Site Pictures


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Photo 1: View of existing site looking South from East side of Bird Rd.

Photo 2: View of existing site looking South from West side of Bird Rd.

Photo 3: View of the existing 7 - Eleven – across Laguna looking east from site

Photo 4: View of the existing 7 - Eleven & office – across Laguna looking east from existing alley

Photo 5: View of the existing offices – across Laguna looking southeast from exiting alley

Photo 6: View of the existing Coral Gables High School – across Le Jeune looking west from site.

Photo 7: View of the existing Coral Gables High School – across Le Jeune looking southwest from site.

Photo 8: View of the existing apartments – across Bird Rd looking northeast from site

Photo 9: View of the existing N-S alley –looking south from site.

Photo 10: View of the existing E-W alley –looking east from site.

Photo 11: View of the existing E-W alley –looking west from Laguna.

Photo 12: View of the existing N-S alley –looking north from south side of alley.

Chase Bank
Bird Road & Le Jeune Road

traffic study

prepared for:
CKE Group, Inc.

Traf Tech
ENGINEERING, INC.

December 2010

Traf Tech
ENGINEERING, INC.

December 27, 2010

Mr. Eduardo Carcache
CKE Group, Inc.
1550 New Barn Road, Suite 106
Miami Lakes, Florida 33014

Re: Chase Bank (Bird Road and LeJeune Road) – Traffic Study

Dear Eduardo:

Traf Tech Engineering, Inc. is pleased to provide you with the results of the traffic study undertaken for the proposed Chase Bank planned to be located on the southeast corner of the intersection of Bird Road and Le Jeune Road in the City of Coral Gables in Miami-Dade County, Florida. It has been a pleasure serving CKE Group on this project.

Sincerely,

TRAF TECH ENGINEERING, INC.

Joaquin E. Vargas, P.E.
Senior Transportation Engineer

8400 North University Drive, Suite 309, Tamarac, Florida 33321
Tel: (954) 582-0988 Fax: (954) 582-0989 E-mail: joaquin@traftech.biz

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

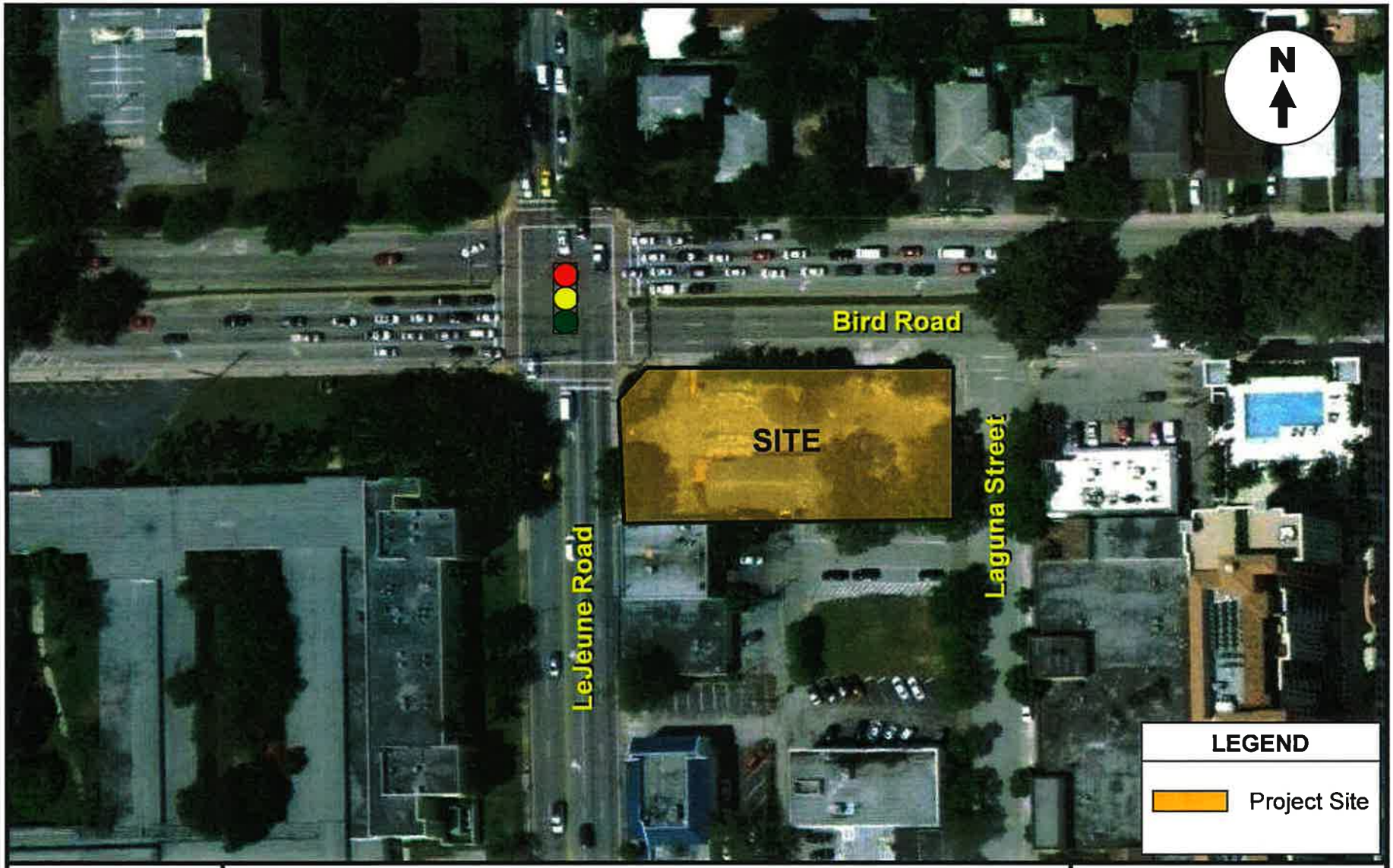
INTRODUCTION

Chase Bank is a proposed financial institution planned to be located on the southeast corner of the intersection of Bird Road and LeJeune Road in the City of Coral Gables in Miami-Dade County, Florida. The proposed branch bank will include three remote drive-through lanes and a one-story building. The location of the project site is illustrated in Figure 1 on the following page.

Traf Tech Engineering, Inc. was retained by CKE Group, Inc. to conduct a traffic study in connection with the proposed branch bank. The study addresses the traffic generated by the proposed bank, queuing at the remote drive-through lanes, and the projected turning movement volumes at the project access driveways on LeJeune Road and on Laguna Street.

This study is divided into Five (5) sections, as listed below:

1. Inventory
2. Trip Generation
3. Trip Distribution and Traffic Assignment
4. Queuing Analysis
5. Conclusions



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Project Location Map

FIGURE 1
Chase Bank
Miami-Dade County, Florida

INVENTORY

Existing Land Use and Access

The project site was previously developed with a gasoline service station with a 3,477 square foot C-store. Access to the site was provided via an access driveway on LeJeune Road and entrance/exit driveways off of Laguna Street.

Proposed Land Use and Access

The entire site is planned to be redeveloped with a new bank building and three remote drive-through lanes. The new branch bank will consist of approximately 4,000 square feet. Parking spaces will be provided on the ease and south sides of the new bank building. The existing access driveway on LeJeune Road will remain and will be restricted to right-turns only. Two full-access driveways will be provided off of Laguna Street.

Appendix A contains a copy of the proposed site plan for the project.

Roadway System

Two roadways are located in the immediate vicinity of the project site. These roadways include Bird Road and LeJeune Road.

Bird Road (State Road 976) is a four-lane east-west arterial roadway adjacent to the project site. Bird Road is classified as an Access Class 7 facility and has a posted speed limit of 40 miles per hour near the project site.

LeJeune Road (State Road 953) is also a four-lane facility and is oriented in the north-south direction. This north-south roadway borders the site on the west side (project site is located east of LeJeune Road). LeJeune Road is an Access Class 7 roadway and has a posted speed limit of 40 miles per hour near the project site.

Trip Generation

A trip generation analysis was conducted for the proposed bank. The analysis was performed using the trip generation rates published in the Institute of Transportation Engineer's ITE *Trip Generation Manual* (8th Edition). The trip generation analysis was undertaken for daily, AM peak hour, and PM peak hour conditions.

According to ITE's *Trip Generation Manual* (8th Edition), the most appropriate "land use" category for the proposed bank is:

DRIVE-IN BANK (ITE Land Use 912)

Daily Trips

T = 148.15 (X)

Where T = average daily vehicle trip ends

X = 1,000 square feet of gross floor area

AM Peak Hour

T = 12.35 (X) (56% inbound and 44% outbound)

Where T = average AM peak hour vehicle trip ends

X = 1,000 square feet of gross floor area

PM Peak Hour

T = 25.82 X (50% inbound and 50% outbound)

Where T = average PM peak hour vehicle trip ends

X = 1,000 square feet of gross floor area

Using the above-listed trip generation rates from the ITE document, a trip generation analysis was undertaken for the proposed branch bank. The results of this effort are documented in Table 1.

TABLE 1
Trip Generation Summary
Chase Bank

		Number of Trips		
Land Use	**Size**	**Daily**	**AM Peak**	**PM Peak**
Bank	4,000 sq.ft.	593	49	103

Source: ITE Trip Generation Manual (8th Edition)

As indicated in Table 1, the new Chase Bank is anticipated to generate approximately 593 gross daily trips, approximately 49 gross AM peak hour trips (27 inbound and 22 outbound) and approximately 103 gross trips (51 inbound and 52 outbound) during the typical afternoon peak hour.

Trip Generation Comparison Analysis

A trip generation comparison analysis was undertaken between the proposed bank building and the previous gasoline service station. Table 2 documents the results of the trip generation comparison analysis. As indicated in Table 2, the proposed branch bank generates less daily, less AM peak hour, and less PM peak hour trips than the previous service station at the site.

TABLE 2
Trip Generation Comparison Analysis
Proposed Chase Drive-in Bank, Coral Gables, Florida

EXISTING USE - GASOLINE SERVICE STATION

				Trips		
Land Use	**Size**		**ITE Code**	**Daily**	**AM Peak**	**PM Peak**
Service Station	3,477	sq.ft.	945	4,225	276	338
			Passer-By Trips (62%) =	2,620	-171	-210
			External Trips =	**1,605**	**105**	**128**

PROPOSED USE - DRIVE THROUGH BANK

				Trips		
Land Use	**Size**		**ITE Code**	**Daily**	**AM Peak**	**PM Peak**
Drive-in Bank	4,000	sq.ft.	912	593	49	103
			Passer-By Trips (47%) =	-279	-23	-48
			External Trips =	**314**	**26**	**55**
			Difference =	**-1291**	**-79**	**-73**

Source: ITE Trip Generation Manual (8th Edition) & Trip Generation Handbook (2nd Edition)

TRIP DISTRIBUTION AND TRAFFIC ASSIGNMENT

The trip distribution was based on Miami-Dade County's Cardinal Distribution information for the study area. Table 3 below summarizes the county's cardinal distribution data for traffic zone 1081, which is applicable to the location of the subject project.

TABLE 3
Project Trip Distribution
Chase Bank

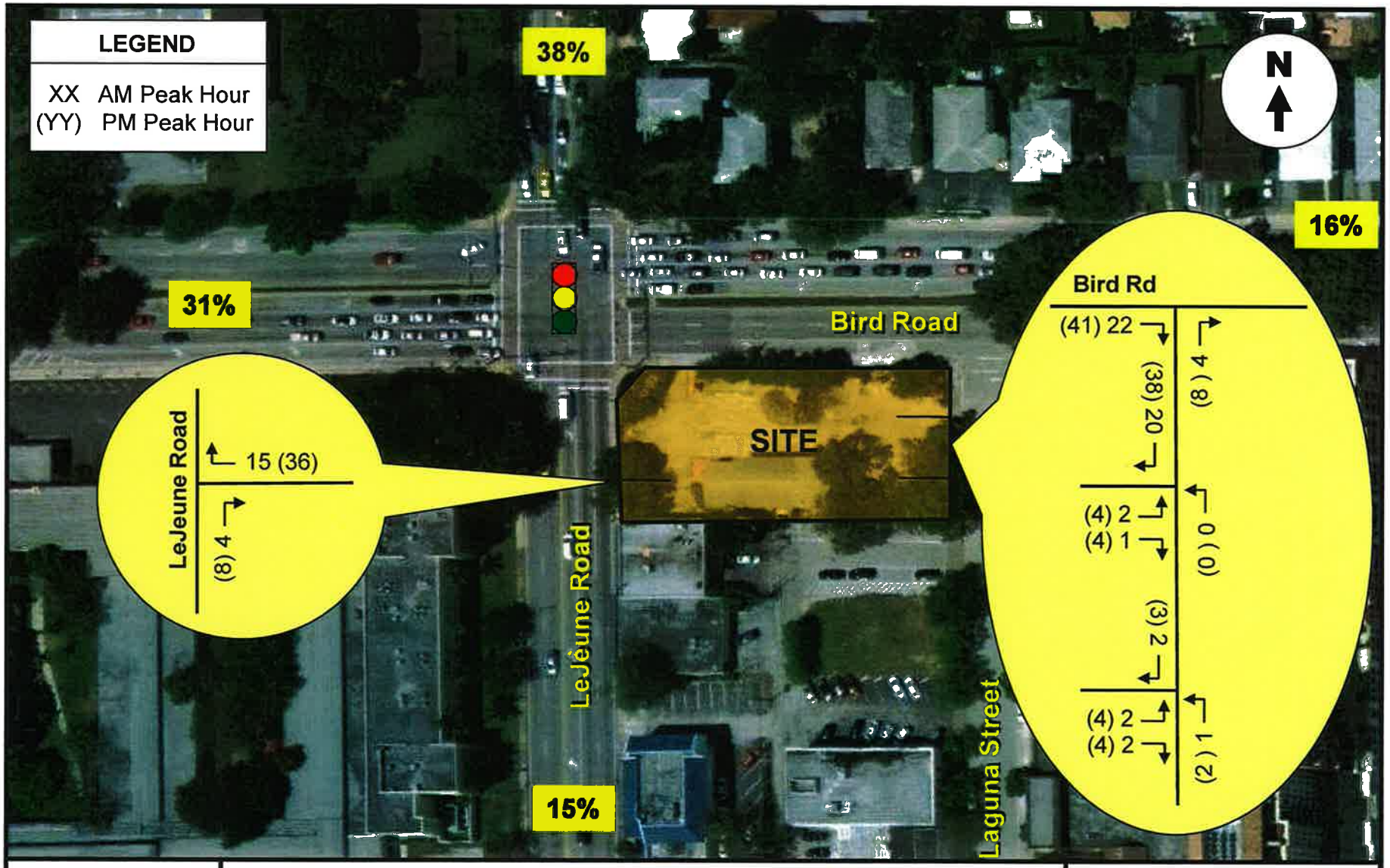
Direction		% of Total Trips
North:	Northwest	17.18%
	Northeast	20.48%
South:	Southwest	12.96%
	Southeast	1.28%
East:	Northeast	13.51%
	Southeast	3.37%
West:	Northwest	11.07%
	Southwest	20.15%
	Total	100.00%

Source: Miami-Dade County

Using the trip distribution documented in Table 3, the traffic assignment assumed for the proposed bank is as follows:

- 38% to and from the north via LeJeune Road
- 15% to and from the south via LeJeune Road
- 16% to and from the east via Bird Road
- 31% to and from the west via Bird Road

The AM and PM peak hour traffic generated by the project was assigned to the project driveways using the traffic assignment documented above. The project traffic assignment is summarized in Figure 2.



Traf Tech
ENGINEERING, INC.

Driveway Traffic Assignment

FIGURE 2
Chase Bank
Miami-Dade County, Florida

QUEUEING ANALYSIS

According to the Institute of Transportation Engineer's (ITE) *Transportation and Land Development*[1], a drive-through bank with a lobby size of less than 5,000 square feet only requires two drive-through lanes. The proposed Chase Bank provides three (3) drive-through lanes and therefore, exceeds ITE's recommended number of drive-through lanes.

Additionally, a queuing analysis was conducted for the three proposed drive-through lanes in order to ensure that traffic queues will not spill onto the parking aisle located on the south side of the bank building. The length of queue anticipated at the drive-through lanes was determined using information contained in ITE's *Transportation and Land Development*, Chapter 8 – Drive-In Facilities[2]. For this analysis, the following input variables were used:

- Service Rate: According to the above-referenced ITE document, the average service time at drive-through tellers is approximately two minutes (refer to Appendix B), or 30 vehicles per hour per drive-through lane.

- Demand Rate: According to ITE's *Transportation and Land Development* (Second Edition) by Virgil G. Stover and Frank J. Koepke, approximately 50% of the project traffic associated with banks is projected to use the drive-through lanes. Since the PM peak inbound traffic anticipated at the proposed bank project is 51 vehicles in a one-hour period (including pass-by trips), 50% of 51 inbound vehicles is approximately 26 vehicles anticipated to use the drive-through lanes during the PM peak hour. In order to assess impacts with a conservative approach, all 51 inbound vehicles during the PM peak hour were assumed to use the drive-through lanes.

Using equation 8-9b and Table 8-11 of ITE's *Transportation and Land Development*, the maximum length of queue anticipated at the drive-through lanes, at the 99% confidence level, is six vehicles. In reviewing the storage capacity provided at the drive-through lanes (refer to project site plan contained in Attachment A), the site plan provides approximately eight vehicles of storage capacity. Therefore, the projected maximum length of queue at the drive-through lanes is not anticipated to spill onto the parking aisle located on the south side of the bank building. The results of the ITE queuing procedure is contained in Attachment B.

[1] Table 11-4, Lobby Size versus Drive-Through Window Requirements, Transportation and Land Development (2nd Edition), by Virgil G. Stover and Frank J. Koepke.
[2] By Vergil G. Stover and Frank J. Koepke.

CONCLUSIONS

Chase Bank is a proposed financial institution planned to be located on the southeast corner of the intersection of Bird Road and LeJeune Road in the City of Coral Gables in Miami-Dade County, Florida. The proposed branch bank will include three remote drive-through lanes and a one-story building.

Traf Tech Engineering, Inc. was retained by CKE Group, Inc. to conduct a traffic study in connection with the proposed branch bank. The study addresses the traffic generated by the proposed bank, queuing at the remote drive-through lanes, and the projected turning movement volumes at the project access driveways on LeJeune Road and Laguna Street.

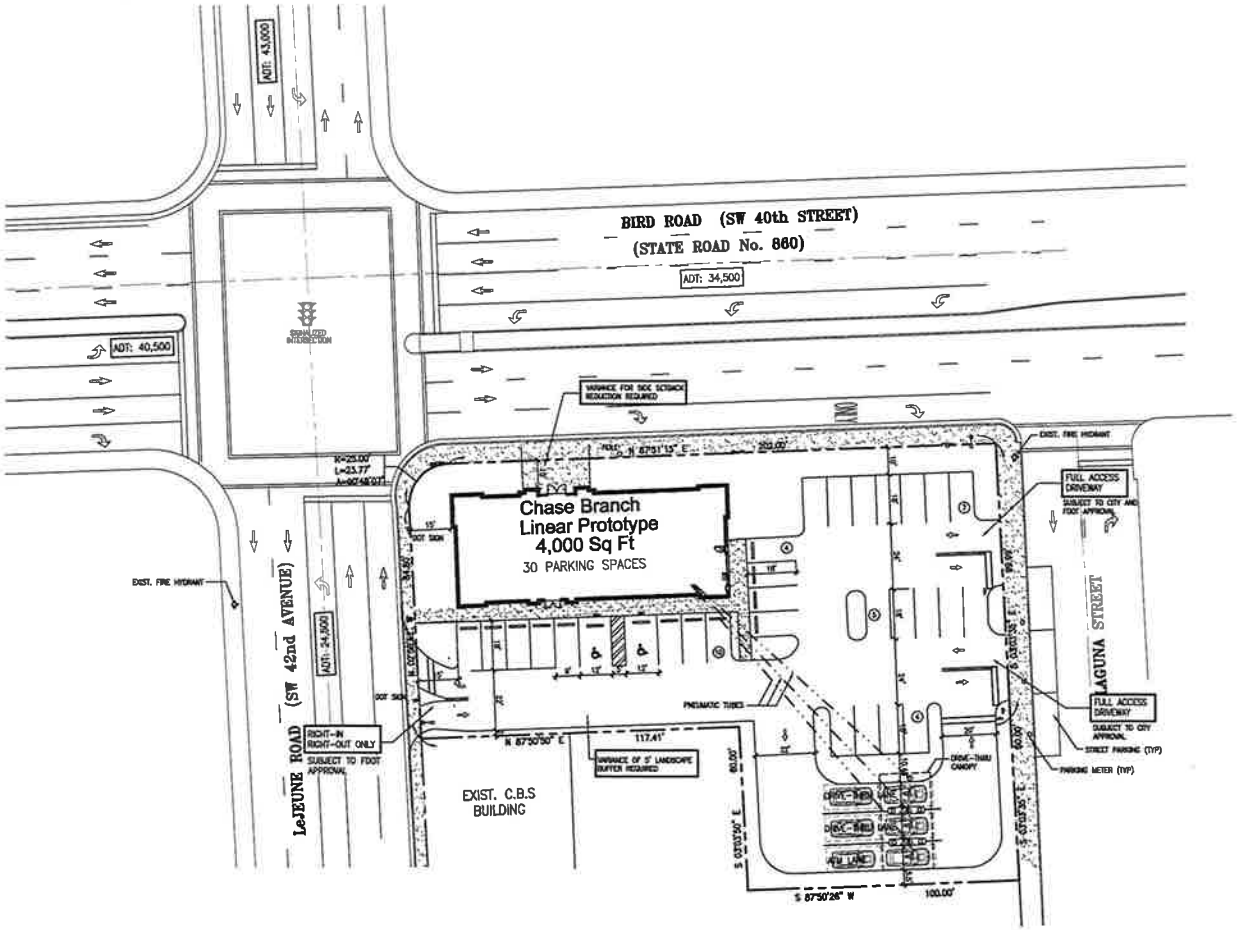
The new Chase Bank is anticipated to generate approximately 593 gross daily trips, approximately 49 gross AM peak hour trips (27 inbound and 22 outbound) and approximately 103 gross trips (51 inbound and 52 outbound) during the typical afternoon peak hour.

The proposed branch bank generates less daily, less AM peak hour, and less PM peak hour trips than the previous service station at the site.

The projected maximum length of queue at the drive-through lanes is not anticipated to spill onto the parking aisle located on the south side of the bank building.

APPENDIX A

Site Plan for Chase Bank



QUICK LOOK SKETCH

1"=20'-0"

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 inch = 20 ft.

NOTES:

JURISDICTION: CITY OF CORAL GABLES
EXISTING USE: SERVICE STATION–AUTOMOTIVE (CLOSED)
ZONING DISTRICT: C (COMMERCIAL)
FOLIO # 03-4120-017-0010
PARKING REQUIRED: (1 PER 250) = 17
PARKING PROVIDED: = 30

SETBACKS:

	BUILDING	LANDSCAPE
FRONT (LEJEUNE RD)	10'	7'
SIDE (N) (BIRD RD)	15'	7'
SIDE (S)	15'	5'
REAR (LAGUNA ST)	10'	7'

10 % LANDSCAPE REQUIRED

CRITICAL ISSUES:

1. VERIFY ACCESS WITH F.D.O.T.
2. VERIFY TRAFFIC CONCURRENCY.
3. ASBESTOS POSSIBILITY IN EXISTING BUILDING.
4. TRY TO SAVE AS MANY TREES AS POSSIBLE.
5. GAS STATION, NEED PHASE I
6. REQUIRES VARIANCE FOR REDUCTION OF SIDE SETBACK ALONG BIRD ROAD FROM 15 FT. REQUIRED TO 10 FT. PROVIDED.
7. INTERIOR PROPERTY LINES REQUIRE 5 FT LANDSCAPE BUFFER (REQUIRES VARIANCE)
8. MEDITERRANEAN ARCHITECTURE STYLE REQUIRED.
9. FDOT REQUIRES TRAFFIC STUDY AND QUEUING ANALYSIS FOR DRIVE-THRU STACKING.
10. ADDITIONAL FIRE HYDRANT MIGHT BE REQUIRED.

NOTE:
QUICK LOOK PREPARED WITHOUT BENEFIT OF AN ACCURATE UPDATED SURVEY.

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CHASE O
BIRD ROAD & LeJEUNE ROAD
MIAMI, FLORIDA

project no: .
scale: AS SHOWN
date: 7-09-10
drawn by: N.G.

revisions east
3-25-10

QL-1J

APPENDIX B

Queuing Analysis

Transportation and Land Development

2nd Edition

Drive-Through Window Requirements

The number of service positions required is a function of the average service time and the demand. Bank officials commonly underestimate service and waiting time; therefore, the average service time should be obtained through observation of similar facilities in the local area. Wait time and, theoretically, storage requirements are sensitive to the service-time parameter.

Table 11–4 gives guidelines for the number of drive-through windows as a function of lobby size. These guidelines are based on an average service time of approximately 2 min. and that 50 percent of the bank customers will use the drive-through windows. These typical values might be used where a more detailed (and expensive) analysis is not warranted.

Table 11–4. *Lobby Size vs. Drive-Through Window Requirements*

Lobby Sizes (ft^2)	Number of Drive-Through Windows
5,000 to 10,000	2 to 3
10,000 to 20,000	3 to 4
20,000 to 30,000	4 to 5
30,000 to 40,000	6 to 8
40,000 to 50,000	8 to 10

Source: Peter N. Scifres [5].

Drive-Through Window Arrangement

The basic configurations for drive-through windows are illustrated in Figure 11–1. Drive-through bank configurations that require one teller per service position makes inefficient use of a teller's time because of the "lost time" that occurs between customers. One teller serving two or more positions results in long customer service times. Arrangements that permit two tellers to service three positions during periods of high demand result in efficient teller utilization and good customer service.

Configuration (a) in Figure 11–1 is impractical for more than a single service position as it makes inefficient use of building frontage and tellers. An excessive building frontage is required so that vehicles can pull into and out of the individual service positions. Even

location, a 5% probability of back-up onto the adjacent street is judged to be acceptable. Demand on the system for design is expected to be 110 vehicles in a 45-minute period. Average service time was expected to be 2.2 minutes. Is the queue storage adequate?

Such problems can be quickly solved using Equation (8-9b) given in Table 8-10 and repeated below for convenience.

$$M = \left[\frac{\ln P(x > M) - \ln Q_M}{\ln \rho}\right] - 1$$

where:

M = queue length which is exceeded p percent of the time
N = number of service channels (drive-in positions)
Q = service rate per channel (vehicles per hour)
$\rho = \frac{\text{demand rate}}{\text{service rate}} \quad \frac{q}{NQ}$ = utilization factor
q = demand rate on the system (vehicles per hour)
Q_M = tabled values of the relationship between queue length, number of channels, and utilization factor (see Table 8-11)

TABLE 8-11
Table of Q_M Values

ρ	$N = 1$	2	3	4	6	8	10
0.0	0.0000	0.0000	0.0000	0.0000			
0.1	.1000	.0182	.0037	.0008	.0000	0.0000	0.0000
.2	.2000	.0886	.0247	.0096	.0015	.0002	.0000
.3	.3000	.1386	.0700	.0370	.0111	.0036	.0011
.4	.4000	.2286	.1411	.0907	.0400	.0186	.0088
.5	.5000	.3333	.2366	.1739	.0991	.0591	.0360
.6	.6000	.4501	.3548	.2870	.1986	.1396	.1013
.7	.7000	.5786	.4923	.4286	.3359	.2706	.2218
.8	.8000	.7111	.6472	.5964	.5178	.4678	.4083
.9	.9000	.8626	.8172	.7878	.7401	.7014	.6667
1.0	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

$\rho = \frac{q}{NQ} = \frac{\text{arrival rate, total}}{(\text{number of channels})(\text{service rate per channel})}$
N = number of channels (service positions)

Solution

Step 1: $Q = \frac{60 \text{ min/hr}}{2.2 \text{ min/service}} = 27.3$ services per hour

Step 2: $q = (110 \text{ veh}/45 \text{ min}) \times (60 \text{ min/hr}) = 146.7$ vehicles per hour

Step 3: $\rho = \frac{q}{NQ} = \frac{146.7}{(6)(27.3)} = 0.8956$

Step 4: $Q_M = 0.7303$ by interpolation between 0.8 and 0.9 for $N = 6$ from the table of Q_M values (see Table 8-11)

Step 5: The acceptable probability of the queue, M, being longer than the storage, 18 spaces in this example, was stated to be 5% $P(x > M) = 0.05$, and:

$$M = \left[\frac{\ln 0.05 - \ln 0.7303}{\ln 0.8956}\right] - 1 = \left[\frac{-2.996 - (-0.314)}{-0.110}\right] - 1$$

$= 24.38 - 1 = 23.38$, say 23 vehicles.

Queuing Analysis based on ITE Procedures

q = 51veh/hr (demand rate)

Q = 30 veh/hr (service rate)

$p = \frac{q}{NQ} = 0.5667$ (N = three drive-through lanes

$Q_M = 0.3155$ (for N = 3)

Using Acceptable Probability of 1% (99% Confidence Level)

$$M = \left(\frac{Ln\,(x > M) - Ln\,(Q_M)}{Ln\,(p)} \right) - 1$$

$$M = \left(\frac{Ln(0.01) - Ln(0.3155)}{Ln(0.5667)} \right) - 1$$

$$M = \left(\frac{-4.6052 - (-1.1536)}{-0.5679} \right) - 1$$

M = 6.1 – 1 = 5.1, say 6 vehicles

Traf Tech
ENGINEERING, INC.


390 BIRD ROAD
(SUBJECT PROPERTY)

WEST VIEW
FROM BIRD ROAD

EAST VIEW
FROM BIRD ROAD


SOUTH VIEW
ON LAGUNA


CITY OWNED
SUBJECT PROPERTY


PROPERTY
TO BE SWAPPED