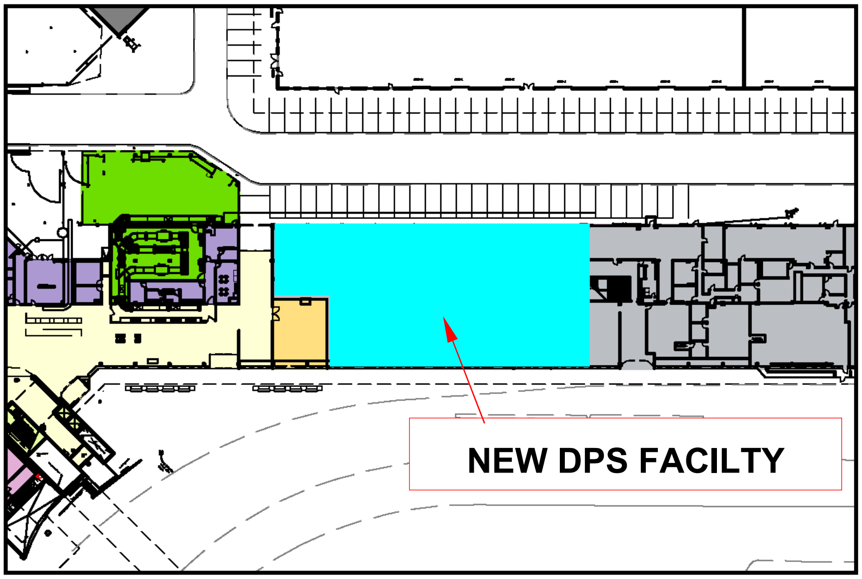
Curb and Adjacent Roadway Concepts

As shown in Table 4-1, the Arrivals, Departures, and Commercial curbside areas all require additional length to meet peak hour demand for 20 gates/10 turn operation. Preliminary expansion options for the curbs are identified below. Option A has little opportunity to provide the required expansion to the arrivals, departures and commercial curbside due to the current terminal and roadway configuration.

Department of Public Safety Facilities

Option A displaces the Department of Public Safety (DPS) office which is currently located at the beginning of the North Concourse. As shown in Table 4-1, the DPS facility requirement is 15,000 s.f. Figure 4-10 identifies a potential location for a new DPS facility for Option A. This location is in the old ticketing hall which is currently unassigned space.

Figure 4-10
New DPS Facility (old ticketing hall) – Option A



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

SECTION 4.2 – OPTION B

Option B reduces the magnitude of affect that each phase of improvement places on operations incrementally reconfiguring existing operations to consolidate activity, promote processing efficiency and provide flexibility for future capacity. At DAL, this alternative would modify the existing terminal facility footprint by demolishing the East Concourse and the existing North Concourse. This alternative would provide additional area for passenger processing, concession expansion and increased flow efficiency.

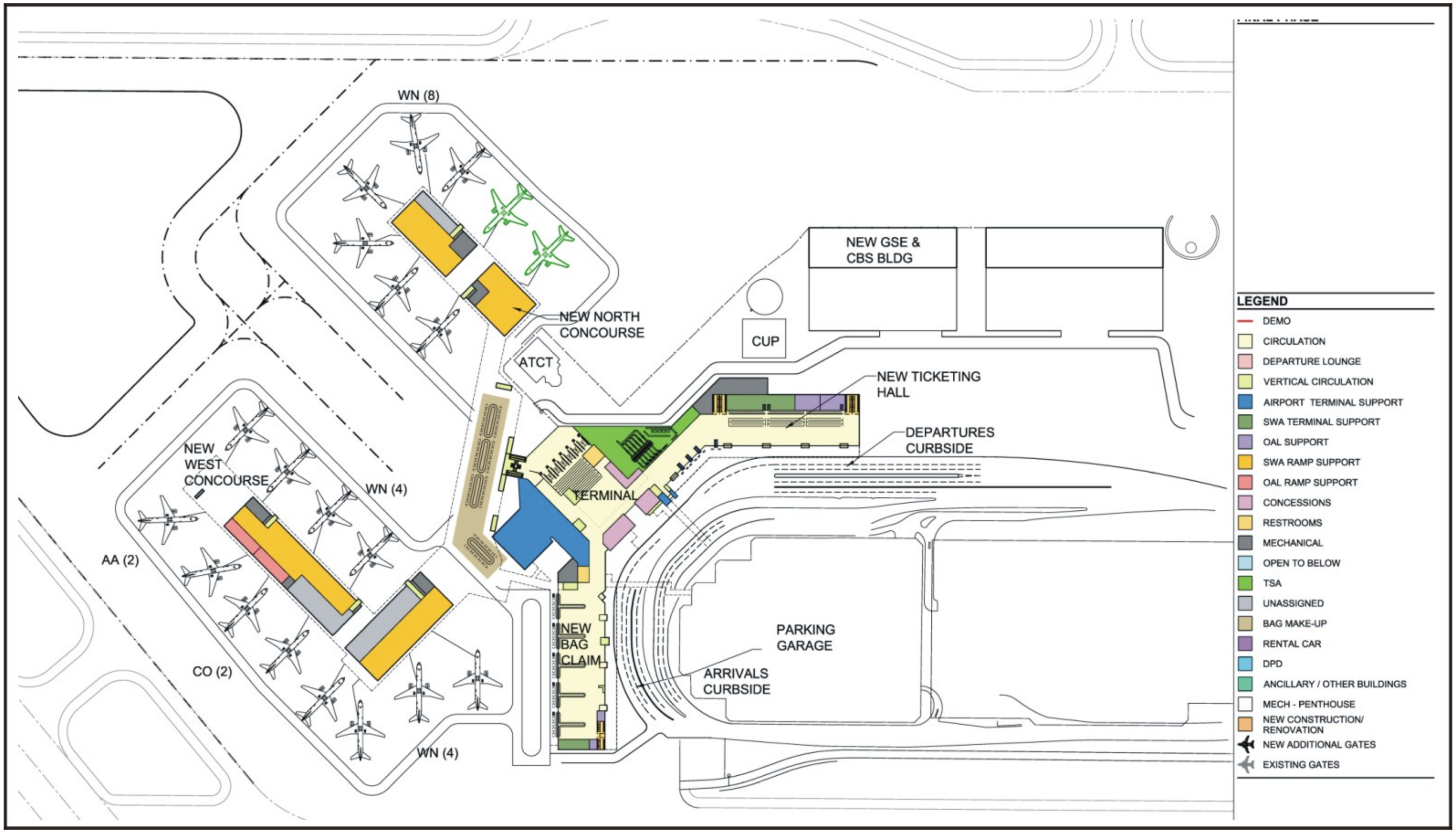
Passenger Processing

Ticketing Area Concept Development

Currently there are 48 ticketing positions for three airlines; Southwest Airlines (WN), American Airlines (AA), and Continental Express (CO). These positions include 14 ticket counter agent positions, 10 curbside check-in positions (WN only), and 24 Self-Service Devices (SSD). The existing ticketing positions currently meet the peak period requirements for the terminal. However, increased overall passenger volumes and consistent passenger demand throughout the day resulting from a 10-turn scenario exceed the capacity of the existing ticketing positions, even as Internet Check-in services become more prevalent.

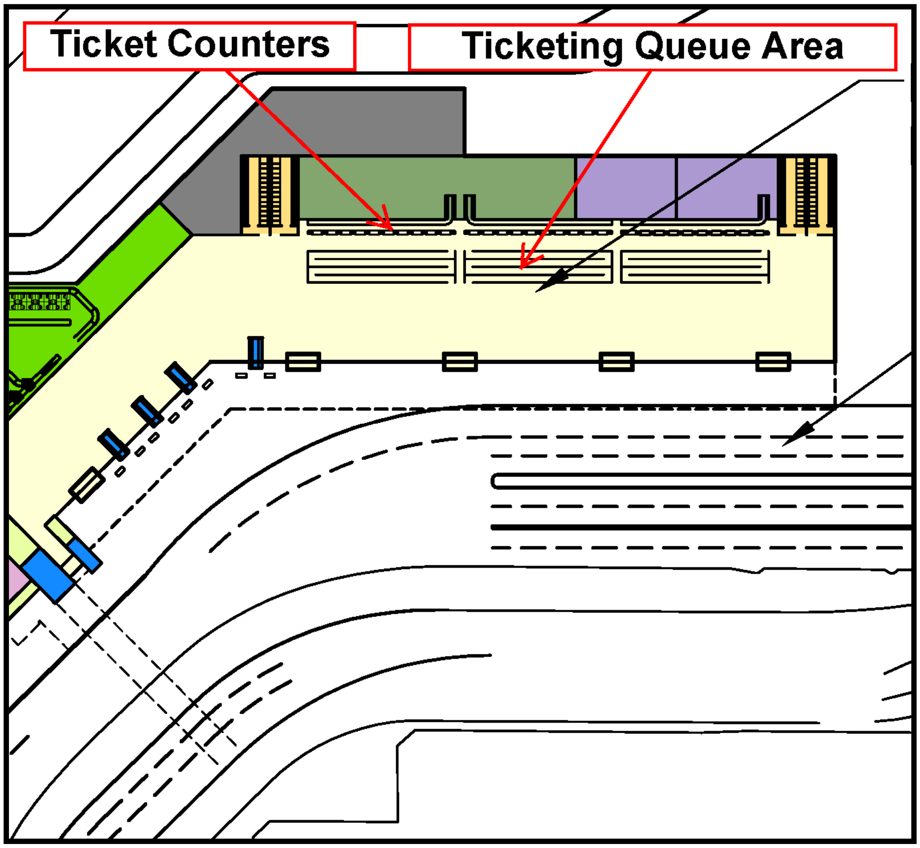
To meet the forecast need, 26 SSD stations and two curbside positions must be added to the existing totals. For Option B, a new ticketing hall would be constructed on the site of the old ticketing hall (currently unassigned building space). As shown in Figure 4-12, all ticketing counters, SSDs, and curbside positions (for all airlines) would be located at this new facility.

Figure 4-11
Terminal Development Option B



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 4-12
Additional SSDs and Curbside Positions – Option B

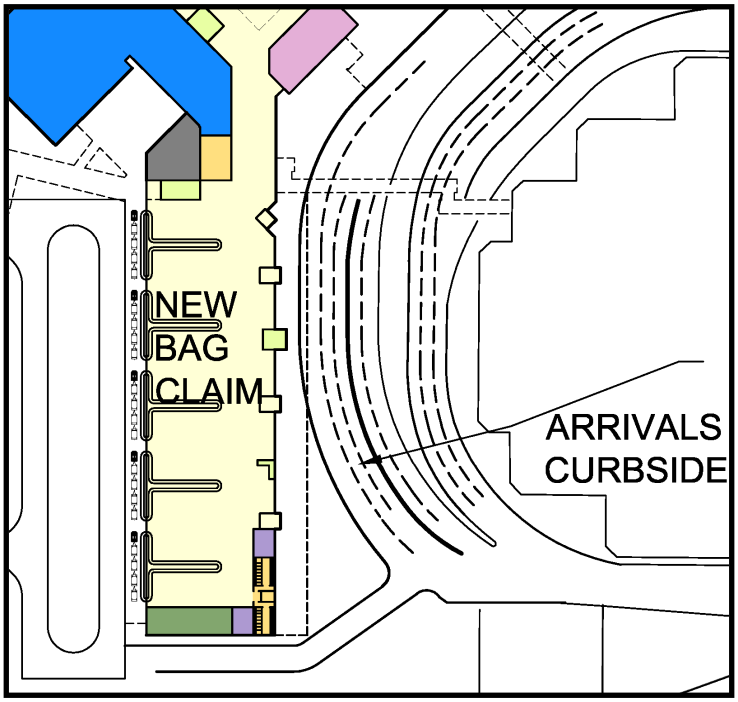


Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Baggage Claim Concept Development

The Dallas Love Field terminal facility currently has four baggage claim devices with a total frontage of 450 linear feet. The facility requirements analysis indicates that the average peak hour passenger activity for a 20-gate/10-turn facility will require approximately 729 l.f. of presentation frontage. Figure 4-3 shows the proposed baggage claim expansion plan for Option B. As shown in Figure 4-3, the baggage claim area is reconfigured to allow for five new devices configured at a 45 degree angle to allow for larger carousels and more efficient circulation.

Figure 4-13
Baggage Claim Expansion – Option B



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

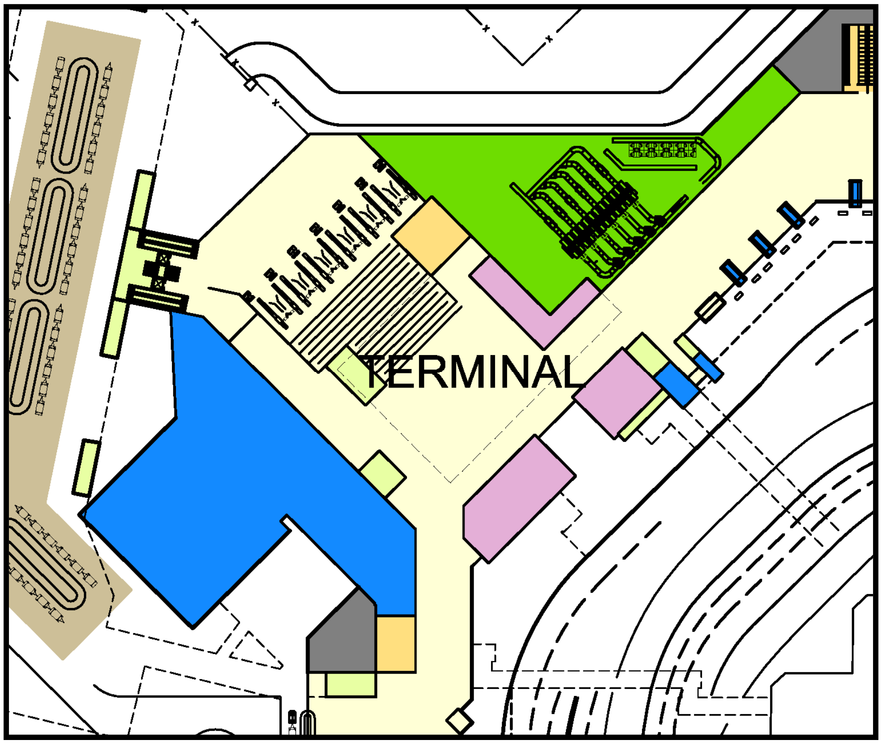
Security Processing

Passenger Screening Concept Development

As discussed in Chapter One, there are currently five passenger security checkpoint lanes in the Main Lobby and two lanes adjacent to the West Concourse utilized by passengers coming from Garage A to the terminal via the conditioned pedestrian walkway bridge. The total number of existing passenger security checkpoint lanes provided in the terminal facility is seven.

As indicated in Table 4-1, 14 passenger checkpoint security lanes are needed to meet the forecasted peak hour passenger demand. As shown in Figure 4-14, Option B rebuilds the passenger security checkpoint in the main lobby to accommodate 12 lanes. The checkpoint would need to be expanded by two additional lanes to meet the long-term demand.

Figure 4-14
Main Lobby Passenger Checkpoint – Option B



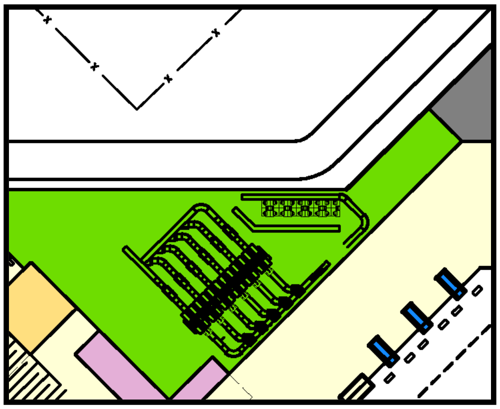
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Baggage Screening Concept Development

Currently, there are nine Explosive Detection System (EDS) machines in operation at DAL for screening checked baggage. Five EDS machines are located behind the existing airline ticket counters, three machines are located in the main lobby, and one machine is located at curbside.

Table 4-1 identifies an EDS requirement of ten machines to process increasing passenger baggage volumes. Where possible, EDS machines should be consolidated to make the TSA's screening operation more efficient. The EDS improvements for Option B are shown in Figure 4-15. The EDS facility would be located under the passenger walkway that leads from the passenger checkpoint area to the new gate area. The facility would be at apron level receiving checked bags via conveyor belt from the new ticketing hall and delivering cleared bags to the new baggage make-up facility under the new gate area. This area consolidates the EDS capacity requirements for all airlines.

Figure 4-15
EDS Screening Devices – Option B



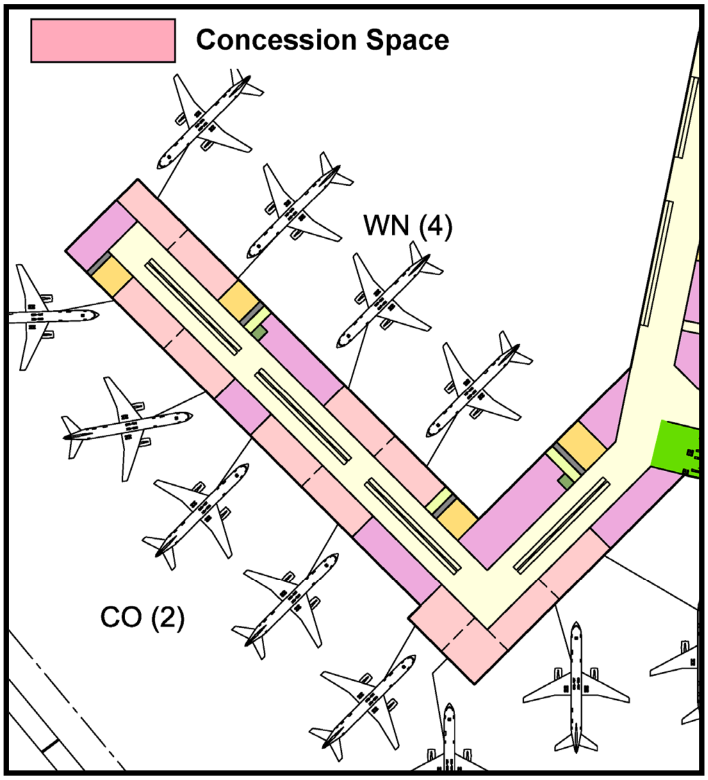
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Concessions

As shown in Table 4-1, the current concession program for DAL totals 20,400 s.f. of the terminal area. The existing concession spaces are located in main terminal core and the East and West Concourses. To meet the TARPS concession requirement of 72,719 s.f., Option B requires a reconstruction of the North Concourse. The determination of the best location for the various types of concessions requires further study as part of a comprehensive concessions program. Figures 4-16 to 4-18 show where concessions space is planned for the Option B.

Figure 4-16 illustrates how the concessions space is incorporated into the entire length of the West Concourse. The majority of the Airport's concession space is divide between the North and West Concourses. Additionally, these gates are occupied by Southwest, which utilizes a fleet of B-737 aircraft. The combination of location and fleet mix results in a significantly higher number of peak hour and daily passengers in the West Concourse than other areas of the terminal. All concession space in the West Concourse is located beyond the security checkpoint.

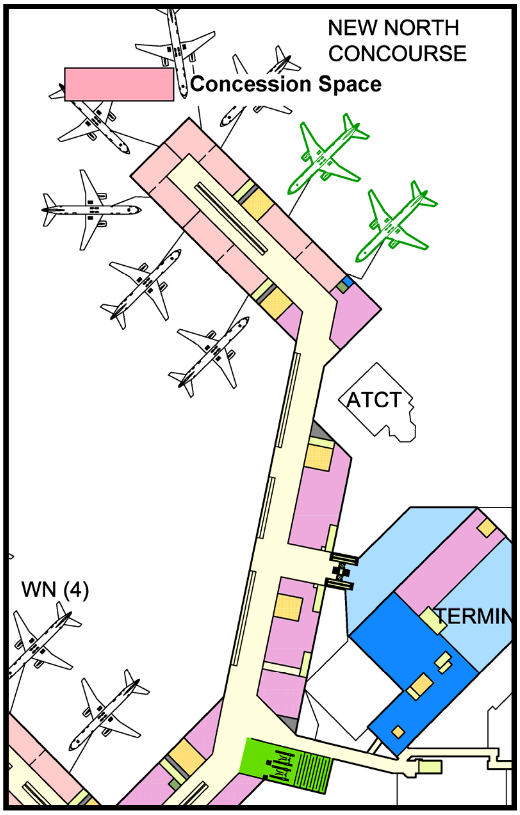
Figure 4-16
Concession Space (West Concourse) – Option B



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

As shown in Figure 4-17 the concession space for the North Concourse is located at the entrance to the concourse. The concession program in the North Concourse is relatively small as a result of fewer gates, resulting in fewer peak and daily passenger demand. All concession space in the North Concourse is located beyond the security checkpoint.

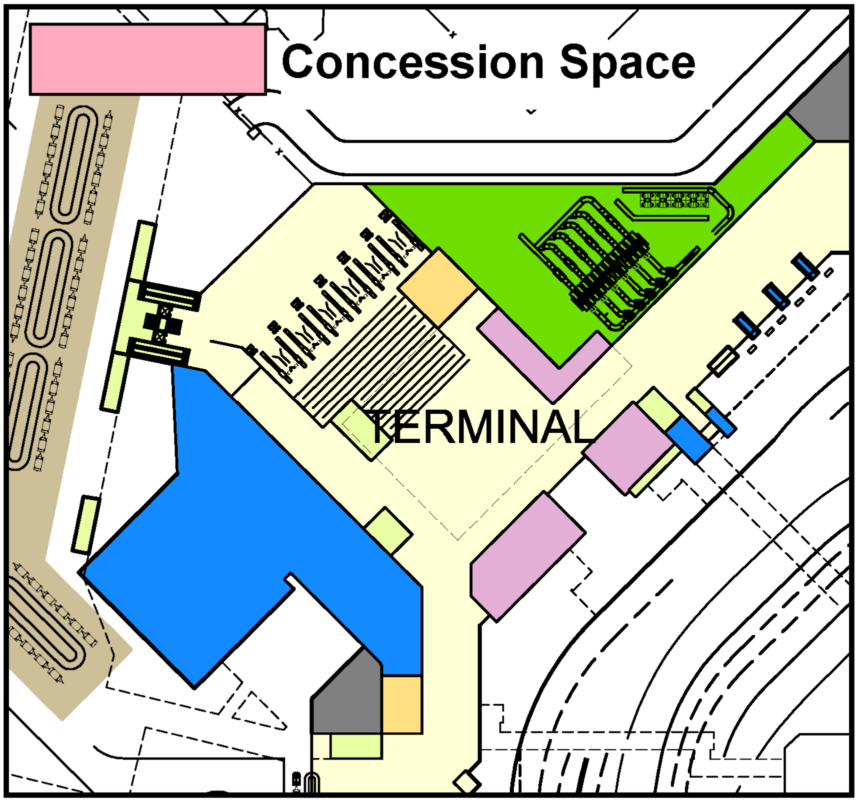
Figure 4-17
Concession Space (North Concourse) – Option B



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

The concessions plan for the main terminal lobby area is shown in Figure 4-18. All concession space in the main terminal area is located in public areas. This concession space is used by meeters and greeters, departing passengers prior to security screening, airport visitors, and airport/tenant employees.

Figure 4-18
Concession Space (Main Lobby) – Option B



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Employee Parking Facilities

Option B displaces most all employee parking spaces that are currently using old apron space around the North Concourse. As shown in Table 4-1, the Airport employee parking demand is projected to be 2,933 spaces. To meet this requirement, various parking lots or a garage will be needed. .

SECTION 4.3 – OPTION C

Option C incrementally reconfigures the terminal and concourse area to maximize processing efficiency. This concept reconfigures the terminal and concourse areas to more efficiently utilize available area on the airfield, consolidate functional areas, create future flexibility for changes in technology, market share and security requirements, and increase passenger LOS and efficiency. This is an efficient development option and treats all tenants and carriers more evenly. The proposed layout is depicted in Figure 4-19.

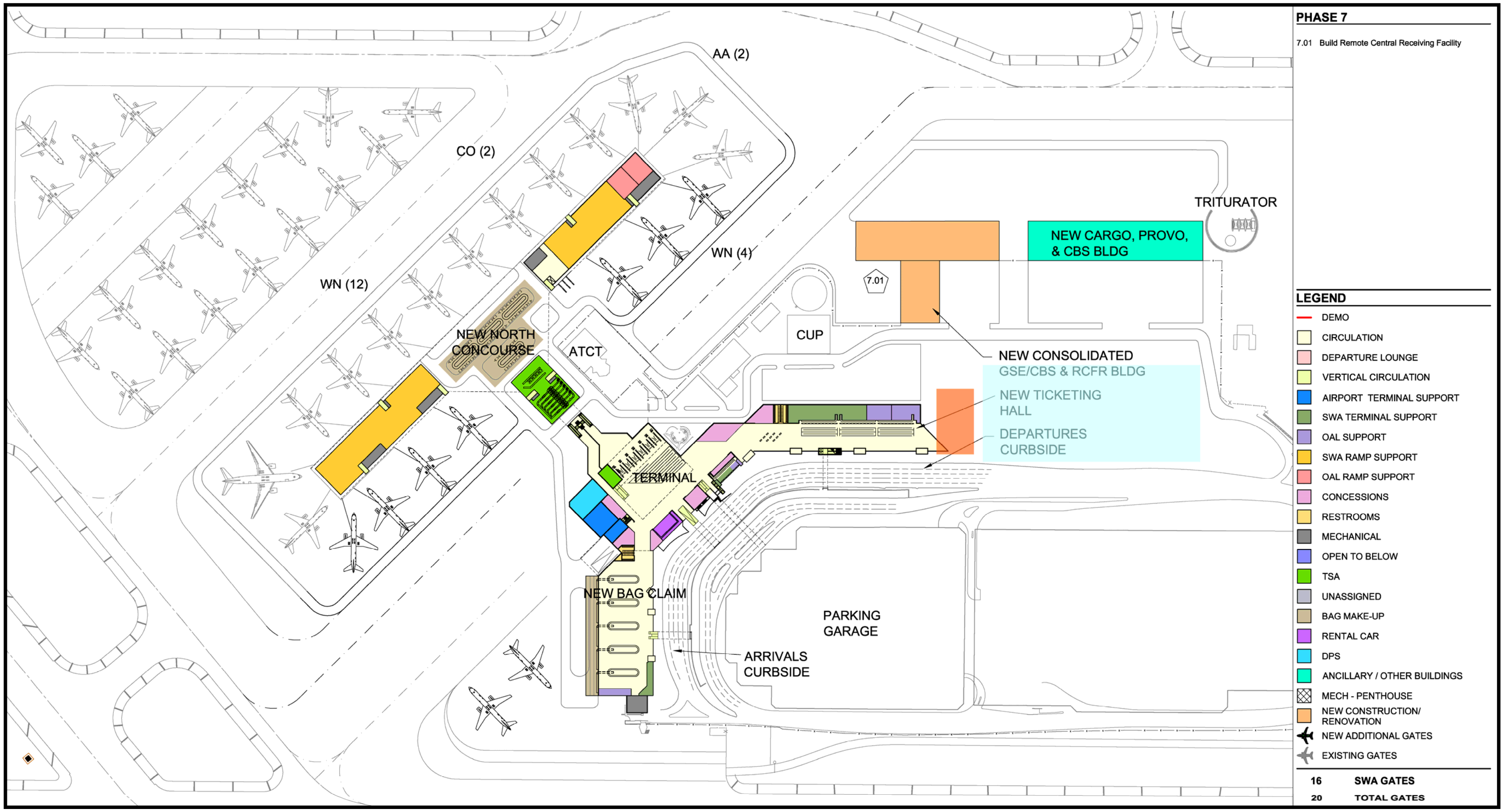
Passenger Processing

Ticketing Area Concept Development

Currently there are 48 ticketing positions for three airlines; Southwest Airlines (WN), American Airlines (AA), and Continental Express (CO). These positions include 14 ticket counter agent positions, 10 curbside check-in positions (WN only), and 24 Self-Service Devices (SSD). The existing ticketing positions currently meet the peak period requirements for the terminal. However increased overall passenger volumes and consistent passenger demand throughout the day resulting from a 10 turn scenario exceed the capacity of the existing ticketing positions, even as Internet Check-in services become more prevalent..

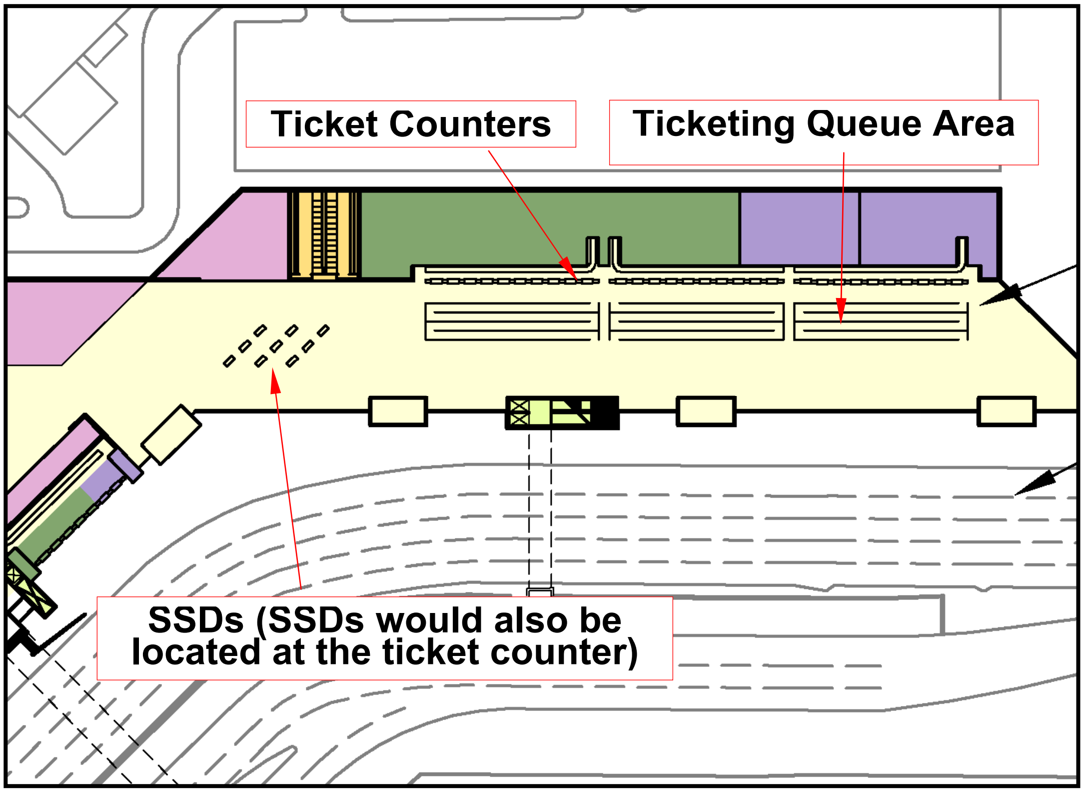
To meet the forecast need, 26 SSD stations and two curbside positions must be added to the existing totals. For Option C, a new ticketing hall would be constructed on the site of the old ticketing hall (currently unassigned building space). As shown in Figure 4-20, all ticketing counters, SSDs, and curbside positions (for all airlines) would be located at this new facility.

Figure 4-19
Terminal Development Option C



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 4-20
New Ticketing Hall – Option C



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Baggage Claim Concept Development

The Dallas Love Field terminal facility currently has four baggage claim devices with a total frontage of 450 linear feet. The facility requirements analysis indicates that the average peak hour passenger activity for a 20-gate/10-turn facility will require approximately 729 l.f. of presentation frontage. Figure 4-21 shows the proposed baggage claim expansion plan for Option C. As shown in Figure 4-21, a new and larger baggage claim areas would be constructed on the location as the existing baggage claim facility. This facility would include five new slope plate baggage claim devices.

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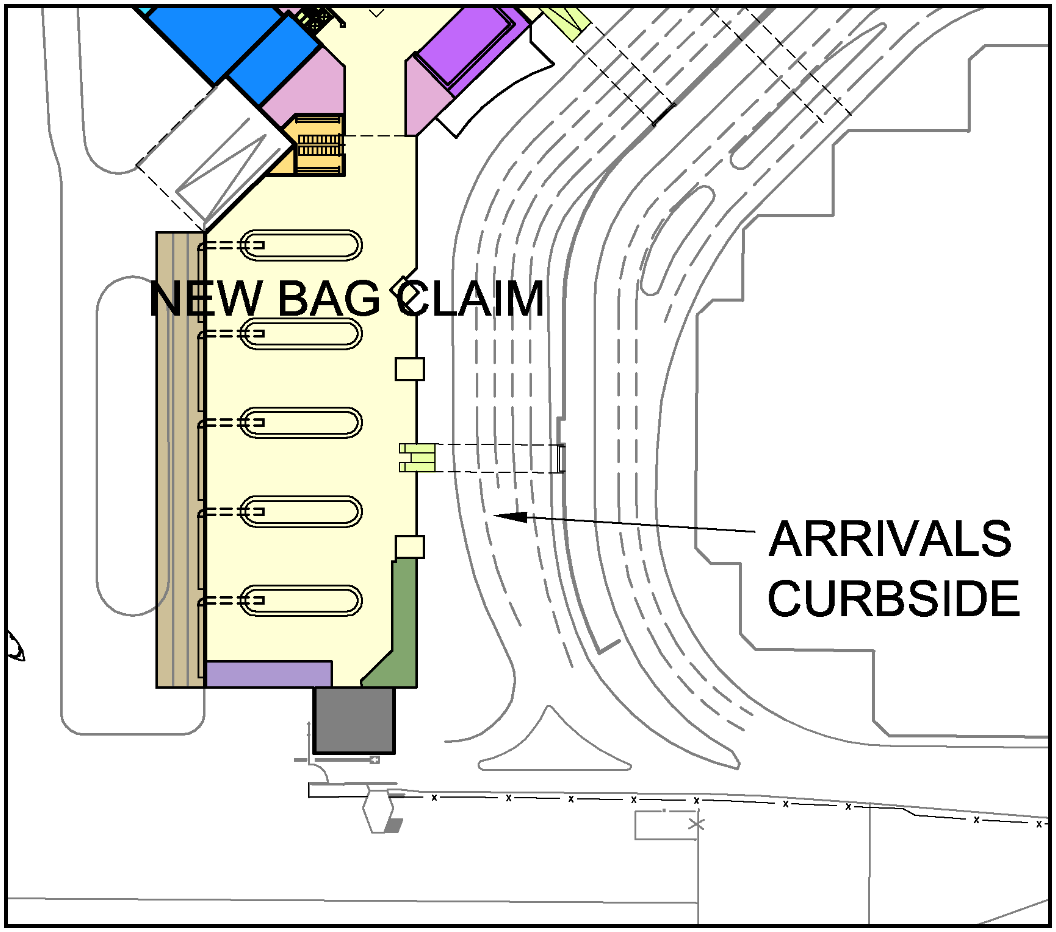
Figure 4-21
New Baggage Claim Facility – Option C



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

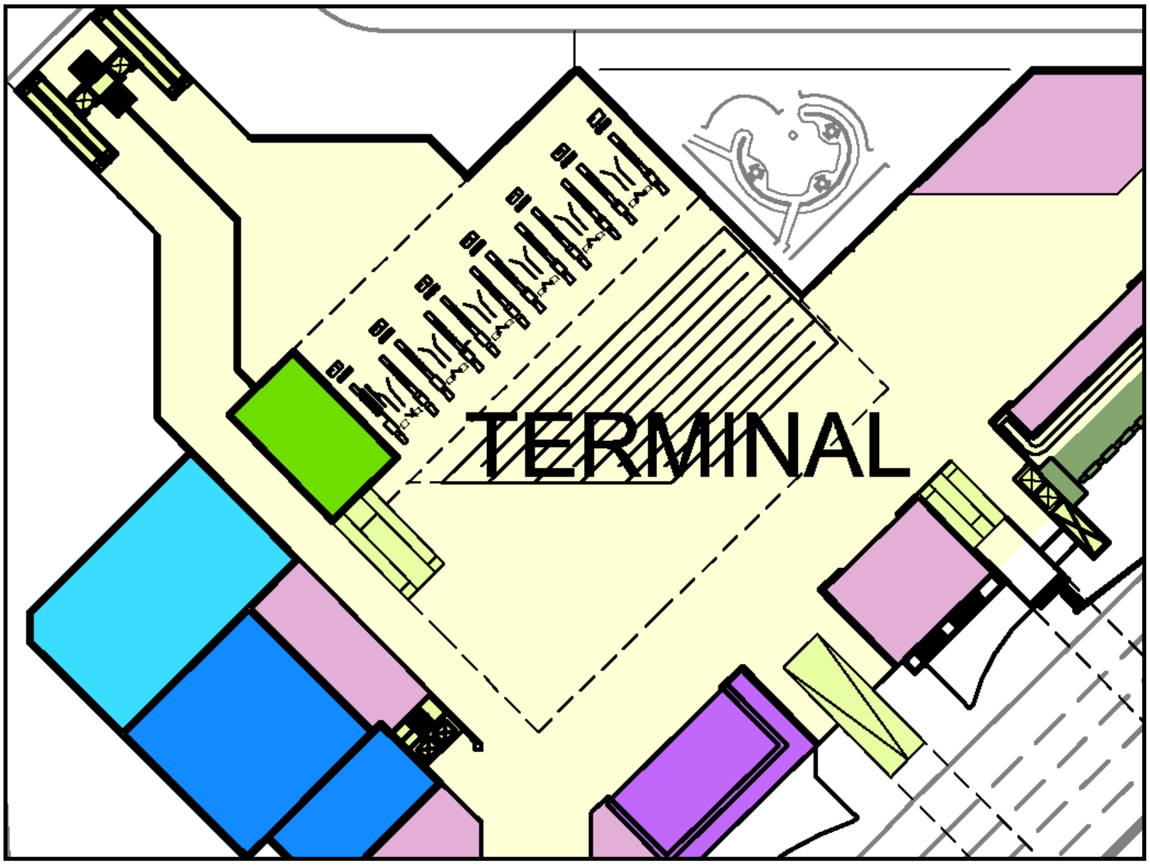
Security Processing

Passenger Screening Concept Development

As discussed in Chapter One, there are currently five passenger security checkpoint lanes in the Main Lobby and two lanes adjacent to the West Concourse utilized by passengers coming from Garage A to the terminal via the conditioned pedestrian walkway bridge. The total number of existing passenger security checkpoint lanes provided in the terminal facility is seven. As indicated in Table 4-1, 14 passenger checkpoint security lanes are needed to meet the forecasted peak hour passenger demand. As shown in Figure 4-22, Option C rebuilds the passenger security checkpoint in the main lobby to accommodate

12 lanes. The checkpoint would need to be expanded by two additional lanes to meet the long-term demand.

Figure 4-22
Main Lobby Passenger Checkpoint – Option C



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Baggage Screening Concept Development

Currently, there are nine Explosive Detection System (EDS) machines at DAL for screening checked baggage. There are a total of five EDS machines behind the existing airline ticket counters, three machines in the main lobby and a single machine at curbside.

Table 4-1 identifies an EDS requirement of ten machines to accommodate increasing passenger baggage demand. Where possible, EDS machines should be consolidated to make the TSA's screening operation more efficient. The EDS configuration for Option C is shown in Figure 4-23. The EDS facility would be located under the passenger walkway that leads from the passenger checkpoint area to the new gate area. The facility would be at apron level receiving checked bags via conveyor belt from the new ticketing hall and delivering cleared bags to the new baggage make-up facility under the new gate area. This area consolidates the EDS capacity requirements for all airlines.

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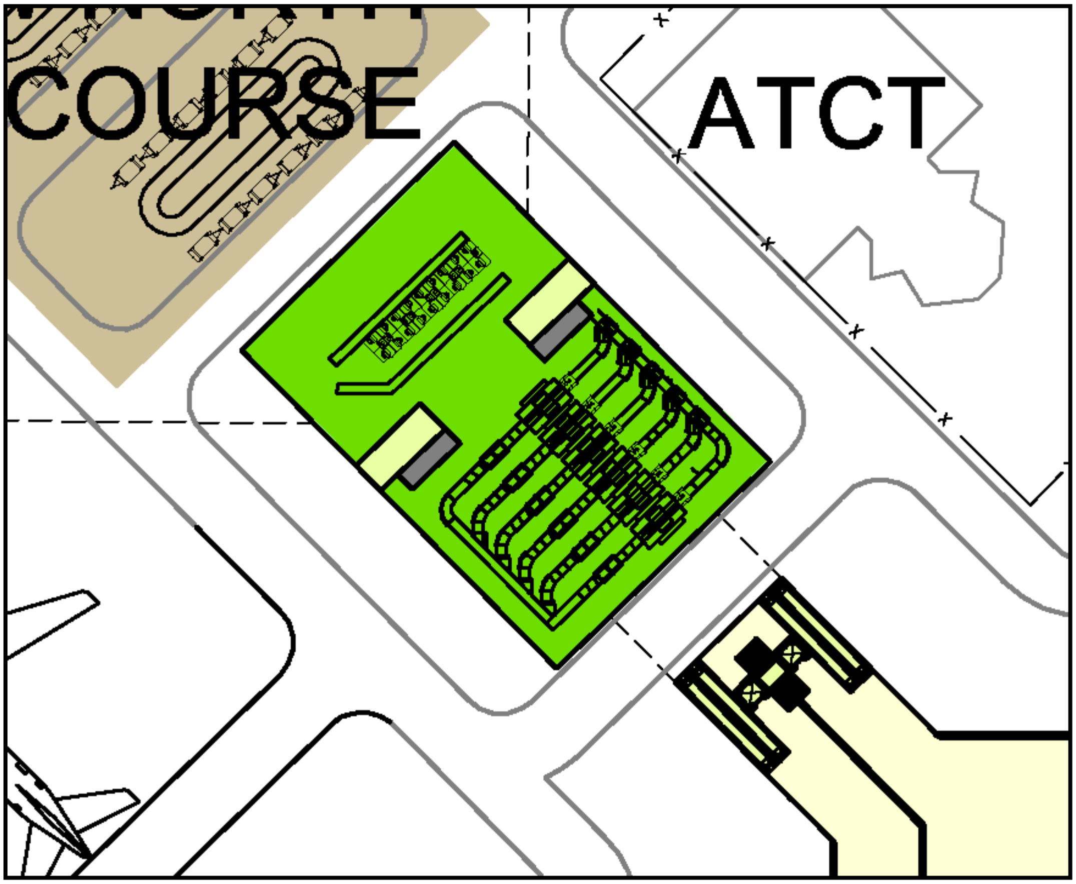
Figure 4-23
EDS Screening Devices – Option C

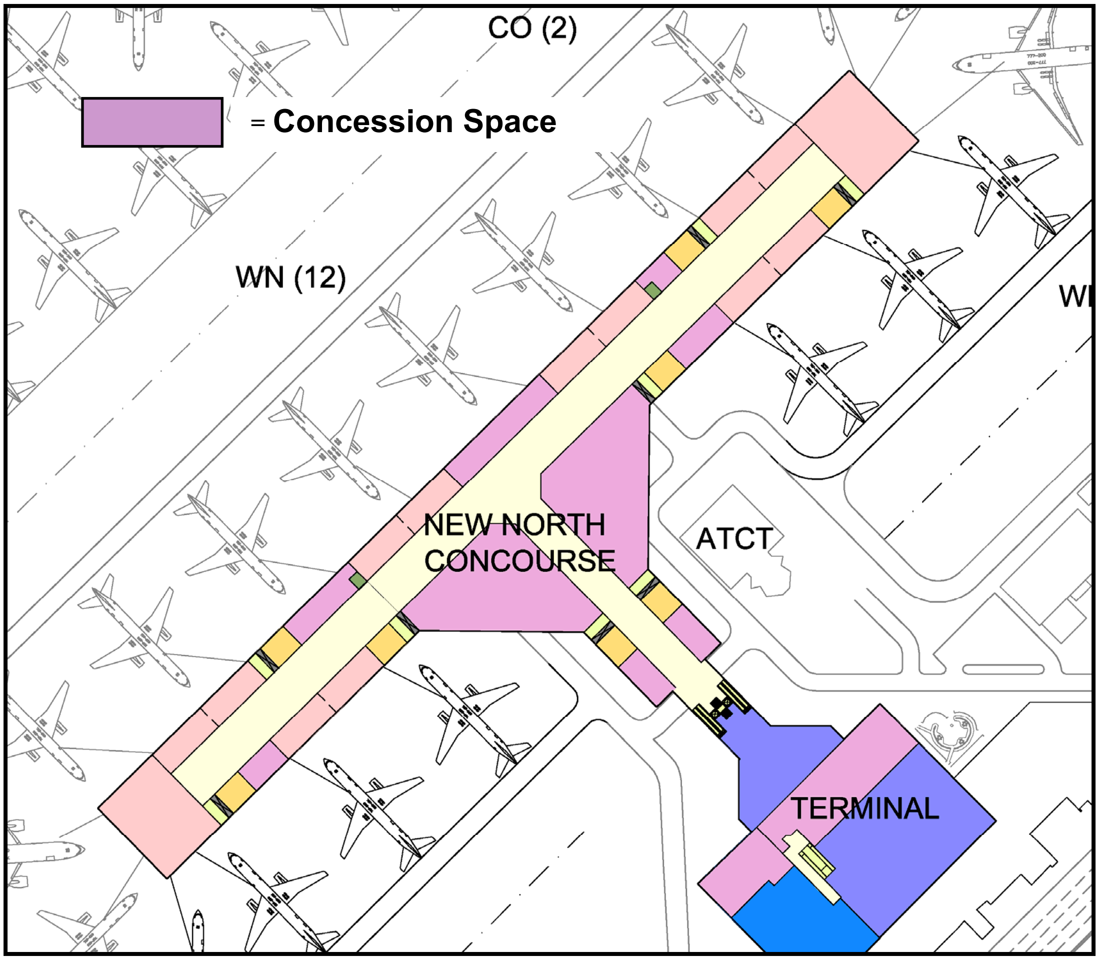


Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Concessions

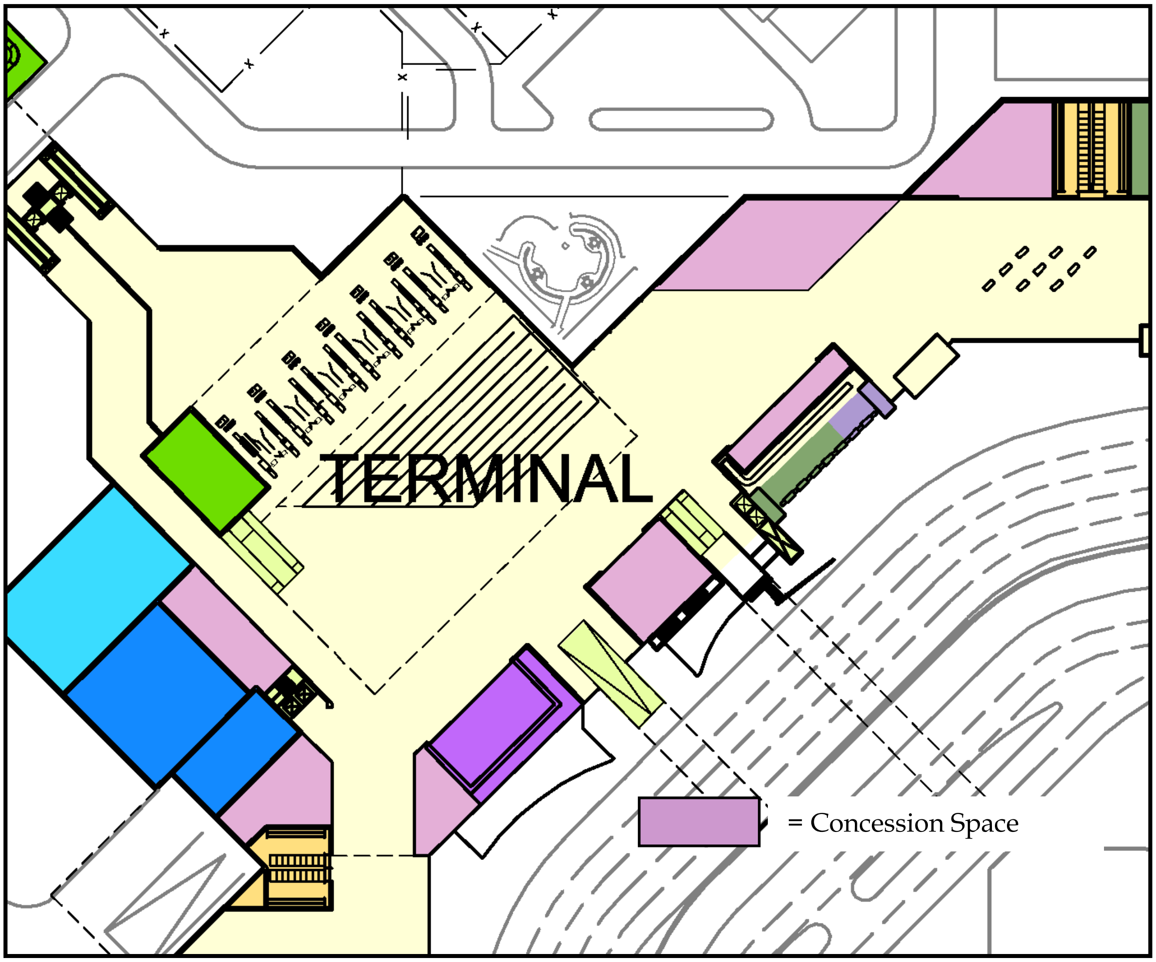
As shown in Table 4-1, the current concession program for DAL totals 20,400 s.f. of the terminal space. The existing concession spaces are located in main terminal core as well as in the East and West Concourses. As shown in Figures 4-24 and 4-25, Option C meets the concessions requirement by incorporating concession space in the new 20 gate concourse as well in the main central lobby area. The determination of the best location for the various types of concessions requires further study in the form of a comprehensive concessions program analysis.

Figure 4-24
Concession Space (New Concourse – Option C



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 4-25
Concession Space Main Terminal Lobby Area – Option C



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Curbside Facilities

Curb and Adjacent Roadway Concepts

As shown in Table 4-1, the Arrivals, Departures, and Commercial curbside areas all require additional length to meet peak hour demand for 20 gates with 10-turns.

Employee Parking Facilities

Option C displaces most all employee parking spaces that are currently using old apron space around the North Concourse. As shown in Table 4-1, the Airport employee parking demand is projected to be 1,000 spaces. To meet this requirement, various parking lots or a garage will be needed. As shown in Figure 4-26, one option to help meet that demand will be an employee parking garage located just southeast of the new ticketing hall. As a surface lot, this area can accommodate approximately 750 automobiles for employee parking. This is roughly one-quarter of the employee parking demand. Creating a parking garage connected over Cedar Springs Road to the existing "B" Parking Garage will provide ample employee parking, allow for valet parking services, and create additional revenue opportunities for the airport.

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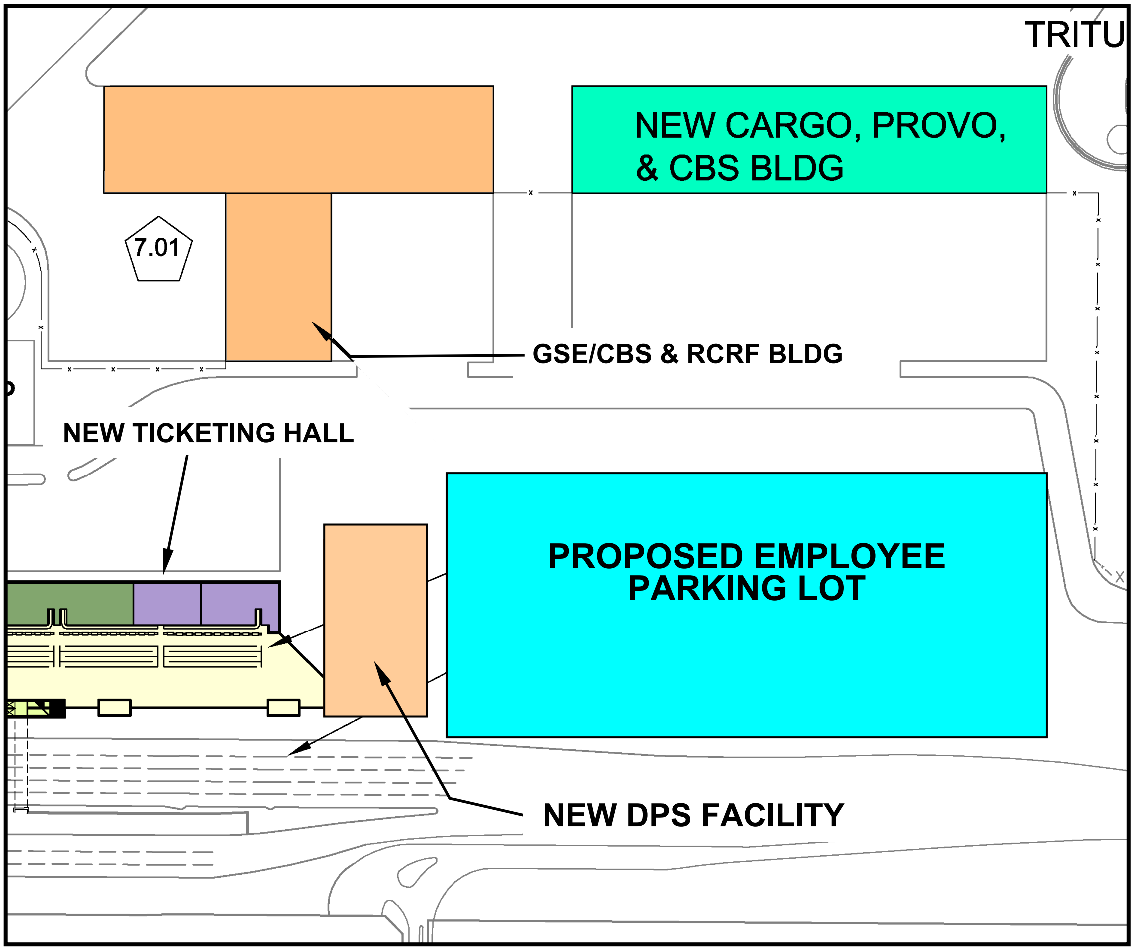
Department of Public Safety Facilities

Option C displaces the Department of Public Safety (DPS) office which is currently located at the beginning of the North Concourse. As shown in Table 4-1, the DPS facility requirement is 15,000 s.f. Figure 4-26 identifies a location for a new DPS facility located between the new ticketing hall and the proposed employee parking lot.

Figure 4-26
Employee Parking and DPS Facility – Option C



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

SECTION 4.4 – ALTERNATIVE COMPARISON

Following the review of three conceptual development alternatives, two methodologies for responding to increasing capacity needs in the terminal area at DAL were used in refining concept alternatives. Option A represents a Minimal Impact approach that strives to limit cost, mitigate the magnitude of impact to existing operations, and extend the life cycle of existing infrastructure, terminal layouts and airfield operations. Option B represents a hybrid approach that reduces the magnitude of the affect that each phase of the improvement process places on operations while promoting processing efficiency and flexibility. However, this option results in extended construction time without fully addressing long-term solutions. Option C represents a Maximum Efficiency solution that reconfigures existing operations to increase processing and flow efficiency, consolidate functional areas and generally increase passenger LOS.

Preferred Concept Selection

As previously indicated, cost considerations typically drive a Minimal Impact approach which result in solutions that are short-term fixes to larger issues and reduce the flexibility to respond to capacity needs in the future. Lower impacts to existing operations tend to come at the expense of schedule, duration and passenger inconvenience during project implementation. Option A addresses the two most critical deficiencies at DAL based on current and projected operations and protocols, which are the concession program and the transition to technology driven ticketing. By taking advantage of underutilized areas of the existing facility, Option A creates viable retail space and maximizes the available area. Although the shortage in SSDs and agent ticketing positions is resolved by adding SSDs to existing clusters and incrementally growing these areas, it only provides improved level of service for WN. Current projects and recent security renovations were adequate to meet previous projections for passenger activity, therefore these areas were not affected in Option A. However, rehabilitation of these areas to increase passenger LOS and efficiency were not addressed. Walking distances to existing gates; intuitive way-finding issues; concession exposure, access, and future flexibility of functional areas to respond to changing technologies, increased demand and market fluctuations; remain constraints after implementation of this option. Additionally, the capacity expansions in Option A do not meet all the needs of the revised passenger activity levels generated in a 20 gate constrained concourse development.

Option B and C aim to provide flexible solutions to the overall capacity needs of the airport resulting from the Five Party Agreement. At DAL, the fundamental shift of 20 gates to a consolidated concourse facility allows for a significantly expanded and refined concessions program, higher LOS for passenger traffic and increased efficiency on the airfield. Both Option B and C provide enabling phases that reduce the impact to the traveling public during construction. Ultimately, this provides solutions that can be adapted to multiple market influences and technology advances while utilizing existing infrastructure where feasible. Options B and C both meet the performance requirements outlined in Section 4.0, however, the estimated cost of construction for Option B is significantly higher that Option C. For these reasons, and the result of the performance comparison discussed later in this section, Option C is the recommended alternative of this study.

Performance Comparison

The alternatives were compared relative to capacity and performance requirements outlined in Chapter Three and an evaluation matrix ranks the concepts based on implementation, operational efficiency and passenger LOS. The recommendation of a preferred concept was based on these evaluation criteria and the goals and objectives of the City and the airport stakeholders.

Table 4-2 illustrates the final capacities relative to the facility requirements and to each other. As indicated, Option A is deficient of performance targets in many categories. This is understandable given the methodology and goals of a minimal impact approach. The intent of Option A is to meet minimum capacity requirements in the existing footprint within the guidelines of the Five Party Agreement. Conversely, Options B and C meet the performance targets by reconfiguring and/or expanding the functional areas to maximize the efficiency of the airport and the terminal process.

Evaluation Matrix

The evaluation matrix is based on the evaluation criteria established by the City, the stakeholders and the planning team. The criteria includes impacts to existing operations and overall cost as a result of implementation of the concept, resulting operational efficiencies and customer convenience. Each criterion was rated on a scale of 1 to 5. Table 4-2 summarizes the results.

DART Light Rail Realignment and Proposed Service Studies

Introduction

Dallas Area Rapid Transit (DART) has started construction on a new Light Rail Transit (LRT) rail alignment called the Green Line. In the vicinity of Love Field, the alignment will be located along Denton Drive – west of the airport. DART has established a passenger station immediately east of Wyman Street referred to as the Love Field Station.

The City of Dallas (COD) intends to provide a transportation connection between the Love Field Station and the Love Field Terminal Building that will connect Dallas Love Field to the regional rail network. DART and COD have investigated various alternatives to accomplish this connection. The Dallas Love Field People Mover Connector Feasibility Study is currently ongoing

Funding Status

The planning level cost assessment for the DAL Love Field People Mover connector (PMC) is $270 million in 2008 dollars. For a project of this nature, there are several funding alternatives available to airports. Since the primary mission of the project is the safe and efficient handling of passengers into and out of the airport, the project becomes eligible for funding under the Airport Improvement Program (AIP) and the Passenger Facility Charge (PFC) Program. This eligibility would extend to all elements of the program with the exception of operation and maintenance costs. It is important to note that with the ongoing development initiatives for the Airport, AIP funding resources may be limited to higher priority projects ad identified by the Airport's Capital Improvement Program and the FAA.

The PFC program provides a valuable revenue stream for capital projects of this nature. These resources are available for both capital and financing costs associated with the program. Based on an anticipated 20-year collection period, the PFC revenue stream appears to be adequate to cover the project cost and related debt service.

Other known sources of funding include the DART $20,000,000 commitment and a portion of the $100,000,000 commitment for rail access into airports in the North Texas Region from the Regional Transportation Commission.

Tunneling Methods

A tunnel will provide the most direct access between the DART Love Field LRT Station and the Love Field Terminal Building. An at-grade solution was considered at the onset of the feasibility study. The route that was considered paralleled runway 13R/31L along Denton Drive towards Mockingbird Lane and then proceeded into Love Field on Cedar Springs Road. This alignment was not further developed as it was determined that this alignment would infringe on the airfield clearances. Based on this fact and an initial assessment of the other site conditions, as well as discussions with the City of Dallas, a tunnel configuration was determined.

Two alignment corridors were initially selected. For each corridor a deep and a shallow tunneling option, as well as a combination with an aerial alignment, were investigated and evaluated. In the recommended alternative, the tunnel will gradually slope to a maximum depth of approximately sixty-five (65) feet under the runway

Station Design

The PMC stations accommodate the boarding/deboarding of passengers to and from the vehicles while providing for passenger dwell time. Stations also provide the required space for passengers to circulate between the APM stations at the Love Field Terminal platform or the DART Love Field Station platform. A center platform configuration is recommended for the PMC stations. The center platform is the most efficient use of space for boarding and deboarding all passengers. This configuration allows for passengers to board/deboard on either side of a shared platform. Platform edge walls are required along the full length to separate the passengers on the platform from the guideways. Automatic platform doors are provided for normal circulation between vehicles and the station platforms and must be fully integrated with the platform edge wall system.

Anticipated Project Schedule

A capital development project such as the Love Field People Mover Connector (DAL PMC) take place over a number of years and includes design, construction, implementation and commissioning phases. It is estimated that the overall project duration of the DAL PMC is seventy-two (72) months.

Table 4-2
Performance Comparison Matrix

Facility Component	Performance Target	Existing	Option		
			A	B	C
Performance Requirements					
Terminal Facilities					
Ticketing Counter Positions	15	24	14		14
Self-Service Devices	50	10	12		12
Ticketing Curbside Positions	12	14	49		49
Bag Claim (area)	12,500 sf	19,000 sf	23,400 sf	45,000	23,400 sf
Bag Claim (frontage)	729 lf	450 lf	729 lf	1,000 lf	729 lf
Passenger Security Checkpoints	14	7	12 to 14	12 to 14	12 to 14
EDS Screening Devices	10	9	10	10	10
Concessions	72,719	20,400	75,000	73,000	75,000
Gate Holdroom (avg.)	2,250 sf/gate	1,835 sf/gate	2,250 sf/gate	2,250 sf/gate	2,250 sf/gate
Landside Facilities					
Arrivals Curb	1,043	820	-	-	
Departures Curb	992	690	-	-	
Commercial Curb	568	110	-	-	
Evaluation Matrix					
Implementation					
Time To Implement	1 low, 5 high		5	2	3
Operational Complexity	1 low, 5 high		2	1	4
Customer Inconvenience	1 low, 5 high		2	1	4
Cost of Overall Program	1 low, 5 high		5	2	3
Operations					
Operational Efficiency	1 low, 5 high		4	3	5
Estimated Relative O&M Cost	1 high, 5 low		2	4	5
Customer Convenience					
Curbside	1 low, 5 high		2	4	4
Ticketing	1 low, 5 high		2	4	4
SSCP	1 low, 5 high		2	4	4
Holdrooms	1 low, 5 high		2	5	5
Concessions and Amenities	1 low, 5 high		2	5	5
Baggage Claim	1 low, 5 high		4	4	4
Walk Distance	1 low, 5 high		3	4	4
Summary			37	43	54

Summary

Option C provides a higher level of operational efficiency, a higher passenger LOS and greater flexibility for future considerations including technology advances and market fluctuations. Option C also addresses functionality issues, aesthetics and capacity increases for each functional area of the terminal in contrast to only addressing those areas of greatest concern in the near-term. The Five Party Agreement and a 20 gate constrained concourse represent a fundamental change for operations at DAL. Increasing passenger volumes and daily operations will continue to burden aging infrastructure. Responding to new technologies in ticketing operations, providing a varied and extensive concessions program and consolidating gate operations will dramatically increase the efficiency of the airport and provide a high LOS for each passenger utilizing the facility. Additionally, Option C provides a much better gateway image for the City of Dallas. For these reasons, it is the recommendation of this study that Option C be refined and carried forward as the preferred concept for terminal facility enhancement at DAL

Chapter 5: Option C – Phasing, Implementation and Cost

Chapter Five

OPTION C – PHASING, IMPLEMENTATION, AND COST

SECTION 5.0 - OVERVIEW

Option C was selected as the preferred expansion concept based on compliance with the Five Party Agreement and a 20 gate constrained concourse, facility requirements outlined in Chapter Three, and evaluation criteria relative to implementation, operational efficiency and passenger Level of Service (LOS) included in Chapter Four. Development of the reconfigured terminal is proposed to be constructed in seven (7) phases. Drawings for all seven development phases are included at the end of this chapter. These drawings are divided into each phase and each phase further divided by three terminal levels. The bottom level is designated as “Level 0”, the lower level (or baggage/arrivals) is designated as “Level 1”, and the upper level (or ticketing/departure) is designated as “Level 2”.

SECTION 5.1 – PHASING & IMPLEMENTATION

The various projects for each phase are described below and illustrated in the phasing drawings at this end of this chapter.

Phase 1 *(Figures 5-0.1, 5-1.1, & 5-2.1)*

Phase 1 provides the enabling projects for moving operations that would conflict with operations in the new concourse area. These actions include the following:

- SWA Gate 1A Activation
- SWA Temporary Outbound Bag Shed
- SWA In-Line EDS Matrix Conversion
- SWA Ground Ops Training Relocation
- SWA Employee Parking Relocation
- New Cargo / Provo / CBS Building
- Relocate GSE
- Relocate Plant Maintenance
- SOS Relocation (North Concourse)
- Other Tenant Relocations (Ticketing Wing)
- Relocate Public Safety Office
- Relocate North Airfield Lighting Vault

Phase 2 *(Figures 5-0.2, 5-1.2, & 5-2.2)*

After relocation of operations as part of Phase 1, Phase 2 is the demolition phase, preparing the area for the new concourse and ticketing area. These actions include the following:

- Demolish North Concourse

- Demolish Cargo / Provo / CBS / GSE / Plant Mx
- Demolish Existing Cargo Building
- Demolish Existing Ticketing Wing & Connector Bridge
- Slurry Fill Existing Fuel Lines

Phase 3 *(Figures 5-0.3, 5-1.3, & 5-2.3)*

Phase 3 begins construction of the new concourse and constructs the new ticketing area in addition to rehabilitation a portion of the existing terminal building. Also included is curb expansion. These actions include the following:

- Build Initial Portion of New Concourse
- Reconstruct Apron
- Install First Phase of New Fuel System
- Upgrade CUP (Cooling Tower / Boiler)
- Build New Ticketing Wing
- Renovate Portion of Main Terminal
- Expand Upper Level Departures Roadway
- Build Portion of New 36” Water Main

Phase 4 *(Figures 5-0.4, 5-1.4, & 5-2.4)*

Tenant relocations highlight Phase 4 as new gates are commissioned and the vacated areas are demolished. Curb expansion continues and reconfiguration of the pedestrian sky bridges begins. These actions include the following:

- Relocate Airlines to New Ticketing Wing
- Relocate WN (5) and CO (2) gates to New North Concourse
- Deactivate AA (1) gate
- Construct remainder of North Concourse
- Reconstruct apron (2 areas)
- Extend Hydrant Fuel System
- Renovate Remaining Portion of Main Terminal
- Reconstruct Lower Level Roadway
- Demolish CO gate areas (Concourse Level)
- Demolish Temporary Bag Make-up / T-point

- Demolish West Garage Skybridge
- Build portion of new 36” Water Main

Phase 5 *(Figures 5-0.5, 5-1.5, & 5-2.5)*

Tenant relocations continue in Phase 5 and the apron area is reconstructed, replacing the West Concourse. The Bag Claim Hall is expanded and new utility infrastructure is completed. These actions include the following:

- Relocate WN (6) gates to New North Concourse
- Demolish West Concourse Extension
- Reconstruct apron
- Extend Hydrant Fuel System
- Expand First Section of Bag Claim Hall
- Reconstruct Arrivals Section of Upper Roadway
- Relocate West Airfield Lighting Vault
- Complete New 36” Water Main
- Deactivate (1) AA Gate

Phase 6 *(Figures 5-0.6, 5-1.6, & 5-2.6)*

The remaining tenants are relocated to the new concourse in Phase 6 and the remainder of the existing gates are demolished. The Bag Claim Hall expansion is finished and apron reconfiguration continues. These actions include the following:

- Relocate WN (4) & AA (2) Gates to New North Concourse
- Demolish remainder of West and East Concourse
- Reconstruct apron (2 areas)
- Demolish West Concourse Skybridge
- Final Fuel System Expansion
- Renovate Remaining Portion of Bag Claim Hall

Phase 7 *(Figures 5-0.7, 5-1.7, & 5-2.7)*

All construction is completed and a new Remote Central Receiving Facility is built. These actions include the following:

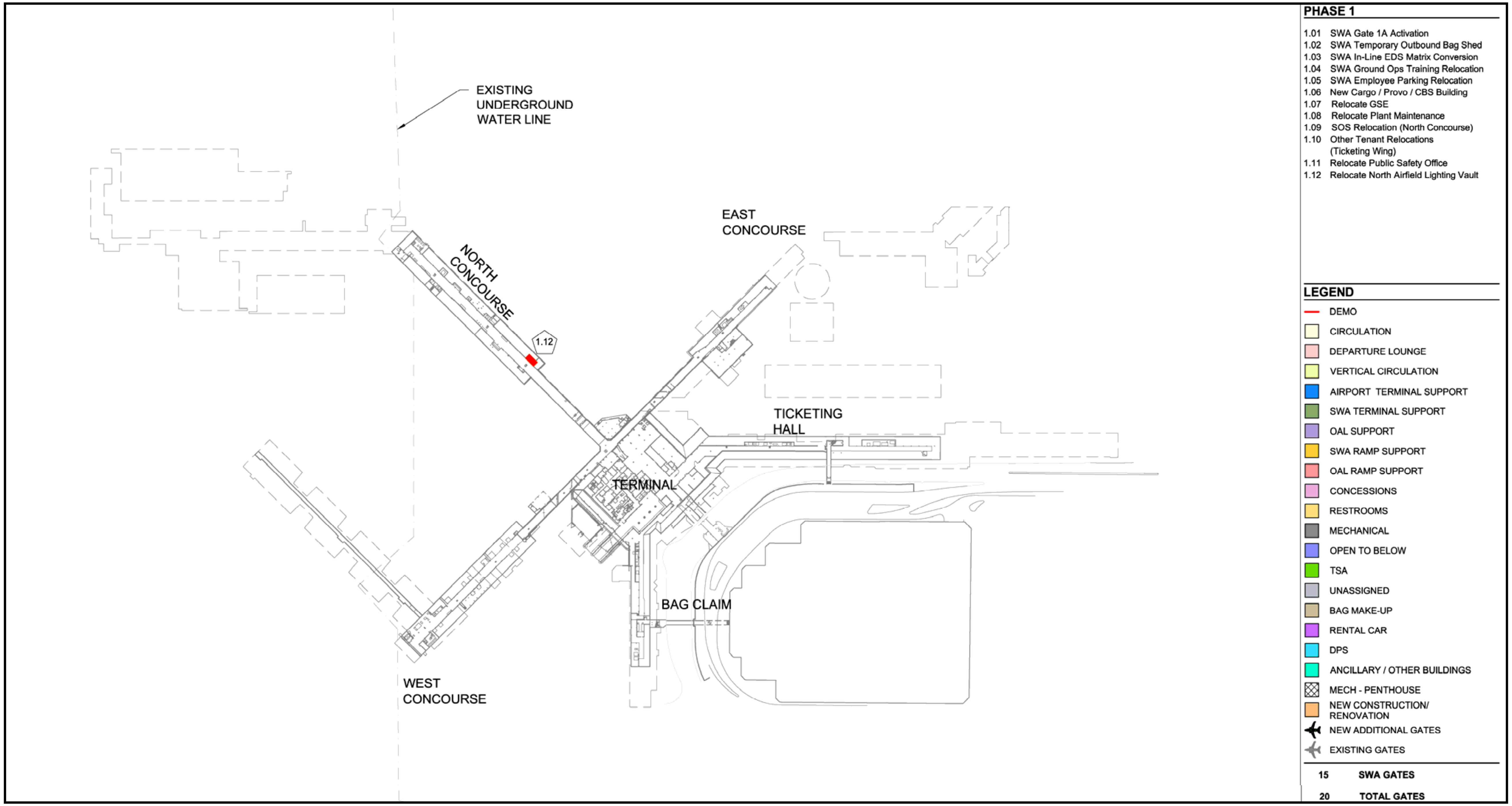
- Build Remote Central Receiving Facility

SECTION 5.2 – CONSTRUCTION COST ANALYSIS

		Hill & Wilkinson		Connico		Variance
Program Reconciliation Design Services	$	265,000	$	265,000	$	-
Phase 1	$	34,235,863	$	34,235,863	$	-
Phase 2	$	11,466,399	$	9,940,000	$	(1,526,399)
Phase 3	$	271,363,224	$	311,940,000	$	40,576,776
Phase 4	$	106,862,536	$	113,140,000	$	6,277,464
Phase 5	$	50,302,180	$	46,410,000	$	(3,892,180)
Phase 6	$	42,557,343	$	37,160,000	$	(5,397,343)
Phase 7	$	14,508,685	$	18,360,000	$	3,851,315
Projected Total Design and Construction Cost	**$**	**531,561,230**	**$**	**571,450,863**	**$**	**39,869,633**

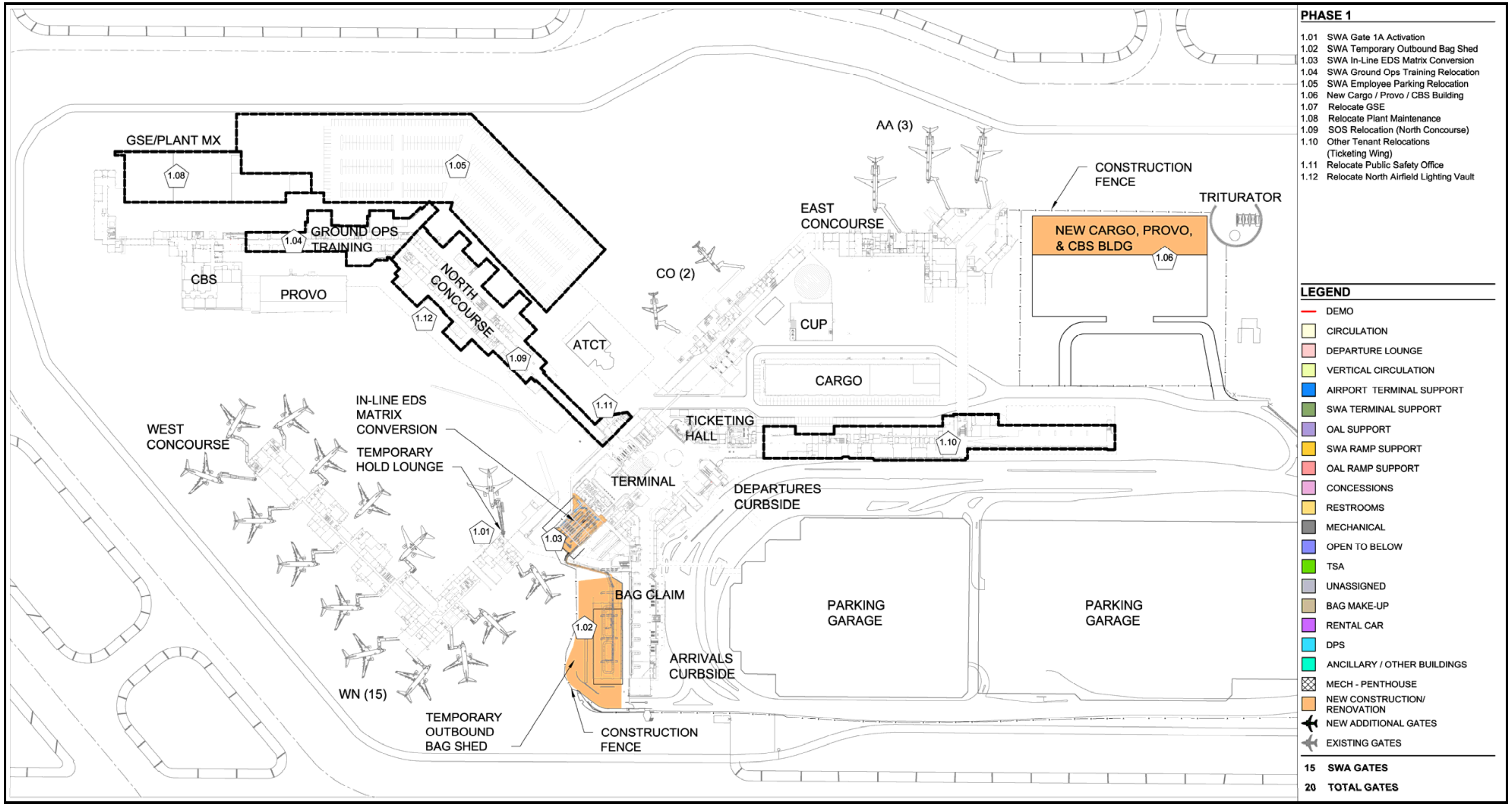
		Hill & Wilkinson		Connico		Variance
Terminal, Concourse	$	298,819,271	$	349,140,000	$	50,320,729
Baggage	$	27,773,400	$	30,950,000	$	3,176,600
Apron	$	83,062,347	$	66,310,000	$	(16,752,347)
Roadwork	$	11,828,088	$	10,530,000	$	(1,298,088)
Utilities	$	2,007,954	$	1,390,000	$	(617,954)
Hydrant Fueling	$	42,490,517	$	41,310,000	$	(1,180,517)
Phase 7	$	14,508,685	$	18,360,000	$	3,851,315
Phase 1	$	34,235,863	$	34,235,863	$	-
Program Reconciliation Design Services	$	265,000	$	265,000	$	-
Relocate West Airfield Lighting Vault	$	1,435,632	$	1,420,000	$	(15,632)
Upgrade CUP (Cooling Tower / Boiler)	$	15,134,473	$	17,540,000	$	2,405,527
Projected Total Design and Construction Cost	**$**	**531,561,230**	**$**	**571,450,863**	**$**	**39,889,633**

Figure 5-0.1
Option C Level 0 - Phase 1



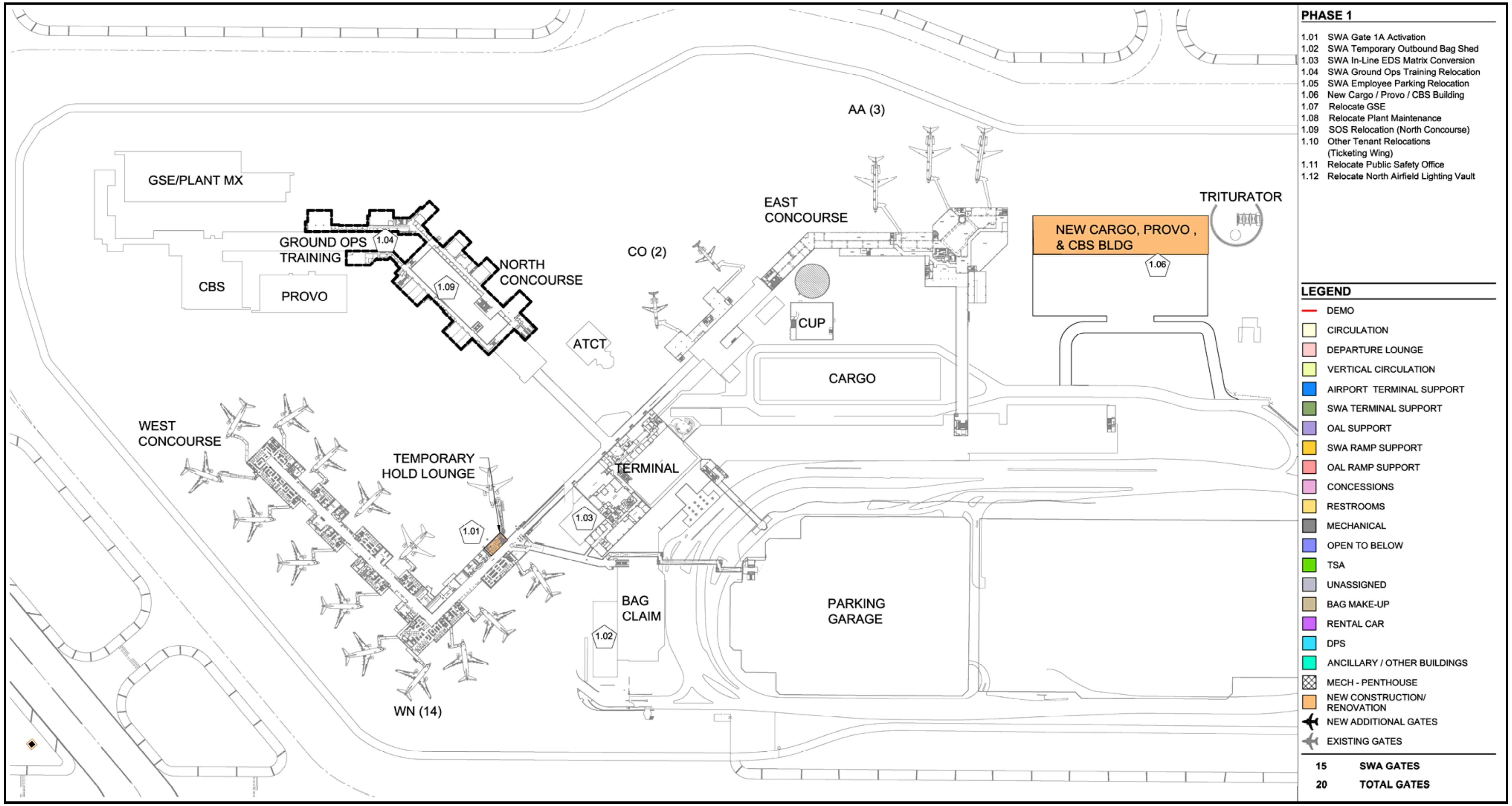
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-1.1
Option C Level 1 - Phase 1



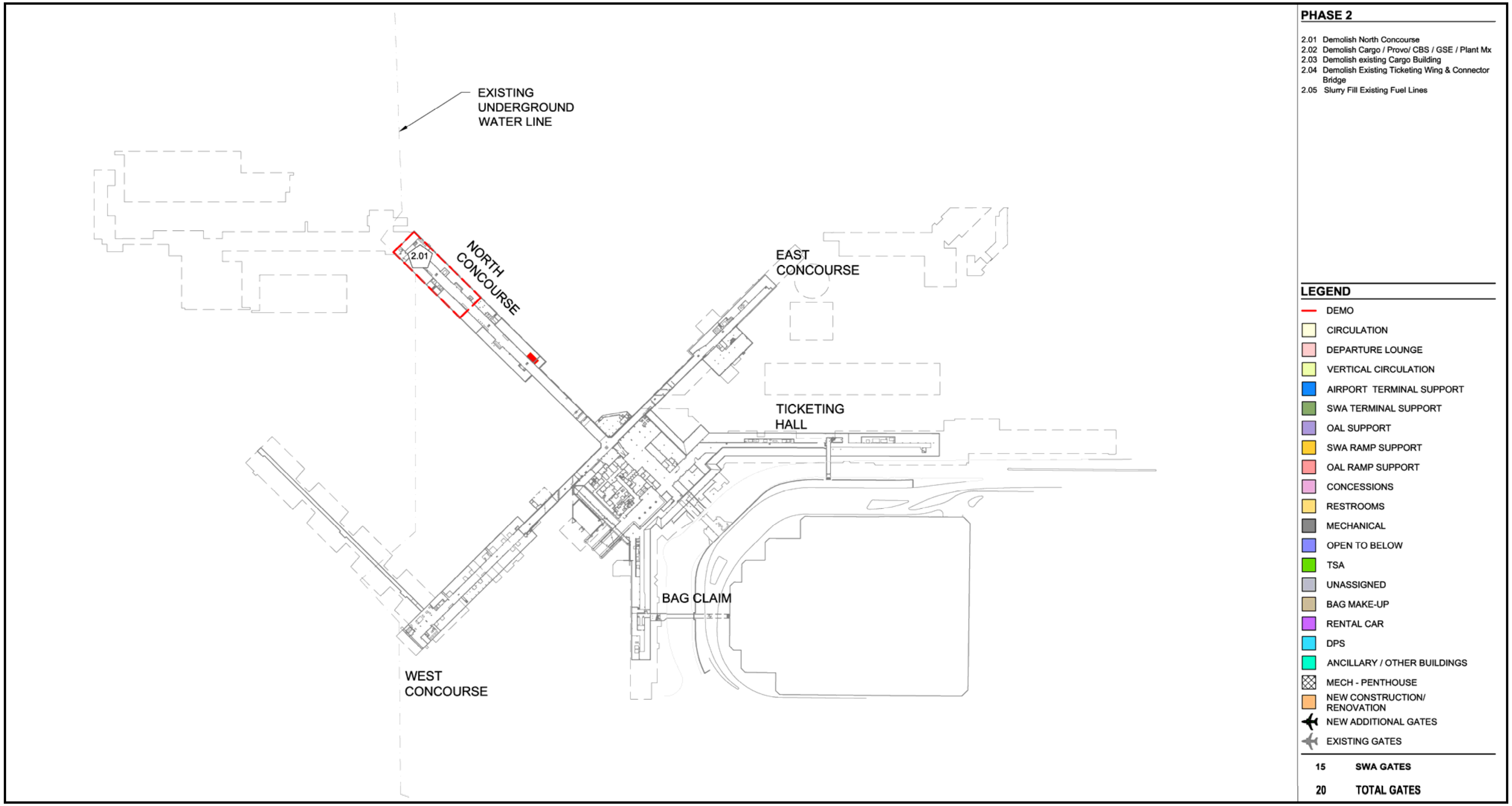
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-2.1
Option C Level 2 - Phase 1



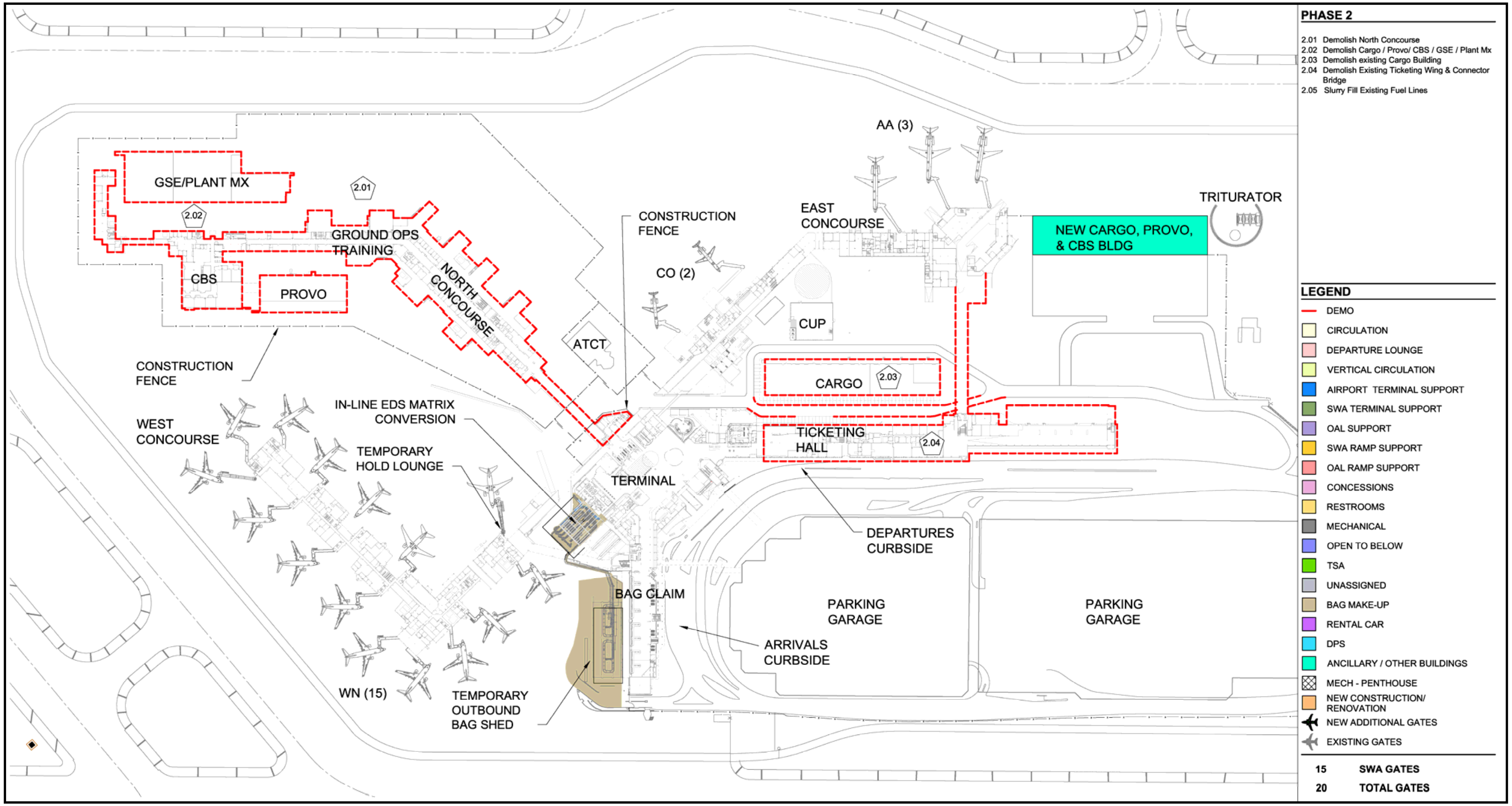
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-0.2
Option C Level 0 - Phase 2



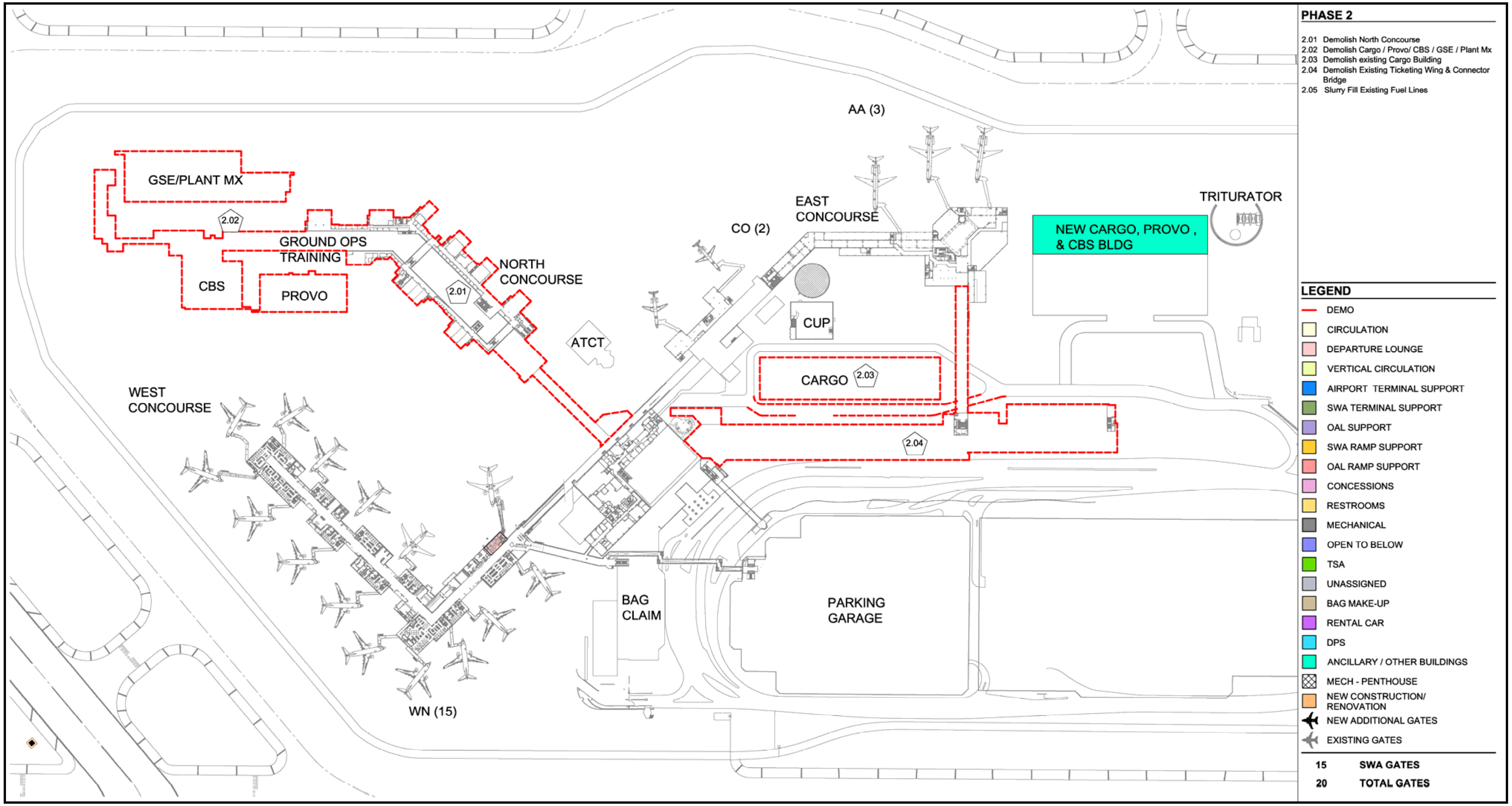
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-1.2
Option C Level 1 - Phase 2



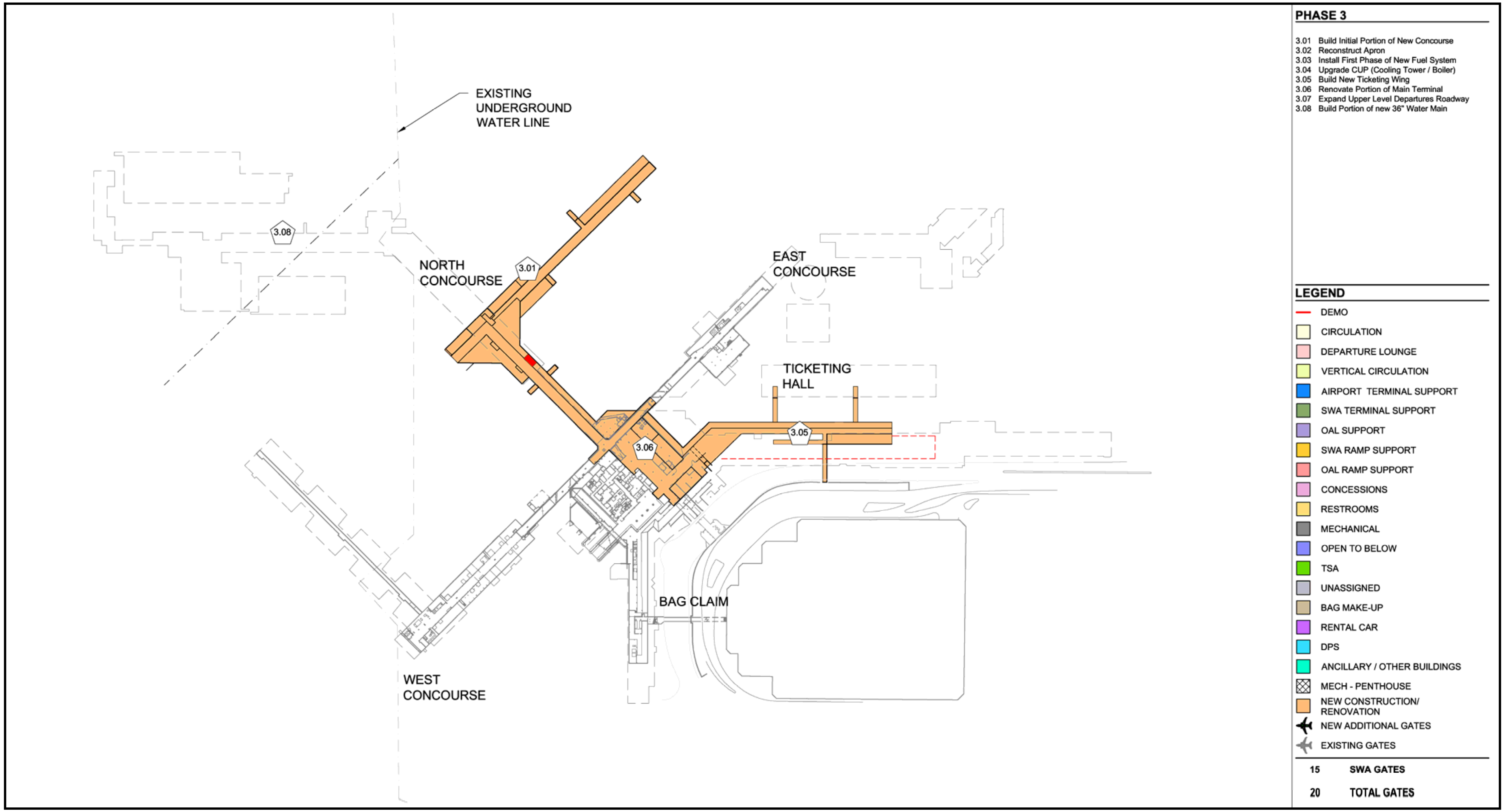
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-2.2
Option C Level 2 - Phase 2



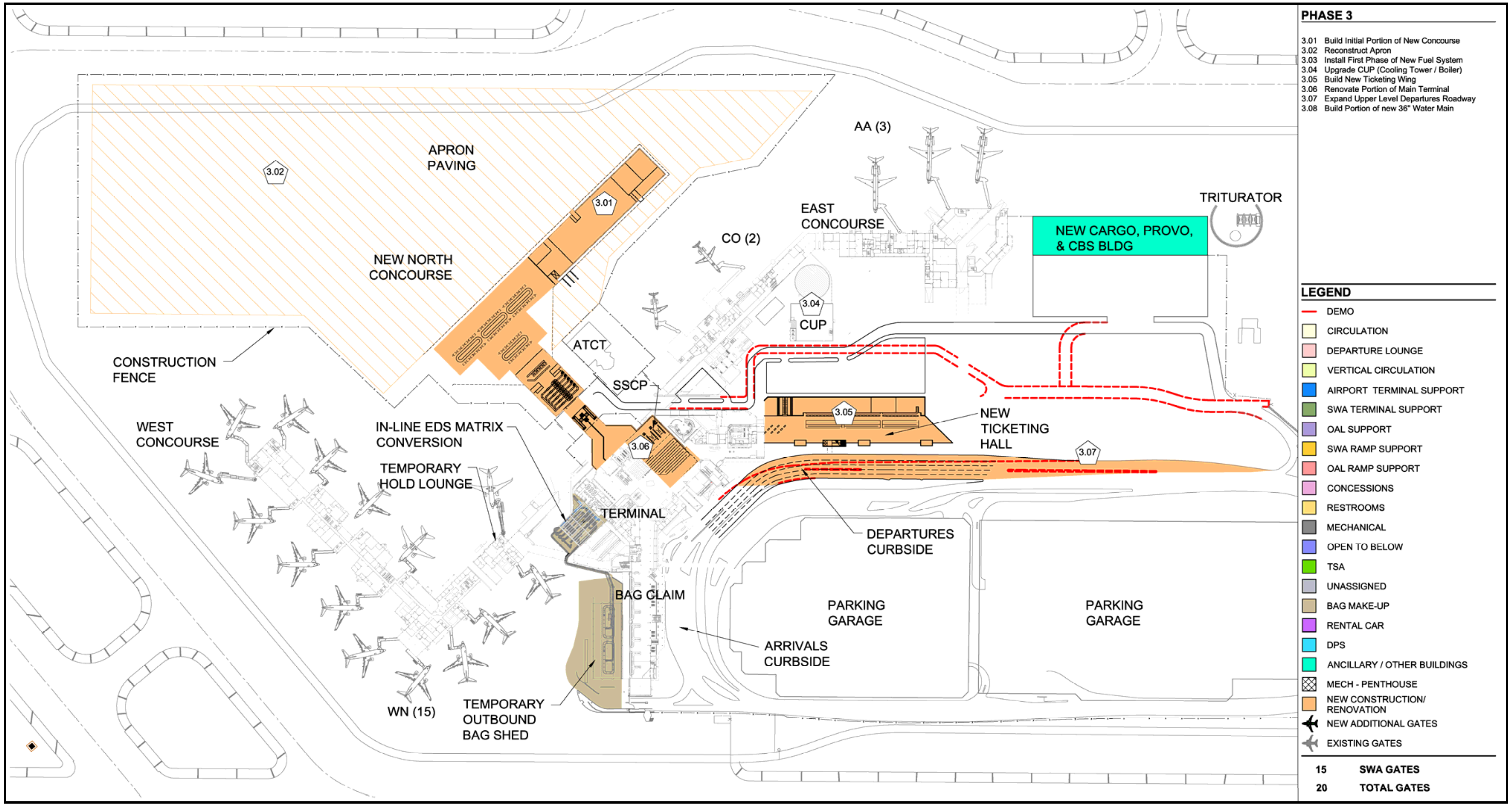
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-0.3
Option C Level 0 - Phase 3



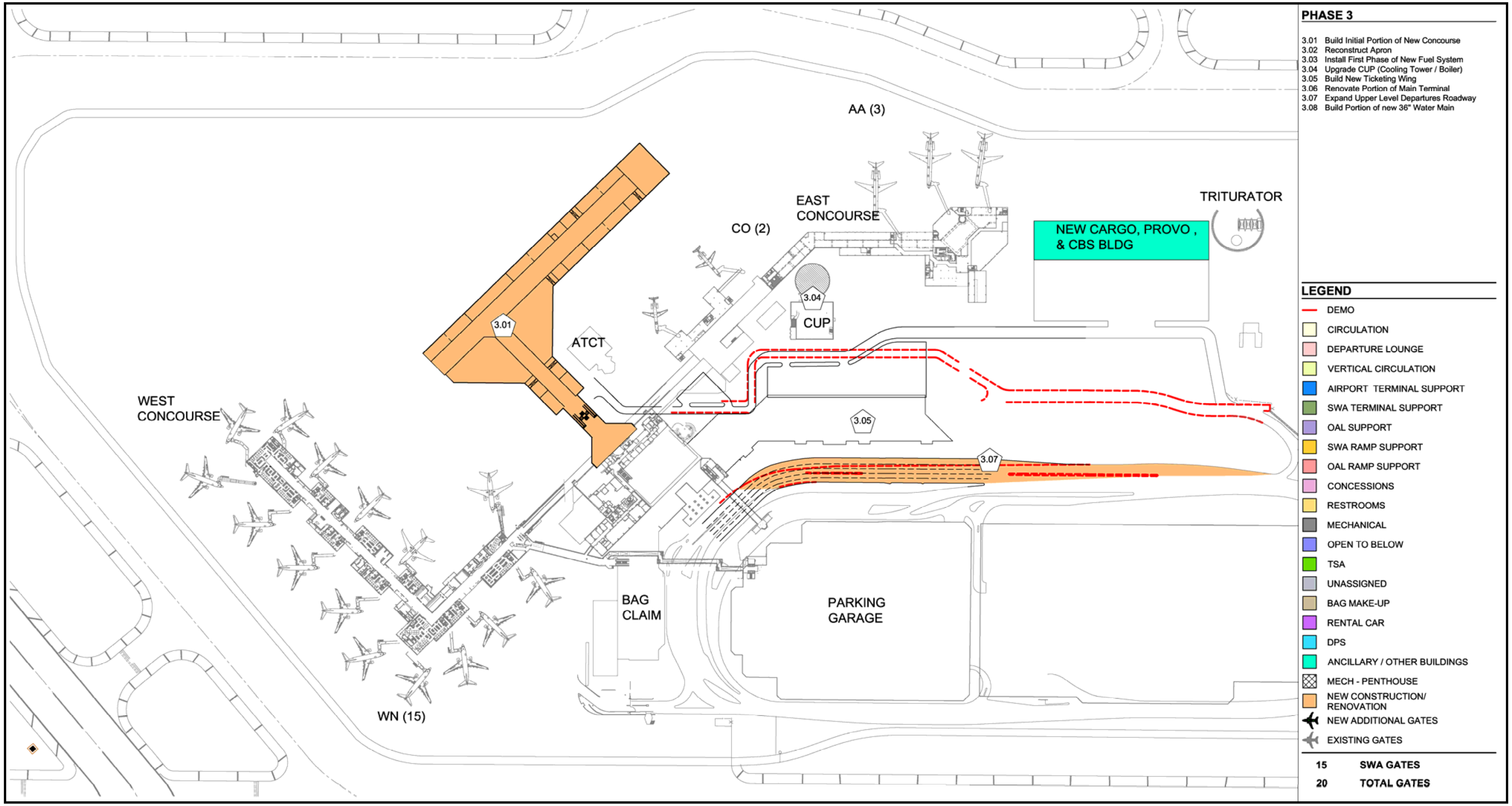
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-1.3
Option C Level 1 - Phase 3



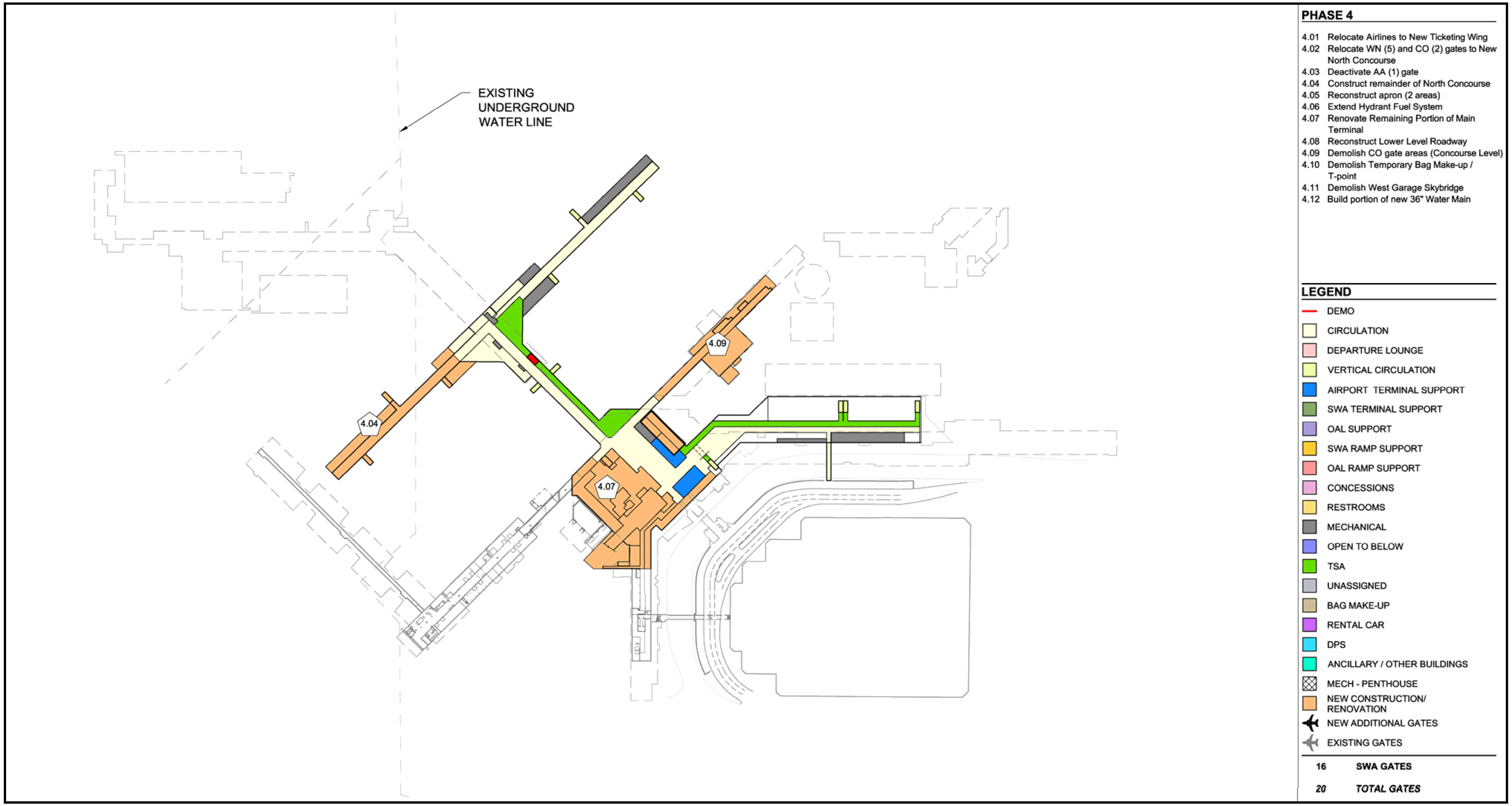
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-2.3
Option C Level 2 - Phase 3



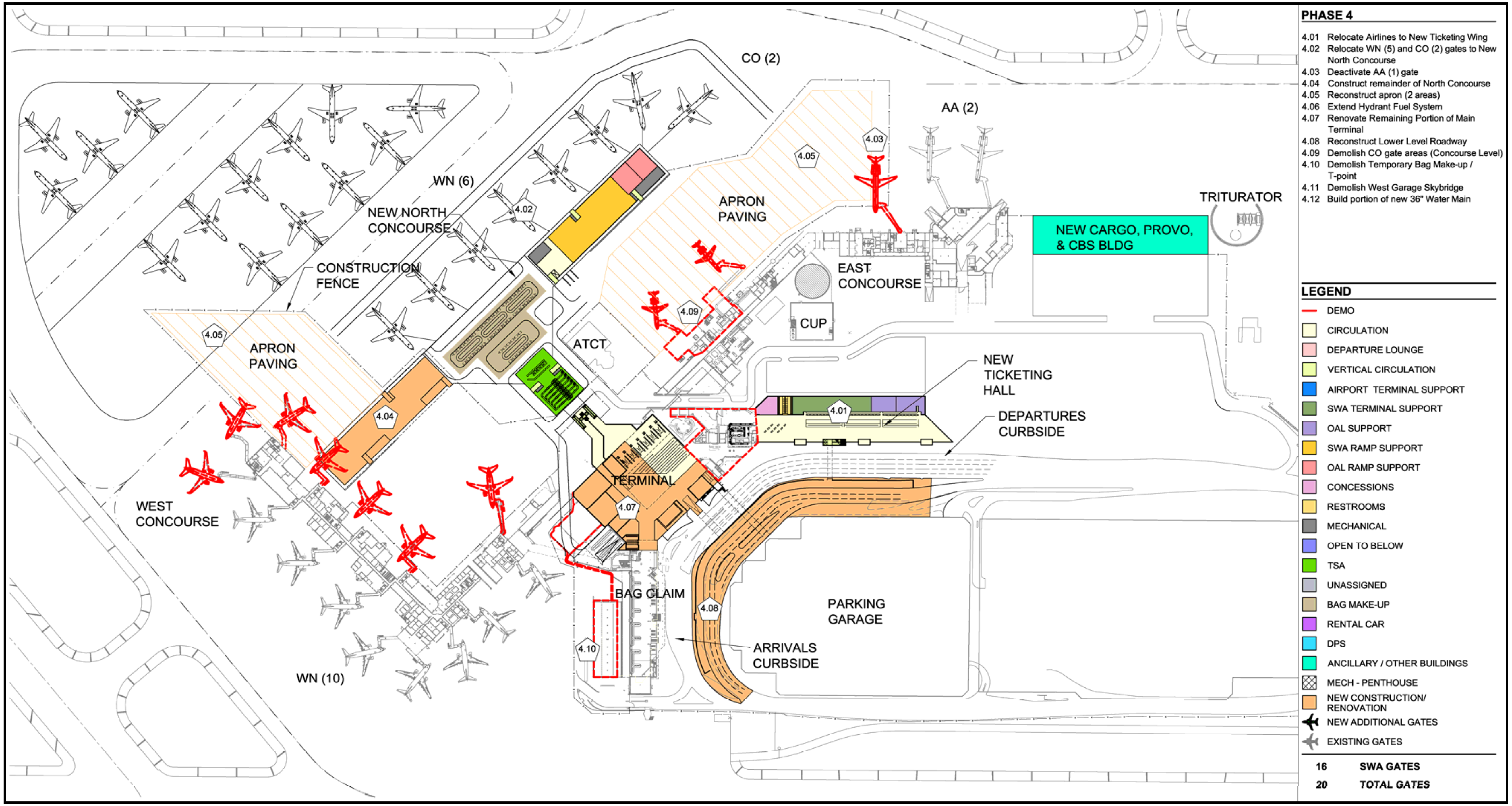
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-0.4
Option C Level 0 - Phase 4



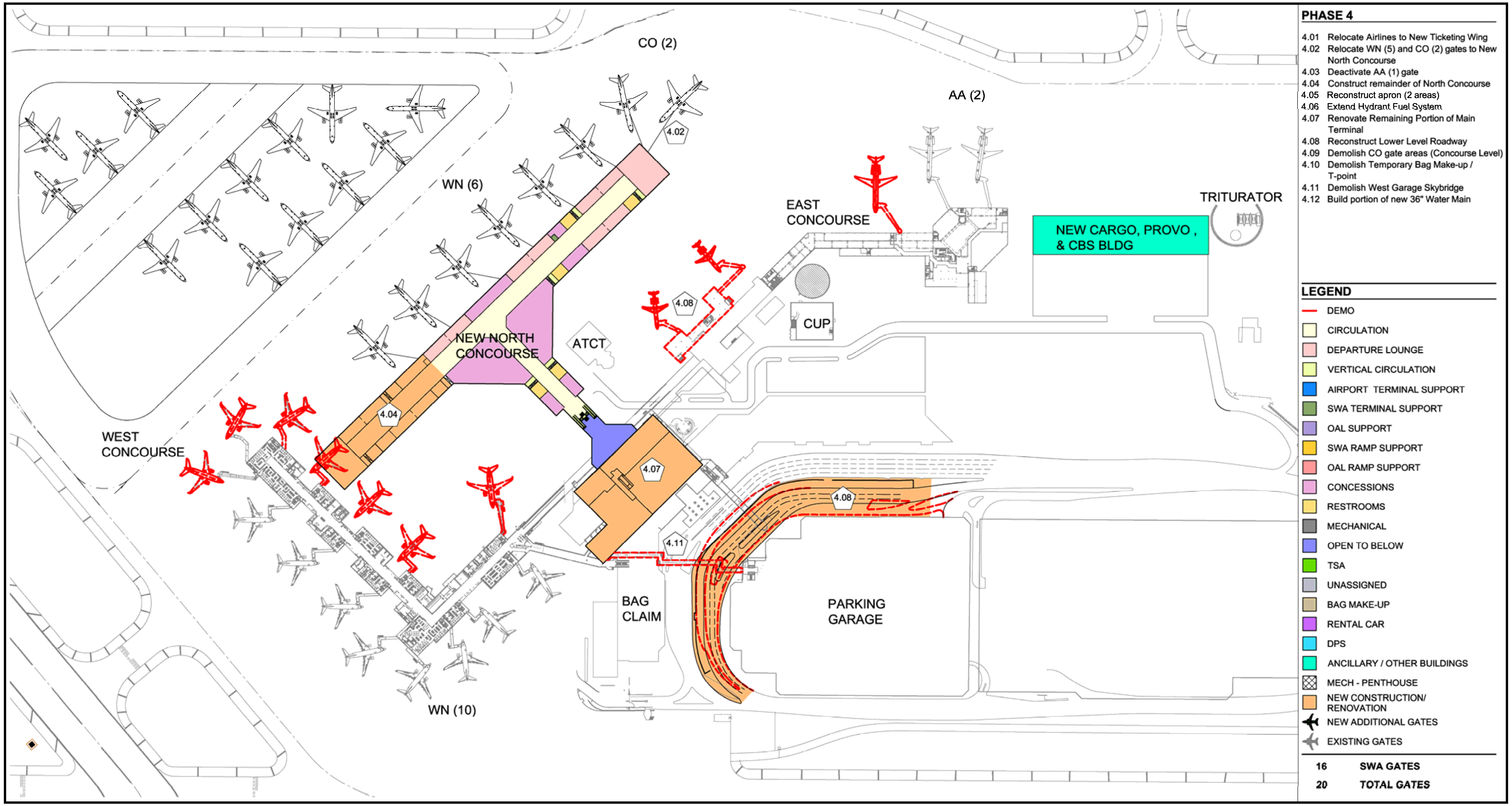
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-1.4
Option C Level 1 - Phase 4



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-2.4
Option C Level 2 - Phase 4



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-0.5
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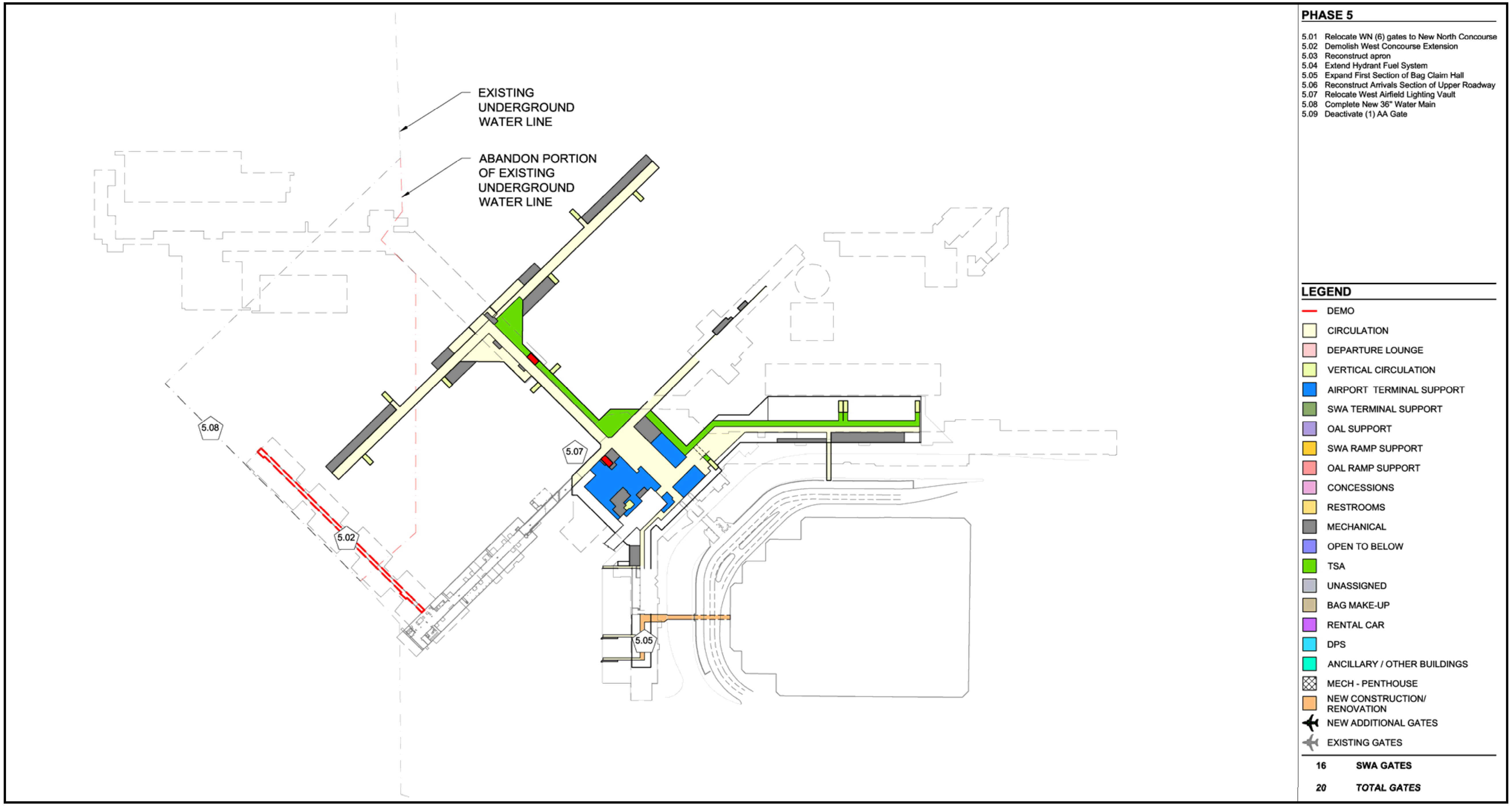
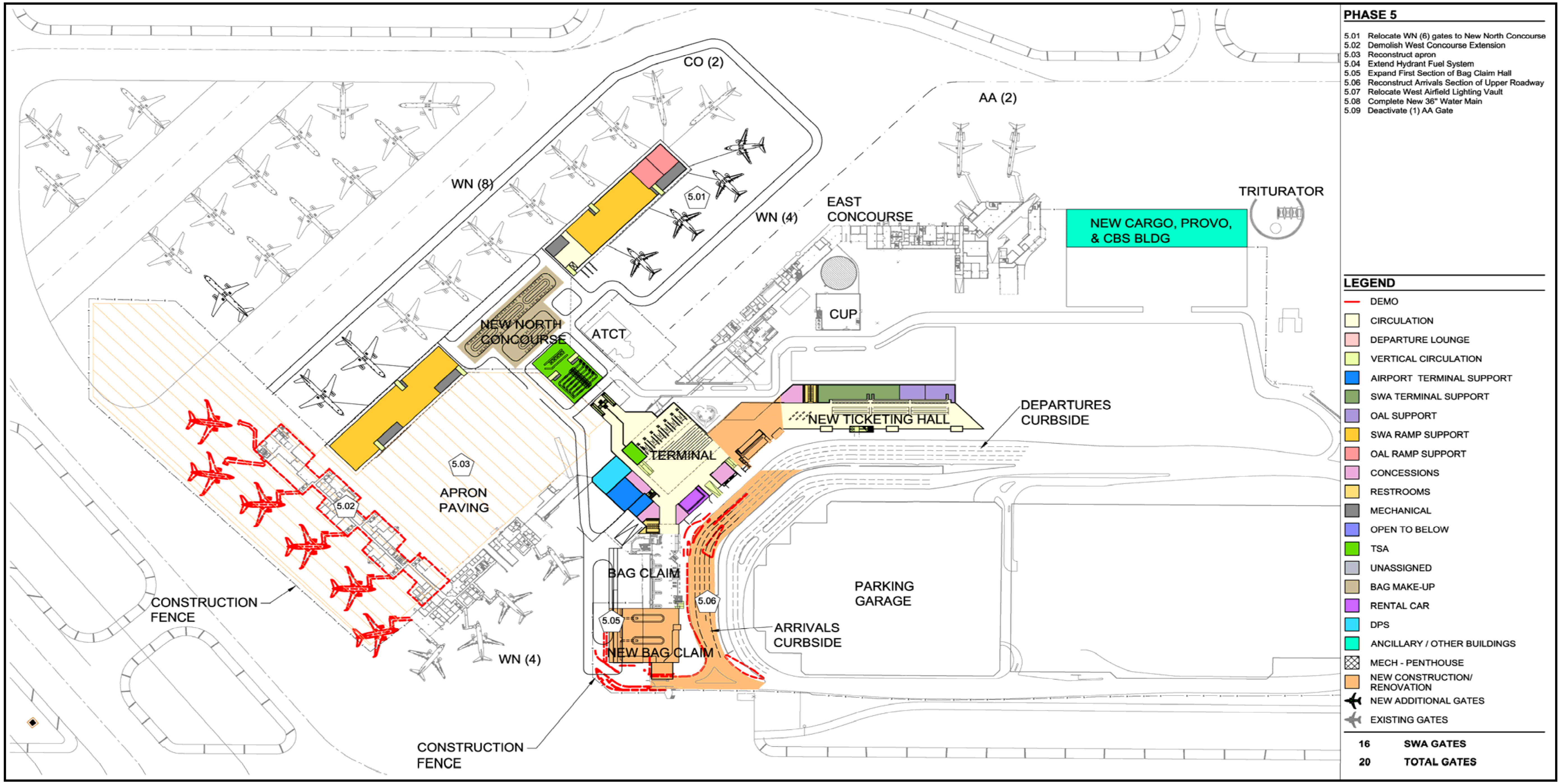


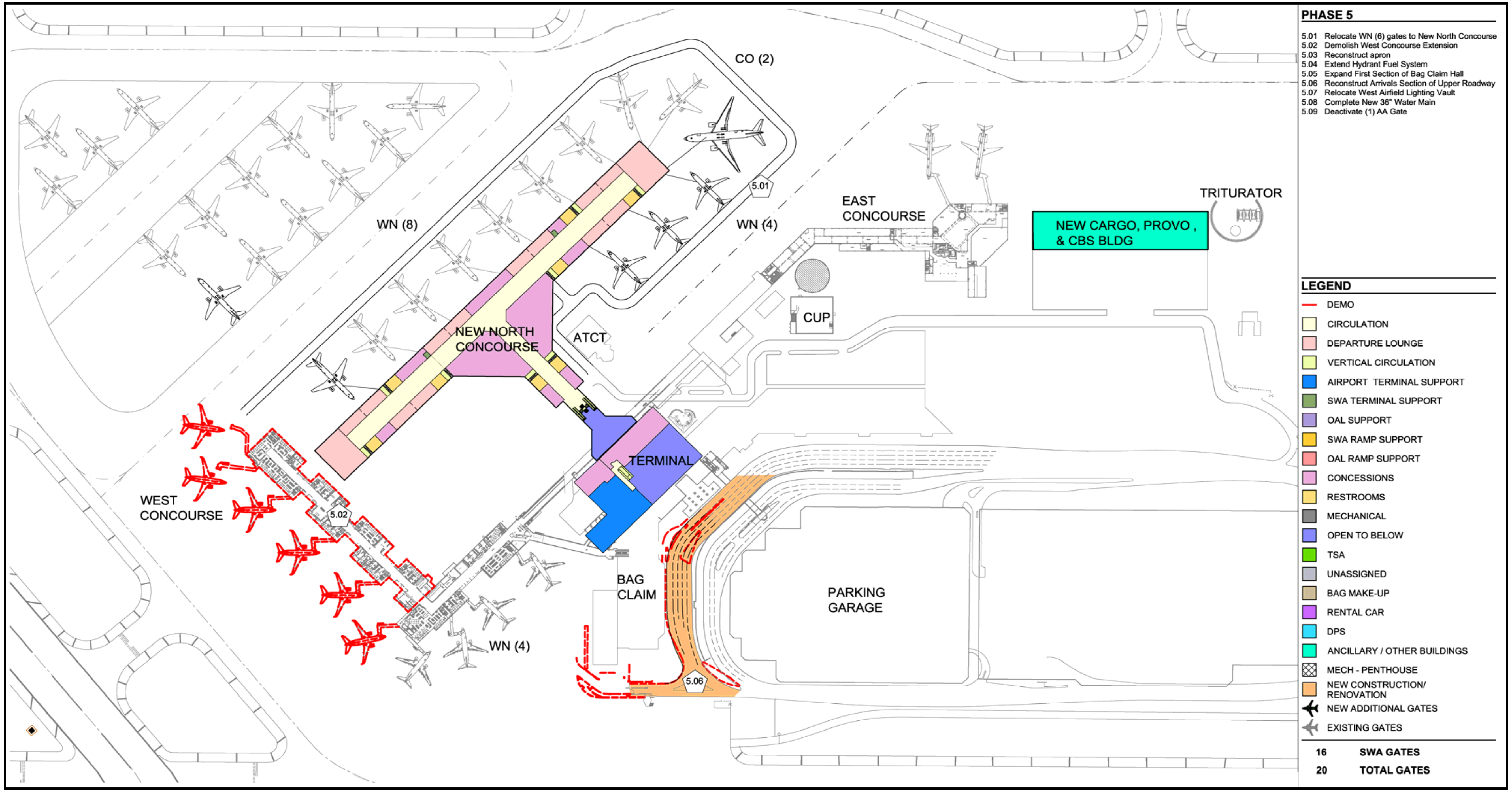
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-1.5
Option C Level 1 - Phase 5



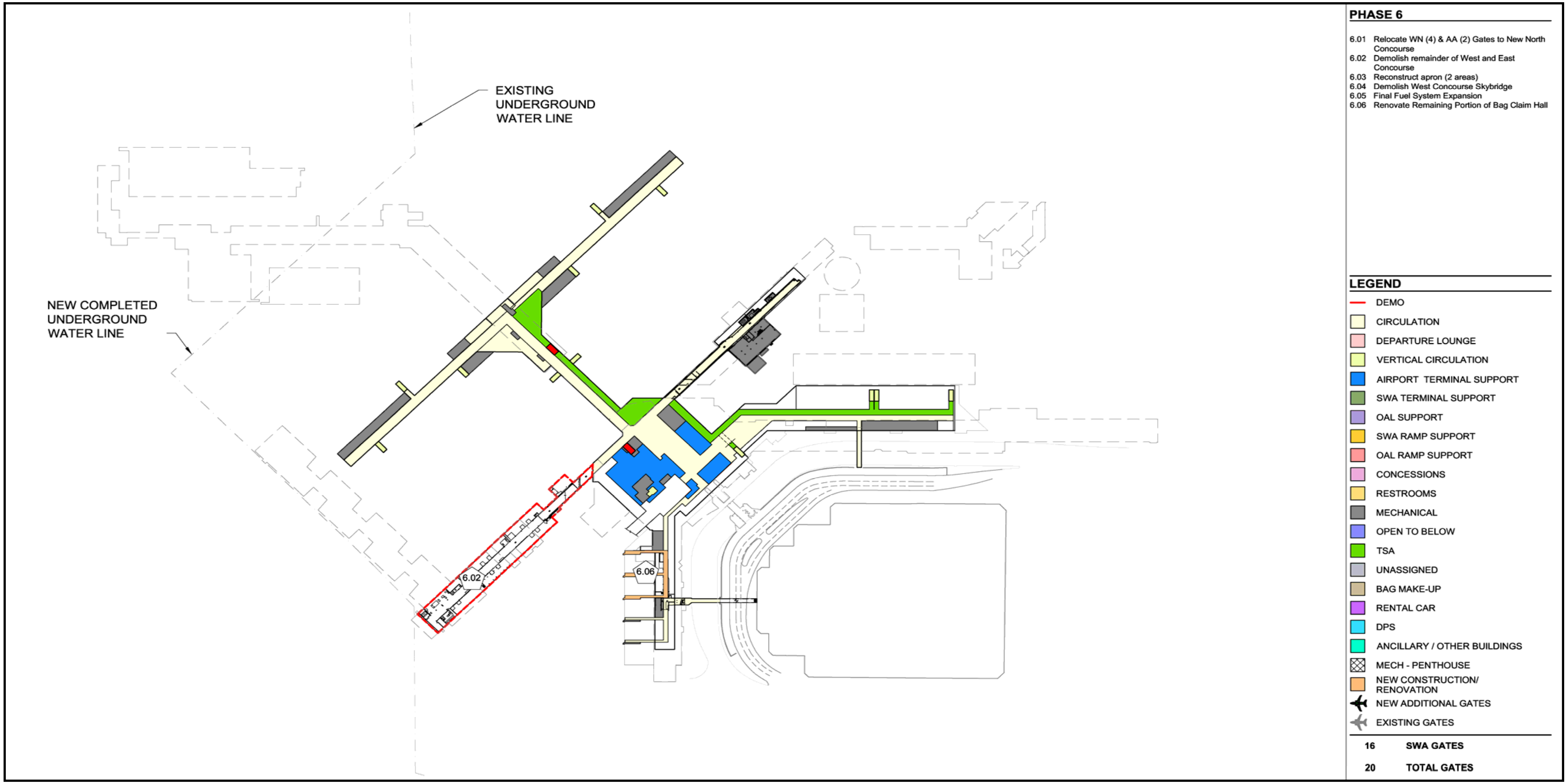
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-2.5
Option C Level 2 - Phase 5



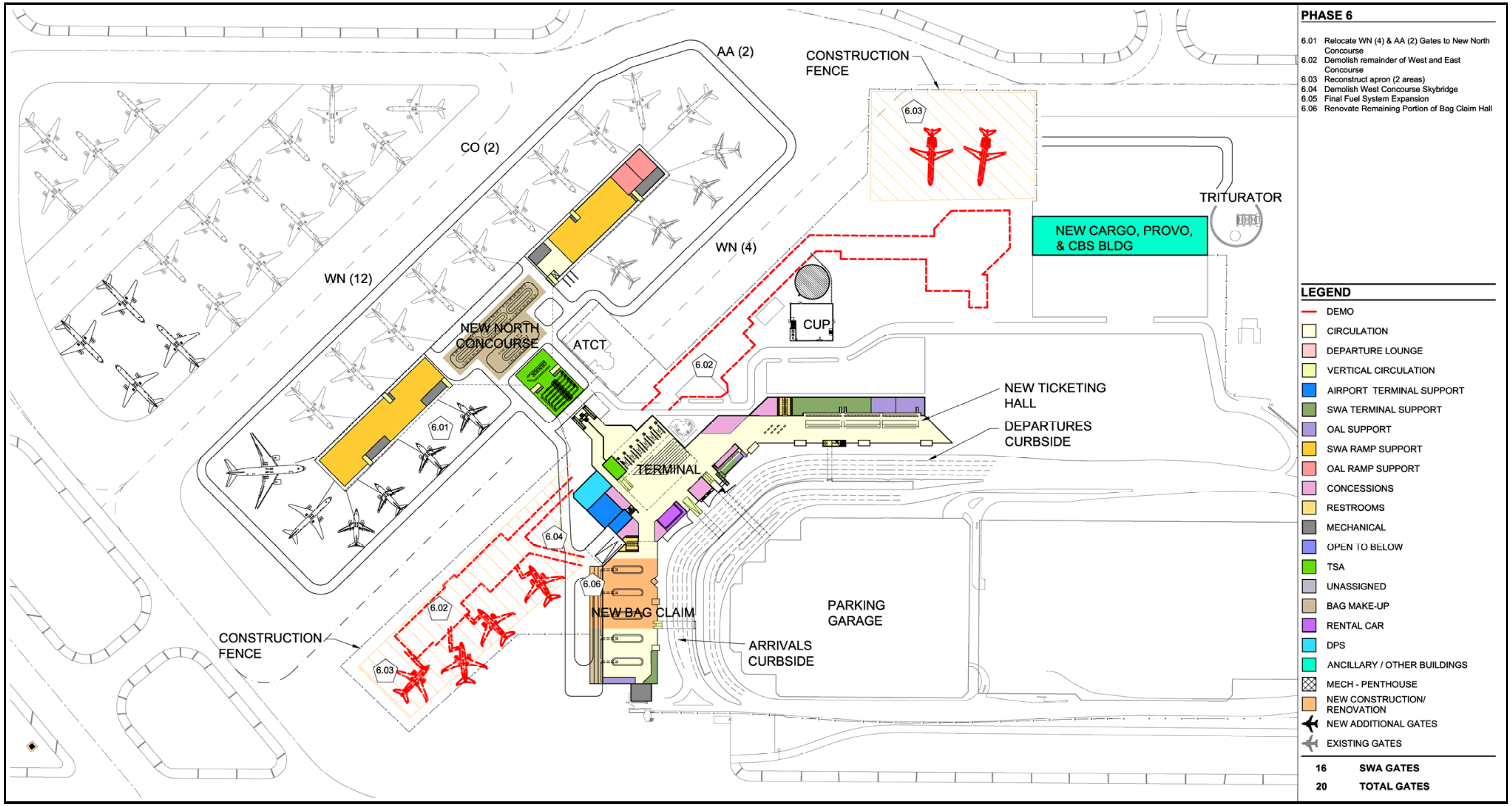
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-0.6
Option C Level 0 - Phase 6



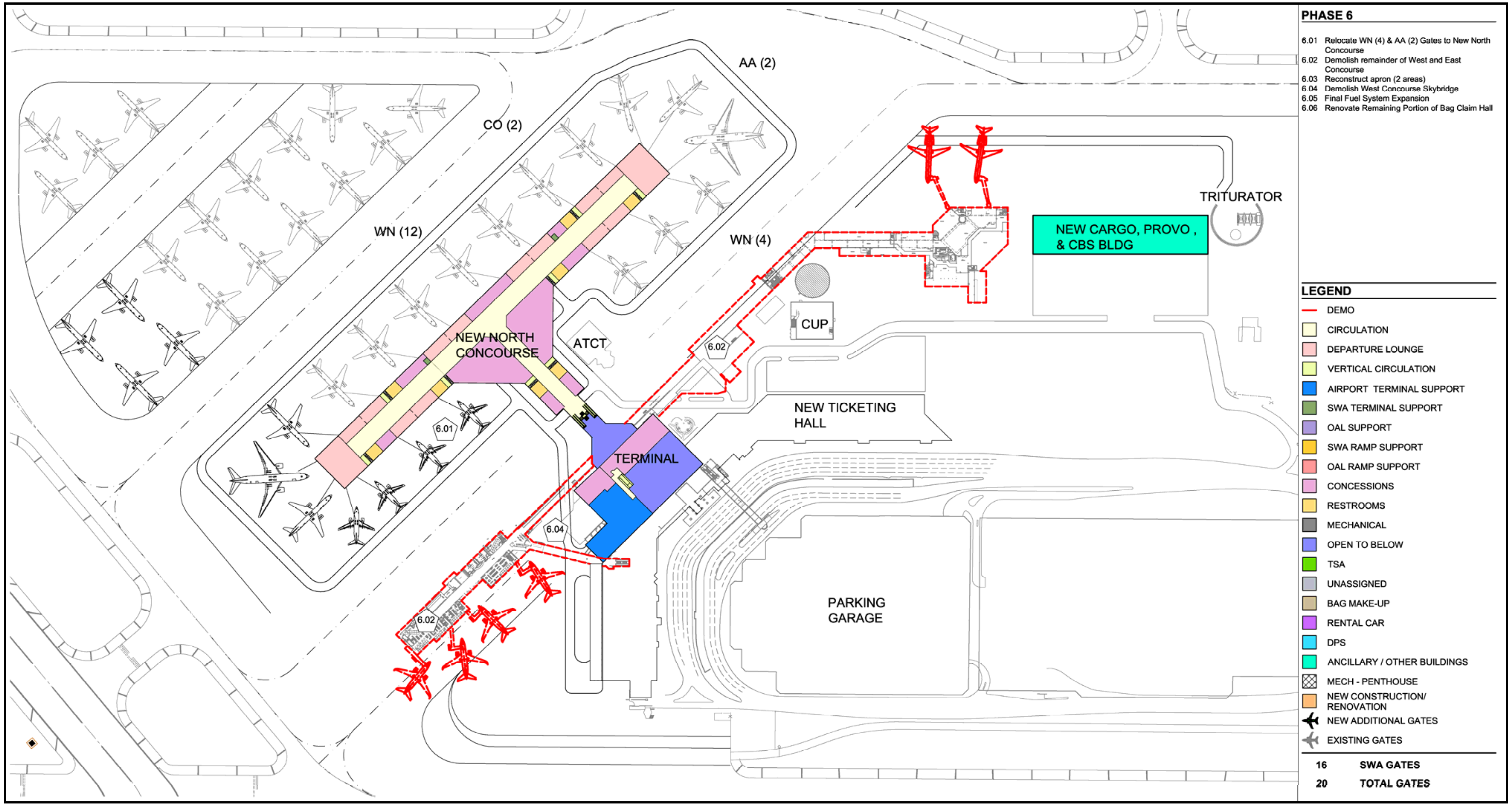
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-1.6
Option C Level 1 - Phase 6



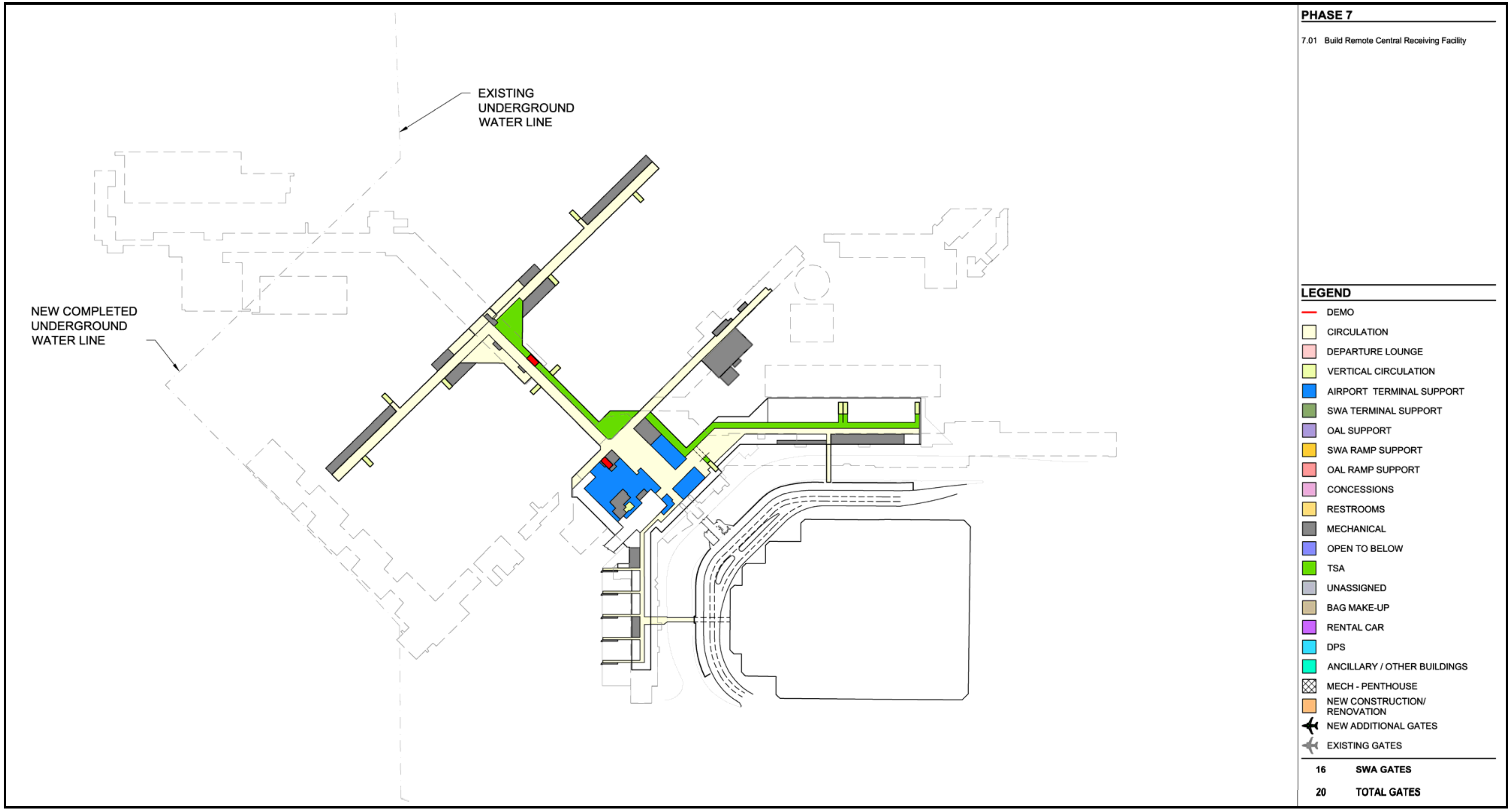
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-2.6
Option C Level 2 - Phase 6



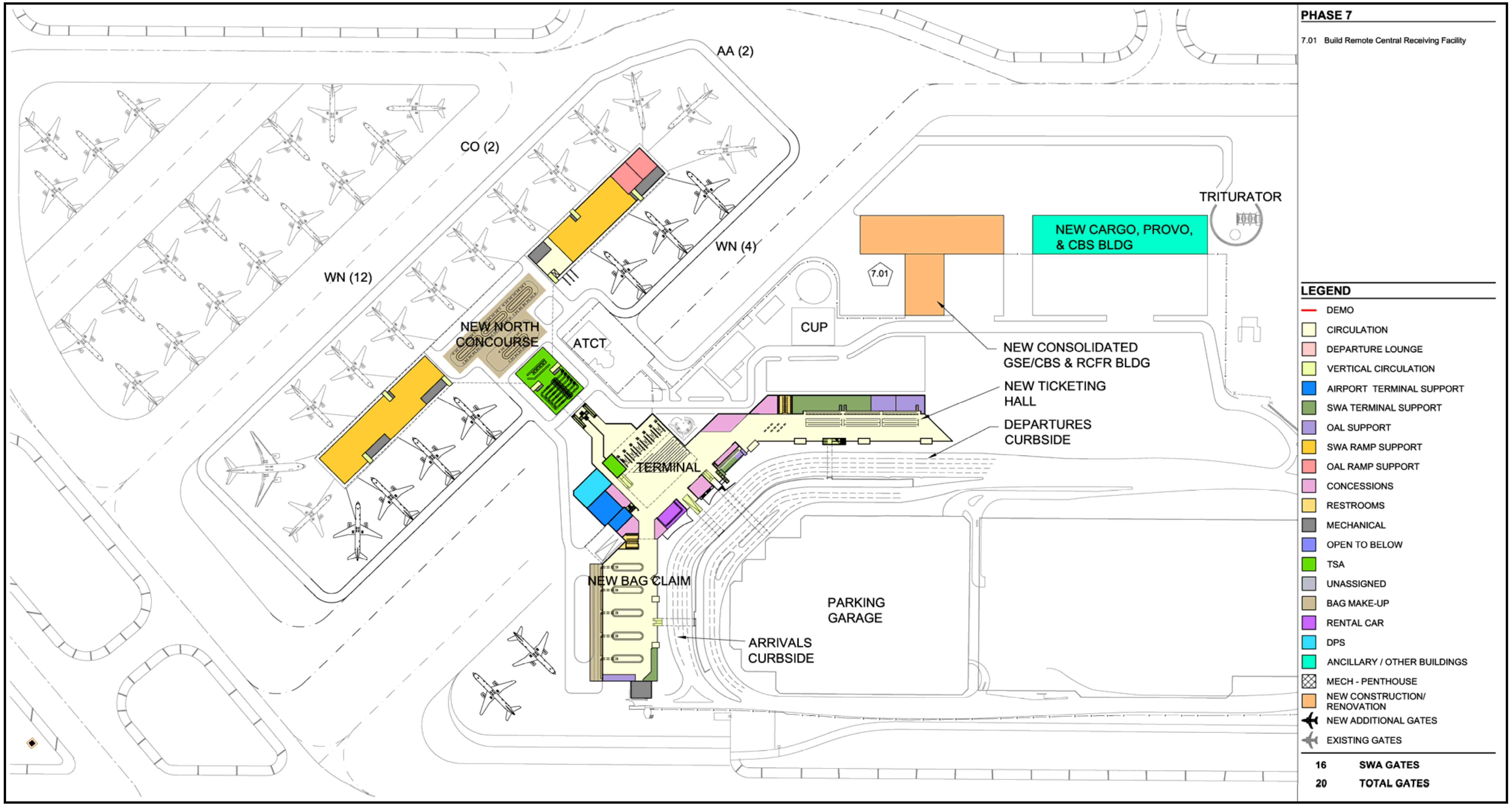
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-0.7
Option C Level 0 – Phase 7



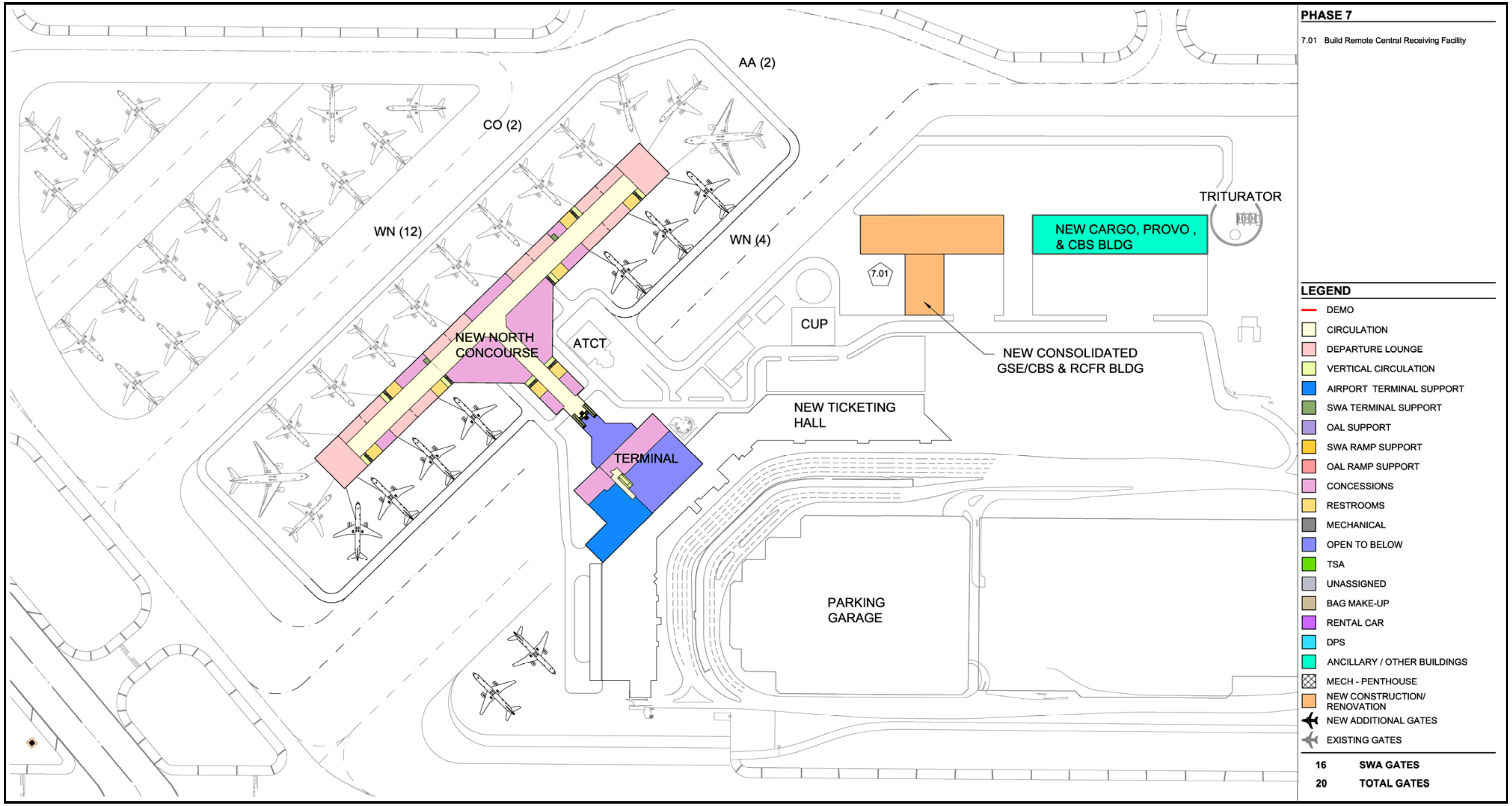
Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-1.7
Option C Level 1 - Phase 7



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Figure 5-2.7
Option C Level 2 - Phase 7



Source: Corgan Associates, Inc., 2008
Prepared by: Ricondo & Associates, Inc., March 2008

Chapter 6: CAD Standards

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SECTION 6.0 - OVERVIEW

This standard has been developed for the City of Dallas Love Field (DAL) draft Terminal Area Redevelopment Plan Study (TARPS) and Revised Capital Improvements Program (C.I.P.). In compiling this standard, several existing standards were analyzed, to be used as a basis, including FAA-STD-002e, National Institute of Building Sciences National CAD Standard and the AIA Standard version 2. Revisions and modifications to these standards were made as required by updated software systems and DAL specific requirements. Projects under design or construction will not be required to conform to this standard. Record drawings shall be modified to conform to this CAD Standard.

This standard is to be utilized for all projects started after the acceptance of this standard by the City of Dallas and Dallas Love Field Department of Aviation. The standard will be applicable at Love Field Airport. The primary objectives of this manual are to:

- Establish consistent quality and uniformity in appearance of CAD products.
- Establish uniform procedures for document control.
- Establish a standard layering system.
- Establish file and sheet naming procedures.

Any deviations from this standard shall be coordinated in writing with the DAL Project Manager prior to execution of the deviation. The City of Dallas Department of Aviation reserves the right to modify this standard, as needed, and will not be liable for errors and omissions in this standard. To obtain the latest version of this standard, please contact: Dallas Love Field Airport Architect at 214.670.6073.

SECTION 6.1 – DRAWING REQUIREMENTS

Drawing File Format

All electronic drawings shall be created and maintained in native AutoCad release 2004 using the vector file format (DWG). If an alternate release of AutoCad is desired, permission must be obtained from Airport Project Manager prior to project initiation. Use of MicroStation or translations from MicroStation will not be allowed. It is the responsibility of the consultant to verify the latest version of AutoCad being utilized by the City of Dallas prior to beginning any work, to ensure file compatibility.

Airport CAD Files

Prior to beginning any project, consultants must obtain copies of the most current existing electronic CAD files from Dallas Love Field Airport. In addition to current existing files, consultants will be provided with template files for all outlined disciplines with standard layers and settings established for use on projects at DAL. These existing files should be renamed per the following standards and utilized for the duration of project. Upon completion of the project, consultants are required to provide DAL with electronic versions of model and sheet files to enable the airport to maintain updated and current electronic drawing files. Template files for all disciplines are also available from the Airport for ease of using this CAD Standard.

Acceptable Sheet Sizes

The standard drawing size shall be 30”x42” or 24”x36”. Other sizes may be allowed as required for specific project needs, but approval shall be coordinated in writing with the Dallas Love Field Project Manager prior to project start. Consultants shall request the DAL standard 30”x42” title block with proper layers and layout for use on all projects.

Creation of CAD Files

All CAD sheet files should be created at full scale (1:1). Drawing Title Blocks and text heights should be created to fit the full scale drawing size. In order to achieve different scaled views required for construction documents, the use of differently scaled paper space view ports will be utilized. Refer to *Figure 6-1* for View Port Scale Factor conversions. All plotting will be at 1:1, eliminating the need for scaled plots. For additional information regarding text scales and placement refer to Section 6.3-“Text”.

Plotted Scale	Scale Factor		Plotted Scale	Scale Factor
Architectural			Engineering	
1/16” = 1’-0”	192		1” = 10’-0”	120
1/8” = 1’-0”	96		1” = 20’-0”	240
3/16” = 1’-0”	64		1” = 30’-0”	360
1/4” = 1’-0”	48		1” = 40’-0”	480
3/8” = 1’-0”	32		1” = 50’-0”	600
1/2” = 1’-0”	24		1” = 60’-0”	720
3/4” = 1’-0”	16		1” = 100’-0”	1200
1” = 1’-0”	12			
1 1/2” =1’-0”	8			
3” = 1’-0”	4			
6” = 1’-0”	2			
12” = 1’-0”	1			

Figure 6-1: View Port Scale Table

Title Block

The title block shown in *Figure 6-2* is to be used as the standard format. All title blocks should be referenced into the paper space of a sheet file. The following information is required to be included on all title blocks.

1. Project Title and Address.
2. Issue and Revision Table.
3. FAA Project Number if applicable.
4. Dallas Love Field Project Number.
5. Consultant Project Number.
6. Consultant Sealing Location.
7. Drawing File Name.

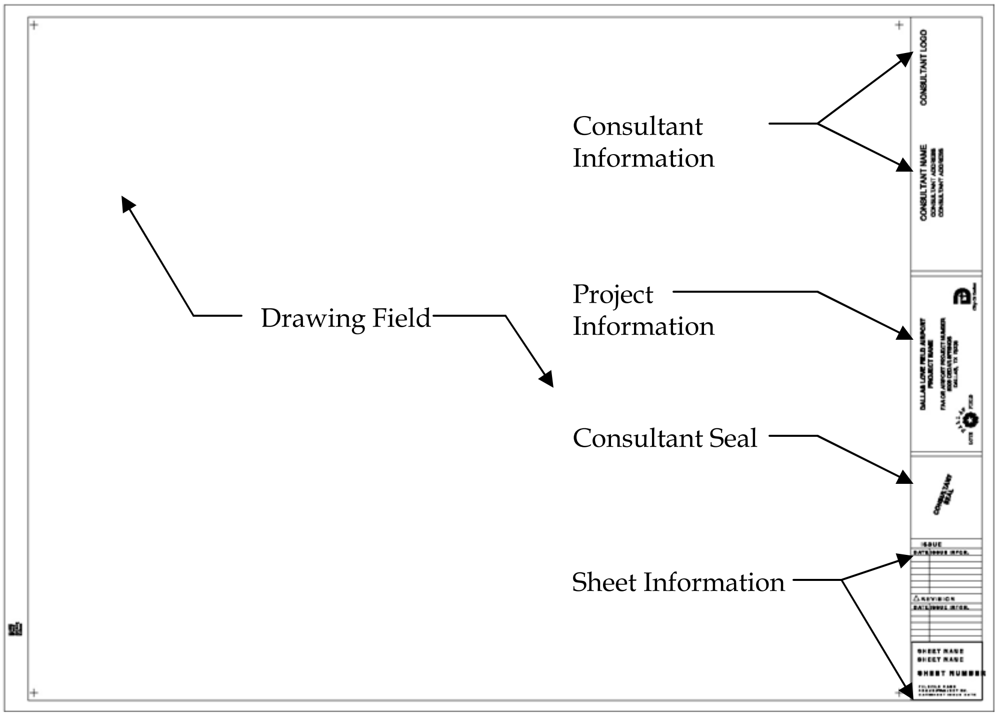


Figure 6-2: Overall Title Block

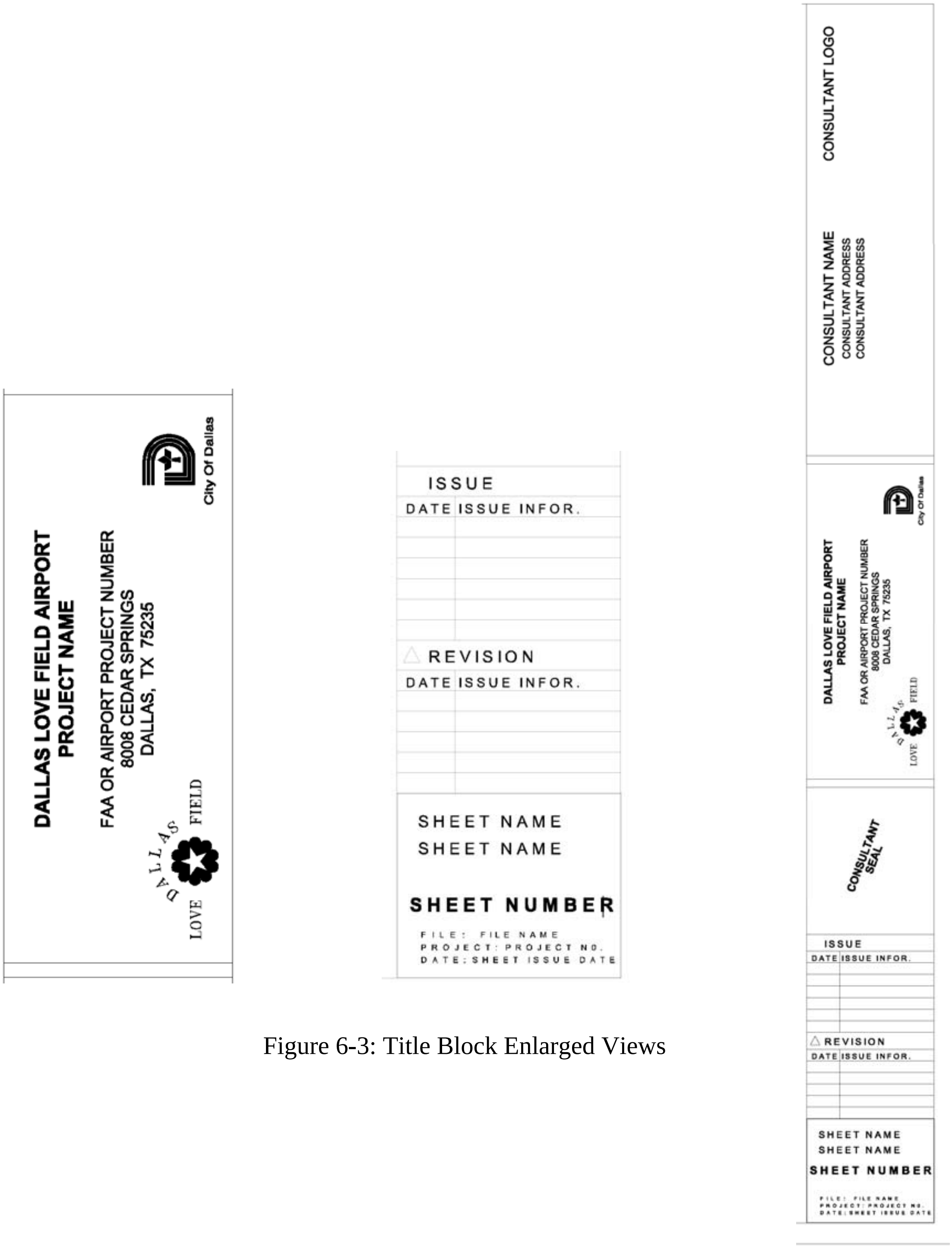


Figure 6-3: Title Block Enlarged Views

SECTION 6.2 – FILE NAMING CONVENTIONS

File Naming Convention

It is essential that the drawing file naming scheme be one that:

- Facilitates electronic archiving, retrieval and interchange.
- Readily relates the drawing of the facility or object being represented.
- Facilitates unique identification
- Promotes reuse of existing drawings.

The file naming structure shall be divided into two separate categories; model files and sheet files. Model files are computer files containing graphic descriptions of all building elements. Sheet files represent the individual sheets used in a construction document set. The naming convention for both file types will be a twelve character system.

Model File Naming Structure

Model files shall use the following 12 character naming convention: 765425AFP-01. The first four characters represent the project specific number provided by Dallas Love Field. The next two characters will represent the last two digits of the year the project was initiated. Projects initiated in 2005 through 2009 use 25 through 29 as first two characters, while projects initiated after 2010 use last two digits of four digit year, i.e. 2015 the first two numbers will be 15. The seventh character represents the discipline that generated the file; refer to the following list for discipline codes. The eighth and ninth characters provide a general file type description; refer to the following list for general file types. The tenth character is a dash (-) to allow for project specific variables such as options or schemes. The final two characters represent the level of a building or number of files of this type. An example of 765425AFP-01.dwg represents a drawing for DAL Project # 7654, initiated in 2005, as an Architectural floor plan level one.

Discipline Codes:

A = Architectural
F = Fire Protection
I = Interiors
P = Plumbing
S = Structural
X = Other Disciplines
Z = Contractor/Shop drawings

C = Civil
G = General
L = Landscaping
Q = Equipment
R = Fueling Systems
T = Telecommunications

E = Electrical
H = Hazardous Materials
M = Mechanical
N = Airfield
B = Baggage Systems

General file types:

FP = Floor Plan
RP = Roof Plan
SC = Section File
SP = Site Plan
UP = Underground Utilities
LP = Lighting Plan
CP = Ceiling Plan
EL = Elevation File
PG = Parking Garage
RF = Roadway File
SF = Schedule File
RG = Fueling File
CG = Column Grid
DT = Detail File
GP = Graphic Plan (Signage)
NP = Airfield Plan
PP = Power Plan

For any general file types not listed specifically, coordinate these proposed file types with DAL project manager. Proposed general file types shall be two characters and shall not repeat any currently used. Detail files will include enlarged sections, section details and plan details.

Existing Files will be named the same as above with an 'X' preceding the file type abbreviations. For example, an existing Floor Plan will be named XFP = Existing Floor Plan and an existing Column Grid will be named XCG = Existing Column Grid. In order to maintain the twelve character naming convention, the dash character will be omitted. For example, an existing floor plan of the second level would be named 765425AXFP02. If project specific requirements result in the need for additional sheets beyond the twelve allowed by this convention please coordinate with the Airport Project Manager prior to modifying the naming convention.

Sheet File Naming Structure

Sheet files shall use the following 12 character naming convention: 765425A2-102. The first four characters represent the Airport provided project number, 7654 above example. The next two characters will represent the last two digits of the year the project was initiated. Projects initiated in 2005 through 2009 use 25 through 29 as first two characters, while projects initiated after 2010 use last two digits of four digit year, i.e. 2015 the first two numbers will be 15. The seventh and eighth characters will describe the sheet series using the following list for each discipline. The ninth character will be a dash (-) for project specific variables, such as different schemes or options being reviewed. The tenth character will represent the level of the building, with the last two characters describing the specific sheet number and allows for sub-series division into sections to provide additional organization as required. A2-001 would be the first plan for the tunnel level and A2-101 would be the first plan for the ramp level. Project specific definitions of these subdivisions or modifications to the convention are allowable but shall be coordinated in writing with Airport Project Manager prior to implementation.

A Series = Architectural Drawings
A0-000 = Cover Sheet, Drawing Index, Code Study, General Notes, Phasing, Demolition
A1-000 = Site Plans (Overall Plans)
A2-000 = Floor Plans
A3-000 = Ceiling Plans

A4-000 = Exterior Elevations and Building Sections
A5-000 = Interior Elevations and Finish Schedules (Millwork Plans, Details, Interiors plans)

A6-000 = Vertical Circulation Enlarged Plans, Sections and Details
A7-000 = Enlarged Plans (Toilets, Security Checkpoint, BHS)
A8-000 = Details (Wall Sections, Plan Details, Section Details and Ceiling Details)
A9-000 = Door and Window Schedules (Door and Window Details)

B Series = Baggage Handling Systems Drawings
B0-000 = General Notes
B1-000 = Floor Plans
B2-000 = Enlarged Floor Plans
B3-000 = Schedules
B4-000 = Details

C Series = Civil Drawings
C0-000 = General Sheets (General Notes)
C1-000 = Existing Conditions (Sealed survey, demolition plans)
C2-000 = Layout (Site plan, Stakeout plans, roadway plan and profile)
C3-000 = Grading (Grading plan, SWPP, Structure charts, storm profiles)
C4-000 = Utilities (Utility plan, Sanitary and water plan and profiles)
C5-000 = Striping plans (Plane parking and airfield roadways)
C6-000 = Detail Sheets
C7-000 = Cross Sections
C8-000 = User Defined

L Series = Landscape Drawings
L0-000 = General Notes
L1-000 = Existing Conditions
L2-000 = Site plan (Landscaping, pavement and planting plans)
L3-000 = Irrigation Plan
L4-000 = Utilities (Utility plan, Sanitary and water plan and profiles)
L5-000 = Plant Schedules
L6-000 = Detail Sheets

S Series = Structural Drawings
S0-000 = General Notes
S1-000 = Site Work
S2-000 = Foundation Plan
S3-000 = Framing Plans
S4-000 = Elevations
S5-000 = Details
S6-000 = Schedules (Column and Beam Schedules)
S7-000 = User Defined

E Series = Electrical Drawings
E0-000 = General Notes
E1-000 = Site Plan
E2-000 = Floor Plans, Lighting
E3-000 = Floor Plans, Power
E4-000 = Ceiling Plans
E5-000 = Enlarged Plans
E6-000 = Single Line Diagrams
E7-000 = Schedules (Lighting and Equipment)
E8-000 = Details

M Series = Mechanical Drawings
M0-000 = General Notes
M1-000 = Site Plan
M2-000 = Floor Plans
M3-000 = Ceiling Plans
M4-000 = Details
M5-000 = Control Diagrams
M6-000 = Schedules
M7-000 = User Defined

P Series = Plumbing Drawings
P0-000 = General Notes
P1-000 = Site Plan
P2-000 = Floor Plans
P3-000 = Ceiling Plans
P4-000 = Riser Diagrams
P5-000 = Piping Flow Diagrams
P6-000 = Details
P7-000 = Schedules

T Series = Telecommunications Drawings
T0-000 = General Notes
T1-000 = Site Plan
T2-000 = Floor Plans (CCTV, FIDS, GIDS, BIDS, Security and Access Control)
T3-000 = Ceiling Plans
T4-000 = Single Line Diagrams
T5-000 = Details
T6-000 = Schedules

N Series = Airfield Electrical Drawings
N0-000 = General Notes
N1-000 = Site Plans
N2-000 = Single Line Diagrams
N3-000 = Details
N4-000 = Schedules

G Series = Graphics Drawings
G0-000 = General Notes
G1-000 = Site Plan
G2-000 = Floor Plans
G3-000 = Sections
G4-000 = Elevations
G5-000 = Schedules
G6-000 = Details

F Series = Fire Protection Drawings
F0-000 = General Notes
F1-000 = Site Plan
F2-000 = Floor Plans
F3-000 = Riser Diagrams
F4-000 = Details

SECTION 6.3 – STANDARD CONSTRUCTION DRAWING REQUIREMENTS

Layers

The layer naming convention included in this standard is based upon the AIA standard for layer naming, FAA layer standard and other related airport standards. It recognizes that it is no longer necessary to have line weights and color directly related. The colors for layers have been selected for visual differentiation while working on the files in AutoCAD. All work completed in model files shall have layer line weight, line type and color set to BYLAYER in the layer property manager to allow for any modifications that need to be made to drawings. For sections, details and elevations, the line weight may be adjusted to provide for appropriate line weights as required by general industry graphics standards. See *Appendix A* for layer naming, line type, color and line weight conventions.

Any additional layers required, but not provided for in current standard, may be added using the AIA standard layer naming process but shall be coordinated in writing with Airport Project Manager prior to implementation.

Text Placement, Fonts and Sizes

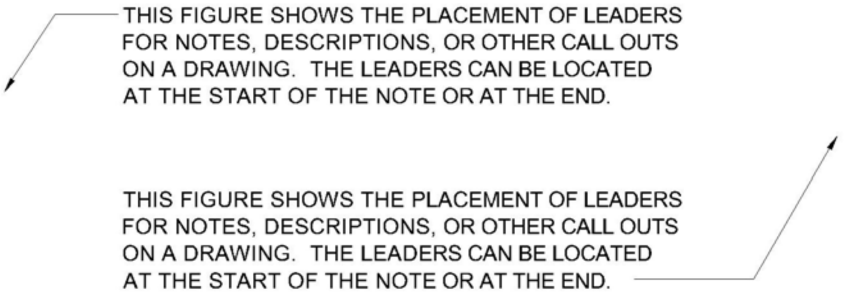
Text will be located in two general locations; in Sheet Files and in floor plan Model files. Text to be located in the Model Files shall be room names/numbers, door numbers and column grid information. This text shall be sized to plot correctly in 1/8" scale view ports in sheet files. The remainder of text information required shall be placed in the sheet files, that will include detail/section symbols, notes, keynotes, and similar text uses. Enlarged floor and ceiling plans should copy room names/numbers from model files and appropriately sized for plotting in sheet files. Alternate column grid bubbles and text are allowed for use in overall floor plans and should be placed on a separate layer that can be easily identified and text should be sized to print appropriately in sheet files. Refer to Layer section above for layer naming guidelines.

Two standard fonts shall be used in all model and sheet files: Arial for notes, subtitles, symbols and general text; and Arial Bold for titles and sheet numbers. No customized text fonts shall be used except for logos, including City of Dallas, Love Field and consultant logos. All drawing text shall be in upper case, except for special case abbreviations such as “dB” and “MHz” or use in logos. Special cases should be included on the abbreviation list provided at the beginning of construction document set. See *Appendix B* for approved abbreviation list, any modifications shall be coordinated with DAL Project Manager.

Notes and general text size shall 1/8” tall, subtitles and symbols text size shall be 5/32” and title text size shall be 3/16” tall when printed at full size. See *Figure 6-1* for scaling factors for alternate text and symbols that will appear in multiple scaled view ports. All alternate text locations shall be scaled to print to appropriate size listed above. Any deviations for location, font or size shall be coordinated in writing with Airport project manager prior to project initiation.

Leaders

Leaders are used with notes and dimensions to point out a specific item that needs additional description. Leaders consist of a short horizontal line, an angled line and an arrowhead (terminator) placed on the G-ANNO-TEXT layer. Arrowheads denote the termination of leader lines and show direction. Arrowheads shall be filled with a 3:1 ration for length to width and proportionally sized to any associated text. Arrowhead size shall be 1/8” for sheet files. Refer *Figure 6-4* for leader placement criteria.



THIS FIGURE SHOWS THE PLACEMENT OF LEADERS FOR NOTES, DESCRIPTIONS, OR OTHER CALL OUTS ON A DRAWING. THE LEADERS CAN BE LOCATED AT THE START OF THE NOTE OR AT THE END.

THIS FIGURE SHOWS THE PLACEMENT OF LEADERS FOR NOTES, DESCRIPTIONS, OR OTHER CALL OUTS ON A DRAWING. THE LEADERS CAN BE LOCATED AT THE START OF THE NOTE OR AT THE END.

Figure 6-4 -Leader Placement

Drawing Units

The units for all A/E/C drawings shall be in feet and inches and fractions of an inch, with the smallest fraction being 1/8”. The use of decimal feet, inches and hundredths of and inch will also be acceptable. Dimensions of less than a foot must be shown in inches or fractions of inches. The use of Metric Units may be allowable but should be coordinated with DAL Project Manager prior to the start of the project. Metric unit files, if used should be identified as such and a procedure to provide feet and inch conversions for DAL record drawings shall be provided.

Drawing Origins

The existing model files shall have a common insertion point that will allow for consistent location and orientation of all drawing files. This will allow for file use by multiple disciplines and projects with consistent and accurate file location.

Dimensioning

All dimensioning shall be placed in sheet files at 1-to-1 scale. No dimensioning in model files is allowed, as it requires multiple dimension strings to document the building. Refer to *Figure 6-5 and Figure 6-6* for dimensioning examples. The distance from the object for the first dimension shall be at least 1/2”. Each additional dimension shall be separated by 3/8”.

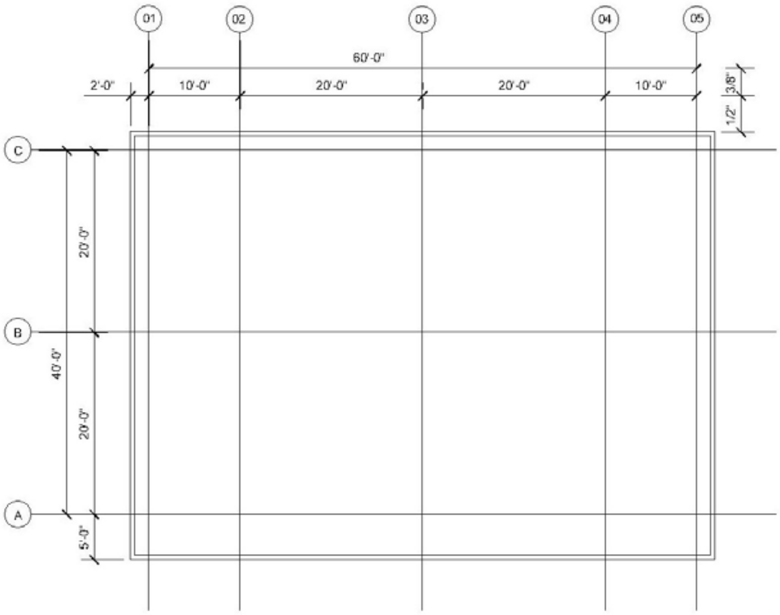


Figure 6-5: Overall Dimensioning

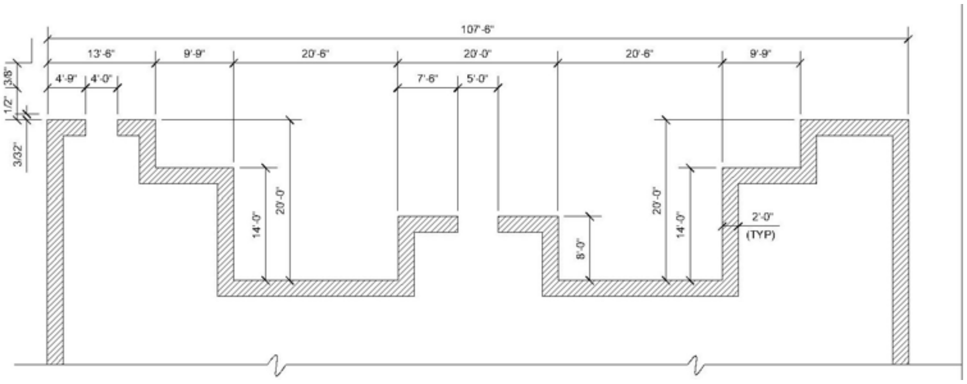


Figure 6-6: Dimensioning positions

Dimension Text Size

All dimensioning text shall be placed on the dimension layer. The size of dimension text is 1/8", the same as the drawing field text. All dimensions are to be placed in the sheet files except for general column grid dimensioning. Multiple layers may need to be created to allow for different scaled versions of column grid dimensioning. Tick size shall be 1/8" for sheet files and 12" for model files.

Positioning dimensions

Dimensions are always placed on the drawing so that the text may be read from left to right or bottom to top. Place longer dimensions outside of shorter ones. Wherever possible, arrange dimensions so they can be easily read on one continuous line. Do not cover dimensions with patterns in any drawing type. Locate dimensions so that they do not cross extension lines. Consideration should be taken to ensure that all dimensions are legible and identifiable in the plotted sheet and at half size plotting. Refer to *Figure 6-7* for example of proper dimension locations.

Symbols

All symbols used in drawings must be indicated in a legend inluded in the construction document set. Refer to *Figure 6-7* for some sample sybmols.

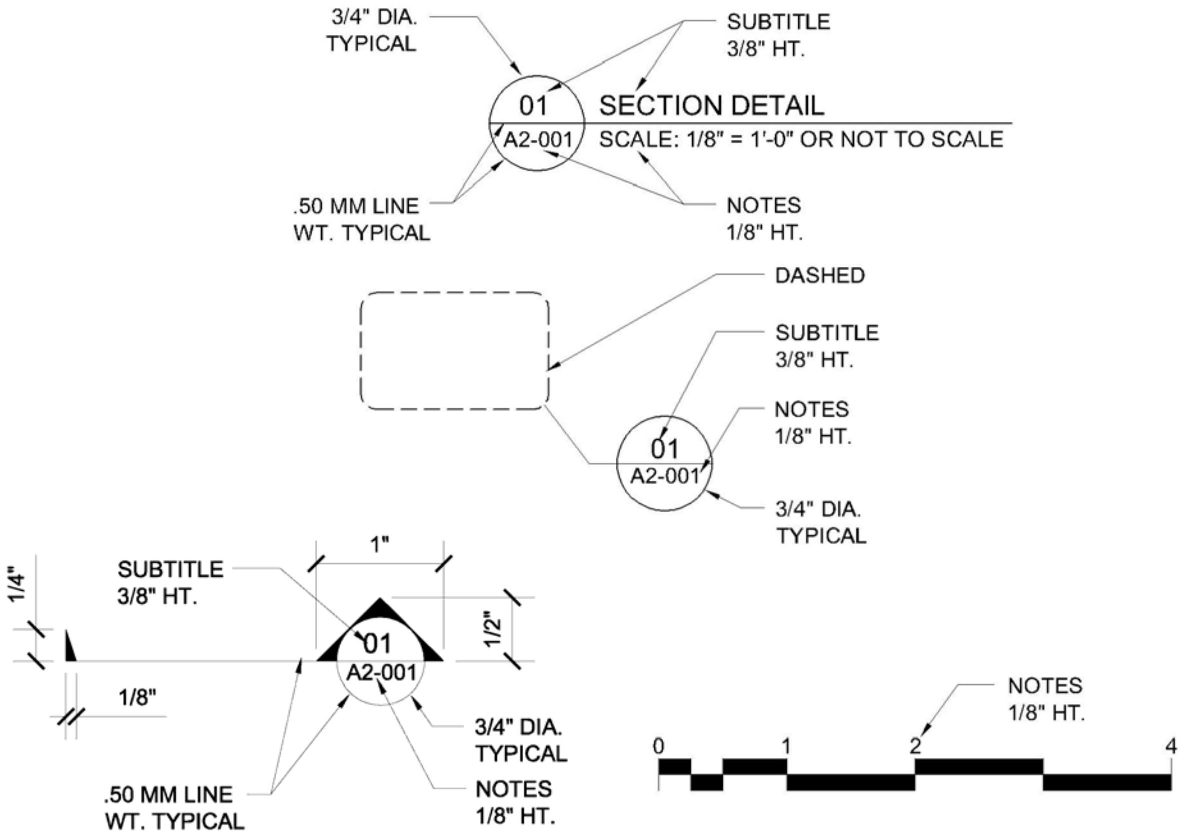


Figure 6-7: Sample Drawing Symbols.
Subtitle, Detail Bubble, Section, Graphic Scale

Externally Referenced Files

All sheet files should use external references in the sheet file using the “Overlay” option within the XREF to prevent circular reference issues. While working on drawings, no external references or portions of the reference should be copied into any sheet or model file.

Patterning

Patterns used shall be only those provided in the standard AutoCad 2004 environment. No custom patterns will be allowed.

Blocks

All Blocks shall be created on layer "0" with color and line type BYLAYER. Blocks shall be inserted on appropriate layer.

Revision of Drawings

Drawings may be issued for review at multiple points in the design process. Each Issue Date and Purpose should be identified in the Issue section of the Title Block. After the construction set has been issued "For Permit" or "For Construction" all changes shall be addressed through either 8 ½" x 11" or 11"x17" supplemental drawings or through CD revisions. Extent of changes to construction document sets are to be reviewed with the Airport Project Manager who will determine which method is to be utilized for issuing revisions.

Each revision is to be recorded in the Revision section of the Title Block with the revision number, purpose of revision and revision date. Information modified by a revision to the drawings shall be identified by a delta triangle and cloud bubble. In the case of multiple revisions to a sheet only, the current revision cloud bubble will be maintained.

Record of Revisions to Drawings

Prior to each revision a compact disc (CD) will be generated documenting the state of the drawing set prior to the revision. All model and sheet files will be preserved and pdf versions of all sheet files being modified will be generated and included on the CD.

SECTION 6.4 – ELECTRONIC DELIVERABLES

General

The need to exchange electronic drawing and data files between the Airport and consultants requires this section of the standard.

Electronic Delivery Media

The preferred method for delivery of drawings and data files is the use of a CD-R 650 MB disc. The use of compression software is not allowed.

All media shall have a label containing but not limited to:

1. Preparation date of media.
2. Airport provided project description.
3. Airport project number.

4. Purpose of delivery of media (i.e. CD's, Record Drawings, etc).
5. File type included (dwg, xls, doc).
6. Consultant names responsible for files.

Electronic File Preparation

Before a file is placed on the electronic delivery media, the following procedures shall be performed:

1. Drawing files shall be in their native format, not DXF or other neutral format.
2. Remove all extraneous graphics outside the drawing border area and set the active parameters to a standard setting of those in the seed or prototype file.
3. The "Z" coordinates of all elements must be "0".
4. Ensure all external reference files are attached with "Bind" function without device or directory.
5. Each file should have the purge command performed to remove any unwanted information.
6. All sheet files with references in the sheet file shall use the "Bind" option within the XREF command to enable the Airport to see the sheets as created by the consultant.
7. In addition the consultant should provide individual model files for floor and roof plans, elevations and sections, site plans etc. to Airport for their use in updating the master files for the facility.

Quality Assurance and Quality Control

The consultant Project Manager is responsible for ensuring that the electronic files are in compliance with these standards. This review should include, but is not limited to, confirming proper layering, title block information is completed and that drawing files are free from unwanted entities.

Ownership

Upon completion of the project all CAD files are the property of the City of Dallas. The City of Dallas shall have unlimited rights to use, duplicate or disclose data and information, in whole or part in any manner or for any purpose whatsoever without compensation to or approval from the Consultant.

SECTION 6.5 – EXHIBITS

The following exhibits, *Exhibit 6-1 and Exhibit 6-2*, define the standard Layer Naming Structures and Standard Abbreviations List that are to be utilized for assembling and producing CAD documents:

Exhibit 6-1: Layer Naming Standard

DAL General

Layer Names	Layer Descriptions	Color	Line Wt.	Linetype
0	*AutoCAD level -use for referencing*	*7*	*.18MM*	Continuous
Defpoints	*AutoCAD level –non-plotting*	*7*	*default*	Continuous
G-ANNO-DIMS	Dimensions and Leaders	5	.25MM	Continuous
G-ANNO-IDEN	Identification Tags: Floor Id. #s; Room/door/window #s; Equip. Id. #s; Furniture #s; Tenant Id.; Elevation Id. #s; Component Id. #s	7	.25MM	Continuous
G-ANNO-KEYN	Key Notes	7	.25MM	Continuous
G-ANNO-LEGN	Legends and Schedules	4	.35MM	Continuous
G-ANNO-LOGO	Logo	4	.35MM	Continuous
G-ANNO-NOTE	Notes	7	.25MM	Continuous
G-ANNO-NPLT	Construction Lines, non-plotting information	8	.18MM	Continuous
G-ANNO-PATT	Floor texture or pattern, floor finishes	5	.18MM	Continuous
G-ANNO-REDL	Redline	1	.25MM	Continuous
G-ANNO-REVS	Revisions	4	.35MM	Continuous
G-ANNO-SYMB	Symbols, grid bubble and room names	4	.35MM	Continuous
G-ANNO-TEXT	Text	7	.25MM	Continuous
G-ANNO-TITL	Drawing Component Titles and Subtitles	3	.35MM	Continuous
G-ANNO-TTLB	Border and title block	30	.70MM	Continuous
G-ACCS	Access plan	1	.25MM	Continuous
G-BRAK	Break lines	8	.25MM	Continuous
G-EVAC	Evacuation plan	1	.25MM	Continuous
G-NTHA	North arrows	1	.25MM	Continuous
G-PLAN	Floor plan – key map	1	.25MM	Continuous
G-PROP	Property lines	4	.25MM	Continuous
G-SITE	Site plan – key map	1	.25MM	Continuous
G-TOPO	Topography lines	5	.25MM	Continuous
H-FLPN	Hazardous material on floor plan	4	.25MM	Continuous
H-SITE	Hazardous material on site plan	4	.25MM	Continuous

DAL Architectural				
Layer Names	**Layer Descriptions**	**Color**	**Line Wt.**	**Linetype**
0	*AutoCAD level -use for referencing*	*7*	*.18MM*	Continuous
Defpoints	*AutoCAD level -nonplotting*	*7*	*default*	Continuous
A-ACFT-AA	Aircraft – American Airline	5	.20MM	Continuous
A-ACFT-CO	Aircraft – Continental Airline	40	.20MM	Continuous
A-ACFT- SWA	Aircraft – Southwest Airline	30	.20MM	Continuous
A-ACFT-SWA-FTRE	Aircraft – Southwest Airline - Future	30	.20mm	Continuous
A-CLNG	Ceiling information, ceiling grid, ceiling/roof penetrations, main tees, suspend elements, ceiling access	1	.25MM	Continuous
A-COLS	Columns	1	.30MM	Continuous
A-CURB-LOWR	Lower curb	242	.25MM	Continuous
A-CURB-UPPR	Upper Curb	42	.25MM	Continuous
A-DEMO	Architectural demolition	3	.25MM	Dashed
A-DOOR	Doors; Full-height (to ceiling) doors, swing and leaf	4	.20MM	Continuous
A-DOOR-HEAD	Door and window headers, Do not appear in ceiling plans	40	.35MM	Continuous
A-EQPM	Equipment, Fixed/moveable equip, Equip not in contract, Equip access, Clng mounted/suspended equip	1	.25MM	Continuous
A-EQPM-ELEC	Electrical Equip.	11	.15MM	Continuous
A-EQPM-HVAC	HVAC Equip.	11	.15MM	Continuous
A-FIRE-PROT	Fire protection, cementitous coatings (columns/beams)	3	.25MM	Continuous
A-FLOR-BLOW	Floor or building below	1	.18MM	Continuous
A-FLOR-EVTR	Elevator cars and equipment, escalators,	4	.25MM	Continuous
A-FLOR-FASC	Fascias	61	.18MM	Continuous
A-FLOR-HTCH	Hatch pattern	8	.25MM	Continuous
A-FLOR-LEVL	Slope drain	9	.18MM	Continuous
A-FLOR-OTLN	Floor or building outlines	4	.18MM	Continuous
A-FLOR-OVHD	Overhead items, roof hatches, floor lines above, etc	5	.18MM	Hidden
A-FLOR-PATT	Floor textures or patterns, floor finishes, paving, tile, carpet	8	.18MM	Continuous
A-FLOR-PFIX	Plumbing Fixtures, Misc fixtures	1	.25MM	Continuous
A-FLOR-RAIS	Raised floors	1		Continuous
A-FLOR-STRS	Stair, treads/risers, ladders, balcony handrails, guard rails	1	.25MM	Continuous

DAL Architectural (Contd.)				
Layer Names	**Architectural Layer Descriptions**	**Color**	**Line Wt.**	**Linetype**
A-FLOR-TPTN	Toilet partitions & accessories; Arch. specialties	1	.20MM	Continuous
A-FLOR-WDWK	Arch woodwork (field built-cabinets and counters); Casework (manuf cabinets); Finishes, wdwrk, trim	1	.20MM	Continuous
A-FURN-FREE	Furniture: freestanding (desks, credenzas, etc), chairs and other seating, file cabinets, plants	5	.18MM	Continuous
A-GLAZ	Windows, window walls, curtain walls, Full & part. Hght glazed walls & partitions; Glazed partitions; Windowsills	4	.20MM	Continuous
A-GRID	Planning grid or column grid	1	.25MM	Dash Dot
A-HVAC	Supply diffusers, Return air diffusers	1	.25MM	Continuous
A-LITE	Light fixtures	1	.25MM	Continuous
A-ROOF	Roof, Outline, Level changes, Roof surfaces – 3D	4	.25MM	Continuous
A-SIGN	Signage	1	.25MM	Continuous
A-SITE-CURB	Site Info. Curbs for roadways and parking areas	31	.25MM	Continuous
A-SITE-FENC	Site Info. Fences, bollards & barricades	142	.25MM	Continuous
A-SITE-HDSC		54	.20MM	Continuous
A-SITE-STRP	Site Info. Parking lot and roadway striping	31	.25MM	Continuous
A-SITE-UTIL	Site Info. Site utilities shown for reference	131	.30MM	Varies
A-WALL-FULL	Full hght walls, walls to structure, columns wraps	4	.35MM	Continuous
A-WALL-PATT	Wall insulation, hatching and fill; Fire wall Patterning,	5	.18MM	Continuous
A-WALL-PRHT	Partial height walls; do not appear on reflected ceiling plans	1	.25MM	Continuous

DAL Structural				
Layer Names	**Layer Descriptions**	**Color**	**Line Wt.**	**Linetype**
0	*AutoCAD level -use for referencing*	*7*	*.18MM*	Continuous
Defpoints	*AutoCAD level -nonplotting*	*7*	*default*	Continuous
S-BEAM-PRIM	Primary Beams	4	.30MM	Continuous
S-BEAM-SCND	Secondary Beams	5	.20MM	Continuous
S-COLS	Columns	1	.35MM	Continuous
S-DECK	Structural floor deck	1	.25MM	Continuous
S-DEMO	Structural demolition	3	.25MM	Dashed
S-FNDN	Foundation, piles, drilled piers	1	.35MM	Continuous
S-FNDN-GRBM	Grade beams	1	.25MM	Continuous
S-FNDN-RBAR	Foundation reinforcing, Slab reinforcing, Anchor bolts	1	.20MM	Continuous
S-GRID	Column grid outside building, inside building, grid dimensions, grid tags, columns	1	.25MM	Dash Dot
S-JOIN-CONT	Control joints	6	.20MM	Continuous
S-JOIN-EXPA	Expansion joints	2	.25MM	Continuous
S-JOIS	Joists	4	.20MM	Continuous
S-MISC-STL	Miscellaneous steel	5	.20MM	Continuous
S-PATT	Structural pattern	8	.18MM	Continuous
S-SLAB	Slab, edge of slab, slab control joints	1	.25MM	Continuous
S-WALL	Structural bearing or shear walls	4	.35MM	Continuous

DAL Mechanical				
Layer Names	**Layer Descriptions**	**Color**	**Line Wt.**	**Linetype**
0	*AutoCAD level -use for referencing*	*7*	*.18MM*	Continuous
Defpoints	*AutoCAD level -nonplotting*	*7*	*default*	Continuous
M-CMPA	Plant compressed air systems, equipment and piping	4	.25MM	Continuous
M-CONT	Mechanical controls and instruments	1	.20MM	Continuous
M-CONT-EQPM	Thermostats			
M-CONT-WIRE	Low voltage control wiring	1	.18MM	Continuous
M-CWTR	Chilled water system, piping and equipment	4	.20MM	Continuous
M-DMPR-FIRE	Fire damper, smoke and fire damper	1	.35MM	Continuous
M-DMPR-SMKE	Smoke damper	1	.35MM	Continuous
M-DEMO	Mechnical demolition	3	.25MM	Dashed
M-DUST	Dust and fume collection system, equipment and ductwork	4	.20MM	Continuous
M-ELHT-EQPM	Electric heat equipment	5	.20MM	Continuous
M-ENER	Energy management system, C47equipment and wiring	6	.20MM	Continuous
M-EQPM	Mechanical equipment	6	.25MM	Continuous
M-EXHS	Exhaust system, equipment and ductwork, Roof exhaust equipment	6	.25MM	Continuous
M-FUEL-GAS	Fuel systems, piping and equipment	2	.25MM	Continuous
M-FUEL-NGAS	Natural gas systems, equipment and piping	2	.20MM	Continuous
M-FUEL-OIL	Fuel oil systems, equipment and piping	2	.25MM	Continuous
M-HVAC	HVAC system general, ductwork	5	.25MM	Continuous
M-HVAC-EQPM	HVAC equipment	5	.30MM	Continuous
M-HVAC-RETN	HVAC return system	5	.25MM	Continuous
M-HVAC-SUPP	HVAC supply system	5	.25MM	Continuous
M-HOTW	Hot water heating system, equipment piping	1	.20MM	Continuous
M-MACH	Machine shop equipment	1	.20MM	Continuous
M-PROC	Process/instrument air piping and equipment	4	.20MM	Continuous
M-RCOV	Energy recovery system, equipment and piping	1	.25MM	Continuous
M-REFG	Refrigeration systems, equipment and piping	4	.20MM	Continuous
M-SPCL	Special systems, equipment and piping	1	.20MM	Continuous
M-STEM	Steam systems, piping and equipment, High/Medium/Low pressure steam piping,	1	.18MM	Continuous
M-TEST	Test equipment	1	.18MM	Continuous

Exhibit 6-1: Layer Naming Standard

DAL Electrical				
Layer Names	**Layer Descriptions**	**Color**	**Line Wt.**	**Linetype**
0	*AutoCAD level -use for referencing*	*7*	*.18MM*	Continuous
Defpoints	*AutoCAD level -nonplotting*	*7*	*default*	Continuous
E-ALRM	Miscellaneous alarm system	1	.25MM	Continuous
E-CCTV	Closed-circuit TV	1	.25MM	Continuous
E-COMM	Telephone, communications outlets	1	.25MM	Continuous
E-COND	Conduit	6	.20MM	Continuous
E-CTRL-DEVC	Control Systems Device	1	.18MM	Continuous
E-CTRL-WIRE	Control Systems Wiring	1	.18MM	Continuous
E-CTRY	Cable trays	6	.20MM	Continuous
E-DATA	Data outlets	1	.25MM	Continuous
E-DEMO	Electrical demolition	3	.25MM	Dashed
E-FIRE	Fire alarm, fire extinguishers	4	.20MM	Continuous
E-GRND-CIRC	Ground system, counterpoise, ground rods	4	.18MM	Continuous
E-GRND-REFR	Reference ground system	4	.18MM	Continuous
E-GRND-DIAG	Electrical grounding diagram	4	.18MM	Continuous
E-JBOX	Junction box	4	.25MM	Continuous
E-LITE	Lighting, ceiling/floor/wall mounted lighting, roof lighting	4	.25MM	Continuous
E-LITE-CIRC	Lighting circuits	1	.20MM	Continuous
E-LITE-EMER	Emergency lighting	4	.35MM	Continuous
E-LITE-EXIT	Exit lighting	5	.35MM	Continuous
E-LITE-IDEN	Lighting circuit numbers, identification and text	7	.20MM	Continuous
E-LITE-SITE	Site lighting	4	.30MM	Continuous
E-LITE-SWCH	Lighting switches	1	.20MM	Continuous
E-LEGN	Legend of symbols	4	.25MM	Continuous
E-LINE	One-line diagram	4	.20MM	Continuous
E-LTNG	Lightning protection system	4	.20MM	Continuous
E-PANL	Panels	6	.30MM	Continuous
E-POWR-CABL	Underfloor raceways, cable trays, busways	1	.18MM	Hidden
E-POWR-CIRC	Power circuits	4	.20MM	Continuous
E-POWR-EMER	Emergency power	4	.25MM	Continuous
E-POWR-EQPM	Power panels, equipment, switchboards	4	.25MM	Continuous
E-POWR-RECP	Power: wall and ceiling outlets and receptacles	4	.25MM	Continuous
E-RISR	Riser diagram	1	.20MM	Continuous
E-SECR	Security	1	.25MM	Continuous
E-SOUN	Sound/PA system	1	.25MM	Continuous
E-TVAN	TV antenna system	1	.25MM	Continuous

DAL Plumbing				
Layer Names	**Layer Descriptions**	**Color**	**Line Wt.**	**Linetype**
0	*AutoCAD level -use for referencing*	*7*	*.18MM*	Continuous
Defpoints	*AutoCAD level -nonplotting*	*7*	*default*	Continuous
P-DEMO	Plumbing demolition	3	.25MM	Dashed
P-DOMW-HOT	Domestic hot water systems and piping	1	.25MM	Continuous
P-DOMW-COLD	Domestic cold water systems and piping	2	.25MM	Continuous
P-EQPM	Plumbing equipment	6	.30MM	Continuous
P-PFIX	Plumbing fixtures	1	.20MM	Continuous
P-SANR	Sanitary drainage and piping, sanitary risers and equip	1	.20MM	Continuous
S-SPRK	Fire sprinkler system	5	.30MM	Continuous
P-SPRK-HEAD	Fire sprinkler heads	5	.20MM	Continuous
P-STRM	Storm drainage system, storm drain piping and risers	1	.20MM	Continuous
P-STRM-RFDR	Roof drains	8	.20MM	Continuous
P-WAST-OIL	Waste oil systems and piping	1	.20MM	Continuous

DAL Landscape				
Layer Names	**Layer Descriptions**	**Color**	**Line Wt.**	**Linetype**
0	*AutoCAD level -use for referencing*	*7*	*.18MM*	Continuous
Defpoints	*AutoCAD level -nonplotting*	*7*	*default*	Continuous
L-DEMO	Landscape demolition	3	.25MM	Dashed
L-IRRG	Irrigation systems, piping, equipment, overage	1	.25MM	Continuous
L-IRRG-CONT	Irrigation controls	1	.25MM	Continuous
L-IRRG-SPKR	Irrigation sprinklers	1	.25MM	Continuous
L-PLNT	Plant and landscape materials, Ground covers and vines, Rock, bark and other landscaping beds, planting beds	3	.25MM	Continuous
L-PLNT-SHRB	Shrubs	3		
L-PLNT-TREE	Trees	3	.25MM	Continuous
L-PLNT-TURF	lawn areas	3	.25MM	Continuous
L-SITE	Site improvements, steps, decks, bridges	6	.25MM	Continuous
L-SITE-FURN	Site furnishings	5	.25MM	Continuous
L-SITE-WALL	Site fences and walls	6	.30MM	Continuous
L-WALK	Walks and steps and crosshatch patterns	1	.25MM	Continuous

DAL Civil				
Layer Names	**Layer Descriptions**	**Color**	**Line Wt.**	**Linetype**
0	*AutoCAD level -use for referencing*	*7*	*.18MM*	Continuous
Defpoints	*AutoCAD level -nonplotting*	*7*	*default*	Continuous
C-ATNA	Antenna (Comm/Radar) -antenna and antenna towers	1	.20MM	Continuous
C-BLDG	Proposed building footprints	4	.35MM	Continuous
C-COMM-OVER	Site communications, telephone poles, boxes, towers	1	.25MM	Continuous
C-COMM-OVHD	Overhead communication / power lines	1	.25MM	Continuous
C-COMM-UNDR	Underground communication /power lines	5	.20MM	Hidden
C-DEMO	Civil demolition	3	.25MM	Dashed
C-ELEC	Electrical lines	6	.30MM	Continuous
C-ELEC-UNDR	Underground electrical lines	6	.20MM	Hidden
C-FENC	Fences and retaining walls	5	.25MM	Continuous
C-FIRE	Fire protection: hydrants, connections	1	.25MM	Continuous
C-FIRE-UNDR	Fire protections: underground lines	5	.20MM	Hidden
C-NGAS	Natural gas – manholes, meters, storage tanks	1	.25MM	Continuous
C-NGAS-UNDR	Natural gas – underground lines	5	.20MM	Hidden
C-PKNG	Parking lots, striping, handicapped symbols	1	.25MM	Continuous
C-PKNG-ISLD	Parking islands, curbs	4	.25MM	Continuous
C-PKNG-DRAN	Parking lot drainage slope indications	1	.25MM	Continuous
C-PROP	Property lines, survey benchmarks, setbacks	4	.25MM	Dash Dot
C-PROP-BRNG	Bearings and distance labels	7	.50MM	Continuous
C-PROP-CONS	Construction Controls	4	.35MM	Continuous
C-PROP-ESMT	Easements, rights-of-way, setback lines, runway approach zones	1	.25MM	Continuous
C-ROAD	Roadways, runways, taxiways, curbs	4	.25MM	Continuous
C-ROAD-CNTR	Center lines (roads, runways)	8	.25MM	Center
C-ROAD-SIGN	Roadway signage	6	.30MM	Continuous
C-STRM-BASN	Storm drainage catch basins, manholes	1	.25MM	Continuous
C-STRM-UNDR	Underground storm drainage pipe lines	5	.20MM	Hidden
C-SSWR	Sanitary sewer – manholes, pumping stations	1	.25MM	Continuous
C-SSWR-UNDR	Sanitary sewer – underground lines	5	.20MM	Hidden
C-TOPO	Contour lines and elevations, spot elevations	5	.20MM	Continuous
C-TOPO-BORE	Test bores	1	.20MM	Continuous
C-WATR	Domestic water: manholes, pumping stations, storage tanks	1	.25MM	Continuous
C-WATR-UNDR	Domestic water: underground lines	5	.20MM	Hidden

Exhibit 6-1: Layer Naming Standard

DAL Interiors				
Layer Names	**Layer Descriptions**	**Color**	**Line Wt.**	**Linetype**
0	*AutoCAD level -use for referencing*	*7*	*.18MM*	Continuous
Defpoints	*AutoCAD level -nonplotting*	*7*	*default*	Continuous
I-CLNG	Ceiling treatments	5	.18MM	Continuous
I-CLNG-PATT	Ceiling patterns	5	.18MM	Continuous
I-DEMO	Demolition	7	.25MM	Dashed
I-EQPM	Equipment	1	.25MM	Continuous
I-FLOR-PATT	Floor textures or patterns, floor finishes, paving, tile, carpet	8	.18MM	Continuous
I-FURN	Furniture	1	.20MM	Continuous
I-FURN-PNLS	Furniture panels, system furniture	5	.18MM	Continuous
I-GLAZ-TRET	Windows treatments	4	.20MM	Continuous
I-LITE	Light fixtures	1	.25MM	Continuous
I-NIC	Items not in contract			
I-SIGN	Signage	1	.25MM	Continuous
I-WALL-PRHT	Partial height walls, wall partitions	4	.35MM	Continuous

DAL Fire Protection				
Layer Names	**Layer Descriptions**	**Color**	**Line Wt.**	**Linetype**
0	*AutoCAD level -use for referencing*	*7*	*.18MM*	Continuous
Defpoints	*AutoCAD level -nonplotting*	*7*	*default*	Continuous
F-ALRM	Fire alarm system	7	.30MM	Continuous
F-ALRM-EQPM	Fire alarm system detectors and sensors	7	.25MM	Continuous
F-CO2S	CO2 sprinkler piping & equipment	1	.25MM	Continuous
F-DEMO	Demolition	3	.20MM	Dashed
F-HALN	Halon piping & equipment	1	.25MM	Continuous
F-IGAS	Inert gas equipment & piping	1	.25MM	Continuous
F-SPRN	Fire protection sprinkler system, sprinkler piping, sprinkler standpipes, fire protection systems	4	.30MM	Continuous
F-SPRN-HEAD	Fire sprinkler heads			
F-PROT	Fire syst equip (fire hose cabinet/extinguishers)	1	.25MM	Continuous

Exhibit 6-1: Layer Naming Standard

DAL Baggage				
Layer Names	**Layer Descriptions**	**Color**	**Line Wt.**	**Linetype**
0	*AutoCAD level -use for referencing*	*7*	*.18MM*	Continuous
Defpoints	*AutoCAD level -nonplotting*	*7*	*default*	Continuous
B-CART-INBD	In-bound tugs/carts	253	.20MM	Continuous
B-CART-OTBD	Out-bound tugs/carts	252	.35MM	Continuous
B-CATW-INBD	Catwalks in-bound	50	.25MM	Continuous
B-CATW-OTBD	Catwalks out-bound	103	.15MM	Continuous
B-CLAM-DEVC	Claim devices	10	.15MM	Continuous
B-CONV-CENT	Conveyor centerlines	252	.25MM	Center
B-CONV-INBD	In-bound conveyor	4	.25MM	Continuous
B-CONV-OTBD	Out-bound conveyor	5	.30MM	Continuous
B-CONV-RECR	Recirculating conveyor	4	.25MM	Continuous
B-DOOR-FIRE	Fire doors	3	.25MM	Continuous
B-DOOR-OH	Overhead doors	23	.25MM	Dashed
B-DEMO	Baggage demolition	3	.25MM	Dashed
B-FLOW-ARRW	Flow arrows	1	.25MM	Continuous
B-MKUP-UNITS	Make-up units	3	.25MM	Continuous
B-MOTR-CONT	Motor controls	6	.25MM	Continuous
B-RAIL	Guardrails and rails	253	.25MM	Continuous
B-SLAB-OPEN	Slab openings	201	.25MM	Continuous

Exhibit 6-1: Layer Naming Standard

DAL Telecommunications				
Layer Names	**Layer Descriptions**	**Color**	**Line Wt.**	**Linetype**
0	*AutoCAD level -use for referencing*	*7*	*.18MM*	Continuous
Defpoints	*AutoCAD level -nonplotting*	*7*	*default*	Continuous
T-ALRM	Alarm systems	40	.35MM	Continuous
T-CBLE	Cable TV, Satelite	5	.18MM	Continuous
T-CCTV	Closed Circuit TV	8	.18MM	Continuous
T-CLOK	Clock systems	4	.20MM	Continuous
T-COMM	Communication systems	1	.25MM	Continuous
T-COMM-JBOX	Communications junction boxes	1	.25MM	Continuous
T-DATA	Data system	3	.25MM	Continuous
T-DATA-CABL	Data cable	1	.20MM	Continuous
T-DEMO	Telecommunications demolition	1	.20MM	Dashed
T-EQPM	Equipment	1	.25MM	Continuous
T-FIRE	Fire alarm system	4	.18MM	Continuous
T-RACK	Racks (plan or elevation view)	4	.20MM	Continuous
T-SECR	Security	1	.25MM	Continuous
T-SOUN	Sound/PA system	4	.25MM	Continuous
T-TELC-EOPM	Telco Equipment	4	.25MM	Continuous
T-TELC-JACK	Telco data/telephone jacks	4	.20MM	Continuous
T-TVAN	TV antenna system	5	.18MM	Continuous
T-WANS	Wireless area networks	4	.20MM	Continuous
T-WAVG	Waveguide paths	4	.25MM	Continuous

DAL Airfield				
Layer Names	**Layer Descriptions**	**Color**	**Line Wt.**	**Linetype**
0	*AutoCAD level -use for referencing*	*7*	*.18MM*	Continuous
Defpoints	*AutoCAD level -nonplotting*	*7*	*default*	Continuous
N-ACFT-AA	Aircraft -American Airlines	5	.20MM	Continuous
N-ACFT-CO	Aircraft -Continental Airlines	40	.20MM	Continuous
N-ACFT-SWA	Aircraft Southwest Airlines	30	.20MM	Continuous
N-ACFT-SWA-FTRE	Aircraft Southwest Airlines -Future	30	.20MM	Continuous
N-APRN	Apron	6	.30MM	Continuous
N-DEMO	Airfield demolition	3	.25MM	Dashed
N-DEMO-STRP	Airfield demolition, striping	3	.25MM	Dashed
N-FIXD-BRDG	Fixed bridge	40	.25MM	Continuous
N-FUEL-PNTS	Aircraft fuel points	1	.25MM	Continuous
N-FUEL-LINE	Aircraft fuel lines	11	.20MM	Hidden
N-GSE	Ground service equipment	11	.25MM	Continuous
N-JETB	Jet Bridge	1	.25MM	Continuous
N-JETB-FNDT	Jet Bridge foundations	1	.35MM	Continuous
N-LEAD-IN	Aircraft Lead-in lines	4	.20MM	Continuous
N-ROAD	GSE roadways	4	.20MM	Continuous
N-RNWY	Runways	5	.30MM	Continuous
N-RNWY-CNTR	Runway centerlines	5	.20MM	Center
N-TAXI	Taxi lanes	3	.25MM	Continuous

Exhibit 6-2: Abbreviations List

AACS	AUTOMATED ACCESS CONTROL SYSTEM
AB	ANCHOR BOLT
ABV	ABOVE
A/C	AIR CONDITIONING
ACFT	AIRCRAFT
ADD	ADDENDUM
ADJ	ADJACENT
ADMIN	ADMINISTRATION
AFF	ABOVE FINISH FLOOR
ALP	AIRPORT LAYOUT PLAN
ALT	ALTERNATE
AMT	AMOUNT
ANOD	ANODIZED
AOA	AIR OPERATIONS AREA
APPROX	APPROXIMATE(LY)
ASST	ASSISTANT
ATTEN	ATTENUATION
ATO	AIRLINE TICKETING OPERATIONS
BD	BOARD
BIDS	BAGGAGE INFORMATION DISPLAY SYSTEM
BTWN	BETWEEN
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
BOT	BOTTOM
BRG	BEARING
BRG PL	BEARING PLATE
BRK	BRICK
BRZ	BRONZE
BU	BUILT-UP
BUR	BUILT-UP ROOFING
CHR	CHAIR
CIP	CAST-IN-PLACE CONCRETE
CIR	CIRCLE
CJ	CONTROL JOINT
CLG	CEILING
CLO	CLOSET
CLR	CLEAR (ANCE)
CMU	CONCRETE MASONRY UNIT
CONC	CONCRETE
CW	CHILLED WATER
COL	COLUMN
COMM	COMMUNICATION
COMP	COMPUTER
CONSTR	CONSTRUCTION
COORD	COORDINATE
CPT	CARPET
CTR	CENTER
CT	CERAMIC TILE
CV	CONTROL VALVE
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
CYD	CUBIC YARD
DEMO	DEMOLISH; DEMOLITION
DEPT	DEPARTMENT
DET, DTL	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DIV	DIVISION
DR	DOOR
DRN	DRAIN
DS	DOWNSPOUT
DSPR	DISPENSER
DWG	DRAWING
EA	EACH
EB	EXPANSION BOLT
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRIC
ELEV	ELEVATOR
EMER	EMERGENCY
EMER EW	EMERGENCY EYE WASH
EMER SHWR	EMERGENCY SHOWER
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
ESC	ESCALATOR
EXT	EXTERIOR
FA	FIRE ALARM
FAA	FEDERAL AVIATION ADMINISTRATION
FD	FLOOR DRAIN

Exhibit 6-2: Abbreviations List

FDV	FIRE DEPARTMENT VALVE
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER CABINET
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHS	FIRE HOSE STATION
FIN	FINISH(ED)
FIS	FEDERAL INSPECTION SERVICE
FF	FINISHED FLOOR
FIXT	FIXTURE
FLR	FLOOR(ING)
FLUOR	FLUORESCENT
FT	FOOT
FURR	FURR(ED) (ING)
FURN	FURNITURE
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERAL
GFB	GROUND FAULT BREAKER
GFI	GROUND FAULT INTERRUPTER
GIDS	GATE INFORMATION DISPLAY SYSTEM
GOVT	GOVERNMENT
GSE	GROUND SERVICE EQUIPMENT
GYP	GYPSUM
GYP BD	GYPSUM BOARD
GYP SHTG	GYPSUM SHEATHING
HB	HOSE BIBB
HC	HANDICAPPED
HDR	HEADER
HDRL	HANDRAIL
HDW	HARDWARE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HTR	HEATER
HVAC	HEATING, VENTILATING AND AIR CONDITIONING

HW	HOT WATER (DOMESTIC)
HWH	HOT WATER HEATER
HWR	HOT WATER RECIRC
HWS	HOT WATER SUPPLY
IN	INCH (ES)
INFO	INFORMATION
INS	IMMIGRATION AND NATURALIZATION SERVICE
INSUL	INSULATE (D), (ION)
INV	INVERT
JAN	JANITOR
JST	JOIST
KG	KILOGRAM
KM	KILOMETER
LAV	LAVATORY
LKR	LOCKER(S)
LVR	LOUVER
MACH	MACHINE
MAINT	MAINTENANCE
MAX	MAXIMUM
MECH	MECHANICAL
MEMB	MEMBRANE
MEZZ	MEZZANINE
MFG	MANUFACTURER(ED)
MGR	MANAGER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MOD	MODULAR
MTL	METAL
MTL FURR	METAL FURRING
MTL PTN	METAL PARTITION
N	NORTH
NIC	NOT IN CONTRACT
NOM	NOMINAL
NTS	NOT TO SCALE

OC	ON CENTER
OD	OUTSIDE DIAMETER
OFF	OFFICE
OH	OVERHEAD
OPP	OPPOSITE
OPP HND	OPPOSITE HAND
PBB	PASSENGER BOARDING BRIDGE
PERF	PERFORATE (D)
PERIM	PERIMETER
PKNG	PARKING
PL	PLATE
P LAM	PLASTIC LAMINATE
PLWD	PLYWOOD
PNL	PANEL
PNT	PAINT(ED)
PR	PAIR
PROP	PROPERTY
PTN	PARTITION
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
QTY	QUANTITY
R	RISER; RADIUS
RA	RETURN AIR
RD	ROOF DRAIN
REFRIG	REFRIGERATOR
REINF	REINFORCE (ING)
REQD	REQUIRED
RET	RETURN
RFG	ROOFING
RIDS	RAMP INFORMATION DISPLAY SYSTEM
RM	ROOM
RO	ROUGH OPENING
ROW	RIGHT OF WAY
S	SOUTH
SAN	SANITARY
SCHED	SCHEDULE
SD	STORM DRAIN
SHTG	SHEATHING
SIDA	SECURITY IDENTIFICATION DISPLAY AREA
SIM	SIMILAR
SPEC	SPECIFICATION(S)
SF	SQUARE FEET
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STO	STORAGE
STRUCT	STRUCTURAL
SUSP	SUSPEND(ED)
SUSP CLG	SUSPENDED CEILING
T	TREAD
T&G	TONGUE AND GROOVE
TEL	TELEPHONE
TOC	TOP OF CURB
TOJ	TOP OF JOIST
TOS	TOP OF STEEL
TSA	TRANSPORTATION SECURITY ADMINISTRATION
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
USG	UNITED STATES GYPSUM COMPANY
VEND	VENDING
VENT	VENTILATE
VEST	VESTIBULE
W	WEST
W/	WITH
WC	WATER CLOSET
WD	WOOD
WIN	WINDOW
W/O	WITHOUT
WT	WEIGHT
YR	YEAR

Chapter 7: Facility Design Standards

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SECTION 7.0 - Overview

This Facility Design Standards has been developed for the FPA TARPS and Revised C.I.P. In compiling this guideline, several existing design and construction standards were reviewed, including the Metropolitan Nashville Airport Authority Tenant Improvement Manual, the Hillsborough County Aviation Authority Design Criteria Manual and the Maimi-Dade Aviation Department requirements as a basis for these standards. Revisions and modifications to these standards were coordinated with the City of Dallas Department of Aviation (DOA), to refine these criteria to the specific requirements of DAL. Projects currently under construction will not be required to conform to these standards, but will be reviewed with this standard for possible areas of non-compliance. All projects currently in design shall be reviewed and considered with respect to the requirements of these standards on a case by case basis.

These criteria should be utilized for all DAL projects started after the acceptance of these standards by the City of Dallas and Dallas Love Field Department of Aviation, and will be applicable at Dallas Love Field Airport. These criteria shall cover the existing terminal building, terminal building support spaces, parking structures and any new additions to these areas. The Department of Aviation shall decide whether projects not specifically covered by these standards shall use the standards included. The primary objectives of these standards are to:

- Establish consistent quality and uniformity in construction and design.
- Establish uniform overall visual continuity.
- Establish standard construction details.
- Establish standard construction materials.

Any deviations from this manual shall be coordinated in writing with the DOA Project Manager prior to execution of the deviation. The City of Dallas DOA reserves the right to modify these standards, as needed, and will not be liable for errors and omissions in these standards. To obtain the latest version of these standards, please contact: Dallas Love Field Airport Architect at 214.670.6073.

SECTION 7.1 – Review and Approval Process

Conceptual Project Review

The DOA requires an initial submittal describing project intent for all projects within Airport terminal building. All future facility tenants expressing interest in constructing or renovating existing space within the terminal facility are required to coordinate a conceptual project review with the Airport Architect and other Airport personnel that may be required prior to initiating the design process. Conceptual project submittal shall include written description of the proposed project identifying location of project, current use of the proposed project location, any known infrastructure impacts, proposed function of project, anticipated construction costs and anticipated design and construction schedule for project. Five copies of project description shall be provided to the DOA at least five days prior to scheduled project review meeting date.

After the project conceptual design has been presented to the DOA for review and approval, the project will be reviewed and formal acceptance will approved in writing within 15 business days. If any portion(s) of the DOA review determine portions of the project to be in non-conformance, these items will be described, in writing, including suggested modifications required. Once discrepancies or non-conforming items have been addressed, the revisions need to re-submitted to the DOA for review and approval. Approval of conceptual design shall be valid for a period of 6 months, with extensions available at the DOA's discretion. All extension requests shall be submitted in writing to the DOA prior to expiration of initial approval. The DOA reserves the right to review the project at additional stages of the design process as outlined below, as well as at additional stages required by a specific project. Conceptual project review approval shall not be considered a guarantee of final project design approval by the DOA.

Schematic Design Review

The tenant shall coordinate a review meeting with the DOA to present the design status at the schematic design level. The schematic design review submittal shall include an updated written description of the project from Conceptual Review, including any additional infrastructure impacts identified and strategies to mitigate new and original infrastructure impacts. Included in the written description will be a schematic project code study spreadsheet identifying project occupancy classification, occupant load and impact to existing exiting and rest room facilities. Additional requirements include professionally prepared drawings, renderings, material boards and technical data needed to describe the project. Five copies of the written project description and graphic images shall be provided to the DOA at least five days prior to the scheduled meeting date.

After the schematic design has been presented to the DOA, they will review the project and provide a formal notice of approval or description of non-conformance in writing within 30 business days of the submittal. Approval of the schematic design shall be valid for 6 months with extensions available at the DOA's discretion. All extension requests shall be submitted in writing to the DOA prior to expiration of initial approval. Schematic design review approval shall not be considered a guarantee of final project design approval by the DOA

Contract Document Review

The tenant shall coordinate a review meeting with the DOA to present the design at the contract document level, prior to application for a building permit. The contract document review submittal shall include an updated written description of the project based on the schematic design review, and shall include a completed building code study spreadsheet and a final infrastructure mitigation plan. Additional requirements include professionally prepared contract documents, renderings, material boards and project specifications, including technical data required to describe the project. Contract

Documents shall include a site plan defining project limits, project access, material delivery plan and material storage area; refer to *Exhibit 7-1* for specific requirements. Contract Documents shall also include all plans, details and sections required to describe design intent and to allow for construction of the project. Five copies of the written project description and contract documents shall be provided to the DOA at least five days prior to the scheduled project review meeting date.

After the Contract Documents have been submitted to the DOA, they will review the project and provide a formal notice of approval or description of non-conformance in writing within 30 business days of the submittal. The DOA written approval will be required to obtain a building permit from the Building Inspections Department. Approval of the contract documents shall be valid for 6 months with extensions available at the DOA's discretion. All extension requests shall be submitted in writing to the DOA prior to expiration of the initial approval. Contract document review approval shall not be considered a guarantee or warrantee of City of Dallas Building Department review approval or Texas Department of Licensing and Regulation TAS accessibility review approval. DOA project review addresses projects with respect to Airport standards and Master Plan only.

SECTION 7.2 – General Construction Information

Existing conditions

The Department of Aviation maintains electronic drawings of existing and "as-built" conditions, which will be provided by the Airport for tenant use for construction documents. These files represent the latest information incorporated by the Airport; however, all "as-built" conditions may not be completely recorded. The tenant is advised to perform any and all field verification of existing conditions prior to proceeding with tenant improvements. The DOA shall not provide any guarantees of accuracy or completeness of information contained in electronic files. Use of DOA provided files by tenant shall be considered an agreement to this understanding.

Applicable Codes and Reference Standards

2003 International Building Code (IBC) with Dallas Amendments
2003 International Mechanical Code (IMC) with Dallas Amendments
2003 International Plumbing Code (IPC) with Dallas Amendments
2005 National Electrical Code (NEC) with Dallas Amendments
2006 International Fire Code (IFC) with Dallas Amendments
2003 International Energy Code (IEC) with 2001 Amendments
2003 International Residential Code (IRC) with Dallas Amendments
2003 International Existing Building Code (IEBC) with Dallas Amendments

Ordinance amending Chapter 52 "Administrative Procedures for the Construction Codes" of the Dallas City Code. These recently adopted codes and the amendments can be purchased on-line at International Code Council Web site and will soon be available for purchase at the Oak Cliff Municipal Center, 320 E. Jefferson Blvd., Room 118, Dallas, TX 75203.

Architectural Barriers Act Article 9102, Texas Civil Statutes –Texas Accessibility Standards (TAS)

United States Green Building Council (USGBC): Green building rating system level Silver rating required for all City of Dallas buildings per Dallas City Council.

Building Materials

Refer to the information listed below for DAL standard construction and finish materials. These products are to be utilized for all projects, constructed or renovated at DAL. DOA approval is required for items not specifically identified in the current standard.

Construction Coordination Meetings

Prior to initiating any construction, the tenant shall coordinate a pre-construction conference with the DOA. This meeting will be used to address Airport specific requirements for construction, including security and badging requirements. The tenant shall coordinate a schedule for construction coordination meetings with the DOA and other required parties in order to address construction issues in an ongoing fashion. These meetings should be scheduled to be bi-weekly. Actual frequency and locations of construction coordination meetings is to be coordinated and approved by the DOA.

Commissioning

All projects will require a phase of commissioning and training for DOA employees. Specific attention shall focus on mechanical and electrical additions that will require airport maintenance. Project completion will require full Operating and Maintenance (O&M) Manuals and all required training sessions per manufacturer's recommendations.

SECTION 7.3 – Performance Standards -Exterior

Foundations

Specific foundation requirements shall be determined on a site by site basis, after extensive geotechnical investigations to determine soil conditions affected are completed. Existing tunnel locations shall be factored into any decisions regarding foundation type and location. All existing tunnels and buildings shall be protected from damage during construction. In locations near or adjacent to existing facilities, the contractor shall provide a work plan outlining operation and safety plans for construction in those affected areas.

Environmental

Refer to *Exhibit 7-1* for the Dallas Love Field Air Operations Area (AOA) Construction Rules, specifically Chapter Six, for regulations regarding environmental impact.

Blast Fences

All blast fences shall be designed and constructed in accordance with FAA Advisory Circular 150/5300-13 Airport Design Standards – Transport Airports.

Landscaping

All new landscaping shall be coordinated with existing planting groups and design patterns to produce a cohesive design intent throughout the Airport property. Use of plants native to the North Texas Region are encouraged and should be considered with respect to meeting USGBC LEED rating requirements. Additionally, all plantings should attempt to reduce the amount of irrigation that will be required for maintenance.

Sight Line Investigation

Prior to any additions or modifications to existing terminal facilities, a “sight line” investigation shall be developed to determine potential impacts on FAA Control Tower sight lines from the cab of the tower and the surrounding airfield and air carrier ramps . Refer to FAA Design Guidelines –Advisory Circular AC150/5300-13 CHG 4 for specific requirements.

Streets and Roads

Texas Department of Transportation (TxDOT) Highway design Division Operations and Procedures Manual, latest version, shall govern the design of streets and roadways.

Roofing Materials

Any modifications to existing roof areas shall be coordinated with the City of Dallas Equipment and Building Services Department and the DOA. Currently installed roofing systems in place are described below:

1. North Concourse: Built up coal tar rood system (4 ply)
2. West Concourse: Built up coal tar rood system (4 ply)
3. Main Terminal: Built up coal tar rood system (4 ply)
4. Baggage Claim: Carlisle single ply membrane
5. Old Control Tower (West Concourse): Carlisle single ply membrane
6. Old Equipment Room: Built up coal tar rood system (4 ply)
7. New Equipment Room: Built up coal tar rood system (4 ply)
8. Plaza Deck at Main Terminal: Concrete pavers over a Carlisle single ply membrane

9. Air Cargo Building: Built up coal tar rood system (4 ply)

For any areas not listed above, field investigation of existing system should be undertaken prior to any new work planned. Additionally roofing warranties on existing systems shall be maintained through any new construction activity.

Glazing, Curtain Walls and Storefronts

Exterior glazing systems: Landside glazing systems shall match Parking Garage B and new pedestrian bridge curtain wall system and glass. Airside glazing systems shall be of similar appearance, but alternate curtain wall systems and glass may be allowable. All alternate curtain wall systems are to be presented to the DOA for review and approval, see *Exhibits 7-2 and 7-3* for additional information.

Interior glazing systems: All interior storefront systems are to utilize clear glass and anodized aluminum frames. Any deviation shall be approved by the Department of Aviation prior to completion of design, see *Exhibits 7-2 and 7-3* for additional information.

Exterior Wall finishes

Grade level finishes:
Airside –concrete masonry units (CMU), composite metal panels, exposed concrete, aluminum, and glass glazing systems and stucco. All exterior airside CMU is to be grouted solid to a height of 4’-0” for impact damage protection.
Landside –composite metal panel, aluminum and glass glazing systems and exposed concrete

Above grade level finishes:
Airside –composite metal panel, exposed concrete and aluminum and glass glazing systems
Landside –composite metal panel, exposed concrete and aluminum and glass glazing systems

SECTION 7.4 – Performance Standards –Terminal Building Improvements

Maintenance Contracts

The following list identifies existing (and continuing) maintenance contracts that will need to be coordinated with the design of any new facility or tenant improvement of the airport. Prior to contacting individual companies for service and maintenance work, coordinate with the Airport Architect to confirm which service contracts are still valid and to obtain contact information for specific companies.

Ford Audio Visual
Trane HVAC Central Plant/Automation/Chillers/EMS
United Elevator-Escalator
Dallas Pest Control
City Wide Building Services
Calibration Airfield Lighting
Chemical Filter
Ascom Revenue Management
Simplex Fire Alarm Security and Fire Pump Calibration

All new equipment warranties coverage shall begin when the project has been granted a Certificate of Occupancy. For projects with multiple phases or extended construction duration, coordination of warranty coverage and beginning of overage should be closely coordinated with the DOA.

Passenger Holdrooms

Passenger holdroom design shall be the responsibility of the tenant Airline. All projects are subject to review by the DOA per these standards. Materials used in design shall be compatible with DOA standards. All project related HVAC and electrical work shall conform to DOA standard requirements.

Furniture

Holdroom furniture shall be the responsibility of the tenant Airline. All projects are subject to review by the DOA per these standards. Materials used in design shall be compatible with DOA standards.

Airline Counters

Ticket and gate counter design shall be the responsibility of the tenant Airline. All projects are subject to review by the Aviation Department per these standards. Materials used in design shall be compatible with Aviation standards. All associated HVAC and electrical work shall conform to Airport standard requirements.

SECTION 7.5 – Construction Material Requirements

Flooring

The preferred material for concourse, lobby, ticket halls, restrooms and other public areas shall be epoxy terrazzo. Existing terrazzo floors shall be maintained and repaired as required by specific project requirements. Passenger holdrooms shall be carpet. Back of house and non-public areas shall be of a durable material that provides proper flooring for intended, specific area use.

Interior Wall finishes

Acrovyn Wall Panel System: Solid surface material up to 8’ minimum in high traffic areas.

4” Rubber Base to be utilized in all public areas.

Ceiling Finishes

Ceiling tile: 2’x2’ lay in ceiling tile in public areas.
Solid material ceilings: Solid gypsum board ceilings are allowable in appropriate areas with required access panels. DOA review is required for specific locations of solid ceilings and for access locations.

Doors and Hardware

Design and construction standards and guidelines for all new construction, additions and renovations, including preferred equipment manufacturers (doors, hardware, locks, etc.), are to be obtained from and coordinated with the Department of Aviation and DOA Maintenance Department.

Toilet Room Designs

Any new toilet rooms shall coordinated with existing adjacent facilities for required finish level. All water closets are to be wall mounted to allow for easier cleaning of facility. All toilet rooms shall have an accessible plumbing chase for water closets, sinks and urinals. At each location of new toilet rooms with more than two fixtures per sex, a Family Toilet Room will be required with provisions for baby changing activities. Additionally each bank of toilet rooms should be located within 200’ of a new or existing janitor’s closet. If there are no existing closets within the prescribed distance, a new one shall be accommodated in the project design.

Conveyor systems

Elevators, Escalators and Moving walks shall meet or exceed the requirements of ANSI 17-1 and the City of Dallas facility requirements.

AACS (CCTV, Card Readers)

As discussed in Chapter One “Inventory,” the Department of Aviation recently began a replacement and upgrade of the existing Automatic Access Control Systems, including CCTV and Card Reader locations. The initial focus of the system replacement was a terminal area wide system Access Control System (ACS) upgrade, to include the terminal facility and perimeter AOA fence access points.

Utilizing the U.S. Army Corps of Engineers guide specifications as a system design guideline, a new ACS was designed and installed, replacing the existing, out-of-date system. The capacity of the system was designed for controlling and monitoring a minimum of 1000 portals and 50,000 users (9,500 current badge holders), 75,000 expired badges, and retaining alarm and system transactions for a six month minimum on-line. Transactions and alarm histories are searchable using a long term data storage subsystem, specified as part of the ACS.

The existing CCTV monitoring system and its related operator control equipment are capable of interfacing with the new ACS. The primary CCTV recording equipment is operated from the Airport Police Service Desk workstation operator console.

Design and construction standards and guidelines for all new construction, additions and renovations to the existing ACS system and its related components, including preferred equipment manufacturers (card readers, rack equipment etc.), are to be obtained from and coordinated with the Department of Aviation and DOA Maintenance Department. It is the responsibility of the design professional and general contractor performing any ACS related work to coordinate expansion capacity and equipment with the DOA prior to beginning work.

HVAC

Design and construction standards and guidelines for all new construction, additions and renovations to the existing HVAC system and its related components, including preferred equipment manufacturers (equipment, diffusers, controls, etc.), are to be obtained from and coordinated with the Department of Aviation and DOA Maintenance Department.

Lighting/Electrical

Design and construction standards and guidelines for all new construction, additions and renovations to the existing electrical system and its related components, including preferred equipment manufacturers (light fixtures, panels, controls, etc.), are to be obtained from and coordinated with the Department of Aviation and DOA Maintenance Department.

SECTION 7.6 – Construction Requirements-Overview

The successful completion of all projects shall require appropriate levels of planning and coordination at many stages of the process. Safety during the construction phase shall be considered one of the most important factors related to achieving a successful project. Refer to the Dallas Love Field “Air Operations Area Construction Rules” including all Appendices for specific requirements of the DOA for all construction at Dallas Love Field Airport. Additional information is provided in this section, however, if there is a conflict between these standards and the Construction Rules, coordination with Airport Project Manager is required to resolve the conflict. The contractor is required to become familiar with the safety provisions in the following Federal Aviation Administration (FAA) documents: Advisory Circular Number 150/5370-10A, “Standards for specifying Construction of Airports”; Advisory Circular Number 150/5370-2E, “Operational Safety on Airports During Construction” and Federal Aviation Regulation FAR Part, 107 and 139.

The specific requirements outlined here shall not be considered a replacement for any company or specific safety plan and should supplement any existing safety programs.   The primary objectives of this section are to:

- Identify FAA requirements.
- Identify specific procedures required to perform construction at Airport.
- Establish safety as important factor of successful construction project.

Prior to initiating any construction, the tenant shall coordinate a pre-construction conference with the DOA. This meeting will be used to address Airport specific requirements for construction, including security and badging requirements. The tenant shall coordinate a schedule of construction progress meetings with the Aviation Department and other required parties in order to address construction issues in an ongoing fashion.

Any deviations from this manual shall be coordinated in writing with the DOA Project Manager prior to execution of the deviation. The City of Dallas DOA reserves the right to modify these standards, as needed, and will not be liable for errors and omissions in these standards. To obtain the latest version of these standards, please contact: Dallas Love Field Airport Architect at 214.670.6073.

Construction Requirements

Scheduling of Work

Prior to commencement of any work, the DOA requires a submittal of the current project schedule for all construction activities. The Contractor shall schedule a meeting with DOA, DPD and ARFF to assure that construction activities will not impact aircraft operations or passenger movement.

Construction in the airfield shall be scheduled as outlined in FAA General Provision Section 80.5, to minimize delays to aircraft operations. Movement from one area of construction shall be coordinated with the Aviation Department.

The contractor shall coordinate scheduled construction activities with FAA/TSA, Air Traffic Control Tower and Aviation Department for any activities that will interrupt, even temporarily, use of buildings, runways, taxiways and aprons.

Insurance/Bonds

It is the responsibility of the contractor to coordinate all insurance and bonding requirements with the DOA.

Contractor's Storage & Staging

The project storage area must be clearly defined in Contract Documents, including the proposed routes for delivery vehicles. No storage will be allowed within the AOA.

The project staging area shall be clearly defined within the Contract Documents, including the proposed routes for delivery and contractor vehicles. The staging area shall be separated from active ramp and taxi lanes by FAA approved standards and methods. The contractor shall coordinate exact details of separation with the DOA prior to initiating project related work.

Limitation of Operations

It is the sole responsibility of the contractor to coordinate the limitation of operations of the proposed construction site with the DOA. Once these operational areas and their limits have been established, it is the contractor's responsibility to ensure that all the work and operations are contained within this area.

Contractor's Access to Airport

For projects with areas of construction within the AOA, the contractor's access shall be limited to specific vehicular access gates. No other points of access shall be allowed without prior coordination and approval from the DOA and other groups having jurisdiction. Refer to *Exhibit 7-1* for additional information.

No personal vehicles will be allowed on the AOA. All vehicular traffic that enters the AOA shall be coordinated with the DOA, FAA and the Air Traffic Control Tower (ATCT). Vehicles must be supplied with radios to allow continuous communication with the ATCT.

For projects within designated SIDA areas, requiring access through security checkpoints, contractor access shall be restricted to off-peak times. Allowable access times are to be coordinated with the DOA. Tool storage is allowable within SIDA areas, but all tools must be inventoried and accounted for each day prior to being locked into storage. This is to prevent unauthorized access to tools and equipment.

Limits of Construction

As part of contract documents, each area of construction shall be denoted in its entirety. All access routes and storage areas shall be shown as well. This may require multiple views to fully address areas of project. No work can commence until full approval is provided in writing by DOA and City of Dallas Building Department. Preliminary staging efforts may be allowed and shall be submitted in writing to the DOA.

Construction areas within the Airport will be separated by construction walls and other methods to reduce impact to passengers and airport employees. The contractor shall provide plans and details depicting construction walls or barricades that will be used for each area of construction. Temporary signage may be required by the DOA depending on extent and duration of project. It is the responsibility of the contractor to coordinate these requirements with the DOA and comply to with these requirements.

Notice of Proposed Construction

The Contractor must submit FAA Form 7460-1, "Notice of Proposed Construction and Alteration", to the Federal Aviation Administration and obtain approval, prior to bringing equipment onto the airport property and into the construction site. The DOA shall review this completed form prior to submission to FAA.

Security

The contractor agrees to observe all security requirements of the Transportation Security Administration (TSA) 49 CFR 1540 and 1542 Airport security program and as they may be amended hereafter, and to take such steps as may be necessary or as directed by the DOA to ensure that subcontractors, material suppliers, employees, invitees and guests observe these requirements.

If the DOA incurs any fines and/or penalties imposed by the TSA/FAA or any expense related to enforcing the regulations of the TSA/FAA regulations 1542 and Airport security program, as a result of the acts or omissions of the contractor, the contractor agrees to pay and/or reimburse all such costs and expenses. The contractor further agrees to rectify any security deficiency as may be determined by the DOA or the TSA/FAA. The DOA reserves the right to take what ever action necessary to rectify any security deficiency as may be determined as such by the DOA or the TSA/FAA, in the event the Contractor fails to remedy the security deficiency. Contractor shall reimburse the DOA for any costs or expenses resulting from DOA remedying of each deficiency.

The Contractor shall provide on-call personnel, and their emergency phone numbers, for 24 hour a day response in case of emergencies or security violations. As determined necessary, the contractor shall have periodic onsite safety meetings with DOA and Department of Public Safety to address security concerns and update security plan as required due to construction progress.

The contractor shall be required to obtain DAL security badges for all supervisory personnel of the contractor and subcontractors when working within the AOA or SIDA areas. All supervisory employees shall have had background checks and SIDA training provided by the DOA. Background checks shall consist of a Criminal History Records Check (CHRC) by means of fingerprint submission to the Federal Bureau of Investigation. The CHRC must show that the individual has not been found guilty of any crimes listed in 49 CFR part 1542.209 in the last ten years. Additional personnel may require badges to meet escort provisions for non-badge holding employees. These employees will require completion of a CHRC and SIDA training course prior to receiving a badge. Badges must be worn at all times on the outer garment and above the waist. Absence of identification badges shall be grounds for removing the employee from construction areas.

The DOA requires all other employees to obtain an identification card issued by DAL DOA. Non-badge identification cards must be worn on outer garment above waist at all times. Absence of an identification card shall be grounds for removing the employee from construction areas. Badge holding employees are limited to escorting (5) additional workers, who must remain within audio and visual control at all times.

Any building improvement project will require construction personnel to meet all security and safety requirements of DOA and the Transportation Safety Administration. Access to AOA and other restricted areas, including deliveries and storage are to be coordinated with the DOA and TSA/FAA. The contractor shall prepare and submit to the

DOA for review and approval, access plans and safety plans prepared to address construction impacts to airport operations.

AOA Escorting

Refer to *Exhibit 7-1* for AOA requirements.

Fire Protection

All construction activities that could result in ignition of a fire, including cutting, grinding and welding, shall require a burn permit from the City of Dallas Fire Department. All construction activities shall be coordinated with the Airport Rescue and Fire Department (ARFF).

The DOA has recently completed the installation of a new automatic fire sprinkler system as part of ongoing facility upgrades. Once this work was completed, the entire airport was capable of being fully sprinkled per NFPA standards. All new work shall maintain fire sprinkler coverage and provide new service as required by Building Codes and NFPA. Renovation design of fire sprinkler system shall be completed by a licensed engineer.

Construction Signage

See *Exhibit 7-1* Dallas Love Field “Air Operations Area Construction Rules” including all Appendices for barricade, cone and plating requirements.

SECTION 08410

ALUMINUM-FRAMED STOREFRONTS CLEARSTORY

PART 1 GENERAL

1.1 SUMMARY
- A. Related Documents: General and Supplementary Conditions of the Contract, Division 1 - General Requirements, and Drawings are applicable to this Section.
- B. Section Includes:
  - 1. Aluminum doors, frames and glazed lights.
  - 2. Glass and infill panels.
  - 3. Anchors, brackets, and attachments.
  - 4. Door hardware.
  - 5. Perimeter sealant.

1.2 SYSTEM DESCRIPTION AND PERFORMANCE
- A. Architectural Requirements
  - 1. Drawings are diagrammatic and do not purport to identify or solve problems of thermal or structural movement, glazing or anchorage.
  - 2. Requirements shown by details are intended to establish basic dimensions of units, sightlines and profiles of members.
  - 3. Provide concealed fastening wherever possible.
- B. Structural Requirements
  - 1. System to provide for expansion and contraction within system components caused by a cycling temperature range of 170 F degrees without causing detrimental effects to system or components.
  - 2. Design and size members to withstand dead loads and live loads caused by pressure and suction of wind as calculated in accordance with building code, and measured in accordance with ANSI/ASTM E 330.
  - 3. Limit mullion deflection to L/200, or flexure limit of glass with full recovery of glazing materials, whichever is less.
  - 4. System to accommodate, without damage to system or components, or deterioration of perimeter seal: Movement within system; movement between system and perimeter framing components; dynamic loading and release of loads; and deflection of structural support framing.
  - 5. Storefront manufacturer shall be responsible for design and engineering of storefront system, including necessary modifications to meet specified requirements and maintaining visual design concepts.
  - 6. Attachment considerations shall take into account site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening or fracturing connection between units and building structure or between units themselves.
  - 7. Design anchors, fasteners and braces to be structurally stressed not more than 50% of allowable stress when maximum loads are applied.
  - 8. Engineer storefront and entrances to be free from rattles, wind whistles and noise due to thermal and structural movement and wind pressure.
- C. Environmental Requirements
  - 1. Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to exterior. No leakage shall occur in wall when tested in accordance with ASTM E 331 at test pressure of 2.86 pounds per square foot.

2. Limit air infiltration through assembly to 0.06 cu ft/min/sq ft of assembly surface area, measured at a reference differential pressure across assembly of 1.57 lbs/sq ft. as measured in accordance with ANSI/ASTM E 283.
3. Maintain continuous air and vapor barrier throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound.

1.3 SUBMITTALS

A. Submit shop drawings and product data under provisions of Section 01330.
B. Include system and component dimensions; descriptive literature on components within assembly; framed opening requirements and tolerances; anchorage and fasteners; glass and infills; door hardware requirements; and affected related work.
C. Submit manufacturer's installation instructions under provisions of Section 01330.
D. Submit samples under provisions of Section 01330.
E. Submit 2 samples, illustrating prefinished aluminum surface (4 by 4 inches) and specified glass (12 by 12 inches), and 6 inch door corner section.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with AAMA SFM-1 and AAMA - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.
B. Conform to requirements of ANSI A117.1 and local accessibility amendments.

1.5 QUALIFICATIONS

A. Manufacturer and Installer: Company specializing in manufacturing aluminum glazing systems with minimum 3 years documented experience.

1.6 PRE-INSTALLATION CONFERENCE

A. Convene one week prior to commencing work of this Section, under provisions of Section 01310.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver and handle system components under provisions of Section 01600.
B. Store and protect system components under provisions of Section 01600.
C. Provide wrapping to protect prefinished aluminum surfaces.

1.8 COORDINATION

A. Manufacturer shall be responsible for details and dimensions not controlled by job conditions and shall show on his shop drawings required field measurements beyond his control.
B. Coordinate with responsible trades to establish, verify and maintain field dimensions and job conditions.

1.9 ENVIRONMENTAL CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F during and 48 hours after installation.

1.10 WARRANTY

A. Provide 2 year warranty jointly signed by manufacturer and installer under provisions of Section 01780.
B. Warranty: Cover complete system for failure to meet specified requirements.

1.11 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on shop drawings and as instructed by the manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with requirements herein, provide products from one of the following:
  - 1. Kawneer Company, Inc.
  - 2. US Aluminum.
  - 3. Vistawall Architectural Products.
  - 4. Tubelite.
  - 5. Reliant Curtainwall.
- B. Substitutions: Under provisions of Section 01600.
- C. The products listed below are based on Vistawall HP-175, as a standard of quality.

2.2 ACCEPTABLE PRODUCTS

- A. Base Bid Frame Style: Design standard: Vistawall HP 175, enhanced to resist 50 psf wind loading.
- B. Alternate Bid Frame Style: Reliant Curtainwall (blast resistant)
- C. Door style: Design standard: Vistawall [____] stile.

2.3 MATERIALS

- A. Extruded Aluminum: ANSI/ASTM B 221; 6060-T5 alloy,temper.
- B. Sheet Aluminum: ASTM B 209;5005-H16 alloy, temper.
- C. Sheet Steel: ANSI/ASTM A 446; hot-dipped galvanized.
- D. Steel Sections: ANSI/ASTM A 36; shapes to suit mullion sections.
- E. Primer and Touch-Up Primer for Galvanized Surfaces: FS TT-P-645.
- F. Fasteners: Stainless steel.

2.4 FABRICATED COMPONENTS

- A. General: Form section true to details with clean, straight, sharply defined profiles, free from defects impairing strength or durability.
- B. Frames: 1-3/4 and 2 wide by 4-1/2 inch profile, thermally broken with interior portion of frame insulated from exterior portion, flush glazing stops. Frames for interior glazing need not be thermally broken.
- C. Doors: 1-3/4 inches thick, fabricated of 3/16 inch wall thickness, stile and rail widths as selected by Architect; welded corners; square glazing stops for insulated glass units; beveled glazing stops for single glazed units.
- D. Flashings: Form from sheet aluminum with same finish as extruded sections. Apply finish after fabrication. Material thickness as required to suit condition without deflection or "oilcanning".

2.5 GLASS AND GLAZING MATERIALS

- A. Glass and Glazing Materials: As specified in Section 08800.

2.6 SEALANT MATERIALS

- A. Sealant and Backing Materials: As specified in Section 07920 of types described below

2.7 HARDWARE

- A. Refer to Section 08710.

2.8 FABRICATION

- A. Fabricate doors and frames allowing for minimum clearances and shim spacing around perimeter of assembly, yet enabling installation.

B. Rigidly fit and secure joints and corners with internal reinforcement, except that door corners will be welded. Make joints and connections flush, hairline, and weatherproof.
C. Develop drainage holes with moisture pattern to exterior.
D. Prepare components to receive anchor devices. Fabricate anchorage items.
E. Arrange fasteners, attachments, and jointing to ensure concealment from view.
F. Prepare components with internal reinforcement for door hardware.
G. Reinforce framing members for imposed loads.

2.9 FINISHES
A. Color Anodized:
    1. Conforming to AA-M12C22A44.
    2. Architectural Class I, etched, medium matte, clear anodic coating, 0.7 mil minimum thickness.

PART 3 EXECUTION

3.1 EXAMINATION
A. Verify wall openings and adjoining air and vapor seal materials are ready to receive work of this Section.
B. Verify dimensions, tolerances, and method of attachment with other work.
C. Beginning of installation means acceptance of existing conditions.

3.2 INSTALLATION
A. Install wall system, doors, and glazing in accordance with manufacturer's instructions and AAMA - Metal Curtain Wall, Window.
B. Use anchorage devices to securely attach frame assembly to structure.
C. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
D. Install sill flashings.
E. Coordinate attachment and seal of air and vapor barrier materials.
F. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
G. Install hardware using templates provided. Refer to Section 08710 for installation requirements.
H. Install glass in accordance with Section 08800, using exterior dry method of glazing.
I. Install perimeter 2 part polyurethane type sealant, backing materials, and installation requirements in accordance with Section 07920.
J. Adjust operating hardware for smooth operation.

3.3 TOLERANCES
A. Maximum Variation from Plumb: 0.06 inches every 3 feet non-cumulative or 1/16 inches per 10 feet, whichever is less.
B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.4 ADJUSTING
A. Adjust work under provisions of Section 01770.
B. Adjust operating hardware for smooth operation.

3.5 CLEANING/REPAIRING/REPLACEMENT
A. Remove protective material from prefinished aluminum surfaces.
B. Wash down exposed surfaces using a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

C. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.

D. Replace scratched, cracked, chipped or otherwise damaged glass and framing.

3.6 PROTECTION OF FINISHED WORK

A. Protect finished work under provisions of Section 01500.

B. Protect finished work from damage.

END OF SECTION

AIR OPERATIONS AREA
CONSTRUCTION
RULES

(REVISED: May 20 2005)

Exhibit 7-1-14

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Exhibit 7-1-15

CHAPTER 1 -

DEFINITIONS AND GENERAL INFORMATION

1.1 DEFINITIONS

1.1.1 **AIR OPERATIONS AREA (AOA)** - The portion of Dallas Love Field which encompasses the landing, take off, taxiing and parking areas for aircraft. All such areas are protected by a chain link fence and positive controlled gates. No openings or unguarded open gates are allowed in the fence at any time.

1.1.2 **AIRPORT CONSTRUCTION** - Work that is performed within the Air Operations Area.

1.1.3 **AIR SPACING** - Aeronautical studies of obstructions to air navigation, performed by the FAA, to determine their effect on the safe and efficient use of airspace.

1.1.4 **APRON (Ramp)** - An area of pavement used for the servicing, loading, unloading and parking of aircraft.

1.1.5 **CONSTRUCTION AREA** - The area approved by the Department of Aviation to designate the limits of construction and equipment/material storage areas required for the Contractor's exclusive use during construction.

1.1.6 **CONTRACTOR** - A person, partnership, firm, corporation, association, organization or any combination thereof entering into a contract with the City of Dallas for the execution of work on the airport, acting directly or through a duly authorized representative.

1.1.7 **CONTROL TOWER** - Refers to the FAA owned and operated tower, located on Dallas Love Field, used to direct the movement in the air within the vicinity of the airport and on the ground within the movement area and associated taxiways.

1.1.8 **CRITICAL AREA** - Refers to a specified area around a NAVAID (electronic or visual) which is to be free of all objects, vehicles or equipment unless authorized by the Love Field FAA Control Tower and the Department of Aviation. Entering this area without authorization represents a safety hazard to airborne traffic.

1.1.9 **DEPARTMENT OF AVIATION** - Refers to the Department of Aviation for the City of Dallas and/or any one of its various subdivisions.

1.1.10 **DIRECTOR OF AVIATION** - Refers to the Director of the Department of Aviation for the City of Dallas, and/or designated representative(s).

1.1.11 **EQUIPMENT** - Any item or unit used by a Contractor which does not meet the definition for vehicles or supplies, and is not incorporated into the finished construction.

1.1.12 **ESCORT** - A person responsible for controlling the movements of individual, vehicles and/or equipment within the AOA. The individual that provide the escort must meet the requirements outlined within this document.

1.1.13 **FEDERAL AVIATION ADMINISTRATION (FAA)** - The government organization that governs the safe and efficient use of the nation's airspace, by military as well as civilian aviation, and promotes civil aeronautics and commercial aviation.

1.1.14 **FOREIGN OBJECT DEBRIS/DAMAGE (FOD)** - The term used to refer to any object (discarded waste, rock fragments, etc.) on the airport. These objects have the potential of causing damage to aircraft.

1.1.15 **FRANGIBLE BASE** - A base designed to be easily broken at a specified impact load. These bases are attached to all objects, including signs and lights, located within all safety and object free areas.

1.1.16 **HAUL ROUTE** - A specific route designated for the purpose of conveyance by vehicles from one point within the AOA to another.

1.1.17 **HAZARDOUS AREA** - Areas in which no part of an aircraft is permitted. These areas are indicated by the use of barricades as specified in the AOA Construction Rules.

1.1.18 **IDENTIFICATION BADGE (AOA)** - A Department of Aviation issued badge which authorizes the person to whom it is issued to enter the AOA for the purpose of conducting business.

1.1.19 **MOVEMENT AREA** - A portion of the Air Operations Area consisting of runways, taxiway and other areas of the airport which are used for the movement of aircraft, excluding aprons.

1.1.20 **NAVIGATION AID (NAVAID)** - Any visual or electronic device, airborne or on the surface, that provides point-to-point guidance information or position to aircraft in flight.

1.1.21 **NIGHTTIME** - The period of time from one (1) hour PRIOR to local official sunset to one (1) hour AFTER local official sunrise.

1.1.22 **OBJECT** - Includes, but is not limited to, above ground structures, NAVAIDs, people, equipment, vehicles, natural growth, terrain and parked aircraft.

1.1.23 **OBJECT FREE AREA (OFA)** - An imaginary surface on either side of runways and taxiway in which no object are allowed. This area shall be clear of vehicles/equipment as well as parked, holding or taxiing aircraft.

1.1.24 **RESTRICTED AREA -** Any area of the airport designated not generally open to the public, unless authorization has been granted to enter.

1.1.25 **RUNWAY** - A defined rectangular surface on an airport prepared or suitable for landing or takeoff of aircraft.

1.1.26 SAFETY AREA - A designated area abutting the edges of runways and taxiway intended to reduce the risk of damage to an aircraft inadvertently leaving the runway or taxiway.

1.1.27 SAFETY REPRESENTATIVE - A person assigned by the Contractor, meeting the requirements of Chapter 4 of this document, to escort personnel, vehicles and equipment on the movement area and the associated safety areas.

1.1.28 SECURE AREA - An area of an airport that has been designated and access is controlled by a system, method, or procedure under FAR 1542 to control unauthorized access.

1.1.29 SECURITY IDENTIFICATION DISPLAY AREA (SIDA) - The area identified as requiring each person to continuously display, on their outermost garment, an airport approved identification medium unless under airport approved escort.

1.1.30 STERILE AREA – A portion of an airport defined in the airport security program that provides passengers access to boarding aircraft and to which the access generally is controlled by TSA, or by an aircraft operator under Part 1544 or a foreign air carrier under Part 1546, through the screening of persons.

1.1.31 SUPPLIES - Materials or provisions stored for use during the construction project.

1.1.32 TAXILANE - The portion of the aircraft parking area used for access between taxiways and aircraft parking positions.

1.1.33 TAXIWAY - A defined path established for the taxiing of aircraft from one part of the airport to another.

1.1.34 TRANSPORTATION SECURITY ADMINISTRATION (TSA) – The government organization that oversees civil aviation security.

1.1.35 VEHICLE - Any motorized, self-propelled, street legal, driver operated unit meeting State of Texas Inspection requirements.

1.2 GENERAL INFORMATION

The Air Operations Area of Dallas Love Field is a restricted area that only authorized person are allowed to enter. Access to the Movement Area is further restricted to only those persons who have successfully completed the "*Movement Area Training Course*." Some of the general rules when operating on the AOA and the Movement Area are:

1.2.1 AIRCRAFT RIGHT-OF-WAY

Aircraft have the right-of-way at all times. Even under Tower clearance, a movement that would put you in conflict with an aircraft should be avoided. Always drive at a safe and controllable speed on the taxiways. Indicate your intent to approaching aircraft that you will give way by slowing down when approaching intersections, moving to the extreme edge of the taxiway and/or stopping completely.

1.2.2 PASSING AIRCRAFT

NEVER DRIVE UNDER OR ALLOW TO BE PASSED OVER BY WINGS OF AIRCRAFT!

Your judgment as to whether of not you can pull over to let an aircraft pass without the plane's wing pass over your vehicle is most critical. When you see a plane approaching, move to the taxiway's edge and judge whether or not a safe distance can be maintained between your vehicle and the wing of the plane. Consider too that the plane may be off the centerline of the taxiway. Being familiar with the common type aircraft wingspans will aid you in determining which aircraft can be safely passed without your leaving the taxiway. You should also be familiar with taxiway widths (including shoulders).

NOTE: Equipment of extreme weight should avoid traveling on asphalt shoulder due to the potential for damage.

1.2.3 NIGHTTIME TRAVEL

Nighttime travel requires total concentration on the part of the vehicle operator. Aircraft can taxi with or without "headlights". Most often, the only lights active on the plane are wing tip clearance lights and fuselage rotating beacon lights. Bright anti-collision strobe lights are not normally used during ground taxiing.

Rotating beacons are REQUIRED for vehicles operating at nighttime at all times. When vehicle headlights are used, caution must be exercised so as to avoid aiming them across runways or in the direction of landing aircraft on short final. Vehicle high beams should not be used.

1.2.4 AIRPORT PERIMETER ROAD

Dallas Love Field has a perimeter road that is used by various tenants in the course of daily business. The perimeter road should be utilized as much as possible during routine movements around the airport. The perimeter road should never be blocked without prior authorization from the Department of Aviation, Airport Operations Division.

CHAPTER 2 -

PERSONNEL IDENTIFICATION REQUIREMENTS

2.1 INTRODUCTION

In response to changes in the Federal Aviation Regulations regarding airport security, an Airport Security Program for Dallas Love Field has been developed to incorporate the security requirements for personnel identification and access to sterile and secure areas of the airport. The federal requirements apply to all airports serving scheduled air carrier operations where passenger screening is conducted. The Dallas Love Field Identification Badge Program is a component of the Airport's Security Program that is designed to control access into the secured areas by providing a means to easily identify authorized individuals.

The Airport Security Program identifies the Security Identification Display Area (SIDA), the Air Operations Area (AOA) and the sterile areas within the confines of their airport. All personnel who are not under airport-approved escort must, at all times, display an airport-issued identification badge on their outermost garment. Additionally, any individual requiring unescorted access to the SIDA must first successfully complete the SIDA training program and complete a criminal history records check, prior to receiving the appropriate airport-issued identification badge. Personnel working in the sterile area must also complete a criminal history records check before being issued and airport issued identification badge.

The Department of Aviation has developed a progressive Airport Security Violation Program for enforcement actions. The penalties range from warnings to revocation of access privileges. Additionally, the Transportation Security Administration (TSA) may impose civil penalties (i.e. fines) for non-compliance of federal regulations.

2.2 DALLAS LOVE FIELD IDENTIFICATION BADGE PROGRAM

All authorized persons with unescorted access to any access restricted or secure area of the airport must read and understand all of the information contained in the various components comprising the Identification Badge Program and agree to comply with the regulations contained therein.

2.2.1 IDENTIFICATION BADGE REGULATIONS

All individuals authorized unescorted access to any of the secure areas (SIDA) of the airport shall posses a valid airport-issued identification badge and comply with the following regulations.

2.2.1.1 While occupying any portion of the secure area, SIDA, AOA or sterile area, all individuals issued an airport identification badge shall continuously display their airport-issued identification badge on the upper part of their body, ensuring visibility by wearing it on their outermost garment. A person with an airport-issued identification badge must escort all other individuals working in this area.

2.2.1.2 The airport-issued identification badge is non-transferable and is not to be loaned or borrowed.

2.2.1.3 While in the SIDA, it is the responsibility of each individual to challenge (approach and question in a non-threatening manner) persons not displaying an airport-approved identification badge. As a challenger, however, you are not expected to put yourself or others around you in a dangerous situation. If you perceive that a verbal challenge might do so, you are expected to contact airport police immediately at (214) 670-6162 or by the Aviation Department's radio if so equipped.

2.2.1.4 All airport-issued identification badges remain the property of the Department of Aviation.

2.2.1.4.1 Individuals must return the identification badge and proximity card upon the request of proper authorities, transfer or termination of employment (to include termination of contract work), or otherwise leaving Dallas Love Field. Failure to return your identification badge will result in a financial penalty being levied against your employer or sponsor.

2.2.1.4.2 Individuals must return their identification badge and/or proximity card if it is damaged, mutilated or has expired.

2.2.1.4.3 Individuals are responsible for immediately notifying their employer and/or Airport Operations of any lost or stolen identification badges and proximity cards. **A replacement badge and/or proximity card will be issued only after a written report is filed with Airport Operations explaining the circumstances leading to the loss or theft.** A penalty charge will be imposed for any lost or stolen identification badge. The penalty charge is refundable, however, but only if the lost or stolen badge is recovered and returned to Airport Operations.

2.2.1.5 The Director of Aviation reserves the right to revoke unescorted access to the airport of any individual where such action is determined to be in the best interest of airport security and safety.

2.2.1.6 All unaccounted for identification badges reported lost, stolen, or not returned as required are entered on a "stop list" by the name of the individual and card number. Airport Operations distributes the list regularly to each tenant responsible for maintaining a secure area perimeter access point(s). The Airport Police are to be immediately notified if any person attempts to gain access to secured area, SIDA, AOA or sterile area of the airport using an identification badge appearing on the "stop list".

2.2.1.7 Any questions regarding an identification badge's authenticity should be directed to either Airport Police, at (214) 670-6162, or Airport Operations, at (214) 670-6156, for verification.

2.2.1.8 The Airport Police, (214) 670-6162, are to be immediately notified if any person attempts to gain unauthorized access to the secured area, SIDA, AOA or sterile area of the airport. Airport Operations will make a permanent record of the incident.

2.2.1.9 Failure to comply with any of these regulations, responsibilities and procedures may result in the loss of unescorted access to the secure areas of the airport.

2.3 IDENTIFICATION BADGE ISSUING PROCEDURES

Dallas Love Field Airport Operations is the administrator of the Dallas Airport Security Program and its Identification Program. Airport Operations will only issue identification badges to individuals who have properly completed the required application forms and acknowledge their understanding of the regulations and their responsibilities. The Airport Badging Office is located on the second floor of the Main Terminal Building. Individuals requiring fingerprinting must make an **appointment** with a badge clerk or manager by calling **(214) 670-6155**. Before an individual will be issued an Airport-issued Identification badge, the following application requirements must be met and all fees must be paid.

2.3.1 Restricted/AOA (NON-SIDA) requirements:

2.3.1.1 The authorizing organization must conduct a verification of each applicant's employment history for the previous five years.

2.3.1.2 Airport Operations must verify the identity of the applicant with two forms of identification, one of which must be a Government issued, with a photograph.

2.3.1.3 The applicant must also successfully complete the required Security Awareness Training in accordance with Airport Security Program.

2.3.2 Secured/SIDA requirements:

2.3.2.1 An airport/air carrier initiated, fingerprint based, Criminal History Records Check (CHRC) must be completed for all individuals requesting unescorted access to the Secured areas/SIDA and those individuals who are Authorized Signatories. Additionally, the authorizing organization must conduct a verification of each applicant's employment history for the previous five years.

2.3.2.2 The results of the CHRC is compared against a listing of "disqualifying crimes" as identified by the FAA/TSA. If an individual has been convicted of a disqualifying crime within 10 years of the date of application for SIDA access, SIDA authorization will not be granted. A CHRC is considered complete only when the results are obtained and any potential disqualifying crimes are cleared. If an employee currently has SIDA access and the CHRC shows a disqualifying crime, SIDA access will be terminated immediately, the individual will be required to surrender their SIDA ID badge. However, the individual may still obtain a NON-SIDA badge at the discretion of their employer.

2.3.2.3 The results of the CHRC are normally received in 5-7 days from date the fingerprints are submitted. Each organization will be notified of the results of the CHRC, clear or not, but not the specifics of the results. Copies of the CHRC can only be provided to the applicant upon written request. If a result comes back unclassifiable, the applicant will be rescheduled for a second set of fingerprints. There will be no charge for this and we will reuse the application on file. Please provide the Department of Aviation with a point of contact you wish to receive the results of the CHRC, if possible an email address would be beneficial.

2.3.2.4 Airport Operations must verify the identity of the applicant with two forms of identification, one of which must be a Government issued identification, with a photograph.

2.3.2.5 SIDA Training must be completed in accordance with the Airport Security Program.

2.3.3 Sterile Area requirements:

2.3.3.1 An airport/air carrier initiated fingerprint based, Criminal History Records Check (CHRC) must be completed for all individuals requesting unescorted access to the Sterile Area. A CHRC is considered complete only when the results are obtained and any potential disqualifying crimes are cleared.

2.3.3.2 If results come back unclassifiable, the applicant will be rescheduled for a second set of fingerprints. There will be no charge for this and we will reuse the application on file.

2.3.3.3 Airport Operations must verify the identity of the applicant with two forms of identification, one of which must be a Government issued identification, with a photograph.

2.4 IDENTIFICATION BADGE FEES AND PENALTY CHARGES SCHEDULE

A schedule of fees and penalty charges associated with the Identification Badge Program is shown below. The dollar amounts contained in this schedule are subject to change when deemed necessary by the Director of Aviation. All dollar amounts quoted are per single identification badge.

IDENTIFICATION BADGE FEES AND PENALTY CHARGES SCHEDULE

ITEM	AMOUNT		PAYER	REFUNDABLE
Identification badge	$5.00	Initial issue or reissue (replacement)	Individual/ Requesting Agency	NO
Proximity card issue (One required for SIDA access badge issued.)	$20.00	Initial issue or reissue – (replacement)	Individual/ Requesting Agency	NO
Criminal History Records Check (CHRC)	$55.00		Individual/ Requesting Agency	NO
Lost, stolen or unaccountable identification badge	White/ Yellow Badge $50.00	Penalty charge	Individual or Requesting Agency	Yes – if badge is recovered and returned.
Lost, stolen or unaccountable identification badge	SIDA or AOA Badge $100.00	Penalty charge	Individual or Requesting Agency	YES - if badge is recovered and returned.

2.5 SPECIAL CONTRACTOR REQUIREMENTS

Those organizations having a contract with the City of Dallas, for work to be performed within the secure areas of Dallas Love Field must meet the following requirements.

2.5.1 All Contractors, upon completion of the project or the termination of the contract, shall ensure that all Airport issued identification badges issued to the Contractor or its subcontractors are returned to the Department of Aviation, Airport Operations Division. All unreturned identification badges will be considered lost and the appropriate penalty charges (see Section 2.4) will be withheld from the final payment.

2.5.2 The Contractor must return all Airport identification badges of its subcontractors, upon completion the subcontractor's work.

CHAPTER 3 -

VEHICLE OPERATION ON THE AOA

3.1 AUTHORIZATION OF VEHICLES/EQUIPMENT

All vehicles that enter the Air Operations Area of Dallas Love Field shall comply with the following:

3.1.1 All vehicle/equipment operators on the AOA shall display the appropriate Airport issued identification badge (requirements outlined in Chapter 2) or shall be under the escort of such an individual.

3.1.2 All vehicles shall be limited to the airport perimeter road, paved leasehold areas and/or construction areas unless specifically authorized by the Department of Aviation.

3.1.3 Vehicles authorized to utilize the airport perimeter road shall display the appropriate airport issued vehicle identification media for their area of access. This identification media is NON-TRANSFERABLE between organizations. Vehicle operators must have the appropriate level of access on their personnel identification badge as the vehicle in which they are driving.

3.1.4 Control of all vehicle identification issued on the project will be the responsibility of the Prime Contractor.

3.1.5 All vehicle identification media must be returned at the completion of the project, or when their use is no longer necessary. Vehicle identification media that is not returned at the completion of the project will be considered lost and the appropriate penalty charge will be withheld from the final payment.

3.1.6 Lost, stolen, or otherwise unaccountable vehicle identification media must be reported to the Department of Aviation, Airport Operations Division (214 670-6156), immediately upon discovery. A $100.00 fee will be assessed for any vehicle media that is unaccountable. <u>Replacement vehicle identification media will be issued only after a written report is filed with Airport Operations explaining the circumstances.</u>

3.1.7 All construction vehicles/mechanized equipment authorized within the AOA construction area, the Movement Area, or related safety areas shall be marked with a 3 ft. X 3 ft. orange and white checkered flag with each box being 1 ft. square, located on the uppermost portion of the vehicle/motorized equipment, or be escorted by a vehicle so equipped.

3.1.8 All vehicles authorized to operate on the Movement Area or associated safety areas are required to maintain 2-way communication with the Control Tower Ground (121.75) or be under the escort of a Safety Representative.

3.1.9 During nighttime hours, all equipment operating on the airport exceeding 15 feet in height shall be lit with a red obstruction light in accordance with Advisory Circular 70/7460-1. This light is to be located on the upper most portion of the equipment.

3.1.10 All construction equipment that exceeds 15 feet in height is required to be "Air Spaced". This procedure will be outlined in Section A of Chapter 5.

3.2 VEHICLE/EQUIPMENT RESTRICTIONS

3.2.1 Unless otherwise authorized by the Director of Aviation, the following are prohibited from operating within the AOA: Any vehicle with two or less wheels (unicycles, bicycles, motorcycles, etc.), skateboards, or skates (roller skates, roller blades, etc.).

3.2.2 All vehicle(s)/equipment must be appropriately secured such that neither aircraft blast nor windblast will result in their movement.

3.3 RIGHT OF WAY

Vehicle(s)/equipment shall be operated in a manner that does not interfere with aircraft operations. All vehicle(s)/equipment shall yield right of way to all aircraft and emergency vehicles.

3.4 VEHICLE/EQUIPMENT OPERATING RULES

3.4.1 Vehicle/mechanized equipment operators shall obey all traffic signs.

3.4.2 The established speed limits within the AOA are:

3.4.2.1.	Airport Perimeter Road	20 m.p.h.
3.4.2.2	Ramp and Terminal Areas	15 m.p.h.

3.4.3 At no time shall the operator of a vehicle/mechanized equipment be driven under any portion of an aircraft.

3.4.4 A vehicle/equipment shall not stop or be parked:

3.4.4.1 So as to block a driveway, AOA access gate, fire lane, or aircraft.

3.4.4.2 In areas other than those prearranged and approved by the Department of Aviation.

3.4.4.3 Within 15 feet of a fire hydrant, unless authorized by the Department of Aviation.

3.4.5 Vehicle(s)/mechanized equipment shall not be operated in a careless or negligent manner within the AOA.

3.4.6 Vehicle(s)/equipment shall not be operated by individuals under the influence of any substance which impairs the ability to do so in a safe manner.

3.5 NIGHT OR LOW VISIBILITY OPERATIONS

3.5.1 Vehicle/mechanized equipment operators are not permitted to move about the airport or outside the designated construction area at night, unless the vehicle has operating headlights, taillights, and brake lights, or is under the escort of a properly lighted vehicle. Headlights shall be set on DIM when moving about the airport at night.

3.5.2 Vehicle(s)/mechanized equipment authorized on the Movement Area and/or associated safety areas shall be equipped with an electrically powered, amber color, 360 degree omni-direction, rotating light, mounted on the vehicle so that it is conspicuous from any direction.

3.6 RUNWAY/TAXIWAY ACCESS

3.6.1 At **NO TIME** shall a vehicle enter the Movement area and/or associated safety area unless it is authorized by the Department of Aviation and is in continuous radio communication with the Control Tower. If a vehicle is not radio equipped to communicate with the Control Tower, an escort vehicle equipped with such a radio, must lead or direct the movement of this vehicle while operating on the Movement Area.

3.6.2 Any individual authorized unescorted access to the Movement Area or associated safety areas must have completed the "*Movement Area Training Course*" administered by the Department of Aviation, Airport Operations Division.

3.7 VEHICLE/EQUIPMENT ACCIDENTS

All accidents, which involve bodily injury or property damage, must be reported immediately to the Department of Aviation, Airport Operations Division at (214) 670-6156.

3.8 REMOVAL OF VEHICLES/EQUIPMENT

In accordance with City of Dallas ordinances, the Department of Aviation may remove and impound, at the owners expense, any vehicle/equipment witch is disabled, abandoned, improperly parked, or represents an operational hazard.

3.9 INSURANCE

All vehicles authorized driving privileges on Dallas Love Field are required to maintain vehicle liability coverage as established by the contract.

CHAPTER 4 -

USE OF SAFETY REPRESENTATIVES

The Contractor shall provide an adequate number of Safety Representatives to serve as escorts for material deliveries along haul routes and the movements of the Contractor's vehicles/mechanized equipment and personnel within the Movement Area.

4.1 REQUIREMENTS FOR SAFETY REPRESENTATIVE

4.1.1 All questions relating to the use of Safety Representatives shall be directed to the Department of Aviation, Airport Operations Division.

4.1.2 Safety Representatives shall be under the direct and exclusive supervision of the Contractor for the duration of the project.

4.1.3 At anytime during the project, the Department of Aviation may reclassify one or all of the Safety Representatives as unacceptable, the Contractor must immediately remove this person(s) from those duties.

4.1.4 Safety Representatives shall have experience in airport operations, and shall be familiar with aircraft operations at Dallas Love Field.

4.1.5 Safety Representatives must:

4.1.5.1 Pass a written examination administered by the Department of Aviation, Airport Operations Division. Study materials will be provided.

4.1.5.2 Demonstrate to the Department of Aviation, Airport Operations Division, in a vehicle provided by the Contractor with appropriate equipment, their ability to move about the airport in a safe manner.

4.1.6 Safety Representatives must meet the requirements of Chapter 2 - Personnel Identification, in this document.

4.2 VEHICLE(s)/EQUIPMENT

4.2.1 If the Contractor's project involves access to the Movement Area or associated safety areas, the Contractor shall furnish appropriate escort vehicle(s) for the use by the Safety Representative. The Safety Representative shall have the capability of 2-way radio communication with the Control Tower on a frequency of 121.75 MHZ.

4.2.2 The Contractor shall identify all escort vehicles in accordance with Chapter 3 - Vehicle Operation on the AOA, of this document.

4.3 DUTIES OF THE SAFETY REPRESENTATIVE

4.3.1 The Safety Representative shall provide all escorts on the Movement Area and/or associated safety areas.

4.3.2 During any absence of the Safety Representative(s) or for periods that they are unable to perform their specified duties, all work within the Movement Area and associated safety areas shall stop. Additionally, all personnel and equipment shall be escorted to approved locations outside the Movement Area and related safety areas. **NO** contract time extension(s) will be granted for time lost due to the absence of the Safety Representative(s). Work shall resume only with the return of the Safety Representative(s).

4.3.3 The Safety Representative shall ensure that all equipment maintains proper clearances from moving aircraft.

CHAPTER 5 -

CONSTRUCTION

AIRPORT OPERATIONS SHALL TAKE PRECEDENCE OVER ALL WORK!

When airfield construction is being performed on the AOA the following rules will apply unless modified in writing by the Department of Aviation. The contractor shall follow the safety guidelines set forth in FAA Advisory Circular 150/5370-2 *"Operational Safety On Airports During Construction"* (current version).

5.1 CONTACT TELEPHONE NUMBER

The Contractor will, for the durations of the project, provide a 24-hour telephone number to the Department of Aviation, Airport Operations Division, which can be used to contact a representative with decision making authority in the event of an emergency or a hazardous situation.

5.2 AIR SPACING REQUIREMENT

5.2.1 Any airport construction and/or alteration not receiving Federal Aviation Improvement Program (AIP) funding **requires the Contractor** to complete and submit FAA Form 7460-1 "*Notice of Proposed Construction or Alteration*" (available from the FAA Air Traffic Division Regional Office), at least 60 days prior to the start of the project, to the Department of Aviation.

5.2.2 The Contractor shall complete and submit a separate FAA Form 7460-1 for all equipment and/or temporary structures, utilized during any airport construction and/or alteration that exceeds a height of 15 feet above ground level. This includes:

5.2.2.1 Cranes
5.2.2.2 Derricks
5.2.2.3 Stockpiles of materials or equipment
5.2.2.4 Earth moving equipment.

5.2.3 A copy of all completed FAA Form 7460-1's and the FAA's determination(s) must be on file with the Department of Aviation prior to commencing the erection or construction of the item(s) proposed by the Contractor.

5.3 AIRPORT IDENTIFICATION BADGE

At least one badged individual with a Department of Aviation issued identification badge (requirements outline in Chapter 2) must be present with any unbadged individual or group of unbadged personnel.

5.4 SECURITY PLAN

If the proposed construction involves any of the following, the contractor must submit in writing to the Department of Aviation as Security Plan, identifying how they plan to maintain the security of the airfield. This Security Plan must be submitted at least 60 days prior to beginning of construction and requires the approval by the Department of Aviation and the TSA.

5.4.1 Construction involving the modification/relocation of the airport perimeter fence.
5.4.2 Construction of a temporary perimeter fence.

5.4.3 Any temporary security measures proposed.

5.5 CONSTRUCTION AREA

5.5.1 The Contractor shall erect and maintain fencing, barricades, signs and warning devices used to delineate the perimeter of all construction areas, as approved by the Director of Aviation.

5.5.2 At no time shall stockpiled materials or parked vehicles/equipment be permitted within 100 feet of the construction areas limits, without the approval of the Department of Aviation.

5.5.3 The Contractor shall render inoperable, remove or cover the following systems of any closed area. The method must be approved by the Department of Aviation prior to the closure of any area.

5.5.3.1 All guidance signage directing aircraft into or within a closed area.

5.5.3.2 All taxiway lighting (edge lights, centerline lights, runway guard lights, etc.)

5.5.3.3 All runway lighting circuits.

5.6 ESCORTS

All escorts performed within the Movement Area and/or associated safety areas, must be provided by a Safety Representative. The Safety Representative requirements are outlined in Chapter 4 of this document.

5.7 ACCESS TO THE AOA

5.7.1 The Department of Aviation will designate all access points into the AOA.

5.7.2 All points of entry into the AOA, which are under the Contractor's control, shall be secured and/or guarded by an individual meeting the requirements of Chapter 2 of this document.

5.7.3 The guards at all access points must:

5.6.3.1 Be able to read and speak English.

5.6.3.2 Be properly badged with an Airport issued identification badge.

5.6.3.3 Ensure all individuals requiring access to the AOA are properly badged in accordance with Chapter 2 of this document, or are under the escort of such an individual.

5.6.3.4 Immediately notify the Contractor of any violation of the access requirements.

5.7.4 Deliveries are to be strictly controlled (by the Contractor) using personnel specifically acquainted with these rules. The Contractor shall provide properly manned escort vehicles as required to guide and escort all deliveries to the work area(s).

5.8 WORK PERFORMED OUTSIDE THE APPROVED CONSTRUCTION AREA(s)

5.8.1 All work outside an approved construction area must be submitted, in writing, 48 hours in advance, excluding weekend and holidays.

5.8.2 Unless otherwise specified by the Department of Aviation, all work outside an approved construction area must be marked in accordance with Appendix A.

5.8.3 All barricades, lighting, and warning devices used to delineate any construction or hazardous area(s) are to be provided by the Contractor.

5.8.4 **PROTECTION OF SAFETY AREAS, OBJECT FREE AREAS, AND OTHER RESTRICTED AREAS.** At NO TIME shall personnel, vehicles or equipment be located or enter any of the following areas unless authorized by the Department of Aviation:

5.8.4.1 Within 250 feet parallel of the centerline of a runway.

5.8.4.2 Within 1,000 feet of the end of a runway.

5.8.4.3 Within 130 feet parallel of the centerline of a taxiway.

5.8.4.4 Any NAVAID Critical Area. The minimum size of the NAVAID Critical Areas is shown in Appendix B, however; the FAA Sector Field Office will identify the exact Critical Area when extended work is require near these areas. (Work within these areas of the AOA has the potential of causing interference with navigation aids.)

5.8.4.5 On the Movement Area and/or associated safety areas during times of inclement weather or unusual events as determined by the Department of Aviation. During such times all work is to be suspended. All equipment shall be removed to approved staging areas.

5.8.5 **Trenches and/or Excavations** - Trenches and/or excavations shall not be allowed in the following areas without closure or restriction of the adjacent Movement Area:

5.8.5.1 Within 250 feet parallel of the centerline of a runway.

5.8.5.2 Within 83 feet parallel of the centerline of a taxiway.

5.8.5.3 Within 1,000 feet of the end of a runway.

5.8.5.4 Barricading/plating of trenches and/or excavations shall be in accordance with the requirements contained in Appendix A.

5.8.6 STOCKPILED MATERIAL(s)/SUPPLIES

5.8.6.1 All stockpiled material/supplies shall be constrained in a manner to prevent movement resulting from aircraft blast or wind conditions.

5.8.6.2 Material/supplies shall not be stored within 250 feet of aircraft turning areas or movement areas.

5.8.6.3 Stockpiled material/supplies shall not exceed 15 feet in height unless the Contractor has complied with all the requirements for AIR SPACING (outlined in Chapter 4) and secured approval from the Department of Aviation.

5.8.6.4 All material/supplies shall be positioned so it will not obstruct the line of sight from the Control Tower Cab to the Movement Area.

5.8.6.5 Marking and lighting shall be in accordance with the requirements contained in Appendix A.

5.8.7 HAUL ROUTES

5.8.7.1 Location of haul routes on the airport site shall be approved by the Department of Aviation.

5.8.7.2 All haul routes on the airport shall be marked, when necessary, and maintained by eh Contractor. The routes shall be restored to their original condition upon completion of the construction project.

5.8.7.3 Markings, if required, shall be provided by the Contractor, in accordance with specifications established by the Department of Aviation.

5.8.8 EQUIPMENT LIMITATIONS

5.8.8.1 Construction equipment shall not be permitted to operate upon paved areas unless the equipment has pneumatic tires or special means have been provided and approved by the Department of Aviation to protect the pavement.

5.8.8.2 Construction equipment shall not exceed a height of 15 feet above the airport surface with approval by the Department of Aviation.

5.8.8.3 All construction involving cranes must be coordinated **at least** 48 hours in advance, excluding weekend and holidays, with the Department of Aviation, Airport Operations Division. This does not include the time required for AIR SPACING. The following information is required:

5.8.8.3.1 Location of the crane.
5.8.8.3.2 Maximum extendable height.
5.8.8.3.3 Hours of operation.

5.8.8.4 The top of each crane boom must be marked by a 3 ft. X 3 ft. orange and white checkered flag, with each box being 1 ft. square.

5.8.8.5 Each crane must be lowered at night and during periods of poor visibility as directed by the Department of Aviation. In the event the crane is approved to remain extended during the hours from sunset to sunrise the highest point of the crane boom must be lit with a red obstruction light in accordance with Advisory Circular 70/7460-1.

5.8.9 NIGHTTIME CONSTRUCTION

5.8.9.1 Nighttime work, not covered by plans and specifications, requires 48 hours advance approval, excluding weekends and holidays, by the Department of Aviation.

5.8.9.2 Lighting for nighttime work must be positioned so as not to hinder the vision of the air traffic controllers in the Control Tower or the pilots of moving aircraft.

5.8.10 DUST AND DEBRIS CONTROL

5.8.10.1 Debris, waste, and loose material shall not be allowed on the Movement Area.

5.8.10.2 If debris and/or loose material is observed to be on active portions of the Movement Area, the Contractor will be responsible for correcting the discrepancy immediately.

5.8.10.3 At the direction of the Department of Aviation, debris problems occurring during construction, **NOT** corrected by the Contractor in a timely manner, will be corrected by the City at the Contractor's expense.

5.8.10.4 The Contractor is responsible for controlling dust problems resulting from the construction, as defined by the Department of Aviation. The contractor is required to have in place, men and equipment to prevent a problem from occurring.

5.9 INSPECTION OF DAILY WORK

5.9.1 The Department of Aviation, Airport Operations Division shall, prior to the release of work crews for the day, inspect all areas to ensure that:

5.9.1.1 Paved areas are free of surface variations in accordance with FAR Part 139.

5.9.1.2 All unpaved safety areas are cleared and graded and have no potentially hazardous ruts, humps depressions or other surface variations.

5.9.1.3 All trenches or excavations within active runway and/or taxiway safety areas are backfilled to support the weight of an aircraft or Aircraft Rescue and Fire Fighting (ARFF) equipment.

5.9.1.4 If the trenches, excavations or hazardous areas have been authorized to remain in place, they are to be adequately plated, marked and lighted in accordance with Appendix A.

5.9.1.5 All equipment is parked in the approved staging areas.

5.9.1.6 All runway/taxiway light circuits are to be returned to service, unless otherwise authorized by the Department of Aviation.

5.9.2 Prior to opening any runway, taxiway, apron or associated safety area that has been closed for construction, the Contractor shall arrange for an inspection by the Department of Aviation, Airport Operations Division.

5.9.3 All barricades used by the Contractor, to designate an unusable or hazardous area on the AOA, shall be secured in place to prevent movement from jet blast. See Appendix A for details.

5.9.4 The Contractor shall ensure that all barricade and hazard lighting is operational prior to departing the construction area at the end of each work day.

CHAPTER 6 -

ENVIRONMENTAL

6.1 GENERAL CONFORMITY

The Clean Air Act (CAA) prohibits action in nonattainment or maintenance areas that do not conform to the State Implementation Plan (SIP) for the attainment and maintenance of the national ambient air quality standards (NAAQS).

Conforming activities or actions should not, through additional air pollutant emissions, result in the following:

- Cause or contribute to new violations;
- Increase the frequency or severity of existing violations; or
- Delay timely attainment or interim emission reductions.
- Interfere with the budget in the SIP.

Any construction or modification activity that may emit air contaminants must obtain a construction permit or an exemption from the Texas Air Control board (TACB) or satisfy the conditions for a standard exemption before any actual work is begun. The owner of the facility or an operator of the facility authorized to act for the owner is responsible for submitting the proper documents and applicable information to the TACB in order to demonstrate projected activities do not violate the General Conformity requirements of the CAA. Approved construction permits or exemptions must be submitted to the Department of Aviation, Environmental Section prior to construction activities.

6.2 STORM WATER POLLUTION PREVENTION

6.2.1 **Before** any earth moving activities begin on projects one acre or greater, the appropriate Notice of Intent (NOI) documentation and any related fees must be submitted to either the EPA or the TCEQ, with copies submitted to the Department of Aviation.

6.2.2 **Additionally**, the Construction Storm Water Pollution Prevention Plan for the project must also be submitted and approved by the Department of Aviation, Environmental Section **prior** to breaking ground on any project one acre or larger.

6.2.3 For projects smaller than one acre, please consult with the Department of Aviation for the appropriate action. At a minimum, written storm water pollution prevention procedures for the project will need to be submitted and approved by the Department of Aviation.

6.3 HAZARD COMMUNICATION

Information detrimental to the protection of exposure from physical, biological, or chemical hazards must be available for all personnel who may be potentially exposed to activities where such hazards are evident. Any activities performed during construction activities must ensure the protection of others in neighboring areas. Hazardous chemicals used must be inventoried, properly labeled and have the appropriate Material Safety Data Sheet (MSDS) available. This information should be submitted to the Department of Aviation, Environmental Section prior to performing activities with any of the aforementioned hazards.

6.4 HAZARDOUS MATERIAL STORAGE

All chemicals used must be stored in a safe area with compatible chemicals and away from potentially reactive sources. Chemicals being used should not be left unsupervised i.e., break, lunch, etc. They must be returned to a designated hazardous material storage area.

6.3 Construction Related Environmental Waste

Any chemicals used or generated due to the repair, maintenance or operation of any equipment during project activities must be properly disposed of at an appropriate off-site facility. Chemical waste shall not be left on-site. Any chemicals left on-site will be properly disposed of by the Department of Aviation at the Contractor’s expense.

6.4 ENVIRONMENTAL CONTROLS

NOIs and approve permits must be submitted to the Department of Aviation, Environmental Section prior to construction activities. The Department of Aviation reserves the right to inspect any construction activities located at Dallas Love Field Airport and/or Dallas Executive Airport, and halt any and all construction activities in the event of a violation of any applicable environmental regulation or ordinance.

CHAPTER 7 -

ENFORCEMENT

At the discretion of the Director of Aviation, violations of these Rules, depending upon the nature and severity, may result in:

7.1 A verbal and/or written warning.

7.2 The removal from the AOA of the individual(s), vehicle(s), and/or equipment that is in violation.

7.3 Cessation of contract work until corrective measures are taken.

7.4 A determination that the Contractor is in default of the contract. All contract work will cease at this time.

APPENDIX A -

BARRICADES, CONES AND PLATES

AIRSIDE BARRICADES, CONES & PLATES

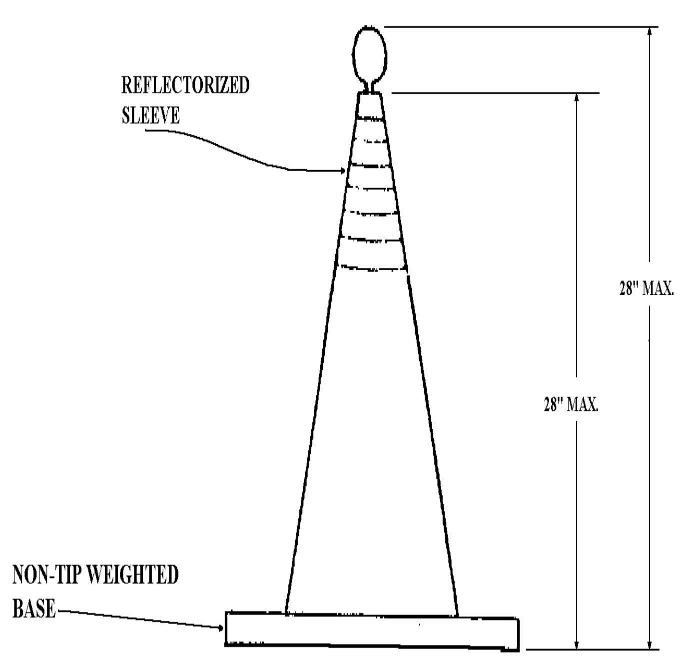
A.1 BARRICADES

All barricades used in the secured area, SIDA or AOA must conform to the standards of FAA Advisory Circular 150/5370-2 *"Operational Safety on Airports during Construction"* and be approved by the Department of Aviation prior to use on the airport. As a minimum, the proposed barricades shall conform to the following standards, unless otherwise approved by the Department of Aviation:

- **LENGTH (Minimum):** 8 Feet LONG
- **HEIGHT (Maximum):** 18 Inches - including light
- **LIGHTING:**
  - Red (Flashing or Steady burning).
  - Each barricade shall have a minimum of two (2) hazard lights, spaced a maximum of 6 feet, center to center.
  - Conform to State Highway Department luminance standards.
- **MAXIMUM SPACING BETWEEN WARNING LIGHTS ON ADJACENT BARRICADES:**
  - 6 Feet between lights when barricades placed perpendicular to aircraft traffic flow.
  - 15 feet between lights when barricades are placed parallel to aircraft traffic flow
- Barricades must be sufficiently weighted or secured to prevent displacement from prop wash, jet blast, wing vortex or other surface wind currents.

A.2 CONES

- **WEIGHT (Minimum):** 10 LBS.
- **HEIGHT (Maximum):** 28" with or without light.
- **LIGHTING:** When cones are used and will be left in place during periods of low visibility or at night, each cone shall have a reflective sleeve or be lighted with a RED warning light. This light can be either blinking or steady burning, provided they meet the State Highway Department luminance standards.
- **MAXIMUM SPACING OF CONES:** 10 feet unless otherwise approved by the Department of Aviation.



A.3 PLATES

The use of plates on an airport construction project requires Department of Aviation approval. If plates are allowed, the following criteria will apply:

A.3.1 All plates shall be provided by the contractor.

A.3.2 Each plate shall be at least ¾” to 1” in thickness of 60 KSI yield strength steel, or of sufficient thickness to support the weight of the most demanding aircraft currently operating at Dallas Love Field, which ever is greater.

A.3.3 All plates shall have 45 degree beveled edges.

A.3.4 Plates shall be sized such that not more than 1/3 of the plate area covers a trench or excavation.

A.3.5 Plates shall not cover trenches or excavations that exceed 24 inches in width.

A.3.6. No more than 3 plates will be used on any one trench or excavation.

A.3.7 No more than 6 plates will be used on the project at any one time.

A.3.8. All plates shall be secured in such a manner that movement does not occur during use by aircraft or vehicular traffic.

APPENDIX B -

NAVAID CRITICAL AREAS

NAVAID CRITICAL AREAS

As a vehicle operator, it is not necessary to have extensive knowledge of navigational aids. You should, however, know their location, basic function, and the minimum dimensions of their critical area. NAVAID critical areas are to be free of all objects except those authorized by the Department of Aviation and the FAA Control Tower. The critical areas for each NAVAID located on Love Field are described below.

***NOTE**: The dimensions are the minimum that must be adhered to; however, whenever there is construction, the actual critical area for all electronic equipment will be determined by the FAA Sector Field Office.*

B.1 LOCALIZER ANTENNA CRITICAL AREAS (see Figure 1)

The localizer is used to guide landing aircraft to the runway by telling the pilot whether the airplane is right, left or aligned with the runway centerline. The localizer is located at the opposite end of the runway in use. The critical area is marked on the taxiway with mandatory instruction signs that have the inscription "ILS". The localizer antennas are located at the ends of runways: 13R, 13L, 31L, and 31R. The dimensions of the localizer critical area are:

B.1.1. Beginning 50 feet behind (away from the runway end) the antenna, extending 2,000 feet from the antenna toward the runway; and,

B.1.2 A radial distance of 250 feet from the center of the antenna.

B.2 GLIDE SLOPE ANTENNA CRITICAL AREAS (see Figure 2)

The GLIDE SLOPE provides vertical guidance to landing aircraft by telling the pilot whether the airplane is above, below or on the runway's glide path. This antenna is located near the approach end of the runway being utilized. The critical area is marked on the taxiway with a mandatory instruction sign that has the inscription "ILS". GLIDE SLOPE antennas are located near the approach ends of Runways 13R, 13L, 31L, and 31R. The dimensions of the GLIDE SLOPE critical areas are:

B.2.1 Beginning at the antenna and extending down the runway, toward the approach end, and terminates at the runway end; and,

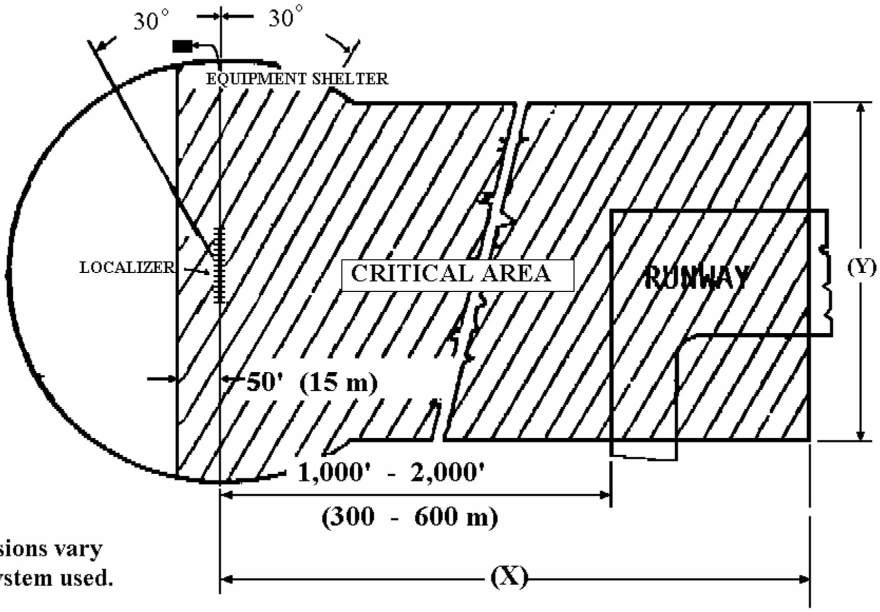
B.2.2 From the runway edge to a perpendicular point 200 feet beyond the GLIDE SLOPE antenna.

B.3. VISUAL NAVAID CRITICAL AREAS

B.3.1 No object may be positioned as to block the view of any part of the following equipment:

B.3.1.1 Approach Light System (ALS). These are located at the end of Runway 13L, 31R, and 31L.
B.3.1.2 Visual Approach Slope Indicators (VASI). These are located at the end of runways 13R, 18, 31R and 36.
B.3.1.3 Runway End Identifier Lights (REIL). This is located at the end of runway 36.

B.3.2 No object may be positioned between any of the RVR equipment installed at Love Field.



NOTE: The X and Y dimensions vary depending on the system used.

X varies from 2,000' (600 m) to 7,000' (2100 m).

Y varies from 400' (120 m) to 600' (180 m).

Figure 1

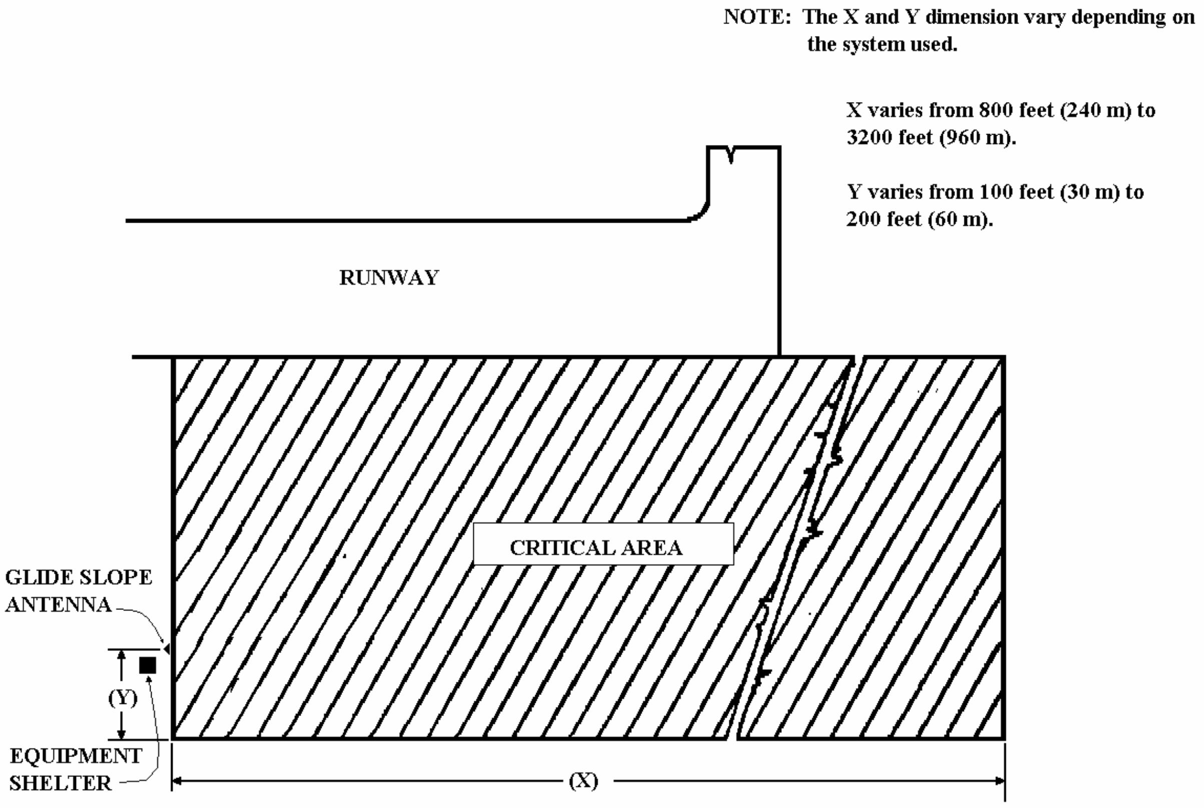

NOTE: The X and Y dimension vary depending on the system used.
X varies from 800 feet (240 m) to 3200 feet (960 m).
Y varies from 100 feet (30 m) to 200 feet (60 m).
RUNWAY
CRITICAL AREA
GLIDE SLOPE ANTENNA
(Y)
EQUIPMENT SHELTER
(X)

Figure 2

SECTION 08800

GLAZING

PART 1 GENERAL

1.1 SUMMARY

A. Related Documents: General and Supplementary Conditions of the Contract, Division 1 - General Requirements, and Drawings are collectively applicable to this Section.

B. Section Includes:
   1. Glass and plastic glazing for hollow metal work, windows and doors.
   2. Glass for unframed mirrors.
   3. Glazing accessories.

1.2 PERFORMANCE REQUIREMENTS

A. Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass as calculated in accordance with applicable code, to a design pressure of 20 lb/sq ft as measured in accordance with ANSI/ASTM E 330.

B. Limit glass deflection to 1/200 or flexure limit of glass with full recovery of glazing materials, whichever is less.

1.3 SUBMITTALS

A. Submit product data under provisions of Section 01330.

B. Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.

C. Provide data on glazing sealant. Identify colors available.

D. Submit samples under provisions of Section 01330.

E. Submit 2 samples, 12 by 12 inches in size, illustrating glass unit, coloration, design.

F. Submit 4 inch long bead of glazing sealant in color selected.

G. Submit sealed glass unit with manufacturer's certificate under provisions of Section 01451 indicating units meet or exceed specified requirements.

1.4 DELIVERY, STORAGE, AND PROTECTION

A. Deliver products to site under provisions of Section 01600.

B. Store and protect products under provisions of Section 01600.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with FGMA Glazing Manual.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Do not install glazing when ambient temperature is less than 50 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.7 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on shop Drawings.

1.8 COORDINATION

A. Coordinate Work under provisions of Section 01310.

B. Coordinate the Work with glazing frames, wall openings, and perimeter air and vapor seal to adjacent Work.

1.9 WARRANTY

- A. Provide 5 year manufacturer's warranty under provisions of Section 01780.
  - 1. Warranty: Include coverage for
    - a. Reflective coating on mirrors and replacement of same.
    - b. Delamination of laminated glass and replacement of same.
- B. Provide 10 year manufacturer’s warranty under provisions of Section 01780.
  - 1. Warranty: Include coverage for insulated glass units.

PART 2 PRODUCTS

2.1 GLASS MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with requirements indicated, provide products of one of the following:
  - 1. Pittsburgh Plate Glass (P.P.G.)
  - 2. Libby Owens Ford (L.O.F.)
  - 3. Spectrum Glass Products.
  - 4. Viracon.
- B. Substitutions: Under provisions of Section 01600.

2.2 GENERAL

- A. Heat strengthened and/or temper glass lites as required by code and as recommended by manufacturer complying with ASTM C 1048 and ANSI Z97.1.
- B. Temper units without tong marks.
- C. Glass unit thicknesses are indicated as minimums, to be increased as required by wind loading and spans encountered. Glass manufacturer to prepare loading and span calculations to document thickness of glass.

2.3 GLASS MATERIALS

- A. Float Glass: ASTM C 1036, glazing select quality; 1/4 inch thick minimum.
- B. Safety Glass: ASTM C 1048, glazing select quality; Kind FT,(fully tempered) 1/4 inch thick minimum. Provide not less than ½ inch thick at butt glazed applications.
- C. Insulated Glass Units:
  - 1. SIGMA No. 64-7-2 double pane with glass to elastomer edge seal
  - 2. Outer pane of 1/4" thick clear glass with low E coating on no. 2 surface
  - 3. Inner pane of [___]" thick laminated clear glass composed of [___] inch heat strengthened glass panes with a 0.030 PVB inner layer
  - 4. Interpane space purged dry hermetic air;
  - 5. Total unit thickness of 1 inch
  - 6. Fully temper both lights (per ASTM C1048) in doors and elsewhere as required by referenced codes.
  - 7. Acceptable Product:
    - a. Type 1: Guardian Sun-Guard Low E (56% LT) for storefront.
    - b. Type 2: Guardian Sun-Guard Low E (28% LT) for clearstory.
- D. Spandrel Glass: [____________________].

2.4 GLAZING COMPOUND MANUFACTURERS

- A. Acceptable Manufacturers: Subject to compliance with requirements herein, provide products from one of the following:
  - 1. Pecora.
  - 2. General Electric.
  - 3. Dow Corning.
- B. Substitutions: Under provisions of Section 01600.

2.5 GLAZING COMPOUNDS

A. Glazing Compound: FS TT-G-410; grey color.

B. Butyl Sealant: FS TT-S-001657; Shore A hardness of 10- 20; black color; non-skinning.

C. Silicone Sealant: FS TT-S-1543; Class A single component; solvent curing; capable of water immersion without loss of properties; cured Shore A hardness of 5; color as selected by Architect.

    1. Acceptable Products

        a. 2001 Ultraclear Silicone Sealant, Dow Corning.

        b. SCS 1201, General Electric.

        c. Proglaze, Tremco.

2.6 GLAZING ACCESSORIES

A. Setting Blocks: Neoprene; 70 to 90 Shore A durometer hardness; 4 inch long by 3/8 inch wide by 1/4 high.

B. Spacer Shims: Neoprene; 50 Shore A durometer hardness; 3 inch long by 1/4 inch wide by 1/4 inch thick; self adhesive one face.

C. Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; black color.

    1. Acceptable Product: Tremco 440.

D. Glazing Splines: Resilient polyvinylchloride extruded shape to suit glazing channel retaining slot, meeting ASTM D 1667.

E. Glazing Clips: Manufacturer's standard type.

F. Setting Angles: 0.060 inch aluminum z-clips on T-angles sized as required.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify surfaces of glazing channels or recesses are clean, free of obstructions, and ready for work of this Section.

B. Beginning of installation means acceptance of substrate.

3.2 PREPARATION

A. Clean contact surfaces with solvent and wipe dry.

B. Seal porous glazing channels or recesses.

C. Prime surfaces scheduled to receive sealant.

D. Carefully measure glass openings and provide minimum required tolerances and clearances.

3.3 GENERAL

A. Comply with manufacturers' recommended installation procedures and as outlined herein.

B. Prevent nicks, abrasions and other damage likely to develop stress on edges.

C. Comply with CPSC and MSGC for provisions of tempering of glass in and near doors and adjacent to walking surfaces, unless local codes are more stringent.

3.4 EXTERIOR DRY METHOD - PREFORMED GLAZING

A. Cut glazing spline to length; install on glass pane. Seal corners by butting tape and dabbing with butyl sealant.

B. Place setting blocks at 1/4 points.

C. Rest glass on setting blocks and push against fixed stop with sufficient pressure to attain full contact at perimeter of pane.

D. Install removable stops without displacement of glazing spline. Exert pressure for full continuous contact.

E. Trim protruding tape edge.

3.5 EXTERIOR WET METHOD - SEALANT AND SEALANT

A. Place setting blocks at 1/4 points and install glass pane.
B. Install removable stops with pane centered in space by inserting spacer shims both sides at 24 inch intervals, 1/4 inch below sightline.
C. Fill gap between pane and stops with sealant to depth equal to bite of frame on pane, but not more than 3/8 inch below sightline.
D. Apply sealant to uniform line, flush with sightline. Tool or wipe sealant surface with solvent for smooth appearance.

3.6 INTERIOR DRY METHOD - TAPE AND TAPE

A. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch above sightline.
B. Place setting blocks at 1/4 points.
C. Rest glass on setting blocks and push against tape for full contact at perimeter of pane.
D. Place glazing tape on free perimeter of pane in same manner described above.
E. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
F. Knife trim protruding tape.

3.7 INTERIOR WET METHOD - COMPOUND AND COMPOUND

A. Install glass resting on setting blocks, spaced at 1/4 points. Install applied stop and center pane by use of spacer shims at 24 inch centers, kept 1/4 inch below sightline.
B. Locate and secure glass pane using spring wire clips.
C. Fill gaps between pane and stops with glazing compound until flush with sightline. Tool surface to straight line.

3.8 GLASS MIRRORS

A. Apply one additional coat of moisture-resistant paint, type recommended by manufacturer, to back of mirror.
B. Allow to dry.
C. Apply mirror mastic to cover not more than 25 percent of back mirror, 1/8 inch to 1/2 inch thickness of setting bed.
D. Set mirror on concealed shelf angle.
E. Press mirror against substrate to bond.
F. Leave open ventilation space, 1/8" minimum between mirror and substrate.
G. Do not seal off ventilation space at edge of mirror.

3.9 CLEANING/PROTECTION

A. After installation, mark pane with an "X" by using plastic tape or removable paste.
B. Clean all surfaces of glazing materials, mortar, plaster, paint and other soiling or contaminates.
C. Remove labels after work is completed.
D. Wash and Polish both faces not more than one week prior to Owners acceptance of work.
E. Replace broken, scratched, chipped, or otherwise damaged glass.

3.10 GLASS TYPE SCHEDULE

A. Refer to Drawings.

END OF SECTION

Appendix A: Forecast Data

APPENDIX A - FORECAST DATA

The baseline schedule in *Exhibit A -1* was generated and provides the baseline schedule throughout a projected number of daily and peak hour operations, which takes into account the current gate turn schedule. From the baseline schedule, the gate operations are increased to a 10 turn per gate average, as reflected in *Exhibit A -2*, with the baseline schedule being adjusted accordingly to reflect this operational increase. *Exhibit A -3* shows the baseline schedule impacts when a 15 turn per gate average operational scenario occurs. The 15 turns per gate average scenario has been provided for reference purposes only for a "what if" condition for maximum aircraft gate turn operations. It should be noted that a "gate turn" is defined as an originating flight or the departure portion of a through-flight.

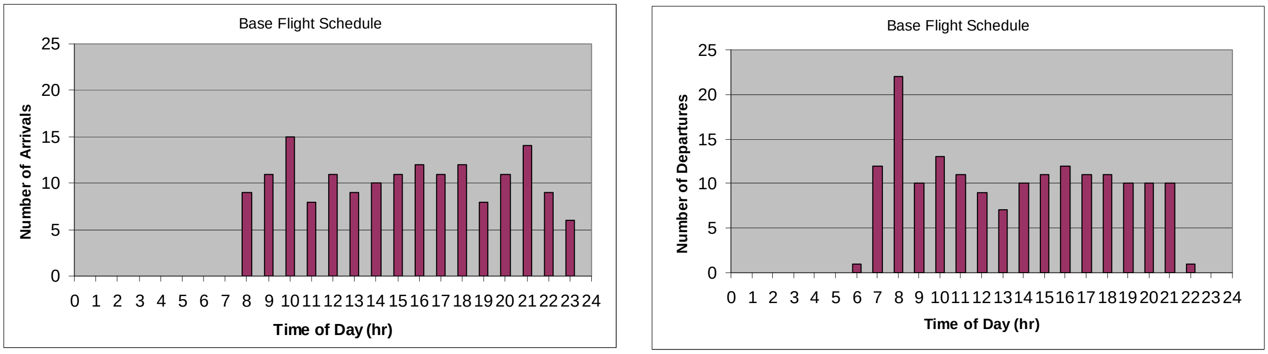


Exhibit A -1: Baseline Flight Schedule

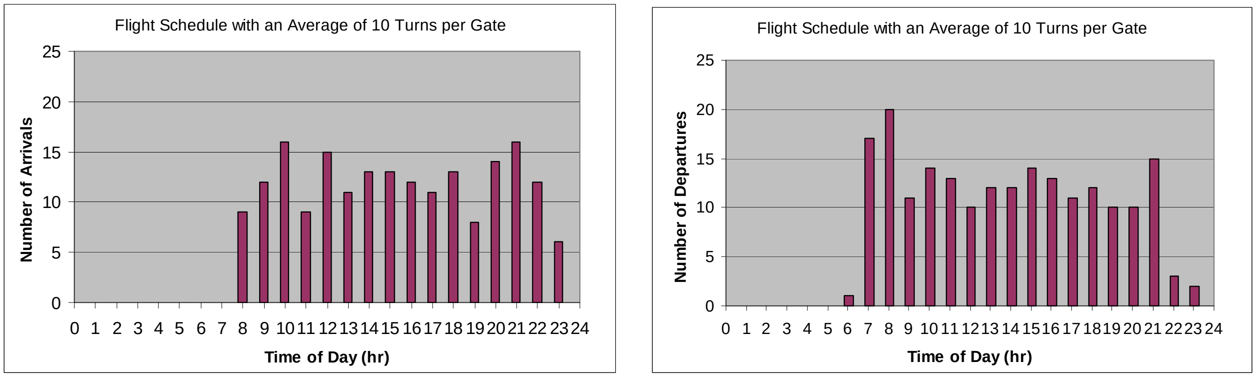


Exhibit A -2: Flight Schedule with 10 Turns per Gate on Average

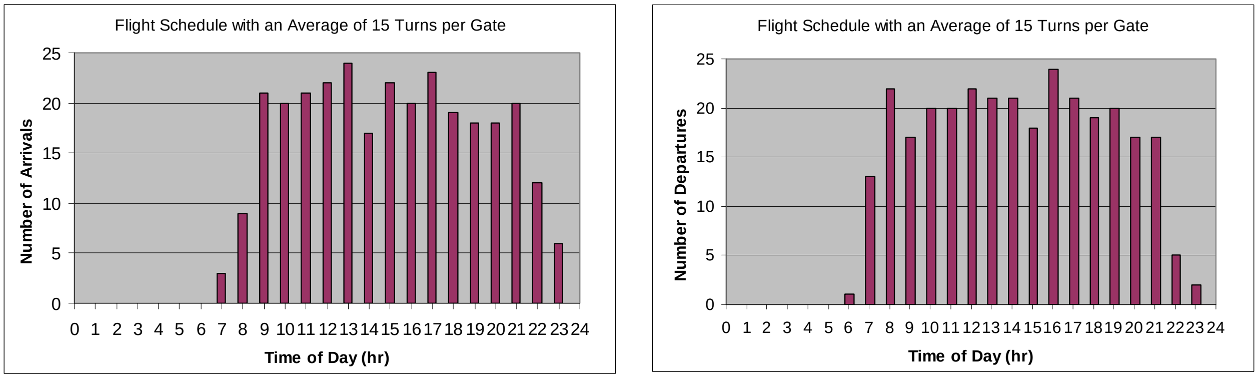


Exhibit A -3: Flight Schedule with 15 Turns per Gate on Average

Prepared by: TransSolutions

The gate plots presented in Chapter 2 as *Figures 2-3 and 2-4*, graphically represent the gate scheduling forecast for operations of flight scheduling for an average 10 and 15 gate turn scenario. The Tables below represent the same future flight scheduling in tabular presentation.

Table A-1 – DAL Forecasted Average 10 Turns Per Gate Flight Schedule

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
AA	***	DAL	AUS	0:00	6:20	ORIG	5153	ER4	32
AA	***	DAL	STL	0:00	6:55	ORIG	5166	ER4	31
AA	***	DAL	AUS	7:05	7:50	ORIG	5154	ER4	32
AA	***	DAL	SAT	7:25	7:50	ORIG	5163	ER4	31
AA	AUS	DAL	AUS	8:35	9:00	1152	5155	ER4	32
AA	MCI	DAL	MCI	9:05	9:30	1156	5159	ER4	31
AA	STL	DAL	STL	9:35	10:00	1163	5168	ER4	32
AA	SAT	DAL	SAT	10:05	10:30	1160	5164	ER4	31
AA	***	DAL	MCI	10:20	10:45	ORIG	1	ER4	32
AA	AUS	DAL	***	11:15	11:40	1153	TERM	ER4	31
AA	XXX	DAL	YYY	12:00	12:25	8021	9021	ER4	32
AA	STL	DAL	STL	12:25	12:50	1164	5169	ER4	31
AA	SAT	DAL	AUS	12:55	13:20	1161	5156	ER4	32
AA	MCI	DAL	MCI	13:35	14:00	1157	5160	ER4	31
AA	***	DAL	STL	14:05	14:30	ORIG	2	ER4	32
AA	STL	DAL	STL	14:40	15:05	1165	5170	ER4	31
AA	AUS	DAL	MCI	15:30	16:00	1154	5161	ER4	32
AA	***	DAL	AUS	16:20	16:45	ORIG	5157	ER4	31
AA	STL	DAL	STL	17:00	17:25	1166	5171	ER4	31
AA	MCI	DAL	SAT	17:30	18:00	1158	5165	ER4	32
AA	AUS	DAL	MCI	19:00	19:25	1155	5162	ER4	31

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
AA	MCI	DAL	***	19:30	20:10	1159	TERM	ER4	32
AA	SAT	DAL	***	20:25	23:59	1162	TERM	ER4	32
AA	STL	DAL	***	20:40	23:59	1167	TERM	ER4	31
CO	***	DAL	IAH	0:00	6:30	ORIG	5148	ER3	27
CO	***	DAL	IAH	0:00	6:00	ORIG	5136	ER4	26
CO	***	DAL	IAH	7:25	7:50	ORIG	5137	ER4	27
CO	IAH	DAL	IAH	7:30	8:00	1136	5138	ER4	26
CO	***	DAL	IAH	8:05	8:30	ORIG	5149	ER3	26
CO	IAH	DAL	IAH	8:05	9:00	1137	5139	ER4	27
CO	IAH	DAL	IAH	8:35	9:30	1149	5150	ER3	26
CO	IAH	DAL	IAH	9:02	10:00	1138	5140	ER4	27
CO	IAH	DAL	IAH	9:32	10:30	1150	5151	ER3	26
CO	IAH	DAL	***	10:03	10:28	1139	TERM	ER4	27
CO	IAH	DAL	IAH	11:03	11:30	1140	5141	ER4	26
CO	XXX	DAL	YYY	12:00	12:25	8012	9012	ER4	26
CO	XXX	DAL	YYY	12:20	12:45	8013	9013	ER4	27
CO	IAH	DAL	IAH	13:05	13:30	1141	5142	ER4	26
CO	IAH	DAL	IAH	14:05	14:30	1142	5143	ER4	26
CO	XXX	DAL	YYY	14:45	15:10	8039	9039	ER3	27
CO	IAH	DAL	IAH	15:33	16:00	1143	5144	ER4	26
CO	IAH	DAL	IAH	16:33	17:00	1144	5145	ER4	26
CO	***	DAL	IAH	17:05	17:30	ORIG	5152	ER3	27
CO	IAH	DAL	IAH	17:05	18:00	1145	5146	ER4	26
CO	IAH	DAL	***	17:35	23:59	1151	TERM	ER3	27

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
CO	IAH	DAL	IAH	18:28	19:10	1146	5147	ER4	26
CO	IAH	DAL	***	20:09	23:59	1147	TERM	ER4	26
WN	***	DAL	ABQ	0:00	6:50	ORIG	5001	737	8
WN	***	DAL	AUS	0:00	6:30	ORIG	5017	737	2
WN	***	DAL	HOU	0:00	6:15	ORIG	5038	737	30
WN	***	DAL	HOU	0:00	6:30	ORIG	5039	737	3
WN	***	DAL	HOU	0:00	7:50	ORIG	5040	737	15
WN	***	DAL	LIT	0:00	7:50	ORIG	5073	737	1
WN	***	DAL	MCI	0:00	6:40	ORIG	5066	737	7
WN	***	DAL	MSY	0:00	6:30	ORIG	5094	737	4
WN	***	DAL	SAT	0:00	6:30	ORIG	5114	737	6
WN	***	DAL	STL	0:00	6:30	ORIG	5106	737	5
WN	***	DAL	TUL	0:00	6:50	ORIG	5128	737	9
WN	***	DAL	YYY	0:00	6:30	ORIG	9029	737	14
WN	***	DAL	YYY	0:00	6:30	ORIG	9025	737	10
WN	***	DAL	YYY	0:00	6:30	ORIG	9026	737	11
WN	***	DAL	YYY	0:00	6:30	ORIG	9027	737	12
WN	***	DAL	YYY	0:00	6:30	ORIG	9028	737	13
WN	***	DAL	ABQ	7:05	7:50	ORIG	5002	737	10
WN	***	DAL	AMA	7:05	7:50	ORIG	5009	737	11
WN	***	DAL	AUS	7:05	7:50	ORIG	5018	737	12
WN	***	DAL	BHM	7:05	7:50	ORIG	5030	737	13
WN	***	DAL	ELP	7:05	7:50	ORIG	5032	737	14
WN	***	DAL	LBB	7:05	7:50	ORIG	5080	737	6

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	***	DAL	MAF	7:05	7:50	ORIG	5088	737	7
WN	***	DAL	MCI	7:05	7:50	ORIG	5067	737	9
WN	HOU	DAL	MSY	7:10	7:50	1040	5095	737	3
WN	LBB	DAL	OKC	7:20	7:50	1082	5100	737	2
WN	HOU	DAL	SAT	7:25	7:50	1041	5115	737	4
WN	AUS	DAL	STL	7:25	7:50	1017	5107	737	5
WN	SAT	DAL	TUL	7:30	7:50	1114	5129	737	8
WN	AMA	DAL	HOU	7:35	8:00	1009	5041	737	30
WN	HOU	DAL	OKC	7:55	8:20	1042	5101	737	7
WN	LIT	DAL	HOU	8:00	8:30	1075	5042	737	3
WN	TUL	DAL	SAT	8:10	8:30	1129	5116	737	1
WN	MAF	DAL	LBB	8:20	8:40	1090	5081	737	30
WN	HOU	DAL	AUS	8:25	8:50	1043	5019	737	13
WN	OKC	DAL	TUL	8:25	8:50	1101	5130	737	4
WN	XXX	DAL	YYY	8:30	8:55	8006	9006	737	11
WN	STL	DAL	HOU	8:35	9:00	1106	5043	737	9
WN	AUS	DAL	STL	8:40	9:05	1018	5108	737	14
WN	SAT	DAL	MCI	8:45	9:15	1115	5068	737	1
WN	HOU	DAL	LIT	8:55	9:20	1044	5074	737	6
WN	TUL	DAL	HOU	9:05	9:30	1130	5044	737	15
WN	ELP	DAL	MSY	9:20	9:40	1034	5096	737	8
WN	HOU	DAL	AMA	9:25	9:55	1045	5010	737	2
WN	AUS	DAL	SAT	9:25	9:50	1019	5117	737	5
WN	XXX	DAL	YYY	9:30	9:55	8007	9007	737	12

Airline	**Origin**	**DAL**	**Destination**	**Arr. Time**	**Dep. Time**	**Arr. Flt Number**	**Dep. Flt Number**	**A/C Type**	**Gate**
WN	MCI	DAL	AUS	9:35	9:55	1069	5020	737	14
WN	STL	DAL	HOU	9:35	10:00	1107	5045	737	6
WN	LIT	DAL	ABQ	9:45	10:10	1076	5003	737	30
WN	ABQ	DAL	MAF	9:50	10:10	1001	5089	737	10
WN	HOU	DAL	ELP	9:55	10:25	1046	5033	737	1
WN	LBB	DAL	MCI	9:55	10:25	1083	5069	737	3
WN	MSY	DAL	SAT	9:55	10:25	1096	5118	737	11
WN	SAT	DAL	LBB	10:05	10:35	1116	5082	737	5
WN	AMA	DAL	OKC	10:05	10:30	1010	5102	737	8
WN	OKC	DAL	AUS	10:25	10:50	1102	5021	737	2
WN	XXX	DAL	YYY	10:30	10:55	8008	9008	737	13
WN	MAF	DAL	HOU	10:35	11:00	1091	5046	737	6
WN	SAT	DAL	LIT	10:45	11:10	1117	5075	737	9
WN	HOU	DAL	AMA	10:55	11:20	1047	5011	737	3
WN	LBB	DAL	HOU	11:05	11:30	1084	5047	737	15
WN	TUL	DAL	SAT	11:05	11:30	1131	5119	737	4
WN	ELP	DAL	ABQ	11:15	11:40	1035	5004	737	10
WN	HOU	DAL	STL	11:25	11:50	1048	5109	737	1
WN	AUS	DAL	TUL	11:30	11:55	1020	5131	737	6
WN	XXX	DAL	YYY	11:30	11:55	8009	9009	737	12
WN	BHM	DAL	HOU	11:35	12:00	1030	5048	737	13
WN	SAT	DAL	ELP	11:40	12:05	1118	5034	737	7
WN	ABQ	DAL	LBB	11:50	12:15	1002	5083	737	2
WN	HOU	DAL	MSY	11:55	12:15	1049	5097	737	30

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	XXX	DAL	YYY	12:00	12:25	8037	9037	737	11
WN	SAT	DAL	HOU	12:10	12:30	1119	5049	737	5
WN	XXX	DAL	YYY	12:30	12:55	8010	9010	737	14
WN	OKC	DAL	AMA	12:35	13:05	1103	5012	737	1
WN	AMA	DAL	AUS	12:35	13:00	1011	5022	737	8
WN	MCI	DAL	HOU	12:35	13:00	1070	5050	737	10
WN	LIT	DAL	SAT	12:40	13:05	1077	5120	737	4
WN	AUS	DAL	STL	12:50	13:15	1021	5110	737	12
WN	HOU	DAL	MAF	12:55	13:20	1050	5090	737	6
WN	MSY	DAL	MCI	13:05	13:30	1097	5070	737	7
WN	XXX	DAL	YYY	13:15	13:40	8032	9032	737	2
WN	XXX	DAL	YYY	13:30	13:55	8011	9011	737	15
WN	STL	DAL	AUS	13:35	14:00	1108	5023	737	1
WN	ELP	DAL	HOU	13:40	14:00	1036	5051	737	30
WN	AUS	DAL	SAT	13:50	14:15	1022	5121	737	8
WN	BHM	DAL	LIT	13:55	14:20	1031	5076	737	9
WN	HOU	DAL	STL	13:55	14:25	1051	5111	737	4
WN	SAT	DAL	ABQ	14:00	14:35	1120	5005	737	2
WN	LIT	DAL	HOU	14:00	14:30	1078	5052	737	13
WN	XXX	DAL	YYY	14:00	14:25	8036	9036	737	11
WN	TUL	DAL	MSY	14:10	14:40	1132	5098	737	6
WN	MAF	DAL	TUL	14:10	14:35	1092	5132	737	10
WN	ABQ	DAL	AMA	14:15	14:50	1003	5013	737	3
WN	HOU	DAL	OKC	14:25	14:55	1052	5103	737	7

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	XXX	DAL	YYY	14:25	14:50	8038	9038	737	5
WN	SAT	DAL	HOU	14:30	15:00	1121	5053	737	8
WN	LBB	DAL	***	14:35	15:15	1085	TERM	737	1
WN	MCI	DAL	LBB	14:35	15:05	1071	5084	737	12
WN	AMA	DAL	AUS	14:55	15:20	1012	5024	737	4
WN	HOU	DAL	SAT	14:55	15:25	1053	5122	737	14
WN	ELP	DAL	HOU	15:05	15:30	1037	5054	737	30
WN	ABQ	DAL	ELP	15:15	15:40	1004	5035	737	6
WN	HOU	DAL	MAF	15:25	15:50	1054	5091	737	7
WN	STL	DAL	BHM	15:30	16:00	1109	5031	737	1
WN	SAT	DAL	HOU	15:30	16:00	1122	5055	737	3
WN	AUS	DAL	LIT	15:35	16:00	1023	5077	737	8
WN	AMA	DAL	AUS	15:40	16:10	1013	5025	737	9
WN	LBB	DAL	SAT	15:50	16:15	1086	5123	737	11
WN	HOU	DAL	LBB	15:55	16:20	1055	5085	737	6
WN	LIT	DAL	HOU	16:00	16:30	1079	5056	737	4
WN	AUS	DAL	MCI	16:10	16:35	1024	5071	737	12
WN	MSY	DAL	ABQ	16:20	16:50	1098	5006	737	1
WN	HOU	DAL	AMA	16:25	16:55	1056	5014	737	10
WN	SAT	DAL	STL	16:30	16:55	1123	5112	737	5
WN	OKC	DAL	HOU	16:35	17:00	1104	5057	737	13
WN	TUL	DAL	AUS	16:50	17:15	1133	5026	737	14
WN	MAF	DAL	SAT	16:55	17:25	1093	5124	737	3
WN	HOU	DAL	TUL	16:55	17:20	1057	5133	737	8

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	MCI	DAL	HOU	17:00	17:30	1072	5058	737	15
WN	XXX	DAL	YYY	17:10	17:35	8033	9033	737	30
WN	HOU	DAL	MAF	17:25	17:50	1058	5092	737	1
WN	LBB	DAL	AUS	17:30	18:00	1087	5027	737	5
WN	STL	DAL	HOU	17:30	18:00	1110	5059	737	13
WN	ABQ	DAL	AMA	17:40	18:05	1005	5015	737	11
WN	SAT	DAL	MSY	17:40	18:05	1124	5099	737	7
WN	ELP	DAL	ABQ	17:50	18:15	1038	5007	737	9
WN	MSY	DAL	ELP	17:50	18:20	1099	5036	737	3
WN	HOU	DAL	HOU	17:55	18:30	1059	5060	737	12
WN	AUS	DAL	OKC	17:55	18:20	1025	5104	737	2
WN	LIT	DAL	TUL	18:05	18:45	1080	5134	737	1
WN	HOU	DAL	LBB	18:25	18:55	1060	5086	737	4
WN	AUS	DAL	LIT	18:25	18:50	1026	5078	737	14
WN	SAT	DAL	HOU	18:35	19:00	1125	5061	737	6
WN	AMA	DAL	SAT	18:40	19:15	1014	5125	737	30
WN	HOU	DAL	ABQ	18:55	19:20	1061	5008	737	7
WN	MAF	DAL	HOU	19:05	19:30	1094	5062	737	1
WN	SAT	DAL	AUS	19:25	19:55	1126	5028	737	2
WN	AUS	DAL	MCI	19:25	19:50	1027	5072	737	5
WN	HOU	DAL	OKC	19:25	19:50	1062	5105	737	11
WN	TUL	DAL	STL	19:30	19:55	1134	5113	737	8
WN	AMA	DAL	ELP	19:35	20:05	1015	5037	737	3
WN	ABQ	DAL	HOU	19:35	20:00	1006	5063	737	7

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	XXX	DAL	YYY	19:35	20:05	8001	9001	737	12
WN	BHM	DAL	SAT	19:40	20:05	1032	5126	737	9
WN	LBB	DAL	LBB	19:45	20:20	1088	5087	737	1
WN	XXX	DAL	YYY	19:45	20:10	8002	9002	737	13
WN	HOU	DAL	HOU	19:55	20:30	1063	5064	737	4
WN	XXX	DAL	YYY	19:55	20:20	8003	9003	737	14
WN	XXX	DAL	YYY	20:05	20:30	8004	9004	737	15
WN	XXX	DAL	YYY	20:05	20:30	8005	9005	737	10
WN	OKC	DAL	SAT	20:10	20:45	1105	5127	737	5
WN	STL	DAL	MAF	20:20	20:50	1111	5093	737	6
WN	HOU	DAL	TUL	20:25	20:50	1064	5135	737	7
WN	AUS	DAL	AMA	20:30	20:55	1028	5016	737	8
WN	MAF	DAL	AUS	20:30	20:55	1095	5029	737	9
WN	MCI	DAL	***	20:35	21:15	1073	TERM	737	13
WN	AMA	DAL	HOU	20:35	21:00	1016	5065	737	1
WN	MSY	DAL	***	20:40	21:20	1100	TERM	737	3
WN	SAT	DAL	***	20:50	23:59	1127	TERM	737	30
WN	HOU	DAL	LIT	20:55	21:20	1065	5079	737	11
WN	TUL	DAL	***	21:00	23:59	1135	TERM	737	5
WN	STL	DAL	***	21:05	23:59	1112	TERM	737	6
WN	LIT	DAL	***	21:10	23:59	1081	TERM	737	7
WN	ABQ	DAL	***	21:15	23:59	1007	TERM	737	8
WN	XXX	DAL	YYY	21:15	21:40	8030	9030	737	1
WN	LBB	DAL	***	21:20	23:59	1089	TERM	737	9

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	HOU	DAL	***	21:25	23:59	1066	TERM	737	10
WN	XXX	DAL	YYY	21:30	21:55	8034	9034	737	2
WN	AUS	DAL	***	21:50	23:59	1029	TERM	737	11
WN	ELP	DAL	***	21:55	23:59	1039	TERM	737	12
WN	HOU	DAL	***	21:55	23:59	1067	TERM	737	13
WN	XXX	DAL	YYY	21:55	22:20	8031	9031	737	1
WN	SAT	DAL	***	22:00	23:59	1128	TERM	737	14
WN	XXX	DAL	YYY	22:10	22:35	8035	9035	737	2
WN	MCI	DAL	***	22:15	23:59	1074	TERM	737	15
WN	ABQ	DAL	***	22:50	23:59	1008	TERM	737	1
WN	BHM	DAL	***	22:55	23:59	1033	TERM	737	2
WN	HOU	DAL	***	22:55	23:59	1068	TERM	737	3
WN	STL	DAL	***	22:55	23:59	1113	TERM	737	4

Prepared by: TransSolutions

Table 2-12 – DAL Forecasted Average 15 Turns Per Gate Flight Schedule

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
AA	***	DAL	AUS	0:00	6:20	ORIG	5153	ER4	32
AA	***	DAL	STL	0:00	6:55	ORIG	5166	ER4	31
AA	***	DAL	AUS	7:10	7:50	ORIG	5154	ER4	32
AA	***	DAL	SAT	7:25	7:50	ORIG	5163	ER4	31
AA	XXX	DAL	YYY	8:05	8:30	8253	9253	ER4	31
AA	AUS	DAL	AUS	8:35	9:00	1152	5155	ER4	32
AA	MCI	DAL	MCI	9:05	9:30	1156	5159	ER4	31
AA	STL	DAL	STL	9:35	10:00	1163	5168	ER4	32
AA	SAT	DAL	SAT	10:05	10:30	1160	5164	ER4	31
AA	***	DAL	MCI	10:20	10:45	ORIG	1	ER4	32
AA	XXX	DAL	YYY	10:50	11:15	8254	9254	ER4	31
AA	AUS	DAL	***	11:15	11:40	1153	TERM	ER4	32
AA	XXX	DAL	YYY	11:30	11:55	8255	9255	ER4	31
AA	XXX	DAL	YYY	12:10	12:35	8256	9256	ER4	31
AA	STL	DAL	STL	12:25	12:50	1164	5169	ER4	32
AA	SAT	DAL	AUS	12:55	13:20	1161	5156	ER4	31
AA	MCI	DAL	MCI	13:35	14:00	1157	5160	ER4	32
AA	***	DAL	STL	13:40	14:05	ORIG	2	ER4	31
AA	XXX	DAL	YYY	14:25	14:50	8258	9258	ER4	31
AA	STL	DAL	STL	14:40	15:05	1165	5170	ER4	32
AA	XXX	DAL	YYY	15:10	15:35	8262	9262	ER4	31

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
AA	AUS	DAL	MCI	15:30	16:00	1154	5161	ER4	32
AA	***	DAL	AUS	16:20	16:45	ORIG	5157	ER4	31
AA	XXX	DAL	YYY	16:30	16:55	8265	9265	ER4	32
AA	STL	DAL	STL	17:00	17:25	1166	5171	ER4	31
AA	MCI	DAL	SAT	17:30	18:00	1158	5165	ER4	32
AA	XXX	DAL	YYY	17:40	18:05	8263	9263	ER4	31
AA	XXX	DAL	YYY	18:20	18:45	8266	9266	ER4	31
AA	XXX	DAL	YYY	18:30	18:55	8261	9261	ER4	32
AA	AUS	DAL	MCI	19:00	19:25	1155	5162	ER4	31
AA	MCI	DAL	***	19:30	19:55	1159	TERM	ER4	32
AA	XXX	DAL	YYY	19:45	20:10	8264	9264	ER4	31
AA	SAT	DAL	***	20:25	23:59	1162	TERM	ER4	32
AA	STL	DAL	***	20:40	23:59	1167	TERM	ER4	31
CO	***	DAL	IAH	0:00	6:30	ORIG	5148	ER3	27
CO	***	DAL	IAH	0:00	6:00	ORIG	5136	ER4	26
CO	XXX	DAL	YYY	6:25	6:50	8247	9247	ER4	26
CO	***	DAL	IAH	7:25	7:50	ORIG	5137	ER4	27
CO	IAH	DAL	IAH	7:30	8:00	1136	5138	ER4	26
CO	***	DAL	IAH	8:05	8:30	ORIG	5149	ER3	26
CO	IAH	DAL	IAH	8:05	9:00	1137	5139	ER4	27
CO	IAH	DAL	IAH	8:35	9:30	1149	5150	ER3	26
CO	IAH	DAL	IAH	9:02	10:00	1138	5140	ER4	27
CO	IAH	DAL	IAH	9:32	10:30	1150	5151	ER3	26

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
CO	IAH	DAL	***	10:03	10:28	1139	TERM	ER4	27
CO	XXX	DAL	YYY	10:45	11:10	8242	9242	ER3	27
CO	IAH	DAL	IAH	11:03	11:30	1140	5141	ER4	26
CO	XXX	DAL	YYY	11:25	11:50	8243	9243	ER3	27
CO	XXX	DAL	YYY	11:45	12:10	8141	9141	ER4	26
CO	XXX	DAL	YYY	12:05	12:30	8244	9244	ER4	27
CO	XXX	DAL	YYY	12:25	12:50	8267	9267	ER3	26
CO	XXX	DAL	YYY	12:45	13:10	8245	9245	ER4	27
CO	IAH	DAL	IAH	13:05	13:30	1141	5142	ER4	26
CO	XXX	DAL	YYY	13:25	13:50	8246	9246	ER4	27
CO	IAH	DAL	IAH	14:05	14:30	1142	5143	ER4	26
CO	XXX	DAL	YYY	14:10	14:35	8248	9248	ER4	27
CO	XXX	DAL	YYY	14:45	15:10	8251	9251	ER3	26
CO	XXX	DAL	YYY	14:50	15:15	8249	9249	ER4	27
CO	XXX	DAL	YYY	15:30	15:55	8250	9250	ER4	27
CO	IAH	DAL	IAH	15:33	16:00	1143	5144	ER4	26
CO	XXX	DAL	YYY	16:10	16:35	8252	9252	ER3	27
CO	IAH	DAL	IAH	16:33	17:00	1144	5145	ER4	26
CO	***	DAL	IAH	17:05	17:30	ORIG	5152	ER3	27
CO	IAH	DAL	IAH	17:05	18:00	1145	5146	ER4	26
CO	IAH	DAL	***	17:35	23:59	1151	TERM	ER3	27
CO	IAH	DAL	IAH	18:28	19:10	1146	5147	ER4	26
CO	IAH	DAL	***	20:09	23:59	1147	TERM	ER4	26
WN	***	DAL	ABQ	0:00	6:50	ORIG	5001	737	8

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	***	DAL	ABQ	0:00	7:50	ORIG	5002	737	10
WN	***	DAL	AMA	0:00	7:50	ORIG	5009	737	11
WN	***	DAL	AUS	0:00	7:50	ORIG	5018	737	12
WN	***	DAL	AUS	0:00	6:30	ORIG	5017	737	2
WN	***	DAL	BHM	0:00	7:50	ORIG	5030	737	13
WN	***	DAL	ELP	0:00	7:50	ORIG	5032	737	14
WN	***	DAL	HOU	0:00	7:50	ORIG	5040	737	15
WN	***	DAL	HOU	0:00	6:15	ORIG	5038	737	30
WN	***	DAL	HOU	0:00	6:30	ORIG	5039	737	3
WN	***	DAL	LIT	0:00	7:50	ORIG	5073	737	1
WN	***	DAL	MCI	0:00	6:40	ORIG	5066	737	7
WN	***	DAL	MSY	0:00	6:30	ORIG	5094	737	4
WN	***	DAL	SAT	0:00	6:30	ORIG	5114	737	6
WN	***	DAL	STL	0:00	6:30	ORIG	5106	737	5
WN	***	DAL	TUL	0:00	6:50	ORIG	5128	737	9
WN	XXX	DAL	YYY	6:45	7:10	8039	9039	737	4
WN	XXX	DAL	YYY	6:45	7:10	8043	9043	737	5
WN	***	DAL	LBB	7:05	7:50	ORIG	5080	737	6
WN	***	DAL	MAF	7:05	7:50	ORIG	5088	737	7
WN	***	DAL	MCI	7:05	7:50	ORIG	5067	737	9
WN	HOU	DAL	MSY	7:10	7:50	1040	5095	737	3
WN	LBB	DAL	OKC	7:20	7:50	1082	5100	737	2
WN	HOU	DAL	SAT	7:25	7:50	1041	5115	737	4
WN	AUS	DAL	STL	7:25	7:50	1017	5107	737	5

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	SAT	DAL	TUL	7:30	7:50	1114	5129	737	8
WN	AMA	DAL	HOU	7:35	8:00	1009	5041	737	30
WN	HOU	DAL	OKC	7:55	8:20	1042	5101	737	7
WN	LIT	DAL	HOU	8:00	8:30	1075	5042	737	3
WN	XXX	DAL	YYY	8:05	8:30	8055	9055	737	9
WN	TUL	DAL	SAT	8:10	8:30	1129	5116	737	1
WN	XXX	DAL	YYY	8:15	8:40	8065	9065	737	10
WN	MAF	DAL	LBB	8:20	8:40	1090	5081	737	30
WN	HOU	DAL	AUS	8:25	8:50	1043	5019	737	2
WN	OKC	DAL	TUL	8:25	8:50	1101	5130	737	4
WN	XXX	DAL	YYY	8:25	8:50	8081	9081	737	11
WN	XXX	DAL	YYY	8:30	8:55	8121	9121	737	14
WN	STL	DAL	HOU	8:35	9:00	1106	5043	737	5
WN	XXX	DAL	YYY	8:35	9:00	8045	9045	737	7
WN	XXX	DAL	YYY	8:35	9:00	8100	9100	737	12
WN	AUS	DAL	STL	8:40	9:05	1018	5108	737	6
WN	SAT	DAL	MCI	8:45	9:15	1115	5068	737	1
WN	XXX	DAL	YYY	8:45	9:10	8056	9056	737	9
WN	XXX	DAL	YYY	8:45	9:10	8120	9120	737	13
WN	HOU	DAL	LIT	8:55	9:20	1044	5074	737	3
WN	XXX	DAL	YYY	8:55	9:20	8066	9066	737	10
WN	TUL	DAL	HOU	9:05	9:30	1130	5044	737	4
WN	XXX	DAL	YYY	9:05	9:30	8082	9082	737	11
WN	XXX	DAL	YYY	9:10	9:35	8101	9101	737	15

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	ELP	DAL	MSY	9:20	9:40	1034	5096	737	8
WN	HOU	DAL	AMA	9:25	9:55	1045	5010	737	2
WN	AUS	DAL	SAT	9:25	9:50	1019	5117	737	5
WN	XXX	DAL	YYY	9:25	9:50	8083	9083	737	30
WN	XXX	DAL	YYY	9:25	9:50	8122	9122	737	13
WN	MCI	DAL	AUS	9:35	9:55	1069	5020	737	9
WN	STL	DAL	HOU	9:35	10:00	1107	5045	737	6
WN	XXX	DAL	YYY	9:40	10:05	8102	9102	737	14
WN	LIT	DAL	ABQ	9:45	10:10	1076	5003	737	7
WN	ABQ	DAL	MAF	9:50	10:10	1001	5089	737	10
WN	HOU	DAL	ELP	9:55	10:25	1046	5033	737	1
WN	LBB	DAL	MCI	9:55	10:25	1083	5069	737	3
WN	MSY	DAL	SAT	9:55	10:25	1096	5118	737	4
WN	SAT	DAL	LBB	10:05	10:35	1116	5082	737	5
WN	AMA	DAL	OKC	10:05	10:30	1010	5102	737	8
WN	XXX	DAL	YYY	10:05	10:30	8084	9084	737	11
WN	XXX	DAL	YYY	10:10	10:35	8057	9057	737	9
WN	XXX	DAL	YYY	10:15	10:40	8103	9103	737	12
WN	OKC	DAL	AUS	10:25	10:50	1102	5021	737	2
WN	XXX	DAL	YYY	10:25	10:50	8046	9046	737	7
WN	XXX	DAL	YYY	10:25	10:50	8067	9067	737	10
WN	XXX	DAL	YYY	10:25	10:50	8123	9123	737	13
WN	MAF	DAL	HOU	10:35	11:00	1091	5046	737	6
WN	XXX	DAL	YYY	10:35	11:00	8104	9104	737	15

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	SAT	DAL	LIT	10:45	11:10	1117	5075	737	1
WN	XXX	DAL	YYY	10:45	11:10	8049	9049	737	8
WN	XXX	DAL	YYY	10:45	11:10	8085	9085	737	11
WN	XXX	DAL	YYY	10:45	11:10	8124	9124	737	14
WN	XXX	DAL	YYY	10:50	11:15	8058	9058	737	9
WN	HOU	DAL	AMA	10:55	11:20	1047	5011	737	3
WN	LBB	DAL	HOU	11:05	11:30	1084	5047	737	2
WN	TUL	DAL	SAT	11:05	11:30	1131	5119	737	4
WN	XXX	DAL	YYY	11:05	11:30	8068	9068	737	30
WN	ELP	DAL	ABQ	11:15	11:40	1035	5004	737	5
WN	HOU	DAL	STL	11:25	11:50	1048	5109	737	1
WN	XXX	DAL	YYY	11:25	11:50	8050	9050	737	8
WN	XXX	DAL	YYY	11:25	11:50	8086	9086	737	11
WN	AUS	DAL	TUL	11:30	11:55	1020	5131	737	6
WN	XXX	DAL	YYY	11:30	11:55	8059	9059	737	9
WN	BHM	DAL	HOU	11:35	12:00	1030	5048	737	3
WN	XXX	DAL	YYY	11:35	12:00	8125	9125	737	13
WN	SAT	DAL	ELP	11:40	12:05	1118	5034	737	7
WN	XXX	DAL	YYY	11:45	12:10	8069	9069	737	10
WN	XXX	DAL	YYY	11:45	12:10	8105	9105	737	12
WN	ABQ	DAL	LBB	11:50	12:15	1002	5083	737	2
WN	HOU	DAL	MSY	11:55	12:15	1049	5097	737	30
WN	XXX	DAL	YYY	11:55	12:20	8106	9106	737	15
WN	XXX	DAL	YYY	12:05	12:30	8051	9051	737	8

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	XXX	DAL	YYY	12:05	12:30	8087	9087	737	11
WN	XXX	DAL	YYY	12:05	12:30	8126	9126	737	14
WN	SAT	DAL	HOU	12:10	12:30	1119	5049	737	5
WN	XXX	DAL	YYY	12:10	12:35	8044	9044	737	6
WN	XXX	DAL	YYY	12:10	12:35	8060	9060	737	9
WN	XXX	DAL	YYY	12:20	12:45	8047	9047	737	7
WN	XXX	DAL	YYY	12:25	12:50	8070	9070	737	10
WN	OKC	DAL	AMA	12:35	13:05	1103	5012	737	1
WN	AMA	DAL	AUS	12:35	13:00	1011	5022	737	2
WN	MCI	DAL	HOU	12:35	13:00	1070	5050	737	3
WN	LIT	DAL	SAT	12:40	13:05	1077	5120	737	4
WN	XXX	DAL	YYY	12:45	13:10	8052	9052	737	8
WN	XXX	DAL	YYY	12:45	13:10	8088	9088	737	11
WN	AUS	DAL	STL	12:50	13:15	1021	5110	737	5
WN	XXX	DAL	YYY	12:50	13:15	8061	9061	737	30
WN	HOU	DAL	MAF	12:55	13:20	1050	5090	737	6
WN	XXX	DAL	YYY	12:55	13:20	8107	9107	737	12
WN	MSY	DAL	MCI	13:05	13:30	1097	5070	737	7
WN	XXX	DAL	YYY	13:05	13:30	8071	9071	737	10
WN	XXX	DAL	YYY	13:05	13:30	8127	9127	737	13
WN	XXX	DAL	YYY	13:25	13:50	8089	9089	737	11
WN	XXX	DAL	YYY	13:25	13:50	8128	9128	737	14
WN	STL	DAL	AUS	13:35	14:00	1108	5023	737	1
WN	XXX	DAL	YYY	13:35	14:00	8108	9108	737	15

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	ELP	DAL	HOU	13:40	14:00	1036	5051	737	30
WN	XXX	DAL	YYY	13:45	14:10	8048	9048	737	7
WN	AUS	DAL	SAT	13:50	14:15	1022	5121	737	8
WN	BHM	DAL	LIT	13:55	14:20	1031	5076	737	9
WN	HOU	DAL	STL	13:55	14:25	1051	5111	737	4
WN	SAT	DAL	ABQ	14:00	14:35	1120	5005	737	2
WN	LIT	DAL	HOU	14:00	14:30	1078	5052	737	5
WN	XXX	DAL	YYY	14:05	14:30	8090	9090	737	11
WN	TUL	DAL	MSY	14:10	14:40	1132	5098	737	6
WN	MAF	DAL	TUL	14:10	14:35	1092	5132	737	10
WN	ABQ	DAL	AMA	14:15	14:50	1003	5013	737	3
WN	XXX	DAL	YYY	14:15	14:40	8109	9109	737	12
WN	HOU	DAL	OKC	14:25	14:55	1052	5103	737	7
WN	XXX	DAL	YYY	14:25	14:50	8129	9129	737	13
WN	SAT	DAL	HOU	14:30	15:00	1121	5053	737	8
WN	LBB	DAL	***	14:35	15:15	1085	TERM	737	1
WN	MCI	DAL	LBB	14:35	15:05	1071	5084	737	9
WN	XXX	DAL	YYY	14:45	15:10	8091	9091	737	11
WN	XXX	DAL	YYY	14:45	15:10	8130	9130	737	14
WN	XXX	DAL	YYY	14:50	15:15	8072	9072	737	10
WN	AMA	DAL	AUS	14:55	15:20	1012	5024	737	4
WN	HOU	DAL	SAT	14:55	15:25	1053	5122	737	2
WN	XXX	DAL	YYY	14:55	15:20	8110	9110	737	15
WN	ELP	DAL	HOU	15:05	15:30	1037	5054	737	30

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	ABQ	DAL	ELP	15:15	15:40	1004	5035	737	6
WN	XXX	DAL	YYY	15:20	15:45	8062	9062	737	9
WN	HOU	DAL	MAF	15:25	15:50	1054	5091	737	7
WN	XXX	DAL	YYY	15:25	15:50	8092	9092	737	11
WN	STL	DAL	BHM	15:30	16:00	1109	5031	737	1
WN	SAT	DAL	HOU	15:30	16:00	1122	5055	737	3
WN	XXX	DAL	YYY	15:30	15:55	8073	9073	737	10
WN	AUS	DAL	LIT	15:35	16:00	1023	5077	737	8
WN	XXX	DAL	YYY	15:35	16:00	8111	9111	737	12
WN	AMA	DAL	AUS	15:40	16:10	1013	5025	737	2
WN	XXX	DAL	YYY	15:45	16:10	8131	9131	737	13
WN	LBB	DAL	SAT	15:50	16:15	1086	5123	737	5
WN	HOU	DAL	LBB	15:55	16:20	1055	5085	737	6
WN	LIT	DAL	HOU	16:00	16:30	1079	5056	737	4
WN	XXX	DAL	YYY	16:00	16:25	8063	9063	737	9
WN	XXX	DAL	YYY	16:05	16:30	8093	9093	737	11
WN	XXX	DAL	YYY	16:05	16:30	8132	9132	737	14
WN	AUS	DAL	MCI	16:10	16:35	1024	5071	737	7
WN	XXX	DAL	YYY	16:10	16:35	8074	9074	737	10
WN	XXX	DAL	YYY	16:15	16:40	8036	9036	737	3
WN	XXX	DAL	YYY	16:15	16:40	8053	9053	737	8
WN	XXX	DAL	YYY	16:15	16:40	8112	9112	737	15
WN	MSY	DAL	ABQ	16:20	16:50	1098	5006	737	1
WN	HOU	DAL	AMA	16:25	16:55	1056	5014	737	2

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	SAT	DAL	STL	16:30	16:55	1123	5112	737	5
WN	OKC	DAL	HOU	16:35	17:00	1104	5057	737	6
WN	XXX	DAL	YYY	16:40	17:05	8064	9064	737	9
WN	XXX	DAL	YYY	16:45	17:10	8094	9094	737	11
WN	TUL	DAL	AUS	16:50	17:15	1133	5026	737	7
WN	XXX	DAL	YYY	16:50	17:15	8075	9075	737	10
WN	MAF	DAL	SAT	16:55	17:25	1093	5124	737	3
WN	HOU	DAL	TUL	16:55	17:20	1057	5133	737	8
WN	XXX	DAL	YYY	16:55	17:20	8113	9113	737	12
WN	MCI	DAL	HOU	17:00	17:30	1072	5058	737	4
WN	XXX	DAL	YYY	17:05	17:30	8133	9133	737	13
WN	HOU	DAL	MAF	17:25	17:50	1058	5092	737	1
WN	XXX	DAL	YYY	17:25	17:50	8095	9095	737	30
WN	XXX	DAL	YYY	17:25	17:50	8134	9134	737	14
WN	LBB	DAL	AUS	17:30	18:00	1087	5027	737	5
WN	STL	DAL	HOU	17:30	18:00	1110	5059	737	6
WN	XXX	DAL	YYY	17:35	18:00	8114	9114	737	15
WN	ABQ	DAL	AMA	17:40	18:05	1005	5015	737	8
WN	SAT	DAL	MSY	17:40	18:05	1124	5099	737	7
WN	XXX	DAL	YYY	17:45	18:10	8040	9040	737	4
WN	XXX	DAL	YYY	17:45	18:10	8096	9096	737	11
WN	ELP	DAL	ABQ	17:50	18:15	1038	5007	737	9
WN	MSY	DAL	ELP	17:50	18:20	1099	5036	737	3
WN	HOU	DAL	HOU	17:55	18:30	1059	5060	737	2

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	AUS	DAL	OKC	17:55	18:20	1025	5104	737	10
WN	LIT	DAL	TUL	18:05	18:45	1080	5134	737	1
WN	XXX	DAL	YYY	18:15	18:40	8115	9115	737	12
WN	XXX	DAL	YYY	18:20	18:45	8054	9054	737	8
WN	HOU	DAL	LBB	18:25	18:55	1060	5086	737	4
WN	AUS	DAL	LIT	18:25	18:50	1026	5078	737	5
WN	XXX	DAL	YYY	18:25	18:50	8135	9135	737	13
WN	XXX	DAL	YYY	18:30	18:55	8080	9080	737	9
WN	SAT	DAL	HOU	18:35	19:00	1125	5061	737	6
WN	XXX	DAL	YYY	18:35	19:00	8076	9076	737	10
WN	AMA	DAL	SAT	18:40	19:15	1014	5125	737	3
WN	XXX	DAL	YYY	18:45	19:10	8097	9097	737	11
WN	XXX	DAL	YYY	18:45	19:10	8136	9136	737	14
WN	HOU	DAL	ABQ	18:55	19:20	1061	5008	737	7
WN	XXX	DAL	YYY	18:55	19:20	8116	9116	737	15
WN	MAF	DAL	HOU	19:05	19:30	1094	5062	737	1
WN	XXX	DAL	YYY	19:10	19:35	8041	9041	737	4
WN	XXX	DAL	YYY	19:15	19:40	8077	9077	737	10
WN	SAT	DAL	AUS	19:25	19:55	1126	5028	737	2
WN	AUS	DAL	MCI	19:25	19:50	1027	5072	737	5
WN	HOU	DAL	OKC	19:25	19:50	1062	5105	737	6
WN	XXX	DAL	YYY	19:25	19:50	8098	9098	737	30
WN	TUL	DAL	STL	19:30	19:55	1134	5113	737	8
WN	AMA	DAL	ELP	19:35	20:05	1015	5037	737	3

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	ABQ	DAL	HOU	19:35	20:00	1006	5063	737	7
WN	XXX	DAL	YYY	19:35	20:00	8117	9117	737	12
WN	BHM	DAL	SAT	19:40	20:05	1032	5126	737	9
WN	LBB	DAL	LBB	19:45	20:20	1088	5087	737	1
WN	XXX	DAL	YYY	19:45	20:10	8137	9137	737	13
WN	HOU	DAL	HOU	19:55	20:30	1063	5064	737	4
WN	XXX	DAL	YYY	19:55	20:20	8078	9078	737	10
WN	XXX	DAL	YYY	20:05	20:30	8099	9099	737	11
WN	XXX	DAL	YYY	20:05	20:30	8138	9138	737	14
WN	OKC	DAL	SAT	20:10	20:45	1105	5127	737	5
WN	XXX	DAL	YYY	20:15	20:40	8118	9118	737	15
WN	STL	DAL	MAF	20:20	20:50	1111	5093	737	6
WN	HOU	DAL	TUL	20:25	20:50	1064	5135	737	7
WN	AUS	DAL	AMA	20:30	20:55	1028	5016	737	8
WN	MAF	DAL	AUS	20:30	20:55	1095	5029	737	9
WN	MCI	DAL	***	20:35	21:15	1073	TERM	737	2
WN	AMA	DAL	HOU	20:35	21:00	1016	5065	737	1
WN	XXX	DAL	YYY	20:35	21:00	8079	9079	737	10
WN	MSY	DAL	***	20:40	21:20	1100	TERM	737	3
WN	XXX	DAL	YYY	20:45	21:10	8119	9119	737	12
WN	SAT	DAL	***	20:50	23:59	1127	TERM	737	30
WN	HOU	DAL	LIT	20:55	21:20	1065	5079	737	11
WN	XXX	DAL	YYY	20:55	21:20	8139	9139	737	13
WN	TUL	DAL	***	21:00	23:59	1135	TERM	737	5

Airline	Origin	DAL	Destination	Arr. Time	Dep. Time	Arr. Flt Number	Dep. Flt Number	A/C Type	Gate
WN	STL	DAL	***	21:05	23:59	1112	TERM	737	6
WN	LIT	DAL	***	21:10	23:59	1081	TERM	737	7
WN	ABQ	DAL	***	21:15	23:59	1007	TERM	737	8
WN	XXX	DAL	YYY	21:15	21:40	8140	9140	737	1
WN	LBB	DAL	***	21:20	23:59	1089	TERM	737	9
WN	HOU	DAL	***	21:25	23:59	1066	TERM	737	10
WN	XXX	DAL	YYY	21:35	22:00	8037	9037	737	3
WN	XXX	DAL	YYY	21:45	22:10	8042	9042	737	4
WN	AUS	DAL	***	21:50	23:59	1029	TERM	737	11
WN	ELP	DAL	***	21:55	23:59	1039	TERM	737	12
WN	HOU	DAL	***	21:55	23:59	1067	TERM	737	13
WN	SAT	DAL	***	22:00	23:59	1128	TERM	737	14
WN	MCI	DAL	***	22:15	23:59	1074	TERM	737	15
WN	XXX	DAL	YYY	22:15	22:40	8038	9038	737	3
WN	ABQ	DAL	***	22:50	23:59	1008	TERM	737	1
WN	BHM	DAL	***	22:55	23:59	1033	TERM	737	2
WN	HOU	DAL	***	22:55	23:59	1068	TERM	737	3
WN	STL	DAL	***	22:55	23:59	1113	TERM	737	4

Prepared by: TransSolutions

Appendix B: Concessions

APPENDIX B – CONCESSIONS

Overview

As an initial step towards development of a comprehensive concessions plan The Center for Airport Management (CAM) has reviewed key concessions data to analyze the present performance of Dallas Love Field Airport's (DAL) concessions program. Analyzing this data provides a better understanding of customer response to the existing concession offerings at Dallas Love Field Airport, and also provides a basis for a comparative analysis with other airports. CAM has also performed a site evaluation of the airport.

This report incorporates and draws on data supplied by the City of Dallas Department of Aviation, as well as other industry sources. It also incorporates site observations performed on a site visit of November 15, 2004 and interviews with DAL senior management.

Size

- DAL's current concessions program has been determined to be undersized.
- Current concessions square footage: 20,400 gsf
    - Preliminary supportable square footage at 2.8 million enplanements (EPAX) may range from 28,000 – 30,800 gsf
    - Current program may be undersized by approximately 7,600 – 10,400 gsf
    - The most significant sizing shortage is in retail, which is undersized by approximately 4,800 to 7,900 gsf

Food and Beverage Performance

- 2004 fiscal year food & beverage sales: $8.1 million
- 2004 fiscal year sales per enplanement: $2.91

Retail Performance

- 2004 fiscal year retail sales: $4.6 million
- 2004 fiscal sales per enplanement: $1.63

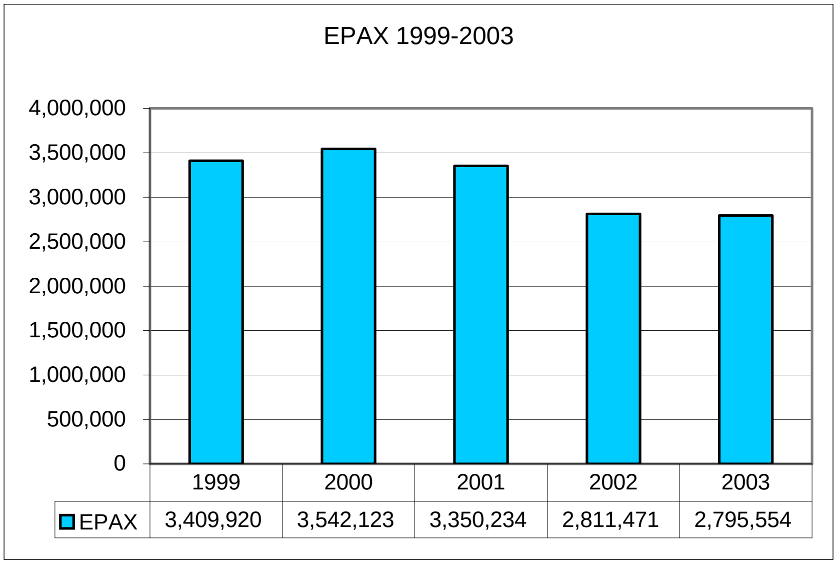
Total Sales and Revenues Performance

- 2004 fiscal gross sales of $12.7 million
- **2004 fiscal total sales per enplanement: $4.54**

Historic Annual Enplanements

For the calendar years 2002 and 2003, the last two complete calendar years utilized during the draft TARPS, DAL enplanements had been 2.8 million. With its limited number of carriers, DAL had been impacted by the economic declines of the major airlines in the wake of the terrorist attack of September 11, 2001. In each year from 1999 through 2001 enplanements ranged near 3.4 million, approximately 600,000 more than in 2002 and 2003.

Exhibit B-1:
Historic Enplanement Trends



	1999	2000	2001	2002	2003
🟦 EPAX	3,409,920	3,542,123	3,350,234	2,811,471	2,795,554

Source: Dallas Love Field Airport

Through October of 2004, enplanements were 5% above the comparable period of 2003. If this pattern continued through the balance of 2004, yearly enplanements may have reached 2.9 million.

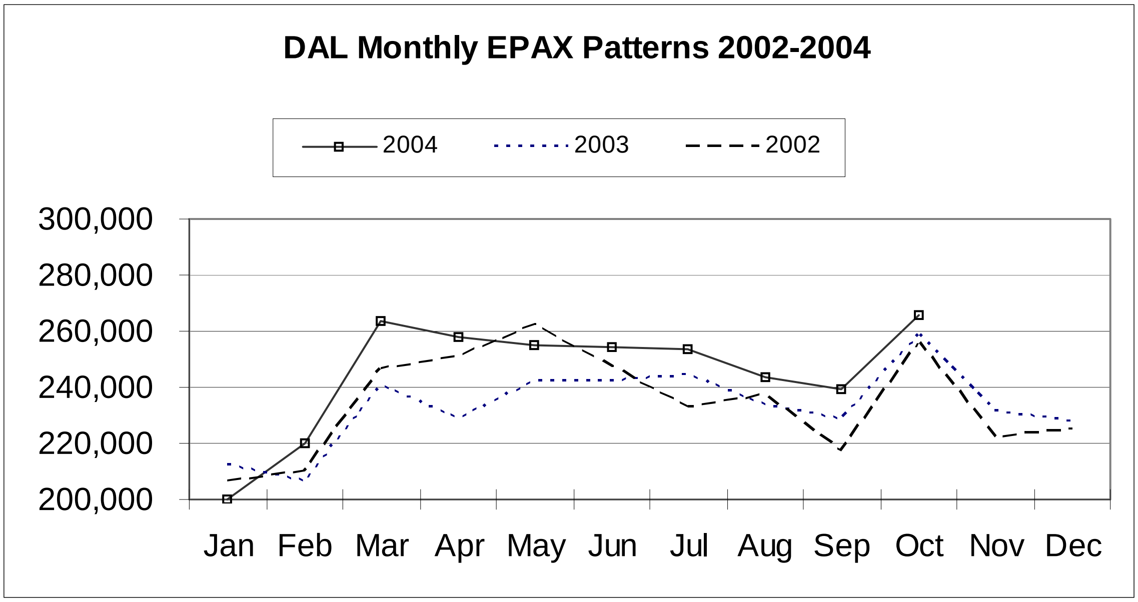
Southwest Airlines was the dominant carrier flying in and out of DAL, with 96% of all traffic.

Historic Monthly Enplanements

Generally, monthly enplanements follow a pattern of slow winter months and busier summer months. Historically, summer enplanements at DAL start strong, but slow down over the course of the summer. A small dip in September is usually followed by an uptick in October. Enplanements fall off in late winter, with January or February usually being the slowest months.

Exhibit B -2:

Monthly Enplanement Patterns



Source: Dallas Love Field

Passenger Demographics

In the absence of passenger intercept survey data, it is believed that the dwell time of the DAL passenger is short in comparison with other US airports where dwell times generally range near two hours. Recent reports have indicated that in the last year, dwell times have decreased, by only 5 to 7 minutes on average.

The short dwell times were believed by airport management to be related, in part, to the short flight stages that were a consequence of the Wright and Shelby Amendments. This may be especially true for West Concourse passengers who utilize the pedestrian bridge to gain direct access to the concourse from Parking Structure A, in lieu of accessing the concourse through the main lobby and PSSC.

An additional factor influencing passenger behavior at DAL is the unique boarding conditions of Southwest Airlines. As SWA does not assign seats, earlier methods of a passengers receiving a boarding group letter card and queuing on a first in line, first on board basis behind one of three letters designating a boarding group, have recently been improved. Now passengers can check-in on-line and receive a boarding pass that has both a letter and number designation. While the letter designation continues to represent the boarding group, the number now designates your position in that group. The earlier methods had passengers more focused on standing in line as early as possible to get on board for premium seat selection. Currently, passengers know their boarding position in line ahead of time and do not have to stand in line until their group and line position is called. This allows passengers to now spend dwell times browsing and utilizing available airside concessions, which provides opportunities for increased concession revenues, as well as potential demand for new offerings.

Shopping that was not done on the way to the gate will not be done. In other words, the landside market is limited. To stimulate sales to this specialized market, checkout/cashiering lines must be very short or extremely fast in both food and retail. Food offerings must be tailored to the grab and go market. However, quality cannot be compromised or sales will suffer. If the offerings do not appeal to the passenger, that passenger will be more inclined to wait for their short haul flight to reach its destination, and then eat.

While the earlier short haul operational characteristics of the terminal facility dictated shorter dwell times, the environment was not conducive to the highest industry levels of passenger spend. Changes in boarding processes or longer dwell times will translate into longer browsing or dining, switches from quick serve to sit down dining yielding higher spends, and higher specialty retail spends. CAM has found that for every extra five minutes of browsing time spent in a retail store, the result could be an additional $7.00 on average spent per passenger.

Concession Sizing

With DAL's 2004 enplanement level reaching 2.8 million enplaned passengers, there is approximately 7.3 sf of concessions utilized per 1,000 enplanements. CAM preliminarily believes that a domestic, non-connecting airport with unique passenger behavioral characteristics like DAL can support closer to 10-11 sf per 1,000 enplanements. For this sizing, DAL would require close to 31,000 sf of concession space, or approximately, 10,400sf more than at present.

Table B-2:
Preliminary Optimal Sizing Requirements ("POR") at 2.8M Epax

	EPAX	Actual	POR SF	Variance
F&B	2,800,000	14,000	16,800 - 18,500	2,800 -4,500
Retail	2,800,000	6,400	11,200 - 12,300	4,800 - 7,900
Total	**2,800,000**	**20,400**	**28,000 - 30,800**	**7,600 - 10,400**

Even if additional space were not built out, existing space could be reallocated to better suit passenger and visitor needs. For instance, if some of the existing food units were available as retail units, and the sub-types of the remaining food units were changed, DAL would offer a more passenger friendly amenities program, and consequently, could boost both sales and rent revenue. See the table below for re-sizing recommendations of the current program.

Table B-3:
Potential Reallocation Plan for Existing Space

	Actual SF	Reallocation	Variance
F&B			
Bar	6,414	2,600	(3,800)
Quick Serve + Seating	4,149	6,600	2,500
Sit Down	2,550	2,600	100
Walkaway	880	1,300	400
F&B TOTAL	**13,993**	**13,200**	**(800)**
RETAIL			
News	4,984	2,800	(2,200)
Specialty Retail	1,380	4,300	2,900
RETAIL TOTAL	**6,364**	**7,100**	**700**
DAL TOTAL	**20,357**	**20,300**	**(100)**

EXISTING CONCESSION SALES ANALYSIS

Overview

As fiscal sales data was not available on a per unit basis, the scope of the analysis will be somewhat limited.

Sales of alcoholic beverages accounted for about 21% of food service sales and branded food accounts for 71%. The balance, 8% of unbranded food, consists primarily of the deli offerings at the two food court/snack bar concessions. The food sales at the Continental gates, American Airlines gates, the Antler Bar and Lone Star Brew Pub units are also classified as non-branded. The Gate 4 and Gate 9 food courts account for 81% of the non-branded food. *Alcohol sales account for 21% of total food and beverage sales.*

Table B-4:
2004 Fiscal Year Sales by Category

	NB Food	Branded	Alcohol	Total	Size (SF)	Sales/SF	SEP
McDonalds	$0	$1,787,000	$0	$1,787,000	3,394	$527	$0.64
DLFJV	$668,000	$3,975,000	$1,702,000	$6,345,000	10,559	$601	$2.27
Total F&B	**$668,000**	**$5,762,000**	**$1,702,000**	**$8,132,000**	**13,953**	**$583**	**$2.91**
% of Total	**8.2%**	**70.9%**	**20.9%**	**100%**			

Sales per square foot for all food and beverage service were $583 for fiscal 2004 with a Sale per Enplaned Passenger (SEP) of $2.91, and of those sales, the two McDonalds units selling were $527 per square foot. The SEP value for the combined McDonalds is notably good, among the highest in our database however, the sales/sf is low. Many McDonalds in our database with lower SEPs have much higher sales/sf.

Looking at the performance of the two units separately, explains the low sales per sf performance. The performance of the McDonald's unit at Gate 4 out performs the unit on landside in the main lobby. While the overall performance of the two units combined is much higher than in other markets, the under-performing landside unit, when viewed separately, clearly impacts the SEP. *Landside food in a terminal or airport dominated by short haul air carrier service is going to have below average capture, thus SEP.*

Table B-5:
McDonalds 2004 Fiscal Year Sales

Unit	Locations		Side	Sales	SEP	Size	Sales/SF
McDonalds	Terminal	Ramp	L	$202,839	$0.07	1,894	$107
McDonalds	West	Gate 4	A	$1,584,306	$0.57	1,500	$1,056
Total				**$1,787,145**	**$0.64**	**3,394**	**$527**

Interestingly the two McDonalds accounted for 21.9% of the food and beverage SEP with the airside unit accounting for 19.5% of the food and beverage SEP. The gate 4 McDonalds is competing directly with the Pizza Hut snackbar and the Lone Star Brew Pub.

Landside F&B Sales vs Airside Sales

Landside food service sales represent 17% of airport-wide food service sales. Landside sales include the Chili's Bar & Bites at $702,000 in 2004 sales, of which 31.6% was for alcoholic beverages.

Table B-6:
Landside vs Airside F&B Fiscal Year 2004 Sales

Landside	$1,389,000	$0.50	17.1%
Airside	$6,743,000	$2.41	82.9%
Total	**$8,132,000**	**$2.91**	**100.0%**

Food sales can be then broken down into the airside McDonalds (19%), alcoholic beverages (21%), and all other food and beverage (60%). This high percentage of alcohol sales indicates unmet needs for food and non-alcoholic beverage service.

Table B-7:
Fiscal Year 2004 Sales by Category

Source	Sales	% of Total
Alcohol	$1,702,000	20.9%
McDonalds (Air)	$1,584,000	19.5%
All Other Food	$4,846,000	59.6%
Total	**$8,132,000**	**100.0%**

Monthly Sales Analysis

It can be informative to look for a relationship between the monthly enplanement volume and the resulting Sales per Enplanement. The table below overlays the Hudson News retail SEP values for the first ten months of 2004 against the monthly enplanements for the same period. DAL provided the retail sales data, but monthly food and beverage sales data were not available at this time.

During this period, the monthly SEP ranged from a low of $1.36 in October to a high of $1.74 in August, a range of 27.9% from the low to the high. The average sale per enplanement for the period was $1.51. The average monthly enplanements for the period were 245,000.

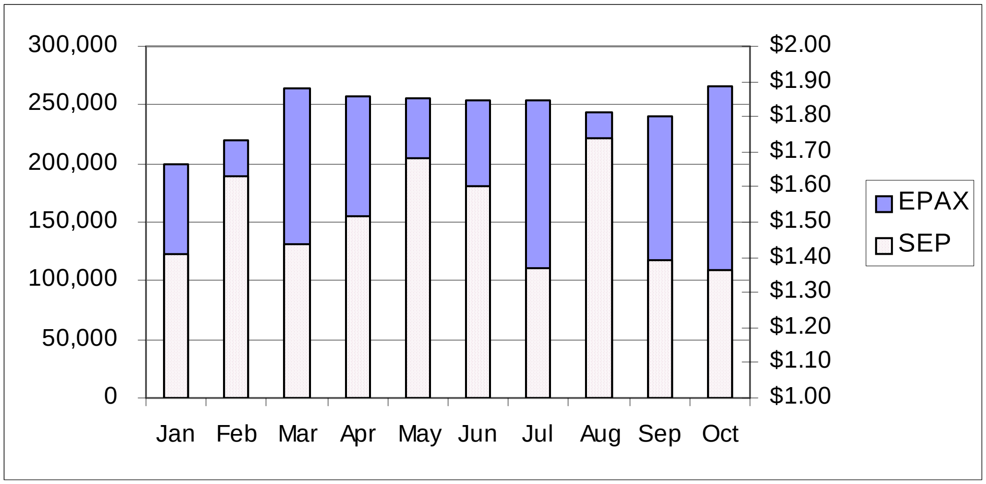
CAM has often determined that slow enplanement months enjoy slightly higher sales per enplanement as shops and restaurants are less busy and have shorter lines. At first glance, it appears that when monthly enplanements exceed 250,000, sales per enplanement drop, but that does provide an explanation as to why September is $0.35 lower than August.

Monthly SEP fluctuation does show a great variance. As an example, EPAX for April through July are essentially equivalent, yet retail SEP varies from $1.00 to $1.60. *This can be an indicator of an under-performing or unsatisfactorily operated concession program.*

Some questions do arise after identifying the varying SEP performance characteristics:

Were all retail units open for all months?
Were retail units fully staffed for busy months?
Are sales promotions that reflect life outside the airport run?
Do shops carry merchandise travelers want to buy?

Exhibit ***B-3:***
Monthly Retail SEP vs. Monthly Enplanements Jan-October 2004



Sales Per Sub-Type

For this analysis, the Lone Star Brew Pub and the Antler Bar have been included in the quickserve totals, as the units were not separated out in both size and sales. Therefore, the quickserve category includes the Oasis Deli, the two pubs, McDonalds, the snackbar at the Continental gates, snackbar at American gates and the three Pizza Hut units.

Even with this inconsistency, it is clear that on a sales per square foot basis, the quickserve and bar sub-types are both under-performing. The one sitdown, Chili's Too, was doing well at $919 per sf. The four walkaway units, coffee and ice cream, are very productive, earning over $1,300 per sf. Again, retail sales were not provided on a per unit basis. Even so, news should be more productive, earning in excess of $1,500 per sf.

The biggest opportunities exist with specialty retail. While there is only so much food a passenger can consume while at the airport, specialty retail spending, to some degree, could be considered somewhat endless, personal budgets aside.

Table B-8:
2004 Fiscal Year Sales per Sub-Type Analysis

	SF	**Sales**	**Sales/SF**	**SEP**	**SF/1K EPAX**
F&B					
Bar	6,414	$1,307,000	$204	$0.47	2.3
Quick Serve	4,149	$3,277,000	$790	$1.17	1.5
Sit Down	2,550	$2,343,000	$919	$0.84	0.9
Walkaway	880	$1,205,000	$1,369	$0.43	0.3
F&B TOTAL	**13,993**	**$8,132,000**	**$581**	**$2.90**	**5.0**
RETAIL					
News	4,984	$3,893,000	$781	$1.39	1.8
Specialty Retail	1,380	$666,000	$483	$0.24	0.5
RETAIL TOTAL	**6,364**	**$4,559,000**	**$716**	**$1.63**	**2.3**
DAL TOTAL	**20,357**	**$12,691,000**	**$623**	**$4.54**	**7.3**

Type Ratio^{sm} Analysis

It can be informative to evaluate the relative performance of food service and retail concessions by calculating the percentage of contributions each makes to total concession sales. Analyzing raw percentage sales by type could be misleading. For instance, it would be interesting to know that food service represents 65% of total sales. But how would your thinking change if you knew that food service accounted for 85% of the total concession square footage? Would your thinking be different if the food service accounted for 50% of the total concession square footage?

For that reason, CAM has developed the Type Ratio^{sm}, a measure of a type's contribution to sales, **relative** to its size. For example, if retail concession sales comprised 45% of total concession sales **and** retail concession square footage were 45% of total concession square footage, the retail type ratio would be 1. A value of 1 indicates that the percentage of sales is equivalent to the percentage of size.

If retail sales contributed 50% of sales and accounted for 25% of size, its Type Ratio would be 2. A value of 2 indicates that the percentage of sales is 2 times the percentage of size.

The table below shows that DAL food service sales comprise 64.1% of total sales and food service square footage consumes 68.7% of the concession square footage. Food service sales are greater than retail sales, and food service utilizes more space than retail.

Table B-9:
Type Ratio Analysis

	F&B	**Retail**	**Total**
Sales Ratio	64.1%	35.9%	100.0%
Size Ratio	68.7%	31.3%	100.0%
Type Ratio	**0.9**	**1.1**	

Market Share & Sales Ratio^{sm} Analysis

Food and beverage sales account for too great a percent of the total concession sales, more than should be accounted for by its size.

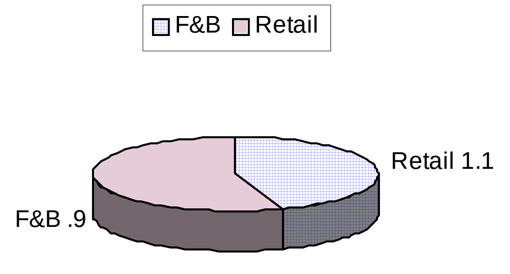


Table 1-9 on the previous page indicates that DAL food service has a type ratio of .9, meaning that its percentage of sales is .9 times its percentage of size. DAL retail has a type ratio of 1.1 meaning its percentage of sales is 1.1 times its percentage of size.

CAM's analysis of the Type Ratio^{sm} at comparable airports indicates that in domestic, non-connecting airports, the most efficient use of concession space for these target market segments at DAL occurs where food comprises approximately 60% of concession space. In a well-designed and well-run concession program with 60% of space allocated to food, food service returns a Type Ratio^{sm} of 1.

The significance of this analysis is to draw attention to inappropriately sized or underperforming concession spaces. Through this Type Ratio^{sm} analysis, we suspect that there is an underperformance in retail. Keep in mind that retail sales, if properly sized, have the greatest potential for growth. People can eat only so much food. And, retail does not require "non-productive" seating space. Therefore, if the food service Type Ratio^{sm}goes above 1 then it is highly likely that retail is underperforming. The Type Ratio^{sm} at DAL is approaching 1.

Of course, one performance measure by itself seldom tells the entire story and the Type Ratio^{sm} is only one of many factors affecting performance. Therfore, the Type Ratio^{sm} must be used in unison with other measures of financial performance.

COMPARABLE AIRPORTS: SALES PER ENPLANEMENT

DAL's unique characteristics and the behavioral motivations of its passengers, which are unique as well, make it difficult to identify truly comparative airports. There are airports that are similar in size, such as Ft. Myers (RSW), Florida, for example, but that airport is a leisure destination, has relatively long haul flights and a large percentage of leisure versus business travelers.

Therefore, CAM has attempted to identify smaller secondary airports, such as major metropolitan airports and day-trip/short haul airports (less than 1,000 miles, as well as those that are similar in enplanement levels. Availability of key data also influenced which airports were chosen for comparison.

Airports identified by CAM as potential benchmarks are listed in the table below. The column headed "EPAX" gives the annual enplanements; the column immediately to the right gives the number of daily domestic departures in November of 2004. DAL is at 130; the median within this group is 131. ALB and AUS are the closest to DAL along this metric. "Avg Dist" is the average of the unweighted distance of destinations. A "Y" in the next column indicates that this is a secondary airport. The "SWA" column shows the volume of Southwest Airlines enplanements, either greater than 10,000 seats daily or less than 10,000 seats daily. Finally, the right-most column gives the percentage of O&D traffic.

Table B-10:
Potential Comparable Airports

Airport	EPAX	Daily Dom Dept (11/04)	Avg Dist	Secondary	SWA	% O&D
Burbank (BUR)	4,660,000	82	654	Y	>10K	98%
Orange County (SNA)	4,270,000	149	1,072	Y	<10K	49%
Houston (HOU)	3,900,000	170	710	Y	>10K	47%
Austin (AUS)	3,300,000	131	847		>10K	95%
Dallas Love Field	*2,796,000*	*130*	*309*	*Y*	*>10K*	*100%*
Reno (RNO)	2,264,000	86	786		>10K	91%
Buffalo Niagara (BUF)	2,042,000	119	594		>10K	97%
Albany (ALB)	1,436,000	132	484		<10K	99%
Median	**3,048,000**	**131**	**682**			**96%**

Avg Dist is the average unweighted distance of destinations.

From this table, ALB and AUS appear to be good matches. The daily departures for November are essentially equivalent. Like DAL, AUS has greater than 10,000 seats departing on Southwest. Both ALB and AUS's average distance is higher than DAL, but are still not great. BUF is another good match, with its high rate of Southwest enplanements and its 97% O&D traffic.

Within this group, DAL is less than 300,000 enplanements below the median. Food service sales per enplanement range from a low of $1.57 at BUR up to $3.48 at AUS. DAL is at the median with $2.91. Retail sales per enplanement range from a low of $0.75 at BUR up to $2.42 at RNO. DAL is just below the median at $1.63. For total program sales per enplanement, DAL is below the median of $4.64 at $4.54.

The range from low to high in food service SEP is $1.91, which is greater than the range in the retail component, which is $1.67. As clearly represented in this comparison, the range in retail sales per enplanement among this group of small, domestic airports is a factor to the strength or weakness of the total concession program. As discussed in the "Concession Sizing" section of this report, DAL is significantly undersized in retail space. This is reflected in the low retail sales per enplanement passenger number.

Table B-11:
Comparable Airports' 2003 Sales and SEPs Sorted by Total EPAX

Airport	**EPAX**	**F&B**		**RETAIL**		**TOTAL**		**SF**	**SF/1K EPAX**
		Sales	**SEP**	**Sales**	**SEP**	**Sales**	**SEP**		
Burbank (BUR)	4,660,000	$7,326,456	$1.57	$3,516,663	$0.75	$10,843,119	$2.33	20,544	4.4
Orange County (SNA)	4,270,000	$12,846,000	$3.01	$7,401,000	$1.73	$20,247,000	$4.74		
Houston (HOU)	3,900,000	$7,465,000	$1.91	$3,865,000	$0.99	$11,330,000	$2.91	16,552	4.2
Austin (AUS)	3,300,000	$11,489,000	$3.48	$5,852,000	$1.77	$17,341,000	$5.26	26,533	8.0
Dallas Love Field	*2,796,000*	*$8,132,000*	*$2.91*	*$4,559,000*	*$1.63*	*$12,691,000*	*$4.54*	20,400	7.3
Reno (RNO)	2,264,000	$6,981,000	$3.08	$5,472,000	$2.42	$12,453,000	$5.50	25,359	11.2
Buffalo Niagara (BUF)	2,042,000	$5,898,000	$2.89	$3,048,000	$1.49	$8,946,000	$4.38		
Albany (ALB)	1,436,000	$4,149,000	$2.89	$3,227,000	$2.25	$7,376,000	$5.14	16,827	11.7
Median	**3,048,000**	**$7,395,728**	**$2.90**	**$4,212,000**	**$1.68**	**$11,891,500**	**$4.64**	20,472	7.7

(DAL is 2004F Data)

Source: Dallas Love Field, airports directly, CAM and other industry databases
Data is sorted in descending order by enplanements

In comparison with the Texas airports, DAL is significantly outperforming HOU, but at the same time is underperforming compared to AUS. At only 8.0sf per 1,000 enplanements, AUS is turning a strong $5.25 per enplanement. However, BUR and HOU at less than 5.0 sf per 1,000 enplanements, are doing less than $3.00 per enplanement. The smallest of the secondary airports compared, Albany, is efficiently utilizing 11.7sf per 1,000 enplanements with sales per enplaned passenger of $5.14.

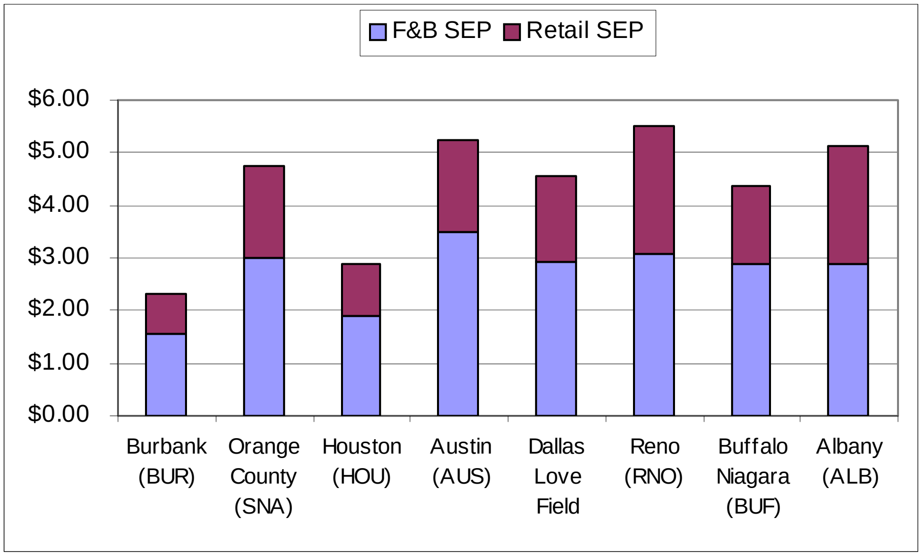
Table B-12:
Summary Comparable Airports: High & Low SEPs
(DAL is 2004F Data)

	Low	**Median**	**High**	**DAL**
F&B SEP	$1.57	$2.90	$3.48	$2.91
Retail SEP	$0.75	$1.68	$2.42	$1.63
Total SEP	**$2.91**	**$4.64**	**$5.50**	**$4.54**

Chart 1-4, below, graphically presents the contribution of food and of retail sales in the total SEP. Both BUR and HOU are severely undersized affecting both food and retail sales. All of the others (except AUS) are at approximately $3.00 for food service. In fact, ALB, BUF and DAL are within 2 cents of each other. Of the three, ALB has the best retail SEP at $2.25, which almost certainly is a function of adequate concession sizing, as well as the right retail offerings.

Exhibit ***B-4:***

Total SEP as the Sum of F&B SEP and Retail SEP (DAL is 2004F Data)

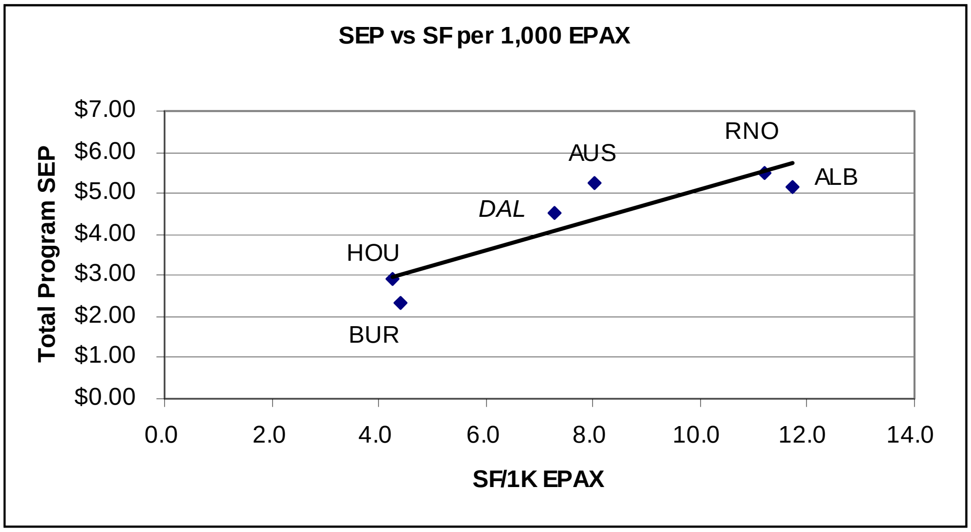


A carefully designed intercept survey would reveal the buying motivations of current airport visitors. The responses can provide DAL potential solutions to identified issues or shortcomings that exist in the current retail program.

The table on the following page shows a graph of total concession sales per enplanement versus the number of square feet per 1,000 enplanements. The dark line of the graph, the trend line, marks the calculated relationship of concession size to SEP, in other words, the “trend”. The trend shown is that for higher values of square feet per 1,000 enplanements, total program SEP increases.

Airports whose values are on the trend line are average performers within this group. Airports below the trend line are under performing within the group. To be above average, SEP values would be above the trend line. HOU anchors the lower end the trend line and RNO anchors the upper end. For its size, DAL is just above the trend line, doing well for its size.

Exhibit ***B-5:***
2003 Total SEP vs SF per 1,000 EPAX (DAL is 2004F Data)



Source: Dallas Love Field, airports directly, CAM and other industry databases
Data is sorted in descending order by enplanements

RENT ANALYSIS

Concession operators reported 2004 gross sales of $12.8 million. Concessionaires paid $1.9 million in rent at an average blended rate of 14.7%. Average blended rents appear to be in line with recent rents proposed at other comparable airports, although there is room for improvement in retail.

Table B-13:
2004 Fiscal Year Sales and Rent by Type

Type	Gross Sales	% of Total	Rent Paid	Rent %
F&B	$8,132,000	63%	$1,189,000	14.6%
Retail	$4,559,000	36%	$679,000	14.9%
Services	$145,000	1%	$21,700	15.0%
Total	**$12,836,000**	**100%**	**$1,889,700**	**14.7%**

At 14.6%, food and beverage rents appear to be in line with rents at other comparable airports. At DAL, McDonalds pays 10% of combined sales of two units for sales up to $1.5 million. Above that level, the percentage rent jumps to 15%. This is a higher step point than at many airports. For non-branded food, the step point is $1.5 million. Above that level DLFJV is required to pay 20%. At current annual sales of $8,132,000, sales are a long way from the step point.

Table B-14:
2004 Fiscal Year F&B Rents Paid by Category

		Rents Paid by Category				Blended
Vendor	**Gross Sales**	**NB Food**	**Branded**	**Alcohol**	**Total Rent**	**% Rent**
McDonalds	$1,787,000	$0	$193,000	$0	$193,000	10.8%
DLFJV	$6,345,000	$100,000	$596,000	$299,000	$995,000	15.7%
Total F&B	**$8,132,000**	**$100,000**	**$789,000**	**$299,000**	**$1,188,000**	**14.6%**

Hudson News retail units pay 15% rent on all categories of sales. The Airport Gallery pays 7.5% rent on all sales. Because of these terms, DAL may be earning less rent than is possible. It is not uncommon to see higher percentage rents for some specialty retail concepts or categories. Recent proposed rents at MSP for News/Convenience units were at stepped rents that ranged from 16% to 17%. Sunglasses rents from CAM’s database range from 13% up to 20%.

Table B-15:
2004 Fiscal Year Retail Rents Paid by Category

Unit/Category	**Gross Sales**	**Rent %**	**Rent $**
Hudson Main	$3,122,000	15%	$468,300
$10 Store	$279,000	15%	$41,850
RDA	$288,000	15%	$43,200
Advertising/Misc	$483,000	15%	$72,450
Sunglasses	$328,000	15%	$49,200
Airport Gallery	$59,000	7.5%	$4,400
Total Retail	**$4,559,000**	**15%**	**$679,400**

SUPPLEMENTAL TABLES

Per Unit Sales

The table below recaps the reported sales on an approximate per unit basis. Sales of vendors with multiple locations were reported on a consolidated basis.

Table B-16:
Fiscal Year 2004 Per Unit Sales

Type	Sub-Type	Name	Term/Conc	Location	Side	Sales	SEP
F&B	BAR	Chili's Bar & Bites	Terminal	Ramp	L	$701,640	$0.25
F&B	QS	Antler Bar	West	Gate 9	A	$605,193	$0.22
F&B	QS	Lone Star Brew Pub	West	Gate 6	A		$0.00
F&B	QS	McDonalds	Terminal	Ramp	L	$202,839	$0.07
F&B	QS	McDonalds	West	Gate 4	A	$1,584,306	$0.57
F&B	QS	Oasis/Hot Dog Combined	West	Gate 4	A	$453,526	$0.16
F&B	QS	Oasis/Hot Dog Combined	West	Gate 9	A	$545,176	$0.19
F&B	QS	Pizza Hut Express	Terminal	Ramp	L	$135,507	$0.05
F&B	QS	Pizza Hut Express	West	Gate 4	A	$178,007	$0.06
F&B	QS	Pizza Hut Express	West	Gate 9	A	$97,948	$0.04
F&B	QS	Snack Bar (Cont Gate)	East		A	$79,166	$0.03
F&B	SD	Chili's Too	West	Gate 2	A	$2,343,406	$0.84
F&B	WA	Dreyers	West	Gate 4	A	$290,313	$0.10
F&B	WA	Seattle's Best Coffee	Terminal	Ramp	L	$348,832	$0.12
F&B	WA	Seattle's Best Coffee Cart	West	Gate 6	A	$363,411	$0.13
F&B	WA	Seattle's Best Coffee Cart	West	Gate 10	A	$202,435	$0.07
Total F&B						**$8,131,704**	**$2.91**
RET	NEWS	Hudson News	Multiple			$3,121,863	$1.12
RET	NEWS	Hudson RDA + Misc	Multiple			$771,422	$0.28
RET	SR	$10/20 Boutique	West	Gate 1	A	$279,011	$0.10
RET	SR	Grand Stand Sports Shop	West	Gate 9	A	$0	$0.00
RET	SR	Sunglass Hut	West	Gate 8	A	$328,104	$0.12
RET	SR	Art Gallery	Terminal		L	$58,767	$0.02
Total Retail						**$4,559,167**	**$1.63**
Total Sales						**$12,690,871**	**$4.54**

Source: Dallas Love Field

Historic Monthly Enplanements

Table B-17:
Historic Monthly Enplanements

	2004	2003	2002
Jan	200,070	212,070	206,103
Feb	220,203	206,699	209,773
Mar	263,360	240,675	246,138
Apr	257,959	228,915	250,835
May	255,349	241,839	262,100
Jun	254,164	241,980	246,845
Jul	253,685	244,226	232,652
Aug	243,840	233,556	237,434
Sep	239,553	228,532	216,930
Oct	265,466	258,312	255,723
Nov		231,210	221,887
Dec		227,540	225,051
Total	**2,453,649**	**2,795,554**	**2,811,471**
Avg	245,365	232,963	234,289
Low	200,070	206,699	206,103
High	265,466	258,312	262,100
Variance	65,396	51,613	55,997
Dif %	32.7%	25.0%	27.2%

Source: Dallas Love Field

2004 Retail Monthly SEP and Enplanements

Table B-18:

	EPAX	Sales	SEP
Jan	200,070	$281,896	$1.41
Feb	220,203	$359,101	$1.63
Mar	263,360	$377,873	$1.43
Apr	257,959	$257,959	$1.00
May	255,349	$255,349	$1.00
Jun	254,164	$407,742	$1.60
Jul	253,685	$347,308	$1.37
Aug	243,840	$423,499	$1.74
Sep	239,553	$333,901	$1.39
Oct	265,466	$361,794	$1.36

Historic Monthly Enplanements

Overall

Most units are not visible to approaching passengers. Storefronts neither pop out, nor use any type of blade signs. Storefront designs should be enhanced to maximize customer awareness and to increase capture.

Currently, DAL does not have an amenities signage program, meaning neither brochures nor directories are available. An amenities awareness program performs three functions. At the lowest level, it lets airport visitors find specific locations. At a higher level, it communicates to those same visitors that DAL is more than an airport; it is a shopping environment. And, at the highest level, it promotes an image of user-friendliness to airport visitors, the kind of image that encourages visitors to relax, dine and shop while awaiting their flight departure.

Appendix C: Terminal Curbside Activity

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APPENDIX C – 2004 TERMINAL CURBSIDE ACTIVITY SURVEY AND SUMMARY

Terminal Curbside

The following is a description of the methodology utilized to conduct the Dallas Love Field Airport 2004 terminal curbside activity survey and a summary of the results of that survey.

Methodology

Quantitative and/or qualitative observations were made of the following functional elements of the terminal curbside activity:

- Passenger Vehicle/Taxi/ Shuttle Drop off and pick up
- Curbside Ticketing/Baggage Check

Each functional element of the curbside activity was observed on December 9, 2004 during morning and afternoon peaks, which were determined based on traffic studies from the 2001 Master Plan. Quantitative analysis included obtaining curbside volumes and dwell times. Qualitative analysis was limited to observing general levels of congestion and identifying particular activities that impacted curbside activity. *Figure 1-5* entitled "Curbside Activity", shows the current layout of the Terminal curbside and locations from which the survey was executed.

Results

Passenger Vehicle/Taxi/Shuttle Drop off and Pick-up

The upper (departures) and lower (arrivals) curbs were observed during their respective peak periods. Counts, queues and dwell times were recorded by vehicle classification. The number of passengers utilizing the curbside ticketing/baggage check-in function was also recorded.

Upper Level Curb

The upper level roadway is divided into an inner and outer roadway separated by a raised median. The inner roadway (i.e., the lanes nearest the upper level terminal entrance) is comprised of three lanes. One lane is marked for active passengers pick up and two are marked as through lanes. The innermost lane is wider than the adjacent travel lanes to allow short-duration dwell while passengers load their luggage and exit the airport.

The upper level arrivals roadway also provides access to the loading dock area situated behind the westerly end of the terminal building. No significant traffic was observed during the afternoon peak hour for the loading dock area.

During the afternoon peak, parking enforcement was performed by five police officers on bicycles. A police car would occasionally flash lights at vehicles to keep them from parking for an excessive duration. Vehicles were observed stopping in the through lanes for a very few seconds when the inner lane was totally occupied. Vehicles stopped occasionally on the pedestrian cross walk blocking pedestrian movement. A tabulation of vehicle types, classification and curbside dwelling time are shown in *Table 1-19*

Approximately 73% percent of the vehicles using the Arrivals curb were passenger vehicles; 26% percent were taxis and the remaining were hotel/motel shuttles.

During the afternoon peak, the inner lane was completely utilized with 14 vehicles dwelling at the curb; the maximum observed was 16. The mean dwell time for vehicles was one minute and 18 seconds; the median dwell time was one minute and 15 seconds. The analysis indicates that the curbside is being used to its optimum capacity.

Table 1-19:
Peak Hour Upper and Lower Curb Use
Dallas Love Field Airport

Location And Time	Automobile	Taxi	Rental Car/ Shuttle	Hotel/Motel Courtesy Vehicle	Others
Upper Level (Arrival)	429	152	0	2	0
4 PM - 6 PM	73.6%	26.1%	0.0%	0.3%	0.0%
Lower Level (Departure)	156	94	308	4	1
4 PM - 6 PM	27.7%	16.7%	54.7%	0.7%	0.2%
Lower Level (Departure)	80	28	178	6	0
6 AM - 8 AM	27.4%	9.6%	61.0%	2.1%	0.0%

Lower Level Curb

The lower level Departures roadway is divided into an inner and outer roadway separated by a raised median. The inner roadway (i.e., the lanes nearest the upper level Arrivals terminal entrance) is comprised of three lanes. One lane is marked for active passenger drop off and two are marked as through lanes. The innermost lane is wider than the adjacent travel lanes to allow for a short-duration dwell while passengers unload baggage.

The lower level roadway also provides access to the SWA curbside baggage check-in/ticketing counters situated at the entrance of the terminal building.

No parking enforcement was observed at this level during morning and afternoon peaks. Very few vehicles stopped in the through lanes during the morning peak hour, and then for only a short duration (generally less than 30 seconds) when the inner lane was totally occupied.

During the morning peak hour, approximately 28% percent of the vehicles using the departures curb were passenger vehicles; 10% percent were taxis and the remaining were hotel/motel and car rental company shuttles. During the afternoon peak hour approximately 28% percent of the vehicles using arrivals curb were passenger vehicles; 17 percent were taxis and the remaining were hotel/motel and car rental company shuttles.

During the morning peak hours the inner lane was occasionally completely utilized with a maximum of 6 vehicles dwelling at the curb. During the afternoon peak hours the inner lane was completely utilized with a maximum of 8 vehicles and the through lane was frequently blocked with a maximum of 4 vehicles.

In the morning peak hours, the mean dwell time for vehicles was one minute and 56 seconds; the median dwell time was one minute and 30 seconds. In the afternoon peak hours, the mean dwell time for vehicles was one minute and 50 seconds; the median dwell time was two minutes and 0 seconds.

Vehicles parked farther away from the entrance in some instances would park for a much longer duration. Occasionally vehicles are parked for longer times with hazard lights on and unattended. Vehicles stopped in the through lane predominantly during the 4:00 pm to 5:15 pm timeframe.

The higher dwell time can be attributed to the scenario wherein the vehicles dropping off passengers wait until they check-in their baggage, get a boarding pass and enter the terminal.

Vehicles stopped in the through lane five times (6:30 am, 7:12 am to 7:20 am and 7:36 to 7:39 am) during the morning peak.

Curbside Ticketing/Baggage Check

In the morning peak hour, only 2 check-in counters were utilized. In the afternoon peak hour, all the available curbside check-in counters (4) were used to serve passengers. In the afternoon, the maximum number of passengers in queue for check-in was approximately 8 persons. The total number of passengers utilizing ticketing/baggage curbside check-in during morning peak was 117 and 192 passengers during the afternoon peak.

Commercial Vehicle Operations

Shuttles

Currently, car rental shuttles pick-up and drop-off passengers at the lower level in the lane closest to Park Structure A. There was no significant traffic of airport shuttles observed during the afternoon peak hour. Also in the afternoon, the shuttles would occasionally stop after they started to leave when hand signaled by passengers exiting the terminal. Pedestrian traffic during the afternoon peak in front of the shuttle drop-off was observed to be one of the factors contributing to the delayed start of the shuttles after picking up passengers. Rental car shuttle departures were controlled by an airport designated person.

It was observed that the shuttles stack end to end while waiting to pick-up and drop-off the passengers. In the morning peak hour between 6:00 am and 8:00 am, the maximum number of vehicles observed was 2, other than the usual capacity of 4 vehicles for the passenger waiting area. In the afternoon peak hour between 4:00 pm and 6:00 pm, the maximum vehicles observed were 5, other than the usual capacity of 4 vehicles for the passenger waiting area. Congestion for through vehicle traffic in this area was observed only during the afternoon peak hour.

For the morning peak hour, the mean dwell time was 30 seconds and median was 20 seconds. For the afternoon peak, mean dwell time for shuttles was found to be 1 min 11 seconds and the median dwell time was found to be 0 min 50 seconds.

Taxi Cabs and Limousines:

Currently, there are five (5) allocated parking spaces for limousines at the upper Arrivals level adjacent to the baggage claim area. The outer roadway is used as the cab stand area. The mean dwell time was found to be one minute and 38 seconds and the median dwell time was found to be one minute 38 seconds.

Appendix D: Public Parking

APPENDIX D - PUBLIC PARKING ASSESSMENT AND REQUIREMENTS

OVERVIEW

Gresham, Smith and Partners performed a high level planning assessment of future public parking requirements at DAL. The future parking space requirements that are included in the text, tables, and exhibits are intended for planning purposes only to determine whether the parking garage will provide adequate capacity to accommodate the increased passenger volume associated with future terminal improvements.

This assessment outlines the methodology and results of the analysis performed. The tables and exhibits present supporting data and results of the public parking demand and capacity assessment at the Airport.

Summary of Findings

Garages A and B are more than sufficient to serve existing demand. The existing facilities are also sufficient to accommodate future design day demand. Additional spaces would have to be provided to supplement the garages to meet future absolute peak day demand. The timing of the need for new spaces is dependent on the rate at which demand increases, which is in turn dependent on the rate at which activity (specifically originating passenger activity) increases at the Airport. Future demand is also dependent on other factors like the split between different types of travel (i.e., business vs. leisure) and economic factors (i.e., parking rates, airline ticket fares) that may or may not change the profile of demand in the future.

In the interim, increasing the capacity of Garage A could increase revenues and potentially customer convenience by eliminating the need for short-term parkers to use the cheaper and slightly more remote Garage B when Garage A is full. Increasing the capacity in Garage A for this purpose would also delay the need to increase capacity in Garage B or build additional facilities as overall demand increases.

Background

Dallas Love Field has two garages that serve all public parking needs. Garage A is the short-term facility and is closest to the terminal entrance. It contains 2,980 spaces. The rate in Garage A is incremental, maxing out at $10 per day. Garage B is the long-term facility and is immediately adjacent to Garage A, which places it slightly farther away from the terminal. It contains 4,000 spaces. The rate in Garage B is also incremental but maxes out at $7 per day. Both facilities are served by a people-mover to provide quick access to and from the terminal.

Data Collection

Prior to performing the parking analysis, various parking data was requested and obtained from the Airport. The data obtained included:

- Total provided spaces by facility
- Total daily transactions and revenue – from October 2004 through part of August 2007

- Monthly transactions by facility and parking duration period – from October 2006 through September 2007
- Monthly entries and exits by facility and discrete hour – from October 2006 through October 2007
- Daily overnight occupancy counts by facility – from October 2006 through September 2007

Other qualitative and anecdotal information was obtained to supplement the qualitative data.

Analysis

The raw data was processed, analyzed and organized to illustrate how the Airport public parking system operates, identify baseline conditions, and identify trends used to determine future requirements.

Total Transactions and Revenue

Table 3-12 shows total monthly parking transactions and corresponding revenue from the period from October 2004 through July 2007. This data includes both ticket transactions as well as TollTag transactions. The three highest levels of transaction activity and revenue are highlighted for each year. The table shows that over the past few years, the peak months for transactions and revenue do not necessarily correspond to each other and shift from year to year. May exhibits high levels of revenue while March shows high transaction levels. July exhibited a high number of transactions and corresponding high revenues in 2005 and so far in 2007. It is understandable that peak transactions and revenues don’t necessarily correlate because demand fluctuates by duration period throughout the year. Peak business seasons have different demand characteristics than peak holiday seasons in terms of how long people are parking, how much they are paying, and which facilities they use.

Exhibits 3.1 and *3.2* show total daily transactions and corresponding total daily revenue, respectively, for the period from October 2006 through July 2007. The trends in both plots are fairly irregular with a few major peaks in both transactions and revenue. The relationship between revenue and transactions is complex and dependent on the rate structure in the various parking facilities. Revenue depends not only on how many transactions occur, but what facilities they occur in and how long the customers park in those facilities.

Overnight Occupancy Counts

Exhibits 3.3 and *3.4* show daily overnight occupancy levels in Garage A and B, respectively, for the period from October 2006 through September 2007. Garage A exhibits fairly consistent overnight levels well below the provided 2,980 spaces. This is typical of short-term facilities. Garage B, as a longer-term facility, exhibits peaks in overnight occupancy levels surrounding holiday periods that are still below the provided 4,000 spaces.

Entries and Exits

Exhibits 3.5 and *3.6* show entries and exits, respectively, by discrete hour for the period from October 2006 through September 2007. Entries into both Garages A and B occur mostly between 5:00 am and 11:00 pm with most of the activity occurring in the morning hours (between 7:00 and 8:00 am). Exits, on the other hand, occur mostly between 7:00 am and 12:00 midnight with the activity focused towards the evening hours (between 6:00 and 7:00 pm). These trends are consistent with passengers departing in the morning and throughout the day and arriving throughout the day and into the evening. For the purposes of this assessment, these data were primarily used to confirm that the typical parking activity period at the Airport is about 17 hours long.

Duration Reports

Table 3-13 shows monthly transactions by facility for the period from October 2006 through September 2007 as tabulated from received duration report transaction data. The table also contains total transaction data from the same period. The difference between the two sets of data are that the duration reports as received only provided data on transactions from ticket receipts and did not account for TollTag transactions. The corresponding TollTag transactions (the difference between the two datasets) and percent split between ticket and TollTag transactions are calculated in the table. The duration report data was used to identify July as the peak month for parking activity because this data were used as the basis for determining demand.

Exhibit 3.7 shows transactions by duration period for each facility (as totaled in the period from October 2006 through September 2007). The operational differences between Garages A and B are most evident in these data. The short-term Garage A had more transactions in periods less than three hours, between seven and 16 hours, and between one and three days. The long-term Garage B had more transactions longer than three days.

Supplemental information received indicated that on typical busy days, Garage A fills to near capacity, causing staff to close it and forcing additional short-term parkers into Garage B. This may account for the significant number of short-duration (less than four hours) transactions occurring in Garage B.

Estimating Baseline Demand

Passenger activity at the Airport is largely business in nature and parking trends reflect this. It is known that the peak daily occupancies in Garages A and B reach their highest levels in the middle of the week during the busy months of the year. At this time, Garage A fills completely and overflow demand goes to Garage B, which reaches a little more than half-full. The significant number of customers parking for multiple days in Garage A reflects the predominance of business activity at the Airport. Demand in the garages does not reach capacity at any other time during the year, including on holidays, though demand in long-term Garage B is higher than in Garage A during holiday periods. This holiday profile is characterized by a decrease in business travelers but an increase in leisure travelers who are more conscious of cost.

Because daily peak occupancies were not available from the revenue control system, another method had to be employed to estimate demand. Transaction data from the duration report for

July of 2007 were used as the basis for estimating demand.

Corresponding daily transaction and revenue data from July are contained in *Table 3-14*. Data on the days highlighted in yellow were omitted from the average, peak, and surge calculations because they were inconsistent with the remaining days in the month. It was decided that the best measure of the increase from the daily average to the peak was the relationship seen in transactions. This calculation showed that the peak day in July had 37.9 percent more transactions than the average day.

Table 3-15 summarizes the calculations used to estimate demand in Garages A and B. The actual calculations supporting this table were performed on the smallest duration periods possible (as provided in the raw data) to maintain fidelity. The numbers in the table have been aggregated for reporting purposes.

An estimated turnover rate for each duration period was calculated based on a few assumptions. For those periods longer than one day, the turnover rate is simply the inverse of the average number of days for that period (e.g., for the two to three day period, the turnover rate would be 1 / 2.5). For shorter periods, the turnover rate was calculated based on the average duration time, the assumed number of operational hours per day (17), and an additional calibration factor.

July transactions were divided by the number of days in the month (31) and then increased by the average-to-peak day surge (37.9 percent) to estimate busy day transactions. Busy day demand was then calculated by dividing estimated busy day transactions by the estimated turnover rate to get the required number of spaces.

To validate the calculations, the statistics contained at the bottom of the table were calculated and compared. The estimated overnight demand was simply the summation of the busy day demand for duration periods longer than one day and half of the demand for the periods between 10 and 24 hours. The actual overnight demand represents the peak occupancy level encountered in July (July 27, 2007). *Exhibit 3.8* shows the same overnight occupancy data as reported previously but sorted by magnitude. The level chosen to compare with the design day occurs at the point just before the highest peaks and corresponds with the 17th highest occupancy level of the year (95th percentile). The absolute peak overnight occupancy level corresponds with the Thanksgiving holiday period (November 23, 2006).

When comparing demand to capacity, a practical capacity was used. To account for the inability to completely fill Garage A, a service factor was applied. It was assumed that Garage A would only fill to 95 percent before it would have to be closed. This is a customer service feature that prevents customers from spending excessive time searching for the few remaining unoccupied spaces.

It is known from information received from the Airport that on a typical busy day, Garage A fills and overflow demand spills into Garage B, which only reaches a little over half-full. These results are reflected in the estimates for demand seen in *Table 3-15* for each facility. Furthermore, estimated overnight demand and actual overnight demand are very close in both facilities. These statistics verify that the estimations of demand are reasonable.

Total design day demand was estimated to be 5,054 spaces. Total overnight occupancy was estimated to be 3,745 spaces (74 percent of design). This relationship was assumed to be constant and was applied to the annual peak overnight occupancy (4,502 spaces) to estimate a total absolute peak day demand of 6,076 spaces. A service factor of five percent was then applied to the design day demand to calculate the baseline requirement of 5,330 spaces. The service factor was not applied to the absolute peak day requirement of 6,080 spaces.

Forecasting Future Demand

A future flight schedule prepared by TransSolutions is provided as a basis for determining future demand. Ideally, the increase in demand would be based on changes in originating passengers from the baseline to the future year. However, the flight schedule information received did not contain any information regarding passengers. Daily departures increased from 171 flights in the baseline to 200 flights in the specified future demand level, an increase of 17.0 percent.

Applying the growth factor to the baseline total design and peak day demands resulted in future total demands. Applying the same five percent service factor results in future design day requirements of 6,220. The absolute peak day requirement totals 7,110 spaces. This means that the garages as they exist today would be able to accommodate all demand on typically busy days through the forecast period. However, on higher absolute peak days, an additional 130 spaces would have to be added (possibly in an overflow surface lot elsewhere on the Airport) to meet all of the demand.

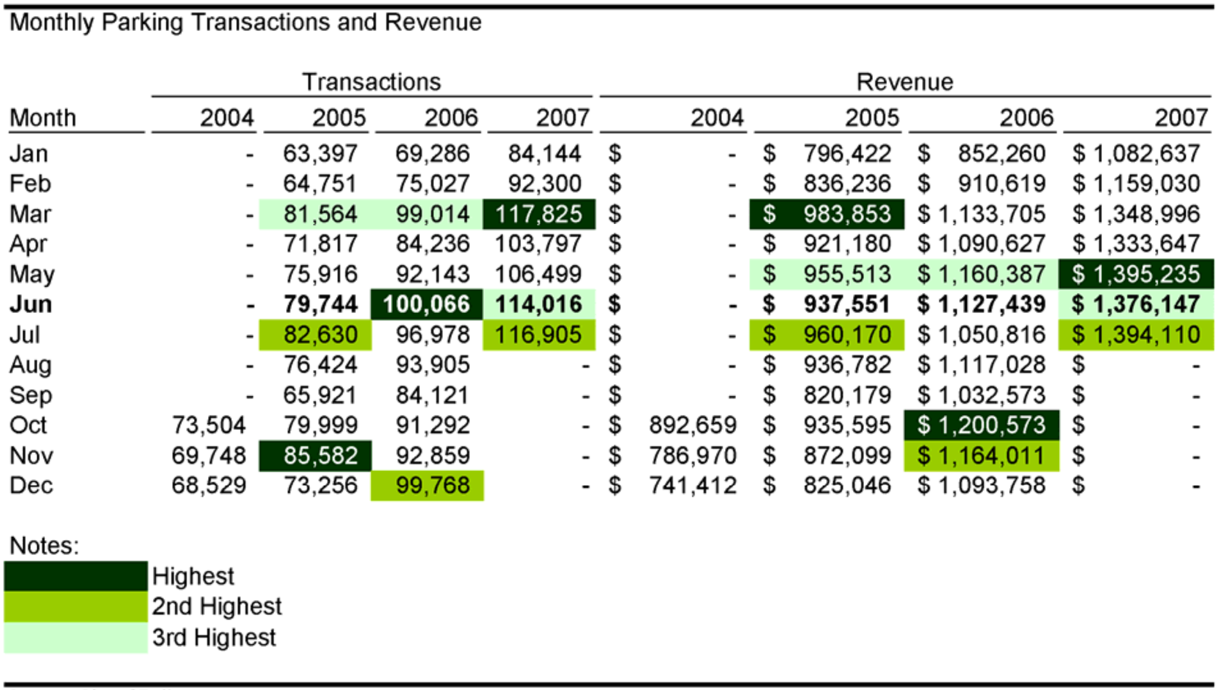
Conclusions

Table 3-16 summarizes baseline and future public parking requirements at the Airport.

Garages A and B are more than sufficient to serve existing demand. The existing facilities are also sufficient to accommodate future design day demand. Additional spaces would have to be provided to supplement the garages to meet future absolute peak day demand. The timing of the need for new spaces is dependent on the rate at which demand increases which is in turn dependent on the rate at which activity (specifically originating passenger activity) increases at the Airport. Future demand is also dependent on other factors like the split between different types of travel (i.e., business vs. leisure) and economical factors (i.e., parking rates, airline ticket fares) that may or may not change the profile of demand in the future.

In the interim, increasing the capacity of Garage A could increase revenues and potentially customer convenience by eliminating the need for short-term parkers to use the cheaper and slightly more remote Garage B when Garage A is full. Increasing the capacity in Garage A for this purpose would also delay the need to increase capacity in Garage B or build additional facilities as overall demand increases.

Table 3-12



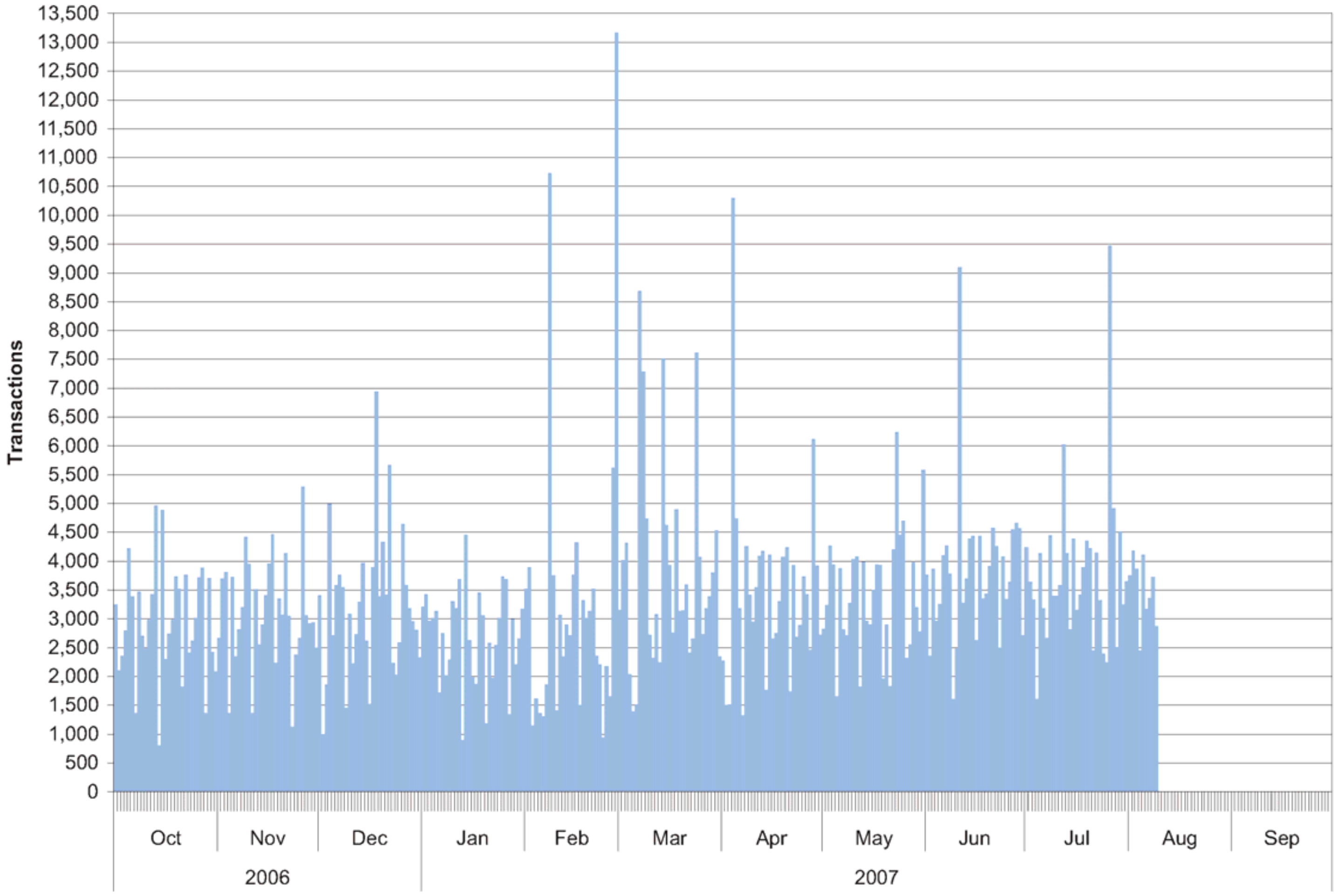
Monthly Parking Transactions and Revenue

	Transactions				Revenue			
Month	2004	2005	2006	2007	2004	2005	2006	2007
Jan	-	63,397	69,286	84,144	$ -	$ 796,422	$ 852,260	$ 1,082,637
Feb	-	64,751	75,027	92,300	$ -	$ 836,236	$ 910,619	$ 1,159,030
Mar	-	81,564	99,014	117,825	$ -	$ 983,853	$ 1,133,705	$ 1,348,996
Apr	-	71,817	84,236	103,797	$ -	$ 921,180	$ 1,090,627	$ 1,333,647
May	-	75,916	92,143	106,499	$ -	$ 955,513	$ 1,160,387	$ 1,395,235
Jun	**-**	**79,744**	**100,066**	**114,016**	**$ -**	**$ 937,551**	**$ 1,127,439**	**$ 1,376,147**
Jul	-	82,630	96,978	116,905	$ -	$ 960,170	$ 1,050,816	$ 1,394,110
Aug	-	76,424	93,905	-	$ -	$ 936,782	$ 1,117,028	$ -
Sep	-	65,921	84,121	-	$ -	$ 820,179	$ 1,032,573	$ -
Oct	73,504	79,999	91,292	-	$ 892,659	$ 935,595	$ 1,200,573	$ -
Nov	69,748	85,582	92,859	-	$ 786,970	$ 872,099	$ 1,164,011	$ -
Dec	68,529	73,256	99,768	-	$ 741,412	$ 825,046	$ 1,093,758	$ -

Notes:

🟩	Highest
🟩	2nd Highest
🟩	3rd Highest

Source: City of Dallas
Prepared by: Ricondo & Associates, Inc.

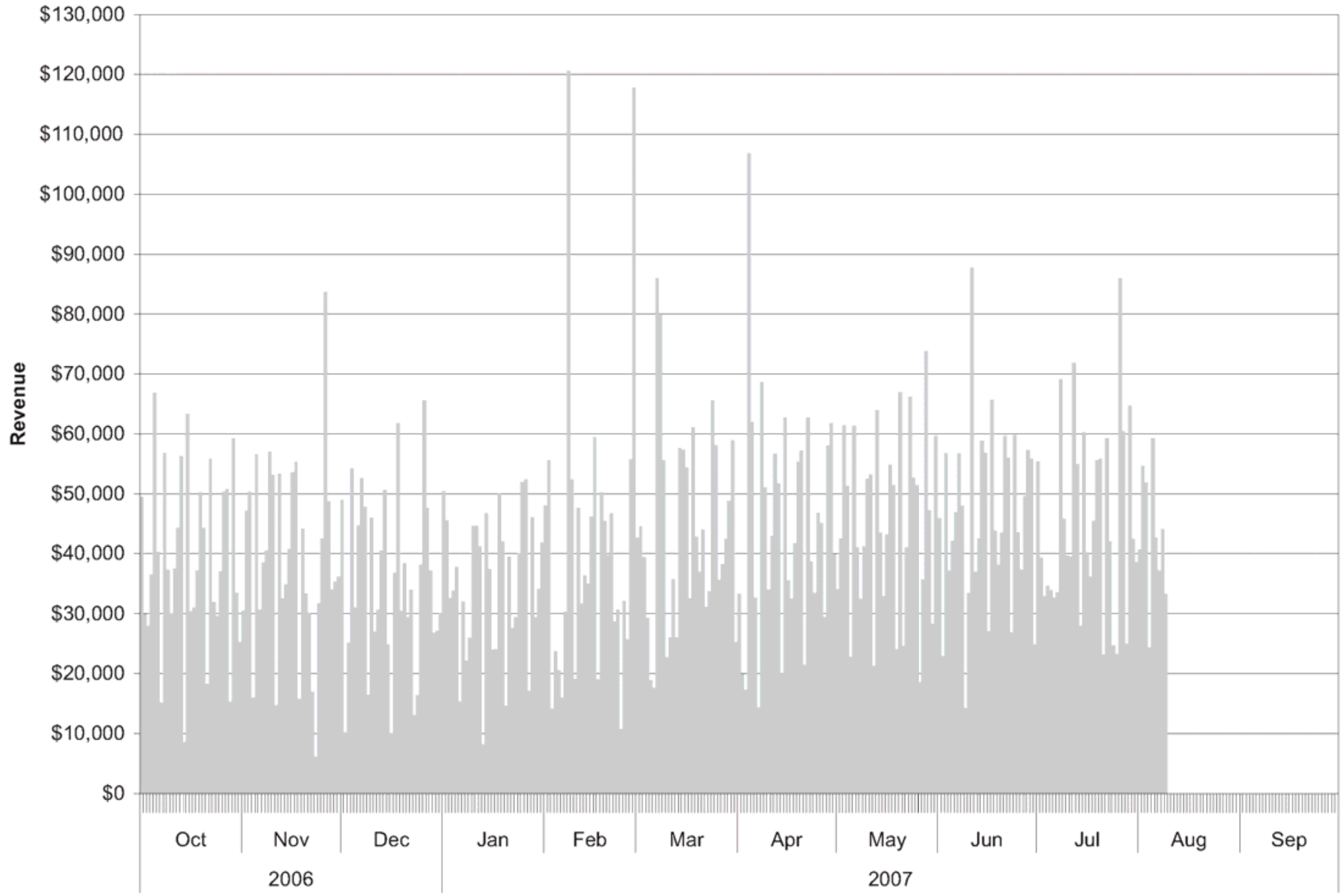


Source: City of Dallas
Prepared by: Ricondo & Associates, I

Exhibit 3-1

Total Daily Transactions

November 2007



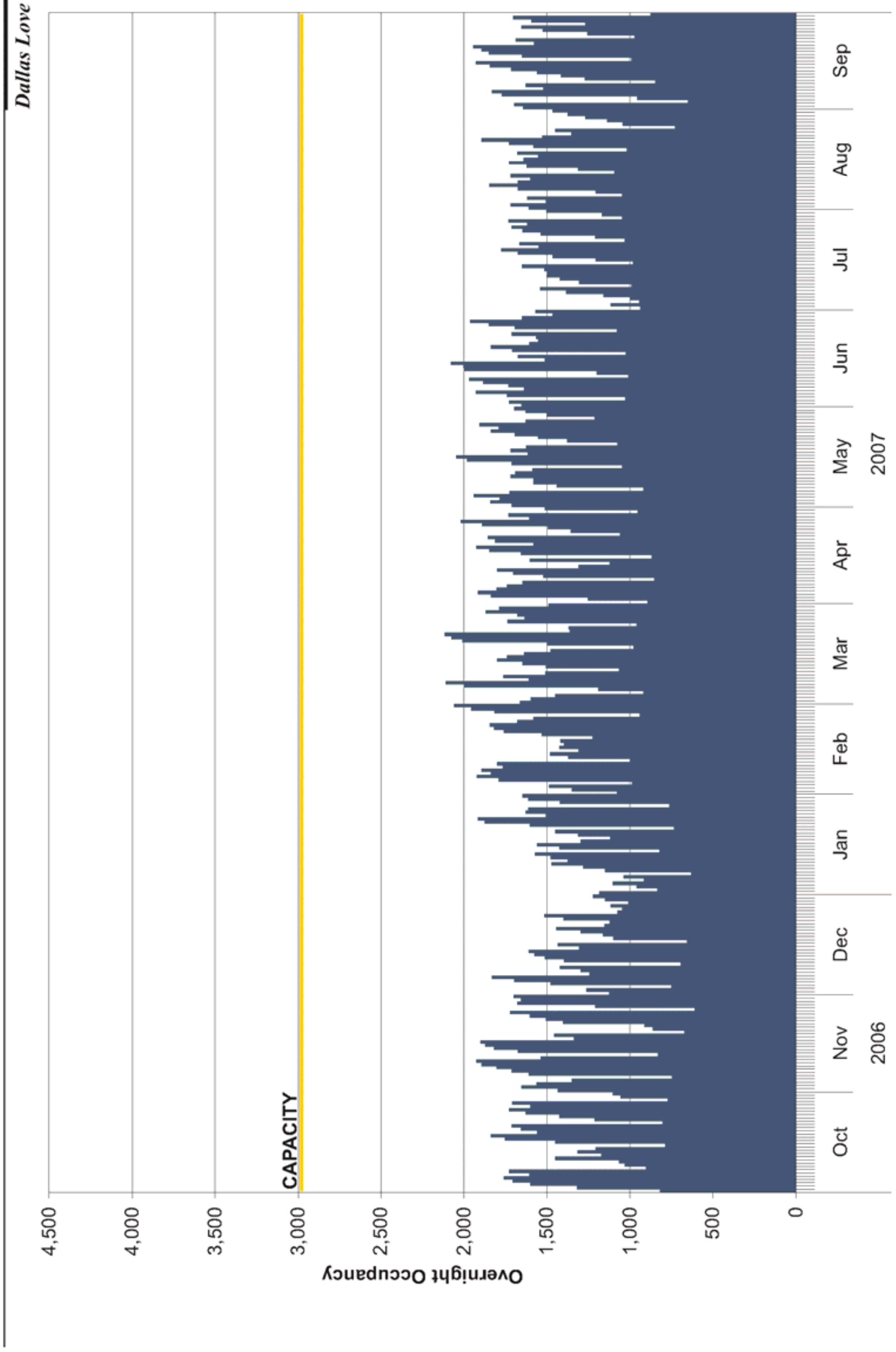
Source: City of Dallas
Prepared by: Ricondo & Associates, In

Exhibit 3-2

Total Daily Revenue

November 2007

Dallas Love Field

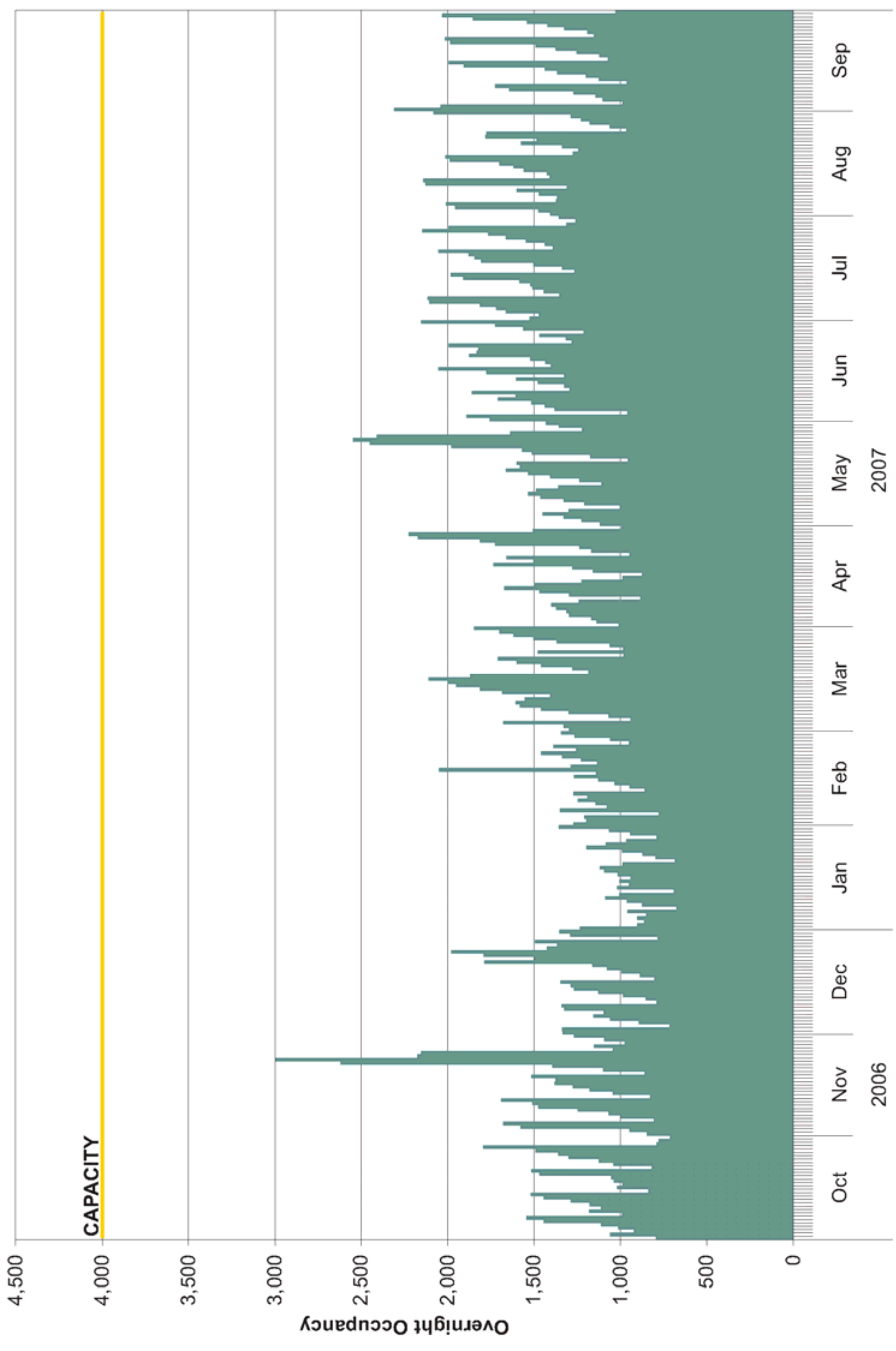


Source: City of Dallas
Prepared by: Ricondo & Associates, In

Exhibit 3-3

Overnight Ocupancy Garage A

November 2007

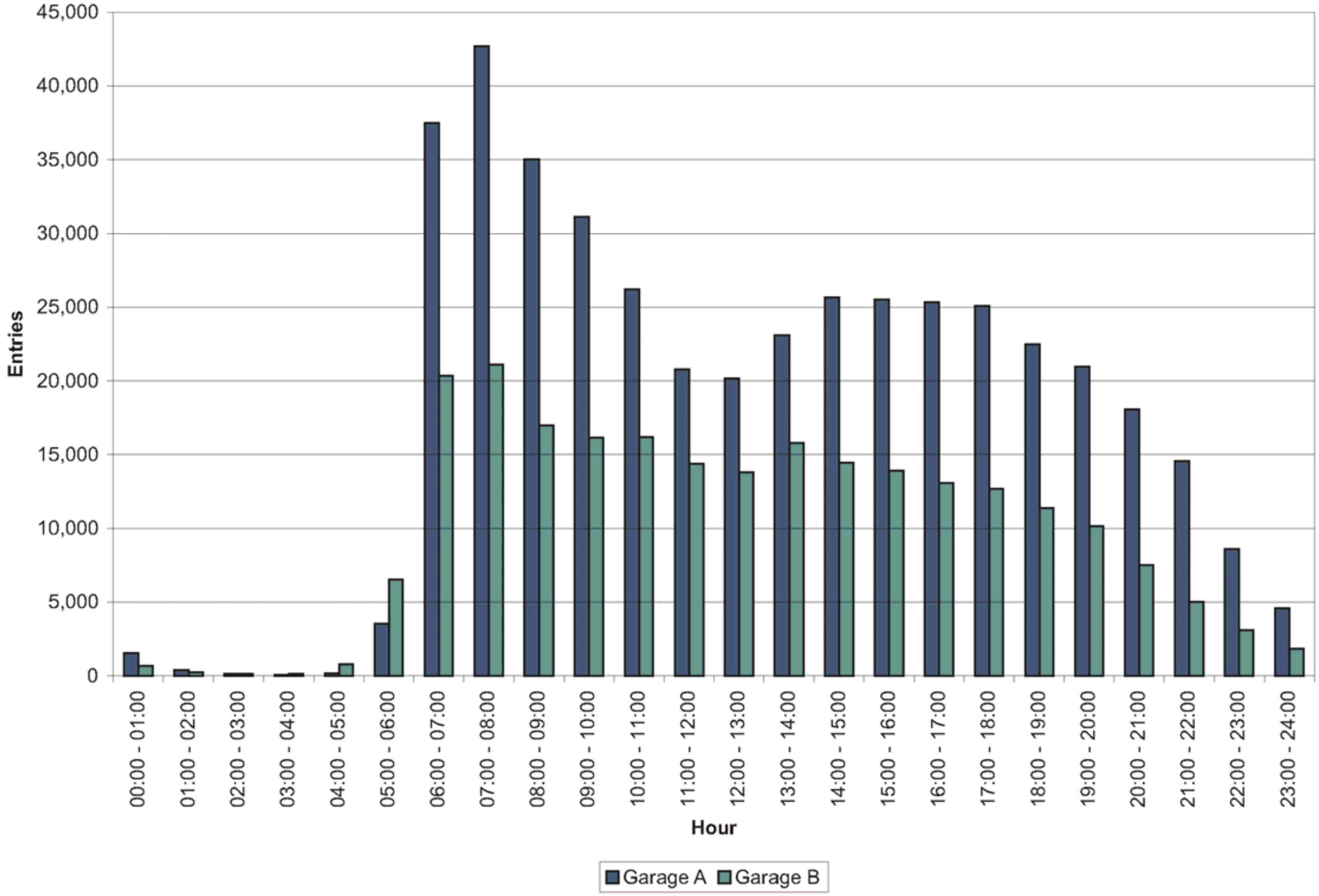


Source: City of Dallas
Prepared by: Ricondo & Associates, In

Exhibit 3-4

Overnight Occupancy Garage B

November 2007



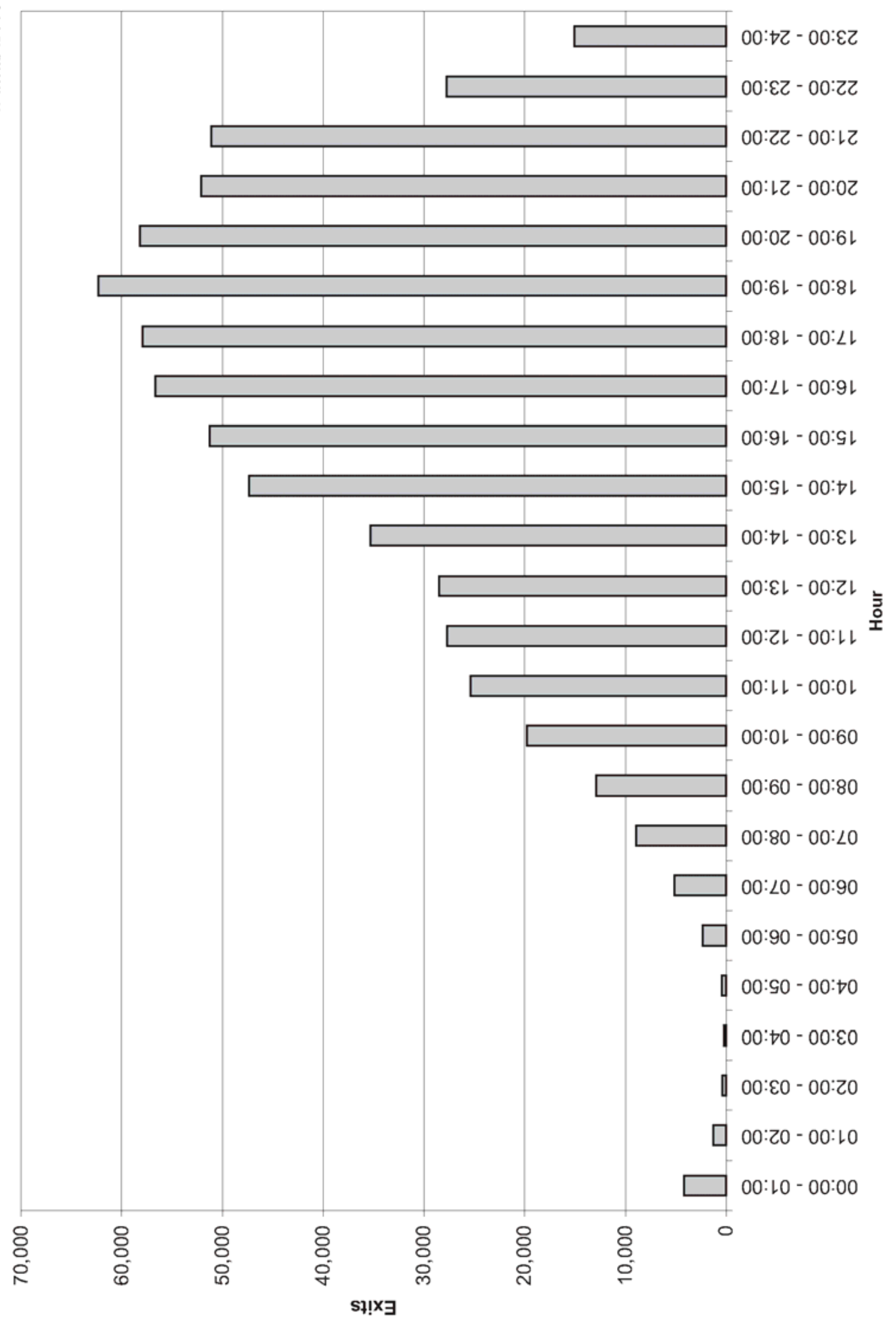
Source: City of Dallas
Prepared by: Ricondo & Associates, In

Exhibit 3-5

Annual Entries
By Facility and Discrete Hour

November 2007

Dallas Love Field



Source: City of Dallas
Prepared by: Ricondo & Associates, In

Exhibit 3-6

Total Annual Exits By Discrete Hour

November 2007

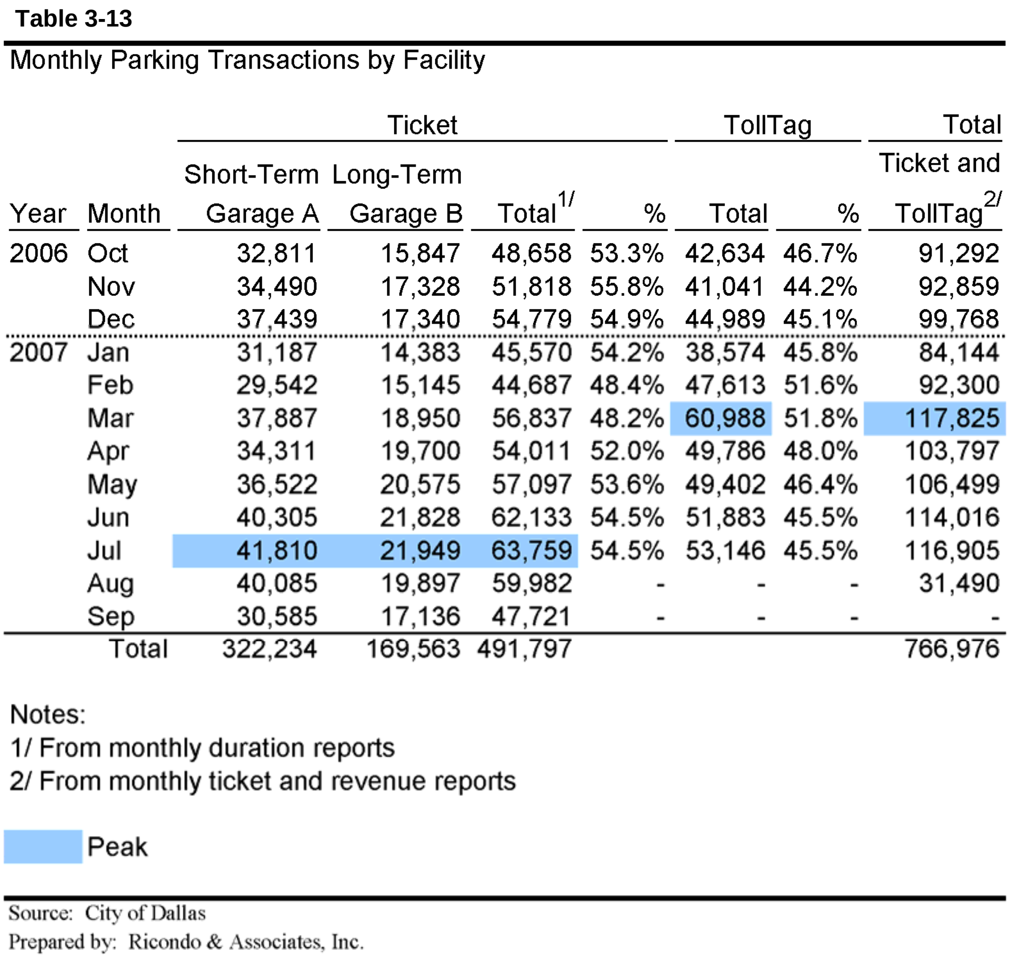


Table 3-13

Monthly Parking Transactions by Facility

		Ticket				TollTag		Total
Year	Month	Short-Term Garage A	Long-Term Garage B	Total[1/]	%	Total	%	Ticket and TollTag[2/]
2006	Oct	32,811	15,847	48,658	53.3%	42,634	46.7%	91,292
	Nov	34,490	17,328	51,818	55.8%	41,041	44.2%	92,859
	Dec	37,439	17,340	54,779	54.9%	44,989	45.1%	99,768
2007	Jan	31,187	14,383	45,570	54.2%	38,574	45.8%	84,144
	Feb	29,542	15,145	44,687	48.4%	47,613	51.6%	92,300
	Mar	37,887	18,950	56,837	48.2%	60,988	51.8%	117,825
	Apr	34,311	19,700	54,011	52.0%	49,786	48.0%	103,797
	May	36,522	20,575	57,097	53.6%	49,402	46.4%	106,499
	Jun	40,305	21,828	62,133	54.5%	51,883	45.5%	114,016
	Jul	41,810	21,949	63,759	54.5%	53,146	45.5%	116,905
	Aug	40,085	19,897	59,982	-	-	-	31,490
	Sep	30,585	17,136	47,721	-	-	-	-
	Total	322,234	169,563	491,797				766,976

Notes:

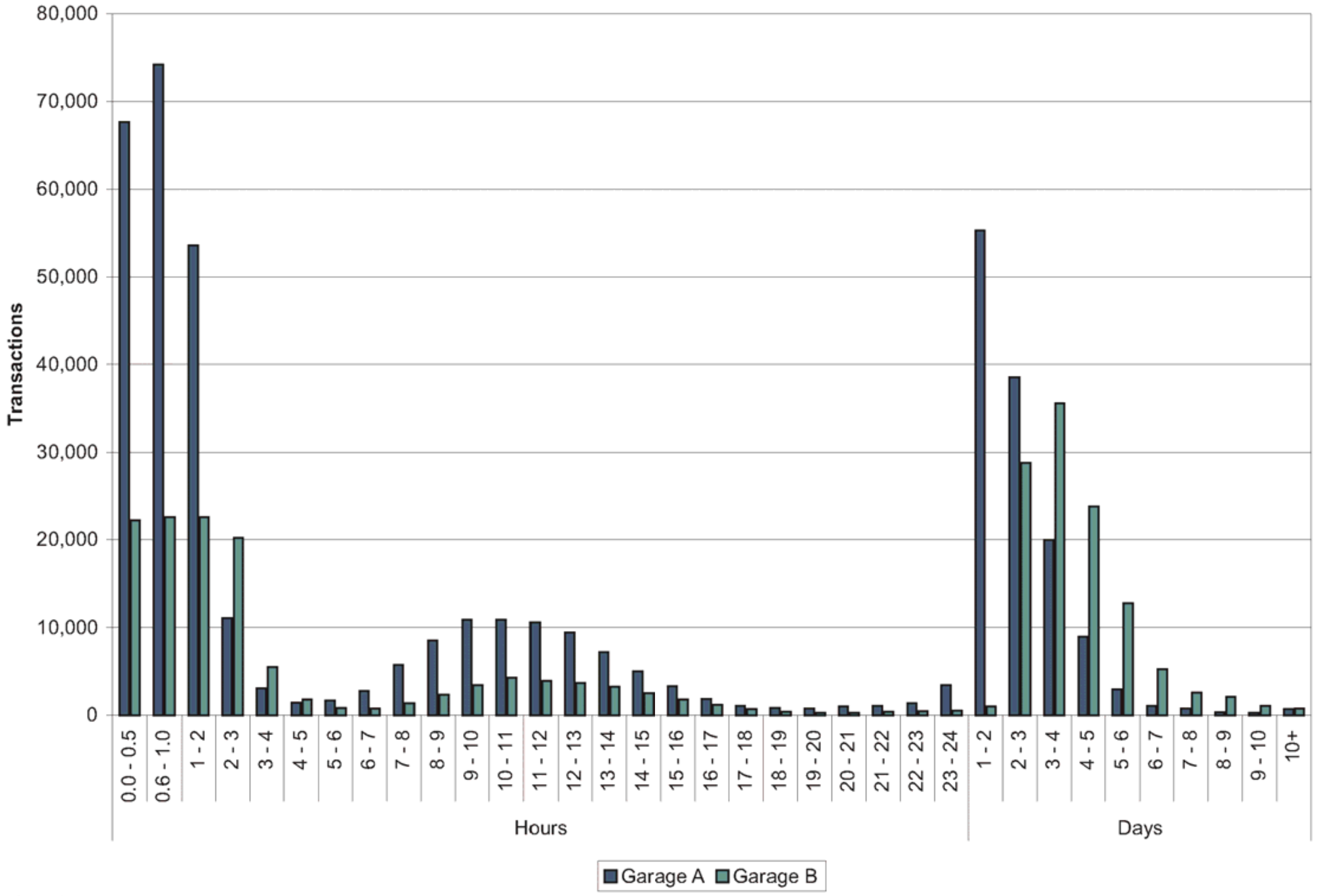
1/ From monthly duration reports

2/ From monthly ticket and revenue reports

🟦 Peak

Source: City of Dallas

Prepared by: Ricondo & Associates, Inc.



Source: City of Dallas
Prepared by: Ricondo & Associates, In

Exhibit 3-7

Annual Transactions
By Facility and Duration Period

November 2007

Table 3-14

Parking Data for July of 2007

Day	Transactions (Exits)	Revenue	Revenue per Transaction	Ending Inventory	Overnight Count
7/1/2007	4,242	$ 55,385	$ 13.06	2,465	2,465
7/2/2007	3,647	$ 39,288	$ 10.77	2,591	2,591
7/3/2007	3,329	$ 32,936	$ 9.89	2,609	2,609
7/4/2007	1,607	$ 34,614	$ 21.54	2,721	2,721
7/5/2007	4,138	$ 33,890	$ 8.19	2,975	2,975
7/6/2007	3,180	$ 32,653	$ 10.27	3,493	3,493
7/7/2007	2,665	$ 33,538	$ 12.58	3,659	3,659
7/8/2007	4,450	$ 69,113	$ 15.53	2,348	2,348
7/9/2007	3,398	$ 45,775	$ 13.47	2,753	2,753
7/10/2007	3,395	$ 39,686	$ 11.69	2,934	2,934
7/11/2007	3,587	$ 39,472	$ 11.00	0	3,024
7/12/2007	6,020	$ 71,806	$ 11.93	3,086	3,086
7/13/2007	4,135	$ 54,929	$ 13.28	3,425	3,425
7/14/2007	2,817	$ 27,959	$ 9.93	3,636	3,636
7/15/2007	4,388	$ 60,266	$ 13.73	2,248	2,248
7/16/2007	3,153	$ 40,244	$ 12.76	2,543	2,543
7/17/2007	3,418	$ 36,216	$ 10.60	0	2,973
7/18/2007	3,890	$ 45,486	$ 11.69	3,486	3,486
7/19/2007	4,359	$ 55,527	$ 12.74	3,623	3,623
7/20/2007	4,222	$ 55,821	$ 13.22	3,428	3,428
7/21/2007	2,446	$ 23,210	$ 9.49	3,721	3,721
7/22/2007	4,150	$ 59,300	$ 14.29	2,423	2,423
7/23/2007	3,325	$ 41,989	$ 12.63	2,648	2,648
7/24/2007	2,392	$ 24,676	$ 10.32	3,085	3,085
7/25/2007	2,246	$ 23,220	$ 10.34	3,311	3,311
7/26/2007	9,469	$ 86,008	$ 9.08	3,479	3,479
7/27/2007	4,915	$ 60,430	$ 12.30	3,769	3,769
7/28/2007	2,509	$ 24,929	$ 9.94	3,730	3,730
7/29/2007	4,515	$ 64,685	$ 14.33	2,360	2,360
7/30/2007	3,246	$ 42,500	$ 13.09	2,430	2,430
7/31/2007	3,652	$ 38,559	$ 10.56	2,863	2,863
Total	116,905	$ 1,394,110	-	-	-
Average	3,565	$ 42,917	$ 11.85	3,021	3,020
Peak	4,915	$ 69,113	$ 15.53	3,769	3,769
Surge	37.9%	61.0%	31.1%	24.7%	24.8%

Note:

🟨	Data not included in averages either because the transactions were inconsistent with those on comparable days or because the transactions and revenues were inconsistent with each other

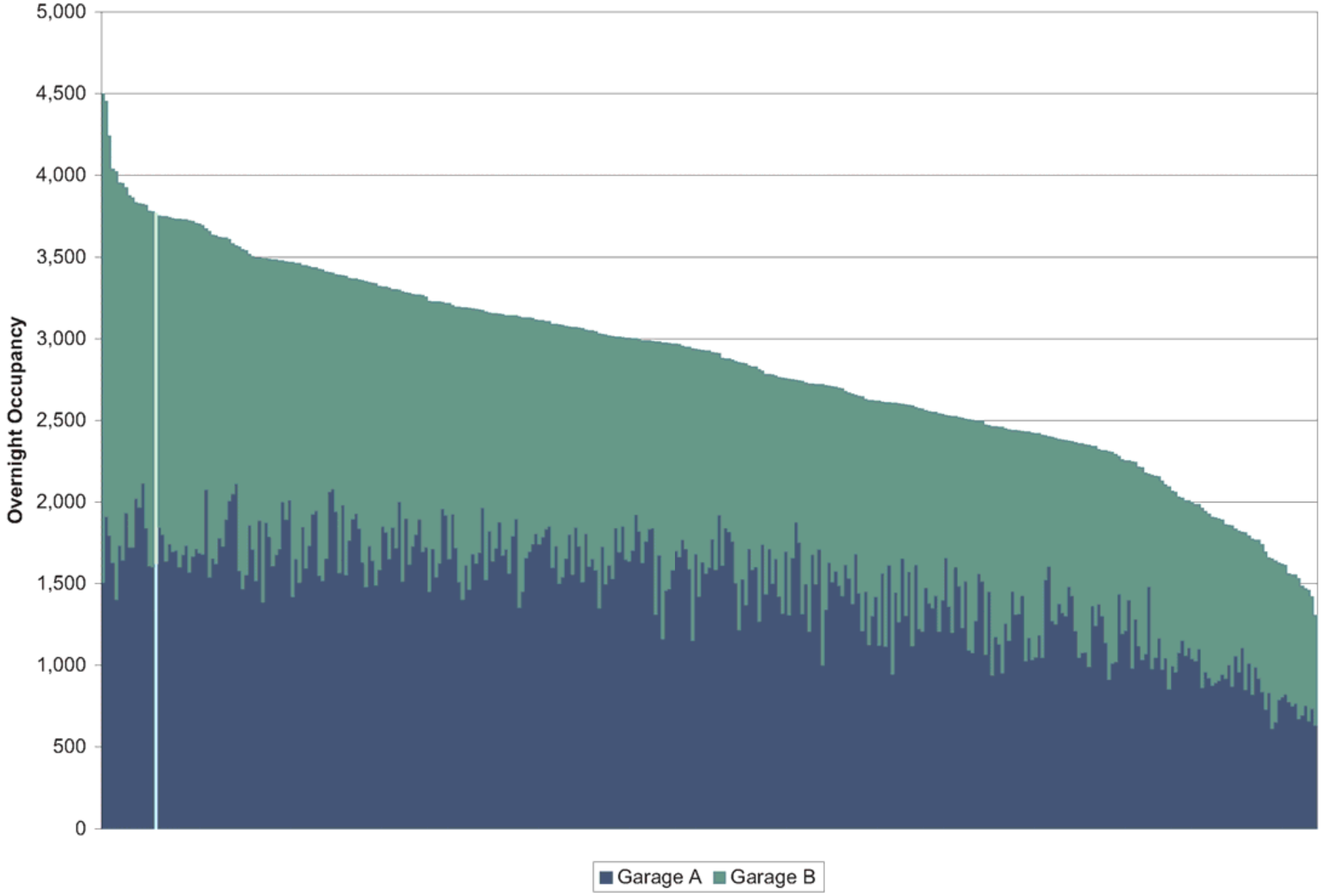
Source: City of Dallas
Prepared by: Ricondo & Associates, Inc.

Table 3-15

Design Day Demand

		Garage A			Garage B			Total	
		Monthly	Busy Day	Busy Day	Monthly	Busy Day	Busy Day	Busy Day	
Duration Period		Transactions	Transactions	Demand	Transactions	Transactions	Demand	Demand	Duration
From	To	(trans/mo)	(trans/d)	(sp)	(trans/mo)	(trans/mo)	(sp)	(sp)	Distribution
0 h	3 h	24,266	1,079	357	8,627	384	136	493	9.8%
3 h	24 h	7,167	319	1,238	2,878	128	464	1,702	33.7%
24 h	∞	10,377	462	1,228	10,444	465	1,632	2,860	56.6%
	Total:	41,810		2,822	21,949		2,232	5,054	100.0%
	% Full:			94.7%			55.8%		
	Estimated Overnight:			1,883			1,862	3,745	
	% Full:			63.2%			46.6%		
	Actual Overnight:			1,620			2,149	3,769	
	% Full:			54.4%			53.7%		
	% Different from Estimated:			16.2%			-13.4%	-0.6%	
	Capacity:			2,980			4,000	6,980	

Source: City of Dallas; Ricondo & Associates, Inc.
Prepared by: Ricondo & Associates, Inc.



Source: City of Dallas
Prepared by: Ricondo & Associates, Inc.

Exhibit 3-8

Total Overnight Occupancy
By Magnitude

November 2007

Table 3-16

Public Parking Requirements

		Baseline		Future[1]	
	Capacity	Demand	Requirements[2]	Demand	Requirements[2]
Design Day[3]					
Garage A	2,980	2,822	2,980	3,301	3,470
Garage B	4,000	2,232	2,350	2,611	2,750
Total	6,980	5,054	5,330	5,912	6,220
Surplus/(Deficit)			1,650		760
Absolute Peak Day					
Total	6,980	6,076	6,080	7,107	7,110
Surplus/(Deficit)			900		(130)

Notes:

1/ The growth factor applied was 17%

2/ Requirements were rounded up to the nearest ten spaces

3/ Service factors of 5% were applied to both parking facilities to calculate design day requirements but were not applied to calculate absolute peak day requirements

Source: Ricondo & Associates, Inc.

Prepared by: Ricondo & Associates, Inc.

G S & P

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