

Resers Fine Foods, Inc.
Proposed Warehouse & Distribution Center
545 SE Croco Road
Topeka, Kansas 66607
CFS Project No. 16-5226

Traffic Impact Analysis

December 8, 2016

Prepared for:

Resers Fine Foods, Inc.
3139 SE 10th Street
Topeka, Kansas 66607

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Introduction and Summary

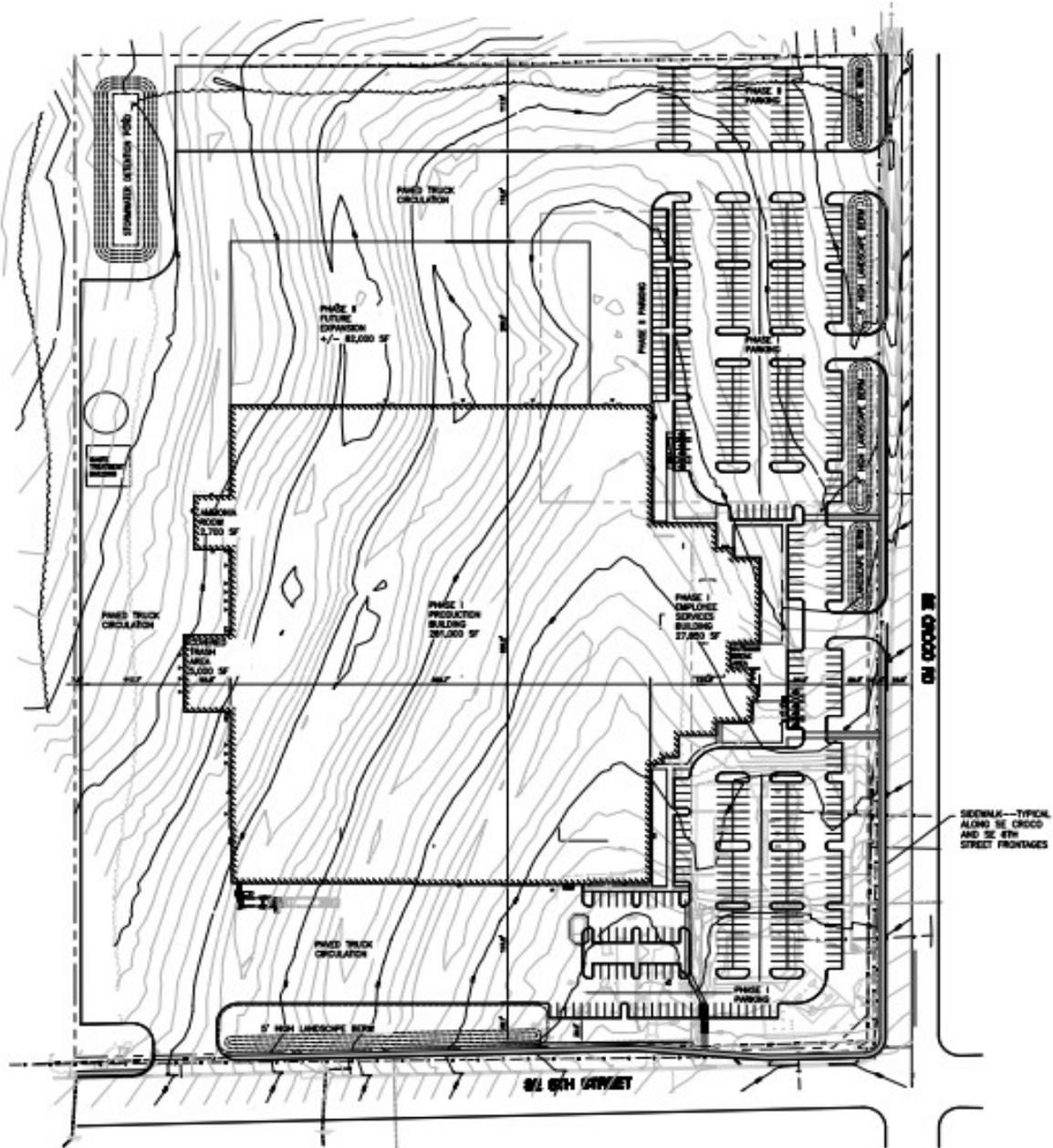
This Traffic Impact Analysis for the Resers Fine Foods, Inc., proposed warehouse and distribution center at 545 SE Croco Road has been prepared at the request of the CIDA Inc. Architects of Portland, Oregon, in accordance with the City of Topeka's requirements. The 25.7 acre site located on the northwest corner of 6th Avenue & Croco Road would include a 318,000 sqft food-processing/manufacturing building and an 85,000 sqft building for warehousing. The building would also include regional administrative offices for the company's Topeka operations. The facility would employ an anticipated total staff of 350 to 380 employees including drivers, warehouse workers and office administrative staff, which would operate during two regular full-time shifts (155-170 employees), and a smaller nighttime cleaning shift (40 employees). The first shift would run from 7:00am – 3:00pm, second shift from 3:00pm – 11:00pm, and nighttime shift from 11:00pm – 7:00am.



Reser's Warehouse & Distribution Center, Vicinity Map

Proposed Development Plan

The 27.5 acre facility would serve as Reser's main warehousing and distribution center in northeast Topeka. The 403,000 sqft building would have an estimated 515 total parking spaces including 8 accessible spaces, along with parking for semi-truck trailers along the north and west sides of the site.



Reser's Proposed Warehouse & Distribution Center, Site Layout Plan

The site would have four points of vehicular access with two expanded truck entrances off of 6th Avenue and off of Croco, and two regular passenger vehicle entrances off of Croco Road. The expanded truck entrance off of 6th Avenue would be 70 ft wide to accommodate semi-truck traffic and would be spaced with approximately 760 ft of separation distance to the west edge of Croco Road. The main passenger vehicle entrances off of Croco Road would be 28 ft wide to provide two lanes of access (one incoming lane and one outgoing lane) and would be spaced with approximately 515 ft and 860 ft of separation distance to the north edge of 6th Avenue. The expanded truck entrance off of Croco Road would be 50 ft wide to accommodate semi-truck traffic and would have approximately 1060 ft of separation distance to the north edge of 6th Avenue.

Internal circulation of truck traffic inside the site would be along the extra-wide pavement corridors along the north and west sides of the site, along the side and rear of the proposed building. The extra-wide service corridors along the rear and northern side of the building would accommodate truck parking and maneuvering of large semi-trailers. Vehicular parking for employees would be distributed along the eastern side of the building with access from the two smaller entrance driveways off of Croco. Passenger vehicles could also use the larger service entrances off of 6th Avenue and off of Croco. The 6th Avenue service entrance is anticipated to be widely used by both cars and trucks coming from and driving to the metropolitan center of the city.

Construction of the project would require the demolition of the existing convenience store, car wash and single-family house presently on the site. The project would be constructed in two phases, with all of the construction work confined within the site. Grades across the site are fairly mild, so major hauling on or off of excavation material is not envisioned to burden the adjacent roadway system during the initial construction operations. Provisions for erosion control and keeping the streets clean and free from sediment would be required by the contractor with regular monitoring by a professional construction inspector.

Street System

Reser's proposed site at the northwest corner of 6th & Croco would have ready access for trucks and passenger vehicles from the surrounding City street grid and from Interstate I-70 and the Oakland Expressway. The characteristics of the key streets in the vicinity were summarized as follows:

6th Avenue (US-40 Highway): 5-lane minor arterial along the south side of the Reser's site.

Curb & gutter street section with enclosed storm sewers west of Croco, transitioning to widened shoulder section to the east where residential driveways connect directly onto 6th Avenue. Posted speed limit of 45 mph. Signalized interchange with the Oakland Expressway one mile to the east of the site with large-radius corners for accommodating semi-truck traffic. KDOT's 2014 Traffic

Count Map indicated an average annual daily traffic volume of 5665 vpd west of nearby Rice Road. Sidewalks on both north and south sides west of Deer Creek Parkway, extending east past Rice Road, then no sidewalks on either side to the interchange with the Oakland Expressway to the east. The major cross-street intersections at Rice, Croco and the Oakland Expressway are signalized.

Croco Road: 2-lane minor arterial to the north and 3-lane minor arterial to the south of 6th Avenue. Roadway extends through single-family residential areas to the north and south with posted speed limits of 40 mph. Croco has been widened to 5-lanes on the north side of 6th Avenue where the street has two northbound thru lanes and designated southbound left, thru and right lanes. Croco has been widened to 4-lanes on the south side of 6th Avenue where the street has a single southbound thru lane and designated northbound left, thru and right lanes. All four corners of the 6th & Croco intersection have back of curb radius of approximately 40 ft to accommodate truck turning movements. KDOT's 2014 Traffic Count Map indicated an average annual daily traffic volume of 4510 vpd south of 6th Avenue. There are sidewalks on both sides of Croco south of 6th Avenue, but no sidewalks on the north leg. Croco Road extends over both Interstate I-70 and I-470 to the south, providing access to the residential subdivisions around Lake Shawnee.

Deer Creek Parkway: 4-lane divided major collector extending through a warehouse/industrial area with heavy truck access. Interchanges directly with Interstate I-70 to the south and ends with a T-intersection at 6th Avenue. KDOT's 2014 Traffic Count Map indicated an average annual daily traffic volume of 3955 vpd south of 6th Avenue. There are sidewalks along the west side of the road south of 6th Avenue, and a portion of the Deer Creek Walking Trail runs along the eastern side of the road north of 10th Street.

Rice Road: 2-lane major collector extending through residential areas on both the north and south sides of 6th Avenue. The northern leg is a standard 24 ft width 2-lane street and the southern leg is a wide 36 ft 2-lane street. Posted speed limit is 30 mph. The Topeka Correctional Facility, Central Unit is located on the western side of the road, south of 6th Avenue. Rice Road interchanges with Interstate I-70 with a roundabout at Sycamore Drive on the north for the westbound I-70 ramp terminals, and another roundabout on the south for the eastbound I-70 ramp terminals, before extending further south to SW 21st Street. KDOT's 2007 Traffic Count Map indicated an average annual daily traffic volume of 2145 vpd south of 6th Avenue. There is sidewalk along only the eastern side of Rice Road south of 6th Avenue, but no sidewalk on either side north of 6th.

Oakland Expressway (Kansas Route 4): 4-lane divided expressway which extends and interchanges with Interstate I-70 to the south. The intersection of 6th Avenue & Oakland Expressway is a partial cloverleaf with signalized T-intersections at both of the north and southbound ramp mergers. The intersection corners have edge of pavement radius of approximately 40 ft to accommodate truck turning movements. There are three northbound lanes and two southbound lanes of traffic posted at 65 mph. KDOT's 2014 Traffic Count Map indicated an average annual daily traffic volume of 8880 vpd south of 6th Avenue. There are no sidewalks along 6th Avenue in the vicinity of the Oakland Expressway interchange.

Existing Traffic Conditions

Photographs of the existing street conditions were clipped from Google-Earth's Street-Cam to show the number of lanes, sidewalks, signals and medians that exist along 6th Avenue and at the major intersections between Deer Creek Parkway and the interchange with the Oakland Expressway. All of the existing major intersections on 6th Avenue including Rice Road, Croco Road and the Oakland Expressway interchange are signalized. The intersection of 6th Avenue & Deer Creek Parkway is stop-controlled for the minor leg only on Deer Creek. The pictures and captions have been included below:



6th & Deer Creek Parkway: 6th Avenue Looking West at Deer Creek Parkway

Stop-control on Deer Creek with free-movement on 6th Avenue. Both streets have 5-lanes. Flat terrain with sight distance over 1000 ft at all approaches to intersection. Large-radius corners. Continuous N-S sidewalks along east side of Deer Creek and along both sides of 6th Avenue.



6th & Deer Creek Parkway: Deer Creek Parkway Looking North at 6th Avenue

Painted channelized island markings and raised center median. Private shopping center to north.



6th & Deer Creek Parkway: Deer Creek Parkway Looking South at 6th Avenue

View of trucking depot center at southwest corner. Deer Creek Parkway connects to interchange with I-70 three-quarters of a mile to the south.



6th & Rice Road: Rice Road Looking North at 6th Avenue

Signalized intersection. 6th Avenue has 5-lanes and Rice has 2-lanes transitioning to 3-lanes at the intersection. Flat terrain with sight distance over 1000 ft at all approaches to intersection. Large-radius corners. Continuous N-S sidewalks along east side of south leg of Rice Road and along both sides of 6th Avenue.



6th & Rice Road: Rice Road Looking South at 6th Avenue

Fire Station at southwest corner with Topeka Correctional Facility further to south. Sidewalks along east side of Rice Road.



6th & Croco Road: 6th Avenue Looking West at Croco Road

Signalized intersection. 6th Avenue has 5-lanes. Proposed Resers Warehouse & Distribution Center on northwest corner (presently occupied by convenience store with gasoline pumps). Flat terrain with sight distance over 1000 ft at all approaches to intersection. Large-radius corners. Continuous N-S sidewalks along both sides of south leg of Croco Road. No sidewalks along either side of 6th Avenue.



6th & Croco Road: Croco Looking North at 6th Avenue

Croco has 2-lanes to north and 3-legs to south, with intersection transitioning to 5-lanes. Croco Road extends north through residential area to Billards Municipal Airport. No sidewalks along either side of north leg of Croco.



6th & Croco Road: Croco Looking South at 6th Avenue

Croco extends south to bridge over both Interstate I-70 and I-470 and on to Lake Shawnee residential area. Continuous sidewalks along both sides of south leg of Croco.



6th Avenue East of Croco Road:

6th Avenue is a 5-lane section extending through a residential area between Croco and the Oakland Expressway, and has 6 ft shoulder lanes for additional maneuvering clearance to residential driveways and for mailboxes.



6th Avenue & Oakland Expressway Southbound Ramp Terminals Interchange:

Intersection of 6th & Oakland Expressway Southbound Entrance/Exit Ramp Terminals. Signalized intersection with flat terrain and sight distance over 1000 ft at all approaches. Large radius corners to accommodate large trucks. Open shoulders with roadside drainage ditches.



6th Avenue & Oakland Expressway Northbound Ramp Terminals Interchange:

Intersection of 6th & Oakland Expressway Northbound Entrance/Exit Ramp Terminals.

Existing Traffic Volume: Traffic counts were taken at the intersections of 6th & Deer Creek Parkway and at 6th & Croco Road during the AM peak traffic hours from 7:00am to 9:00am on Tuesday, December 6, 2016 and during the PM peak traffic hours from 4:00pm to 6:00pm on Tuesday, December 6, 2016. Counts were tabulated into fifteen minute intervals and the calculated peak hour factors ranged from 0.85 to 0.94. Truck traffic was higher during the AM peak hour making up approximately 3.5% of the total traffic volume. The PM peak hour truck traffic comprised approximately 1.8% of the total traffic volume. Tables showing the full traffic count data taken at the two intersections during the AM and PM peak hours have been included in the appendix section of this report.

Future Growth Estimates: To estimate the projected future growth for traffic volumes in the region, the 2007 and 2014 KDOT Traffic Count Maps for the City of Topeka were used to examine the change in volume on 6th Avenue and on the Oakland Expressway:

6th Avenue Between Deer Creek & Rice Road:

2007 AADT = 5180 VPD

2014 AADT = 5665 VPD

$GF = (1+i)^n$ years

$GF(5665/5180) = (1+i)^7$ years

$i = 1.29\%$

Oakland Expressway North of 6th Avenue:

2007 AADT = 7580 VPD

2014 AADT = 9210 VPD

$GF = (1+i)^n$ years

$GF(9210/7580) = (1+i)^7$ years

$i = 2.82\%$

Based on the calculated annual percentage of growth, an annual growth rate of 2% was assumed for the region. This area of Topeka has a significant amount of open space to the north and east to accommodate future development. The region also has close access to I-70 and to the major traffic arteries into the city.

Trip Generation & Site Traffic Projections

The management at Resers provided the following data about the facility size, projected employment staffing, estimates on the volume of heavy delivery trucks, work shifts and hours of operations:

Proposed Facility:

Building Size: 318,000 sqft Food Processing / Manufacturing

85,000 sqft Storage / Warehouse

403,000 sqft Total

Employees: 350 – 380 Total Employees Including Regular Staff and Drivers

Hours of Operation: 2 Full Daytime Shifts (155 – 170 per Regular Shift)

Nighttime Cleaning Crew (40)
Operating Days: September to April, Regular Monday thru Friday Operation
May to August, Full 7-Days per Week Operation

Truck Deliveries:

Design Vehicle: Typical WB-62 Semi Truck
Deliveries: 25 – 50 per day
Delivery Times: Staggered throughout the Day to Avoid Peak Hour Traffic
Loading Times: 1 to 2 hours per truck
Trailers Stored On Lot: 30 – 40

Shipping Products / Hazardous Materials:

Typical Cargo: Food Products, Packaging Materials (Plastic Containers, Cardboard)
Hazardous Material: Ammonia for Refrigeration Systems
Fuel: No Fuel Stored on Site

Reser's does not plan to close their existing Warehouse on Deer Creek Parkway south of 6th Avenue, and would continue to operate that existing facility at full capacity after the proposed 6th & Croco facility is complete and fully functional. It was noted that the percentage of truck traffic comprised approximately 3.5% of the total volume during the AM peak hour and 1.8% during the PM peak hour when counts were taken in December of 2016. With Resers planning as many as 50 truck deliveries per day, the percentage of truck traffic would likely increase up to 4.5% or 5%. Resers prefers to stagger truck deliveries throughout the day for safety, avoiding peak hour traffic periods.

Bicycle parking for the facility would be considered by the management if there is sufficient need by the employees and staff. There is ample room in the green-space areas by the building's main entrance for bicycle racks. Administrative staff are likely to roll their bicycles into the building to park by their desks during the day.

Trip Generation: Trip generation calculations utilized the land use types categorized by the Institute of Transportation Engineer's Trip Generation Guidelines, 9th Edition. The different types of building uses given by Resers for their proposed facility included Manufacturing (ITE Land Use Code 140) and Warehousing (ITE Land Use Code 150). Given the working/industrial nature of the site, there would be no pass-by traffic. The estimated trips generated were calculated based on the estimated total building square footage and the estimated total number of employees. The following table shows the parameters for measurement units, total trip generation rates for Weekday, AM and PM Peak Hour Traffic Volumes, corresponding percentage divisions for traffic entering and exiting the site:

Trip Generation Calculations

Land Use	ITE Code	Units	Weekday Rate	AM-Peak Hour Rate	AM Enter	AM Exit	PM-Peak Hour Rate	PM Enter	PM Exit
Manufacturing (KSF)	140	318 ksf	1215 VPD	232 vph	78%	22%	232 vph	36%	64%
Warehousing (KSF)	150	85 ksf	303 VPD	26 vph	79%	21%	27 vph	25%	75%
Total Site (KSF)		403 ksf	1518 VPD	258 vph	202 vph	56 vph	259 vph	91 vph	168 vph
Manufacturing (Emp)	140	300 Emp	639 VPD	120 vph	73%	27%	108 vph	44%	56%
Warehousing (Emp)	150	80 Emp	311 VPD	41 vph	72%	28%	47 vph	35%	65%
Total Site (Emp)		380 Emp	950 VPD	161 vph	118 vph	43 vph	155 vph	64 vph	91 vph

Crash histories of the intersections surrounding the site were not reviewed as part of this analysis.

Trip Distribution: Traffic entering and exiting the site would be routed in and out of the four proposed driveway entrances along 6th Avenue and Croco Road. Assumptions were made for splitting the approach and departure volumes from the eastern side of the site where entering traffic can decide between making left-turns at the 6th & Croco intersection or into the entrance drives connecting directly to Croco Road. Traffic from the west was assumed to utilize the 6th Avenue entrance drive which has a continuous left-turn lane to shelter and store eastbound left-turn motorists. The diagram below shows the distribution paths entering and exiting the site:

Trip Distribution and Traffic Assignment Diagram Resers Truck Depot & Distribution Center, 6th & Croco



Left-Turn Lane Improvements: Since 6th Avenue and the section of Croco Road fronting the site already have dual-direction center left-turn lanes, there was no need to check for a warrant based on Topeka's Left-turn Deceleration Lane requirements from Section 1.2.5.2.8 of the Street Design Criteria.

Right-Turn Improvements: A check for a warrant for a westbound right-turn at the main truck access drive on 6th Avenue was done based on the City's Section 1.2 Street Design Criteria, Section 1.2.5.2.8 – Speed Change Lanes. According to the City's design criteria, a right-turn deceleration lane shall be required if:

1. The street's ADT exceeds 10,000 vehicles per day
2. The street's operating speeds equal, or exceed, 35 miles per hour
3. The driveway's volume equals, or exceeds, 1,000 vehicles per day, and
4. The driveway's right-turn ingress movements equal, or exceed, 40 vehicles per hour during any peak period.

The 2014 KDOT traffic count map showed 6th Avenue's AADT at 5665 vpd. Posted speed limit of 45 mph. The estimated peak hour eastbound right-turning traffic was 43 vph during the AM peak hour, exceeding the 40 vph right-turn threshold volume, which would warrant a right-turn deceleration lane.

Capacity Analysis: Using the traffic counts taken in December of 2016 and distributing the proposed site-generated traffic onto the street-grid based on the gravity-weighted traffic volumes, trip distribution diagrams were derived for eight different traffic scenarios including:

1. AM Peak Hour Pre-Development Present-Day Conditions
2. AM Peak Hour Pre-Development Future-Growth Conditions (Year 2036)
3. AM Peak Hour Post-Development Present-Day Conditions
4. AM Peak Hour Post-Development Future-Growth Conditions (Year 2036)
5. PM Peak Hour Pre-Development Present-Day Conditions
6. PM Peak Hour Pre-Development Future-Growth Conditions (Year 2036)
7. PM Peak Hour Post-Development Present-Day Conditions
8. PM Peak Hour Post-Development Future-Growth Conditions (Year 2036)

Synchro traffic simulation software was used to model the surrounding street-grid under the eight different traffic distribution scenarios, taking into account the existing numbers of street-lanes, turn-lane lengths, speed limits, channelized radius corners and stop and signalized control. The existing intersection of 6th Avenue & Deer Creek Parkway acts like a T-intersection since the northern leg feeds to a private shopping center development. The intersection is stop-controlled with stops for the minor approach north and south legs and free-movement for the

major street / 6th Avenue. Thus the east and westbound approaches operate at LOS-A with essentially no delay under all traffic analysis scenarios. The northbound leg on the south side of the intersection was studied to view the potential impact of the proposed Resers development. The level-of-service ratings were lower during the PM peak traffic hours with increased east-west traffic creating more conflicts for the northbound left and right-turn movements. The PM future growth scenarios showed a complete breakdown in traffic movement for the northbound left and right-turn movements, which would warrant signalization at some point in the future. The following table shows the delays, level-of-service and 95th percentile queuing lengths for the approaches to the intersection:

6th Avenue & Deer Creek Parkway, Synchro Model Results

Scenario	Factor	NB Total	NBL	NBR
AM Pre-Dev, Present-Day	Delay (sec)	11	14.7	10
	LOS	B	B	B
	95Q-(veh-l)		0.4	0.9
AM Pre-Dev, Future	Delay (sec)	12.8	20	11
	LOS	B	C	B
	95Q-(veh-l)		0.9	1.4
AM Post-Dev Present-Day	Delay (sec)	11.6	16.3	10.6
	LOS	B	C	B
	95Q-(veh-l)		0.5	1.2
AM Pre-Dev, Future	Delay (sec)	13.9	23.1	11.9
	LOS	B	C	B
	95Q-(veh-l)		1.1	1.9
PM Pre-Dev, Present-Day	Delay (sec)	19.7	30.5	9.8
	LOS	C	D	A
	95Q-(veh-l)		1.8	0.4
PM Pre-Dev, Future	Delay (sec)	136.3	274.9	10.9
	LOS	F	F	B
	95Q-(veh-l)		9.5	0.7
PM Post-Dev Present-Day	Delay (sec)	25.4	45	10.1
	LOS	D	E	B
	95Q-(veh-l)		2.6	0.5
PM Pre-Dev, Future	Delay (sec)	218.4	474.4	11.2
	LOS	F	F	B
	95Q-(veh-l)		11.7	0.9

The impact of the proposed Resers development on the intersection of 6th & Croco Road appears to be small. Under all eight of the traffic modeling scenarios, the intersection as a whole continued to operate at LOS-A with some LOS-B ratings for the westbound and southbound lanes during the future growth conditions. The following table shows the delays, level-of-service and 95th percentile queuing lengths for the approaches to the intersection:

6th Avenue & Croco Road, Synchro Model Results

Scenario	Factor	EB	WB	NB	SB	Intersection
AM Pre-Dev, Present-Day	Delay (sec)	6.5	8.8	6.3	6.3	7.7
	LOS	A	A	A	A	A
	95Q-Left (ft)	5	40	28	6	
AM Pre-Dev, Future	Delay (sec)	6.5	9.6	6.5	6.6	8.2
	LOS	A	A	A	A	A
	95Q-Left (ft)	6	54	36	7	
AM Post-Dev Present-Day	Delay (sec)	6.3	8.5	6.7	6.7	7.6
	LOS	A	A	A	A	A
	95Q-Left (ft)	5	40	31	9	
AM Pre-Dev, Future	Delay (sec)	6.3	9.7	6.9	6.8	8.3
	LOS	A	A	A	A	A
	95Q-Left (ft)	6	54	39	10	
PM Pre-Dev, Present-Day	Delay (sec)	7.1	9.5	5.4	7.1	7.3
	LOS	A	A	A	A	A
	95Q-Left (ft)	9	48	17	5	
PM Pre-Dev, Future	Delay (sec)	6.8	10.5	8.2	11.3	8.5
	LOS	A	B	A	B	A
	95Q-Left (ft)	12	81	31	9	
PM Post-Dev Present-Day	Delay (sec)	7	9	7.4	10.2	8
	LOS	A	A	A	B	A
	95Q-Left (ft)	9	53	23	24	
PM Pre-Dev, Future	Delay (sec)	6.4	10.6	9.1	12.8	8.8
	LOS	A	B	A	B	A
	95Q-Left (ft)	11	86	35	29	

Traffic Signal Warrant: Under the 2009 MUTCD, the 6th Avenue & Deer Creek Parkway was reviewed for traffic signal Warrant 3, Peak Hour condition. The Peak Hour signal warrant is

intended for use at a location where traffic conditions are such that for a minimum of 1 hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street. Using Figure 4C-3, Warrant 3, Peak Hour, the peak hour traffic volumes for the Minor Approach (largest volume) and the combined volumes of the Major Approach, were plotted onto the graph to check if they met the combination threshold limit to justify warranting a signal for the intersection. All eight of the traffic scenarios analyzed with the Synchro models were checked, and it was found that none of the combinations met the threshold limit (although the PM Post-Development future Growth Conditions did come very close). The Major and Minor Approach data was tabulated as follows:

Warrant 3, Peak Hour Analysis, 6th Avenue & Deer Creek Parkway

Scenarios / AM (PM) vph Volumes	Pre-Dev Present-Day	Pre-Dev Future-Growth	Post-Dev Present-Day	Post-Dev Future-Growth
Minor Street (Larger Approach)	227 (163)	306 (245)	268 (180)	347 (260)
Major Streets (Combined Totals)	589 (752)	792 (1118)	660 (860)	863 (1225)
Meets Warrant 3, Peak Hour	N (N)	N (N)	N (N)	N (N-Close)

Although the Warrant 3, Peak Hour analysis to check if the existing intersection at 6th Avenue & Deer Creek Parkway did not meet the threshold peak hourly traffic volume levels to warrant installing a traffic signal, the future growth projections for the region modeled into Synchro showed that the stop-controlled south leg of the intersection will begin experiencing extreme delays within the next twenty years. The additional peak hour traffic from the proposed Resers site does not increase traffic loading in the intersection to push the volume levels up to the warrant threshold limits.

Findings & Recommendations

The proposed Resers Warehouse & Distribution Center at 545 SE Croco Road should not cause any hindrances or undue delays to the local traffic in the vicinity of the site. The site's location at the northwest corner of 6th Avenue and Croco Road has excellent access for truck traffic to the Oakland Expressway via 6th Avenue and to Deer Creek Parkway via 6th Avenue to the west. Regular passenger car traffic has direct access to 6th Avenue to travel westwards back to the heart of the Topeka metropolitan area or ready access back to Interstates I-70 and I-470 for utilizing the loop highways circling the Topeka area. 6th Avenue has been widened to a 5-lane roadway section and the major half-mile intersections are signalized for safe and improved traffic movement.

Recommendations: The following recommendations are made for the construction of the proposed Reser site improvements:

1. A 205 ft westbound right-turn deceleration lane with a 120 ft transition taper needs to be added onto 6th Avenue at the proposed truck access entrance to the site located approximately 760 ft west of Croco Road.
2. SE Croco Road should be widened to a consistent 5-lane section along the entire frontage of the Resers site, from intersection with 6th Avenue to the northern truck access entrance. The street should be transitioned from 5-lanes to 2-lanes from the northern truck access entrance to the north to match into the residential neighborhood to the north.
3. Sidewalks should be extended along the entire frontage of the property along 6th Avenue and along Croco Road. Gaps in the sidewalk west of the site along the northern side of 6th Avenue should be filled-in to meet the existing limits of sidewalk 160 ft east of Rice Road.
4. Provisions for a bus stop on 6th Avenue to the west of Croco Road should be made to replace the existing bus stop located by the existing convenience store. Consideration should be made for a turn-out type bus stop with a widened lane to allow the bus to pull off of the main traffic on 6th Avenue.
5. The existing intersection at 6th Avenue & Deer Creek Parkway did not meet the threshold peak hourly traffic volume levels for a Warrant 3, Peak Hour traffic signal, under the pre and post development conditions for present-day and the future growth projections. The additional peak hour traffic from the proposed Resers site does not increase traffic loading in the intersection to push the volume levels up to warrant signaling the intersection.

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Traffic Impact Analysis

Appendix-1

Exhibits: (Vicinity Map, PUD Development Plan, 2007 & 2014 Traffic Volume Maps)



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Reser's Distribution Center

RESER'S FINE FOODS
EAST DEVELOPMENT



6th Avenue

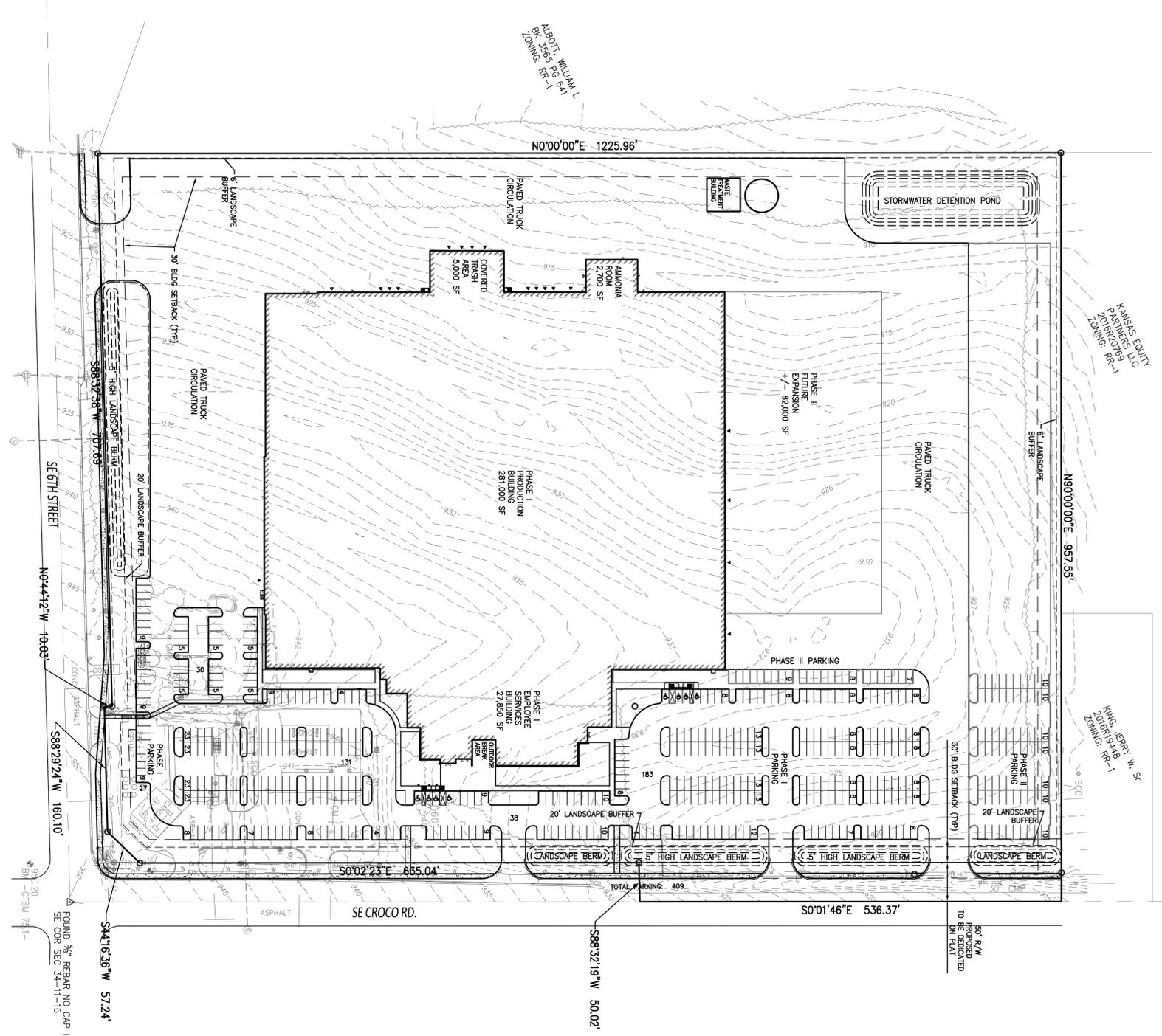
Croco Road



4000 ft



MASTER PLANNED UNIT DEVELOPMENT PLAN RESER'S FINE FOODS EAST DEVELOPMENT



PERFORMANCE OBJECTIVE
TO CONSTRUCT A FOOD PROCESSING AND PACKAGING FACILITY WITHIN A RESIDENTIAL/AGRICULTURAL SETTING WHILE REASONABLY ACCOMMODATING THE OWNERS OF THE FACILITY AND SURROUNDING NEIGHBORHOOD.

DEVELOPMENT SCHEDULE
PHASE I (2016-2018) CONSTRUCT 318,000 SF FACILITY, CONSTRUCT DETENTION LAKE AND WEST ENTRANCE OFF SE 6TH ST., ADJOINING SE CROCO RD. TO ACCOMMODATE INDUSTRIAL TRAFFIC 3 LANE ROADWAY THROUGH THE NORTH ENTRANCE ON SE CROCO AND IMMEDIATELY THEREAFTER TO EXISTING WIDTH (NOT SHOWN). CONSTRUCT DRIVEWAY ON SE 5TH ST TO CONNECT TO MAIN ON SE 6TH RD.
PHASE II (2023-2028) CONSTRUCT 82,000 SF STORAGE AND DISTRIBUTION BUILDING THAT WILL BE ATTACHED TO THE PHASE I MAIN STRUCTURE (NORTH OF EXISTING BUILDING WITHIN EXISTING PAVED)

PROJECT DATA
CURRENT ZONING: RA-1, C-2
PROPOSED ZONING: 1.1 USES FOR WAREHOUSING/DISTRIBUTION AND MANUFACTURING AND PROCESSING, TRUCK AND TRAILER, ALL OTHER USES LISTED IN RA-10
MINIMUM LOT AREA: 10,000 SF
MINIMUM LOT DEPTH: 100.00 SF
MINIMUM BUILDING COVERED AREA: 655 SF
TOTAL STRUCTURES PROPOSED: SINGLE STORY BUILDING
TOTAL WAREHOUSE BUILDING AREA: 317,190 SF
281,000 SF PRODUCTION
27,850 SF OFFICE/RECEPTION SERVICE
640 SF COVERED OUTDOOR BREAK AREA
5,000 SF COVERED TRASH COLLECTION AREA
2,700 SF AMMUNIA ROOM
PARCEL SIZE: 25.93 ACRES
PARKING CALCULATIONS: PH 1 & PH II
488 SPACES PROVIDED (679 STANDARD + 91 HANDICAP)
417 REQUIRED: 11 SPACE / 600 SQ. FT UP TO 25,000 SQ. FT.; 1 SPACE / 1,000 SQ. FT. THEREAFTER
24 BIKE SPACES PROVIDED

GENERAL NOTES
1. THE BASE ZONING OF 1.1 SHALL APPLY UNLESS OTHERWISE STATED
2. NO BUILDING PERMITS SHALL BE ISSUED UNTIL INDIVIDUAL SITE DEVELOPMENT PLANS SUBJECT TO TRAC 18.150 (60%) HAVE BEEN REVIEWED AND APPROVED BY THE PLANNING DIRECTOR. THESE SITE PLANS SHALL ADDRESS INDIVIDUAL BUILDING SITE LOCATIONS, OFF-STREET PARKING AND INTERNAL CIRCULATION, FIRE HYDRANTS, LANDSCAPING, FEETSTAIR CONNECTIVITY, EXTERNAL LIGHTING, SPONGE, BUILDING ELEVATIONS, UTILITIES, STORM WATER, RELATIONSHIP TO ADJACENT LOTS, ETC.
3. NO BUILDING PERMITS SHALL BE ISSUED UNTIL THE PROPERTY IS PLATTED
4. NO BUILDING PERMITS SHALL BE ISSUED UNTIL STORMWATER MANAGEMENT PLANS PURSUANT TO TRAC 13.335 ARE APPROVED, INCLUDING GRANTING OF ANY NECESSARY STORMWATER MANAGEMENT EASEMENTS.
5. THE LOCATION OF ALL TRASH ENCLOSURES SHALL BE DETERMINED AT THE SITE DEVELOPMENT PLAN STAGE.
6. ALL DRIVES, LINES, AND PRIVATELY OWNED ACCESS SHALL BE CONSIDERED AS MUTUAL RIGHTS OF ACCESS FOR STRUCTURES, BUILDINGS, AND USES WITHIN THE PLANNED UNIT DEVELOPMENT. SUPPORT AND UTILITY SERVICE PERSONNEL AND EMERGENCY SERVICE PROVIDERS, INCLUDING LAW ENFORCEMENT, FIRE PROTECTION, AND AMBULANCE SERVICES, ALL ACCESS WAYS PROVIDING GENERAL ACCESSIBILITY TO, AND CIRCULATION AMONG, THE USES WITHIN THE PLANNED UNIT DEVELOPMENT SHALL BE MAINTAINED AT ALL TIMES IN GOOD SERVICEABLE CONDITION WITH THE MAINTENANCE OF SAID ACCESS WAYS BEING THE RESPONSIBILITY OF THE OWNERS.

UTILITY NOTES
1. LIGHTING SHALL BE FULL CUT OFF, SHIELDED & RECESSED WITH CUT-OFF ANGLES TO PREVENT THE CAST OF LIGHTING BEHIND THE PROPERTY & NOT EXCEED 3 FOOT CANDLE AS MEASURED AT THE PROPERTY LINE. EXTERIOR LIGHTING SHALL FOLLOW ACCEPTED NATIONAL GUIDELINES FOR PARKING LOT LIGHTING (IE. CITED). THE TYPE, ILLUMINATION, POLE HEIGHT & QUANTITY OF NEW PARKING LOT LIGHTING SHALL BE APPROVED BY THE TOPEKA PLANNING DEPARTMENT AT THE TIME OF PERMIT APPROVAL. A FOOT CANDLE ANALYSIS WILL BE APPROVED AT THE SITE DEVELOPMENT PLAN STAGE.
2. WATER AND SEWER WILL BE PROVIDED BY CITY OF TOPEKA. THE PROJECT WILL PROVIDE A LOOP FROM THE WATER MAINS ON 6TH & CROCO ALONG THE WEST AND NORTH OF THE PARCEL. FIRE HYDRANTS WILL BE ADDED NORTHWEST OF THE PROPOSED BUILDING. THE FIRE DEPARTMENT SHALL REVIEW AND APPROVE FUTURE PLANS SHOWING THE HYDRANT LOCATIONS AND FIRE ACCESS PRIOR TO THE START OF CONSTRUCTION.
3. ALL UTILITIES SHALL BE PLACED UNDERGROUND PURSUANT TO THE CITY'S RIGHT-OF-WAY MANAGEMENT STANDARDS.

CIRCULATION, PARKING & TRAFFIC NOTES
1. HANDICAP SPACES SHALL MEET MINIMUM ADA CRITERIA WITH A MINIMUM OF NINE(9) HANDICAP SPACES PER 401,500 PARKING SPACES.
2. A 40 FT. RIGHT TRIANGLE, MEASURED FROM THE FACE OF CURB EXTENDED, SHALL BE MAINTAINED AT ALL ENTRANCES. NO OBSTRUCTIONS OR OTHER THAN 180 INCHES ABOVE GRADE OF ANY ADJACENT STREET OR ENTRANCE MAY BE PLACED WITHIN THE AREA.
3. ACCESS OPENINGS SHALL BE ALLOWED AS DICTATED ON THE PLAN.
4. ALL NEW DRIVES, STREETS, PARKING AREAS, APPROACHES AND WALKS SHALL BE CONSTRUCTED TO CITY OF TOPEKA STANDARDS.
5. ALL DRIVES, LINES & PRIVATELY OWNED ACCESS WAYS PROVIDING ACCESSIBILITY TO STRUCTURES, BUILDINGS AND USES WITHIN THE PLANNED UNIT DEVELOPMENT SHALL BE CONSIDERED AND SERVE AS MUTUAL RIGHTS OF ACCESS TO OWNERS, TENANTS, INVITED GUESTS, CLIENTS, EMPLOYEES, CUSTOMERS, SUPPORT AND UTILITY PERSONNEL AND EMERGENCY SERVICE PROVIDERS, INCLUDING LAW ENFORCEMENT, FIRE PROTECTION AND AMBULANCE SERVICES. ALL ACCESS WAYS PROVIDING GENERAL ACCESSIBILITY TO, AND CIRCULATION AMONG, THE USES WITHIN THE PLANNED UNIT DEVELOPMENT SHALL BE MAINTAINED AT ALL TIMES IN GOOD SERVICEABLE CONDITION WITH THE MAINTENANCE OF SAID ACCESS WAYS BEING THE RESPONSIBILITY OF THE OWNER.
6. ALL REQUIREMENTS OF THE TRAFFIC IMPACT ANALYSIS SHALL BE COMPLETED PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
7. A TOPEKA METRO BUS SHELTER CONCEPT PLAN AND/OR FULL OUTLET LANE MAY BE REQUIRED AS DETERMINED AT THE SITE DEVELOPMENT STAGE UPON FURTHER DETERMINATION BY THE CITY TRAFFIC ENGINEER AND THE TOPEKA METROPOLITAN TRANSIT AUTHORITY.

BUILDING NOTES
1. ALL BUILDINGS/STRUCTURES SHALL BE CONSISTENT WITH 1.1 ZONING REQUIREMENTS AND RESTRICTIONS.
2. THE OUTSIDE STORAGE OF VEHICLES OTHER THAN TRAILERS/CAMPER/LOADING EQUIPMENT AND MACHINERY SHALL NOT BE PERMITTED. ALL DOCKS AND/OR LOADING AREAS SHALL BE RECESSED TO THE SIDE AND BEAR WAYS AND NOT FRONT ON TO ANY PUBLIC STREET RIGHTS OF WAY.
3. A MINIMUM OF 50% OF THE MAIN ENTRY OF THE FRONT FACADE SHALL BE COMPOSED OF WINDOWS AND DOOR OPENINGS, THE MAIN ENTRY OF THE FRONT FACADE SHOULD BE TREATED WITH ARCHITECTURAL FINISHES. ADD MECHANICAL EQUIPMENT SHALL BE SCREENED OR NOT VISIBLE FROM PUBLIC STREET RIGHTS OF WAY.
LANDSCAPING NOTES
1. ALL LANDSCAPING SHALL BE CONSISTENT WITH 1.1 ZONING REQUIREMENTS AND RESTRICTIONS.
2. LANDSCAPING SHALL BE PROVIDED CONSISTENT WITH TRAC 18.235 LANDSCAPE REGULATIONS. THE SPECIFIC POINTS, TYPES AND QUANTITIES SHALL BE APPROVED BASED ON THE LANDSCAPE PLAN SUBMITTED AT THE SITE DEVELOPMENT PLAN REVIEW STAGE. AN ATTRACTIVE MIX OF EVERGREEN TREES, SHRUBS, AND DECIDUOUS LARGER TREES SHALL BE PROVIDED ALONG THE PROPERTY'S STREET FRONTAGES WITHIN THE 20 FT. LANDSCAPE SETBACK AND WHERE THE BUILDING AND/OR DEVELOPED AREA IS IMMEDIATELY ADJACENT TO RESIDENTIAL FRONTAGES.
3. THE CARE, MAINTENANCE, AND OVERSEER OF COMMON OPEN SPACE, PARKING AREAS, UTILITIES, PRIVATE STREETS, ACCESS WAYS, STORMWATER MANAGEMENT FACILITIES, FENCING, AND LANDSCAPING SHALL BE THE RESPONSIBILITY OF THE OWNERS. ALL LANDSCAPING SHALL BE INSTALLED PURSUANT TO PLANNING SCHEDULE AND PROPERLY MAINTAINED. IF ANY PORTION OF THE LANDSCAPED MATERIAL DIES, IT SHALL BE REPLACED BY THE NEXT PLANTING SEASON.

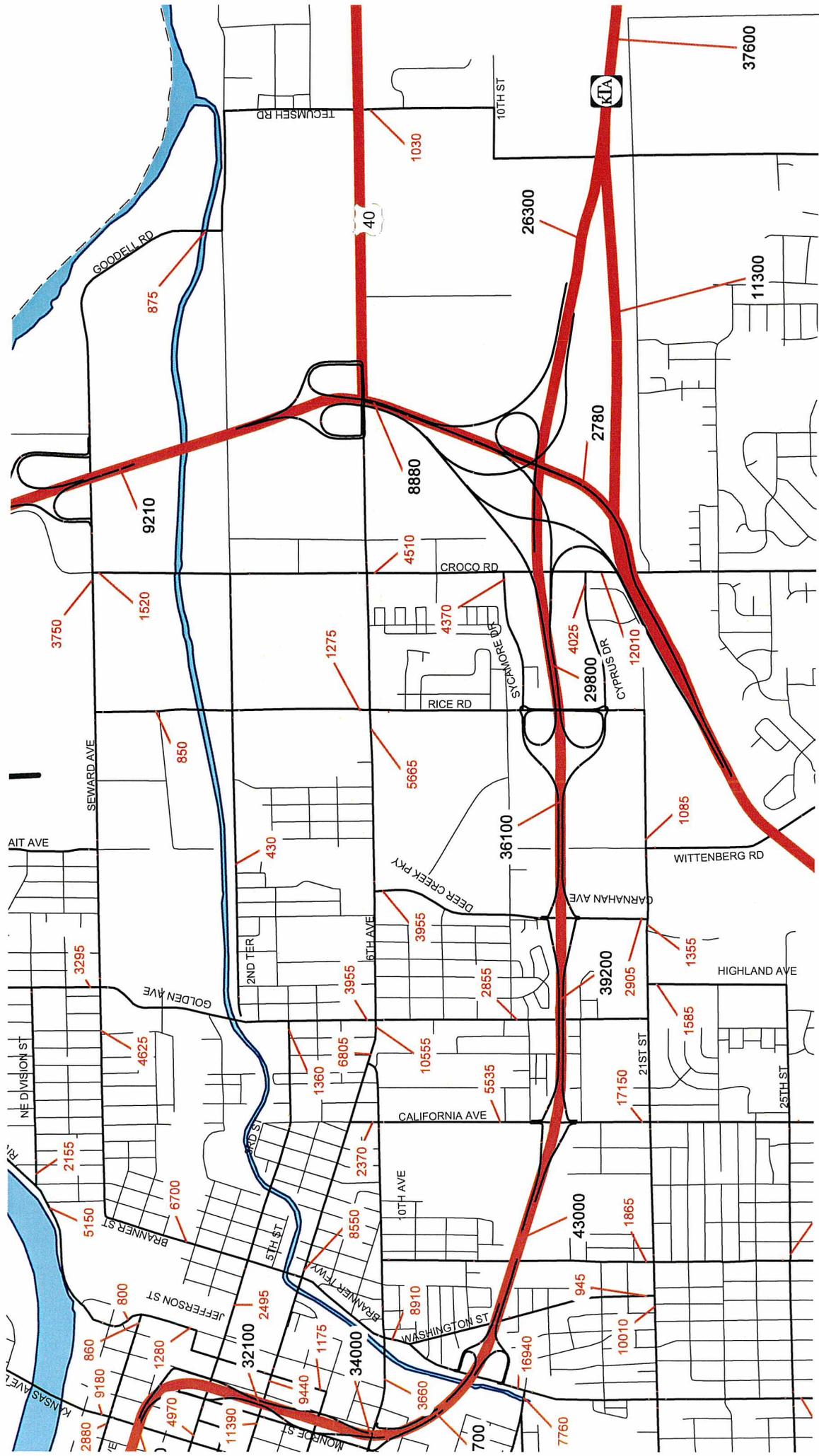
BOOK PAGE
DATE TIME
RECORDED WITH THE SHAWNEE COUNTY REGISTER OF DEEDS
REBECCA L. NIOCE, REGISTER OF DEEDS

CERTIFICATION OF MASTER PUD PLAN APPROVAL
THIS PLANNED UNIT DEVELOPMENT (PUD) MASTER PLAN HAS BEEN REVIEWED AND APPROVED IN ACCORDANCE WITH THE PROVISIONS OF CHAPTER 18.190 OF THE COMPREHENSIVE ZONING REGULATIONS OF THE CITY OF TOPEKA, SHAWNEE COUNTY, KANSAS AND MAY BE AMENDED ONLY AS DESCRIBED IN IWC 18.190.070 OF SAID CHAPTER AND AS SET FORTH ON THIS DOCUMENT OR AS MAY SUBSEQUENTLY BE APPROVED AND RECORDED.

OWNER'S CERTIFICATE
RESER'S FINE FOODS INC. OWNER, AGREES TO COMPLY WITH THE CONDITIONS AND RESTRICTIONS AS SET FORTH ON THE MASTER PUD PLAN IN TESTIMONY WHEREOF, THE OWNERS OF THE ABOVE DESCRIBED PROPERTY, RESER'S FINE FOODS INC. HAS SIGNED THESE PRESENTS THIS _____ DAY OF _____ 2016.
PAUL LEVAY, CHIEF FINANCIAL OFFICER
RESER'S FINE FOODS INC.

NOTARY PUBLIC
MY COMMISSION EXPIRES: _____
DATE: _____
STATE OF KANSAS) s)
COUNTY OF SHAWNEE) ss
BE IT REMEMBERED THAT ON THIS _____ DAY OF _____ 2016, BEFORE ME, A NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE, CAME PAUL LEVAY, CHIEF FINANCIAL OFFICER, WHO IS PERSONALLY KNOWN TO BE THE SAME PERSON WHO EXECUTED THE WITHIN INSTRUMENT OF WRITING, AND SUCH PERSON DULY ACKNOWLEDGED THE EXECUTION OF THE SAME.
IN WITNESS WHEREOF, I HEREBY SET MY HAND AND AFFIX MY SEAL ON THE DAY AND YEAR LAST WRITTEN ABOVE.

DESCRIPTION
INSTR. 2016R17250
A TRACT OF LAND IN THE SOUTHEAST QUARTER OF SECTION 34, TOWNSHIP 11 SOUTH, RANGE 16 EAST OF THE 6TH P.M. SHAWNEE COUNTY, KANSAS DESCRIBED AS FOLLOWS:
COMMENCING AT THE SOUTHWEST CORNER OF SAID SOUTHEAST QUARTER, THENCE SOUTH 88 DEGREES 32 MINUTES 38 SECONDS WEST (ASSUMED BEARING) ALONG THE SOUTH LINE OF SAID SOUTHWEST QUARTER, 250.20 FEET; THENCE NORTH 0 DEGREES 21 MINUTES 22 SECONDS EAST, 60.02 FEET TO THE POINT OF BEGINNING; THENCE SOUTH 88 DEGREES 32 MINUTES 38 SECONDS WEST ALONG THE NORTH RIGHT OF WAY LINE OF 54-00 HIGHWAY, 707.69 FEET; THENCE NORTH 0 DEGREES 00 MINUTES 00 SECONDS EAST, 1225.96 FEET; THENCE NORTH 90 DEGREES 00 MINUTES 00 SECONDS EAST, 59.55 FEET TO THE EAST LINE OF SAID SOUTHWEST QUARTER; THENCE SOUTH 0 DEGREES 00 MINUTES 00 SECONDS WEST ALONG THE SOUTH LINE OF SAID SOUTHWEST QUARTER, 186.46 FEET; THENCE SOUTH 88 DEGREES 32 MINUTES 38 SECONDS WEST, 403.50 FEET; THENCE SOUTH 0 DEGREES 00 MINUTES 00 SECONDS WEST, 350.00 FEET; THENCE NORTH 88 DEGREES 32 MINUTES 38 SECONDS EAST, 153.59 FEET TO THE NORTHWEST CORNER OF CORE SUBDIVISION NO. 4; THENCE SOUTH 0 DEGREES 01 MINUTES 22 SECONDS WEST (MAYO) SOUTH 0 DEGREES 00 MINUTES 00 SECONDS WEST (PLATT) ALONG THE WEST LINE OF CORE SUBDIVISION NO. 4, 668.14 FEET TO THE POINT OF BEGINNING.
AND
INSTR. 2016I8725
A TRACT OF LAND IN THE SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 11 SOUTH, RANGE 16 EAST OF THE 6TH P.M. SHAWNEE COUNTY, KANSAS DESCRIBED AS FOLLOWS:
BEGINNING AT THE SOUTHEAST CORNER OF SAID SOUTHWEST QUARTER, THENCE NORTH 00 DEGREES 00 MINUTES 00 SECONDS EAST, 775.00 FEET AND SOUTH 88 DEGREES 32 MINUTES 38 SECONDS WEST, 79.00 FEET TO THE WEST RIGHT OF WAY LINE OF SE CROCO ROAD AND THE TRUE POINT OF BEGINNING; THENCE NORTH 00 DEGREES 00 MINUTES 00 SECONDS EAST, 350.00 FEET PARALLEL WITH THE EAST LINE OF SAID SOUTHWEST QUARTER; THENCE SOUTH 88 DEGREES 32 MINUTES 38 SECONDS WEST, 373.50 FEET; THENCE SOUTH 00 DEGREES 00 MINUTES 00 SECONDS EAST, 350.00 FEET; THENCE NORTH 88 DEGREES 32 MINUTES 38 SECONDS EAST, 373.50 FEET ALONG THE NORTH LINE OF CORE SUBDIVISION NO. 4 EXTENDED TO THE POINT OF BEGINNING.
AND
CORE SUBDIVISION NO. 4, SHAWNEE COUNTY, KANSAS
AND
CORE SUBDIVISION NO. 6, SHAWNEE COUNTY, KANSAS



Resers Fine Foods, Inc.
Proposed Warehouse & Distribution Center
545 SE Croco Road
Topeka, Kansas 66607
CFS Project No. 16-5226

Traffic Impact Analysis

Appendix-2

Traffic Counts (12-06-16 AM & PM Peak Hours at 6th & Deer Creek, 6th & Croco)



Prepared by:
Cook, Flatt & Strobel Engineers, P.A.
2930 Woodside Drive
Topeka, Kansas 66614
785.272.4706

Resers Truck Depot & Distribution Center Traffic Analysis (CFS Project No. 16-5226)
 6th & Deer Creek Turning Movement Counts
 AM Peak, 7:00am to 9:00am, Tuesday, December 6, 2016

Start	6th & Deer Creek - Eastbound			6th & Deer Creek - Westbound			6th & Deer Creek - Northbound			6th & Deer Creek - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
07:00	0	28	10	12	44	0	3	0	19	0	0	0
07:15	0	33	15	15	59	0	7	0	27	0	0	0
07:30	0	42	24	20	79	1	9	0	36	1	1	0
07:45	1	51	6	13	90	0	16	0	63	0	0	0
08:00	0	34	14	7	75	0	10	0	55	0	1	0
08:15	0	38	8	12	74	0	11	0	27	0	0	0
08:30	0	45	9	8	51	0	5	0	22	0	0	0
08:45	1	33	8	6	45	2	7	1	20	0	0	1

AM Hourly Totals - Tuesday, 12/06/16

Start	6th & Deer Creek - Eastbound			6th & Deer Creek - Westbound			6th & Deer Creek - Northbound			6th & Deer Creek - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
07:00	1	154	55	60	272	1	35	0	145	1	1	0
07:15	1	160	59	55	303	1	42	0	181	1	2	0
07:30	1	165	52	52	318	1	46	0	181	1	2	0
07:45	1	168	37	40	290	0	42	0	167	0	1	0
08:00	1	150	39	33	245	2	33	1	124	0	1	1

AM Peak Hour Volumes - Tuesday, 12/06/16

PHF	6th & Deer Creek - Eastbound			6th & Deer Creek - Westbound			6th & Deer Creek - Northbound			6th & Deer Creek - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
0.85	1	165	52	52	318	1	46	0	181	1	2	0

Resers Truck Depot & Distribution Center Traffic Analysis (CFS Project No. 16-5226)
 6th & Deer Creek Turning Movement Counts - Truck Traffic Only
 AM Peak, 7:00am to 9:00am, Tuesday, December 6, 2016

Start	6th & Deer Creek - Eastbound			6th & Deer Creek - Westbound			6th & Deer Creek - Northbound			6th & Deer Creek - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
07:00	0	2	0	1	0	0	0	0	2	0	0	0
07:15	0	1	1	0	2	0	0	0	1	0	0	0
07:30	0	2	2	0	1	1	1	0	0	0	0	0
07:45	0	3	0	0	3	0	0	0	3	0	0	0
08:00	0	2	0	1	5	0	0	0	0	0	0	0
08:15	0	0	0	1	2	0	1	0	1	0	0	0
08:30	0	1	1	0	3	0	0	0	1	0	0	0
08:45	0	2	0	1	5	1	0	0	3	0	0	0

AM Hourly Totals - Tuesday, 12/06/16

Start	6th & Deer Creek - Eastbound			6th & Deer Creek - Westbound			6th & Deer Creek - Northbound			6th & Deer Creek - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
07:00	0	8	3	1	6	1	1	0	6	0	0	0
07:15	0	8	3	1	11	1	1	0	4	0	0	0
07:30	0	7	2	2	11	1	2	0	4	0	0	0
07:45	0	6	1	2	13	0	1	0	5	0	0	0
08:00	0	5	1	3	15	1	1	0	5	0	0	0

AM Peak Hour Volumes - Tuesday, 12/06/16

PHF	6th & Deer Creek - Eastbound			6th & Deer Creek - Westbound			6th & Deer Creek - Northbound			6th & Deer Creek - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
0.65	0	7	2	2	11	1	2	0	4	0	0	0

Resers Truck Depot & Distribution Center Traffic Analysis (CFS Project No. 16-5226)

6th & Deer Creek Turning Movement Counts

PM Peak, 4:00pm to 6:00pm, Tuesday, December 6, 2016

Start	6th & Deer Creek - Eastbound			6th & Deer Creek - Westbound			6th & Deer Creek - Northbound			6th & Deer Creek - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
04:00	0	58	19	16	60	2	13	1	17	1	1	0
04:15	0	46	16	18	55	0	15	2	18	0	0	0
04:30	0	75	27	26	66	0	25	0	16	0	1	1
04:45	1	69	15	28	64	2	12	0	32	0	0	0
05:00	1	67	12	48	72	1	25	1	15	1	2	0
05:15	2	57	15	42	59	3	16	1	22	1	1	1
05:30	0	58	11	29	59	1	23	3	16	1	0	2
05:45	0	42	9	13	54	0	18	3	11	2	2	0

PM Hourly Totals - Tuesday, 12/06/16

Start	6th & Deer Creek - Eastbound			6th & Deer Creek - Westbound			6th & Deer Creek - Northbound			6th & Deer Creek - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
04:00	1	248	77	88	245	4	65	3	83	1	2	1
04:15	2	257	70	120	257	3	77	3	81	1	3	1
04:30	4	268	69	144	261	6	78	2	85	2	4	2
04:45	4	251	53	147	254	7	76	5	85	3	3	3
05:00	3	224	47	132	244	5	82	8	64	5	5	3

PM Peak Hour Volumes - Tuesday, 12/06/16

PHF	6th & Deer Creek - Eastbound			6th & Deer Creek - Westbound			6th & Deer Creek - Northbound			6th & Deer Creek - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
0.94	4	268	69	144	261	6	78	2	85	2	4	2

Resers Truck Depot & Distribution Center Traffic Analysis (CFS Project No. 16-5226)
 6th & Deer Creek Turning Movement Counts - Truck Traffic Only
 PM Peak, 4:00pm to 6:00pm, Tuesday, December 6, 2016

Start	6th & Deer Creek - Eastbound			6th & Deer Creek - Westbound			6th & Deer Creek - Northbound			6th & Deer Creek - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
04:00	0	4	0	1	4	0	0	0	0	0	0	0
04:15	0	2	0	0	1	0	1	0	1	0	0	0
04:30	0	0	0	0	2	0	1	0	1	0	0	0
04:45	0	0	0	0	0	0	0	0	1	0	0	0
05:00	0	0	0	0	2	0	0	0	0	0	0	0
05:15	1	0	0	1	1	0	4	0	1	0	0	0
05:30	0	2	1	2	4	0	0	0	1	0	0	0
05:45	0	0	0	1	3	0	1	0	1	1	0	0

PM Hourly Totals - Tuesday, 12/06/16

Start	6th & Deer Creek - Eastbound			6th & Deer Creek - Westbound			6th & Deer Creek - Northbound			6th & Deer Creek - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
04:00	0	6	0	1	7	0	2	0	3	0	0	0
04:15	0	2	0	0	5	0	2	0	3	0	0	0
04:30	1	0	0	1	5	0	5	0	3	0	0	0
04:45	1	2	1	3	7	0	4	0	3	0	0	0
05:00	1	2	1	4	10	0	5	0	3	1	0	0

PM Peak Hour Volumes - Tuesday, 12/06/16

PHF	6th & Deer Creek - Eastbound			6th & Deer Creek - Westbound			6th & Deer Creek - Northbound			6th & Deer Creek - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
0.68	1	0	0	1	5	0	5	0	3	0	0	0

Resers Truck Depot & Distribution Center Traffic Analysis (CFS Project No. 16-5226)

6th & Croco Turning Movement Counts

AM Peak, 7:00am to 9:00am, Tuesday, December 6, 2016

Start	6th & Croco - Eastbound			6th & Croco - Westbound			6th & Croco - Northbound			6th & Croco - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
07:00	0	7	5	11	18	2	11	8	15	1	10	3
07:15	2	14	4	19	53	5	13	16	28	2	7	3
07:30	2	24	7	24	79	6	26	12	28	1	11	3
07:45	1	12	5	16	90	5	17	15	8	1	7	6
08:00	1	25	6	21	74	3	13	10	18	2	7	4
08:15	2	21	4	45	60	0	15	6	17	3	5	2
08:30	2	18	8	16	28	4	9	5	8	0	8	3
08:45	2	13	8	7	21	3	12	10	8	1	5	3

AM Hourly Totals - Tuesday, 12/06/16

Start	6th & Croco - Eastbound			6th & Croco - Westbound			6th & Croco - Northbound			6th & Croco - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
07:00	5	57	21	70	240	18	67	51	79	5	35	15
07:15	6	75	22	80	296	19	69	53	82	6	32	16
07:30	6	82	22	106	303	14	71	43	71	7	30	15
07:45	6	76	23	98	252	12	54	36	51	6	27	15
08:00	7	77	26	89	183	10	49	31	51	6	25	12

AM Peak Hour Volumes - Tuesday, 12/06/16

PHF	6th & Croco - Eastbound			6th & Croco - Westbound			6th & Croco - Northbound			6th & Croco - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
0.86	6	82	22	106	303	14	71	43	71	7	30	15

Resers Truck Depot & Distribution Center Traffic Analysis (CFS Project No. 16-5226)
 6th & Croco Turning Movement Counts - Truck Traffic
 AM Peak, 7:00am to 9:00am, Tuesday, December 6, 2016

Start	6th & Croco - Eastbound			6th & Croco - Westbound			6th & Croco - Northbound			6th & Croco - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
07:00	0	2	1	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	1	0	0
07:30	0	0	1	0	1	0	0	1	0	0	0	0
07:45	0	2	0	0	1	0	0	0	0	0	0	0
08:00	1	3	0	0	2	0	0	0	1	0	0	0
08:15	1	0	0	6	0	0	0	0	0	0	0	0
08:30	0	0	0	2	0	0	1	0	0	0	0	0
08:45	0	0	0	0	3	1	0	1	1	1	0	0

AM Hourly Totals - Tuesday, 12/06/16

Start	6th & Croco - Eastbound			6th & Croco - Westbound			6th & Croco - Northbound			6th & Croco - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
07:00	0	4	2	0	2	0	0	1	0	1	0	0
07:15	1	5	1	0	4	0	0	1	1	1	0	0
07:30	2	5	1	6	4	0	0	1	1	0	0	0
07:45	2	5	0	8	3	0	1	0	1	0	0	0
08:00	2	3	0	8	5	1	1	1	2	1	0	0

AM Peak Hour Volumes - Tuesday, 12/06/16

PHF	6th & Croco - Eastbound			6th & Croco - Westbound			6th & Croco - Northbound			6th & Croco - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
0.86	2	5	1	6	4	0	0	1	1	0	0	0

Resers Truck Depot & Distribution Center Traffic Analysis (CFS Project No. 16-5226)
 6th & Croco Turning Movement Counts
 PM Peak, 4:00pm to 6:00pm, Tuesday, December 6, 2016

Start	6th & Croco - Eastbound			6th & Croco - Westbound			6th & Croco - Northbound			6th & Croco - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
04:00	6	38	13	20	19	3	9	15	22	3	11	3
04:15	1	39	10	17	34	2	9	15	18	4	10	5
04:30	4	47	16	17	29	3	12	11	30	2	13	4
04:45	2	54	15	30	25	6	9	20	21	1	12	1
05:00	1	93	19	35	17	2	1	18	21	3	14	2
05:15	7	62	13	35	26	2	14	14	29	0	16	3
05:30	6	38	13	32	28	2	8	15	14	4	19	2
05:45	1	34	5	20	19	2	6	10	21	2	7	4

PM Hourly Totals - Tuesday, 12/06/16

Start	6th & Croco - Eastbound			6th & Croco - Westbound			6th & Croco - Northbound			6th & Croco - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
04:00	13	178	54	84	107	14	39	61	91	10	46	13
04:15	8	233	60	99	105	13	31	64	90	10	49	12
04:30	14	256	63	117	97	13	36	63	101	6	55	10
04:45	16	247	60	132	96	12	32	67	85	8	61	8
05:00	15	227	50	122	90	8	29	57	85	9	56	11

PM Peak Hour Volumes - Tuesday, 12/06/16

PHF	6th & Croco - Eastbound			6th & Croco - Westbound			6th & Croco - Northbound			6th & Croco - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
0.92	14	256	63	117	97	13	36	63	101	6	55	10

Resers Truck Depot & Distribution Center Traffic Analysis (CFS Project No. 16-5226)
 6th & Croco Turning Movement Counts - Truck Traffic Only
 PM Peak, 4:00pm to 6:00pm, Tuesday, December 6, 2016

Start	6th & Croco - Eastbound			6th & Croco - Westbound			6th & Croco - Northbound			6th & Croco - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
04:00	0	0	0	0	0	0	0	0	2	0	0	0
04:15	0	0	0	0	0	0	0	0	0	0	0	0
04:30	0	0	0	0	0	0	0	0	4	1	0	0
04:45	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0
05:15	0	0	0	0	0	0	1	0	0	0	0	0
05:30	0	0	0	0	1	0	2	0	0	0	0	0
05:45	0	0	0	0	0	0	0	0	0	0	0	0

PM Hourly Totals - Tuesday, 12/06/16

Start	6th & Croco - Eastbound			6th & Croco - Westbound			6th & Croco - Northbound			6th & Croco - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
04:00	0	0	0	0	0	0	0	0	6	1	0	0
04:15	0	0	0	0	0	0	0	0	4	1	0	0
04:30	0	0	0	0	0	0	1	0	4	1	0	0
04:45	0	0	0	0	1	0	3	0	0	0	0	0
05:00	0	0	0	0	1	0	3	0	0	0	0	0

PM Peak Hour Volumes - Tuesday, 12/06/16

PHF	6th & Croco - Eastbound			6th & Croco - Westbound			6th & Croco - Northbound			6th & Croco - Southbound		
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
0.35	0	0	0	0	0	0	1	0	4	1	0	0

Resers Fine Foods, Inc.
Proposed Warehouse & Distribution Center
545 SE Croco Road
Topeka, Kansas 66607
CFS Project No. 16-5226

Traffic Impact Analysis

Appendix-3

ITE Trip Generation Calculations



Prepared by:
Cook, Flatt & Strobel Engineers, P.A.
2930 Woodside Drive
Topeka, Kansas 66614
785.272.4706

Trip Generation Calculation - Weekday Peak AM and PM Hour

Resers Truck Depot & Distribution Center, 6th & Croco

Cook Flatt and Strobel, Engineers

CFS Project No. 16-5226

Date: 12/05/16

Land Use	ITE Land Use Code	Square Footage or Unit Quantity	Pass-By Traffic Percent	Weekday Total		AM Peak Hour (7-9 AM)						PM Peak Hour (4-6 PM)						Notes				
				Total PHV	New-Gen PHV	Total 2-Way PHV	New-Gen 2-Way PHV	Enter %	Total Enter PHV	New-Gen Enter PHV	Exit %	Total Exit PHV	New-Gen Exit PHV	Total 2-Way PHV	New-Gen 2-Way PHV	Enter %	Total Enter PHV		New-Gen Enter PHV	Exit %	Total Exit PHV	New-Gen Exit PHV
Manufacturing (KSF)	140	318	0%	1215	1215	232	232	78%	181	181	22%	51	51	232	232	36%	84	84	64%	148	148	
Manufacturing (Emp)	140	300	0%	639	639	120	120	73%	88	88	27%	32	32	108	108	44%	48	48	56%	60	60	
Warehousing (KSF)	150	85	0%	303	303	26	26	79%	21	21	21%	5	5	27	27	25%	7	7	75%	20	20	
Warehousing (Emp)	150	80	0%	311	311	41	41	72%	30	30	28%	11	11	47	47	35%	16	16	65%	31	31	
Ph-I Manufacturing + Ph-2 Warehouse (KSF)				1518	1518	258	258			202			56	259	259			91			168	
Ph-I Manufacturing + Ph-2 Warehouse (Emp)				950	950	161	161			118			43	155	155			64			91	

Notes:
ITE 9th Edition Trip Generation, AM Peak Hour of Generator and PM Peak Hour of Generator

Manufacturing (140)

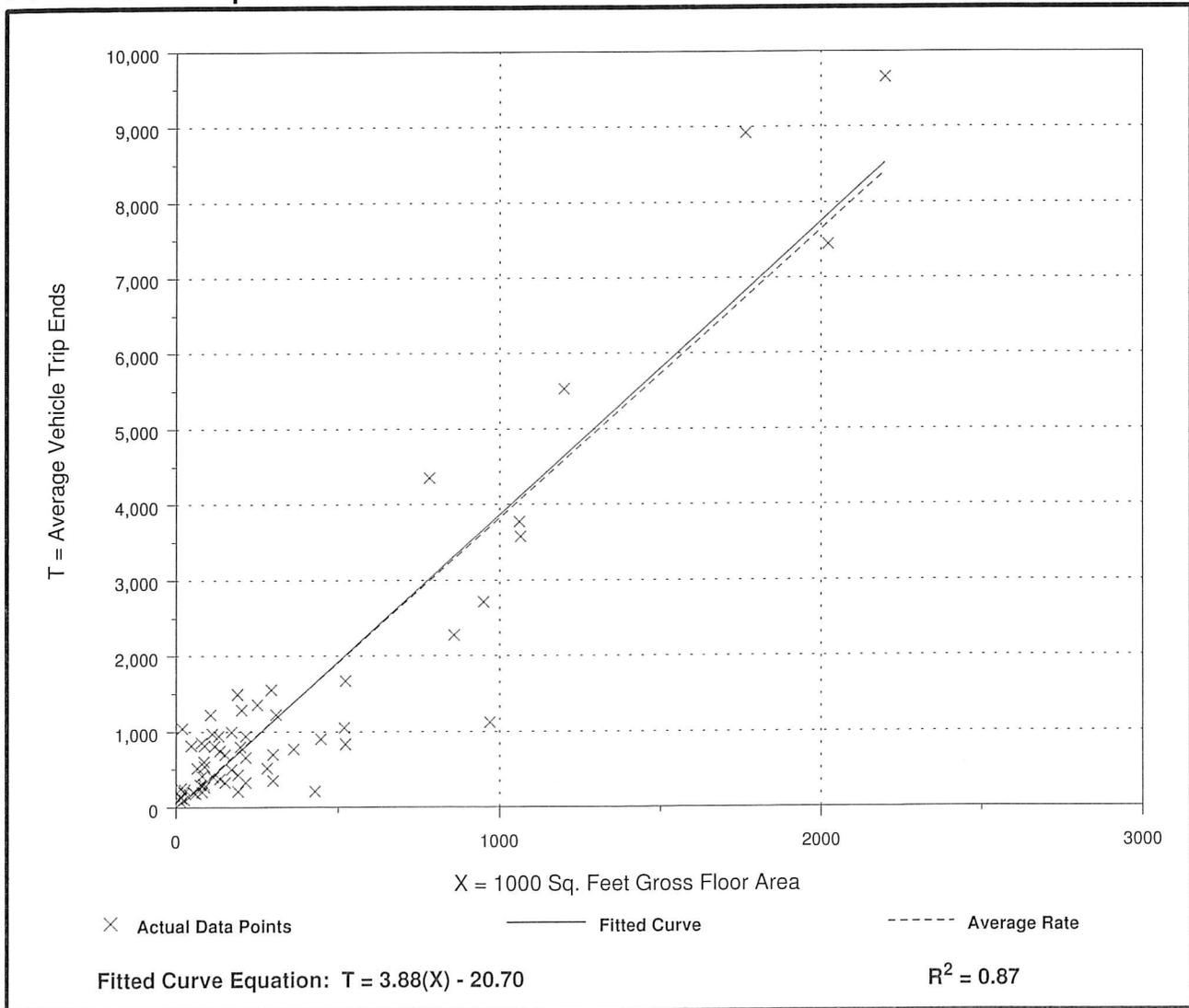
**Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday**

Number of Studies: 62
Average 1000 Sq. Feet GFA: 349
Directional Distribution: 50% entering, 50% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
3.82	0.50 - 52.05	3.07

Data Plot and Equation



Manufacturing (140)

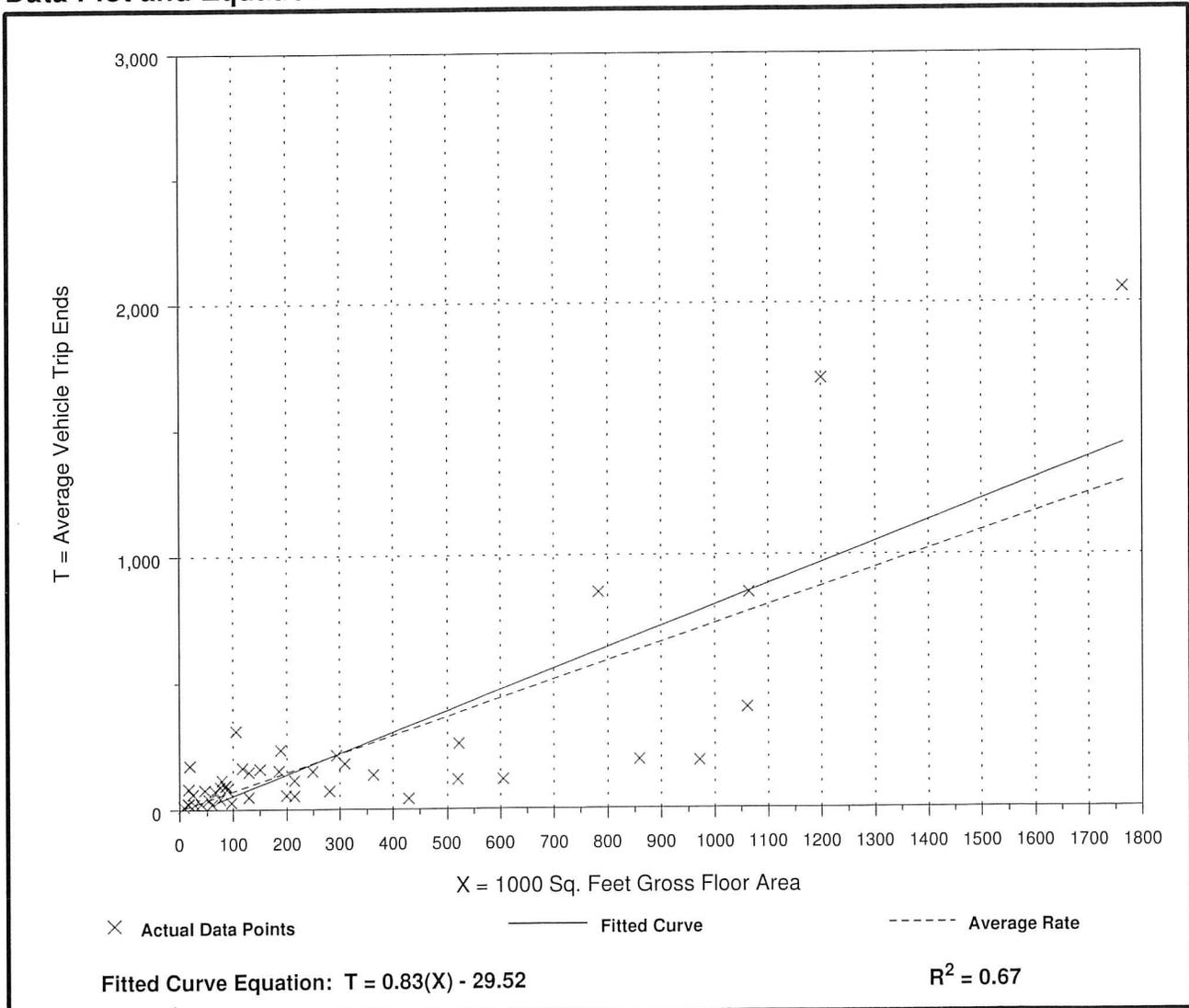
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 51
Average 1000 Sq. Feet GFA: 293
Directional Distribution: 78% entering, 22% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.73	0.10 - 8.75	1.04

Data Plot and Equation



Manufacturing (140)

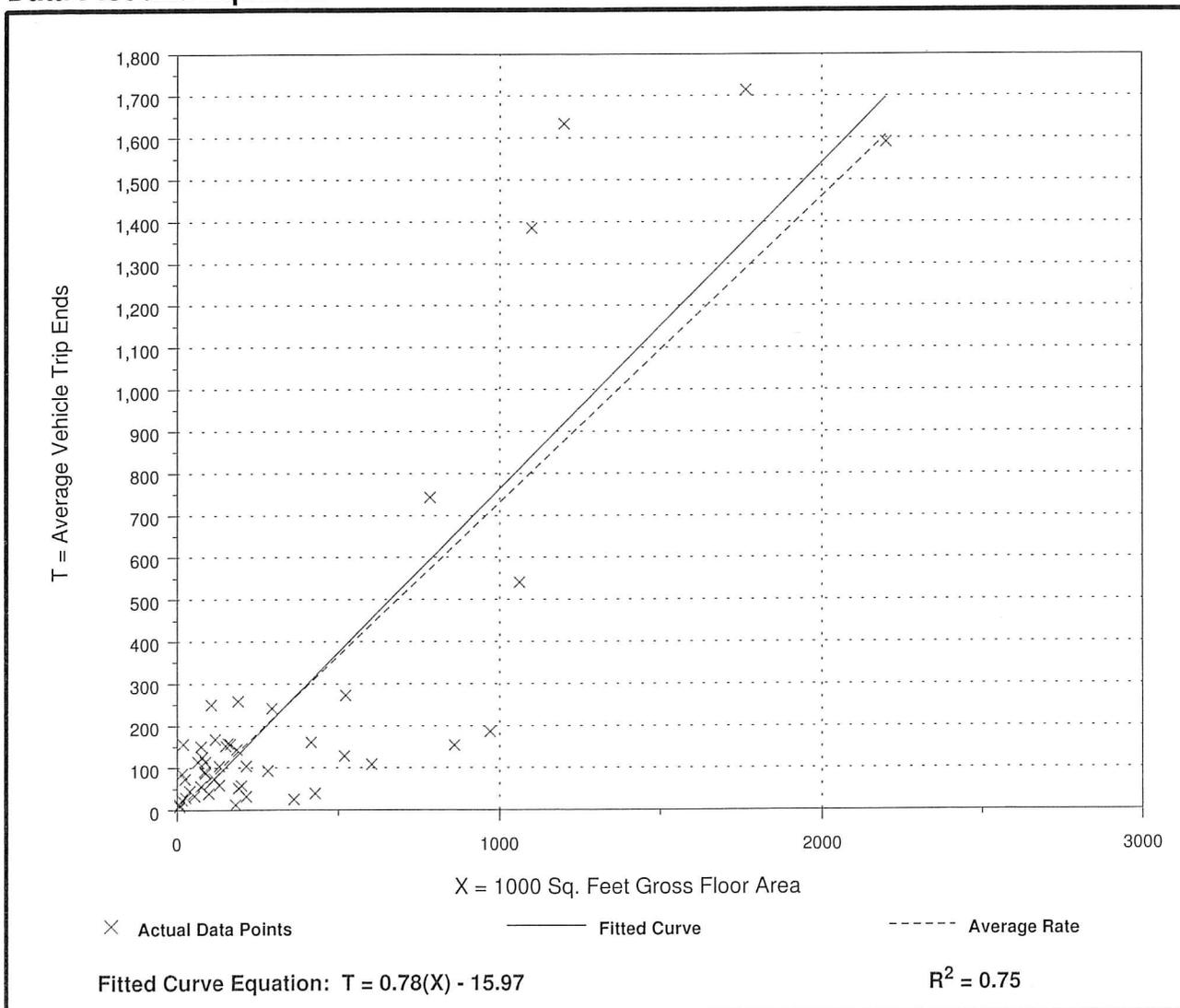
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 56
 Average 1000 Sq. Feet GFA: 318
 Directional Distribution: 36% entering, 64% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.73	0.07 - 7.85	1.01

Data Plot and Equation



Manufacturing (140)

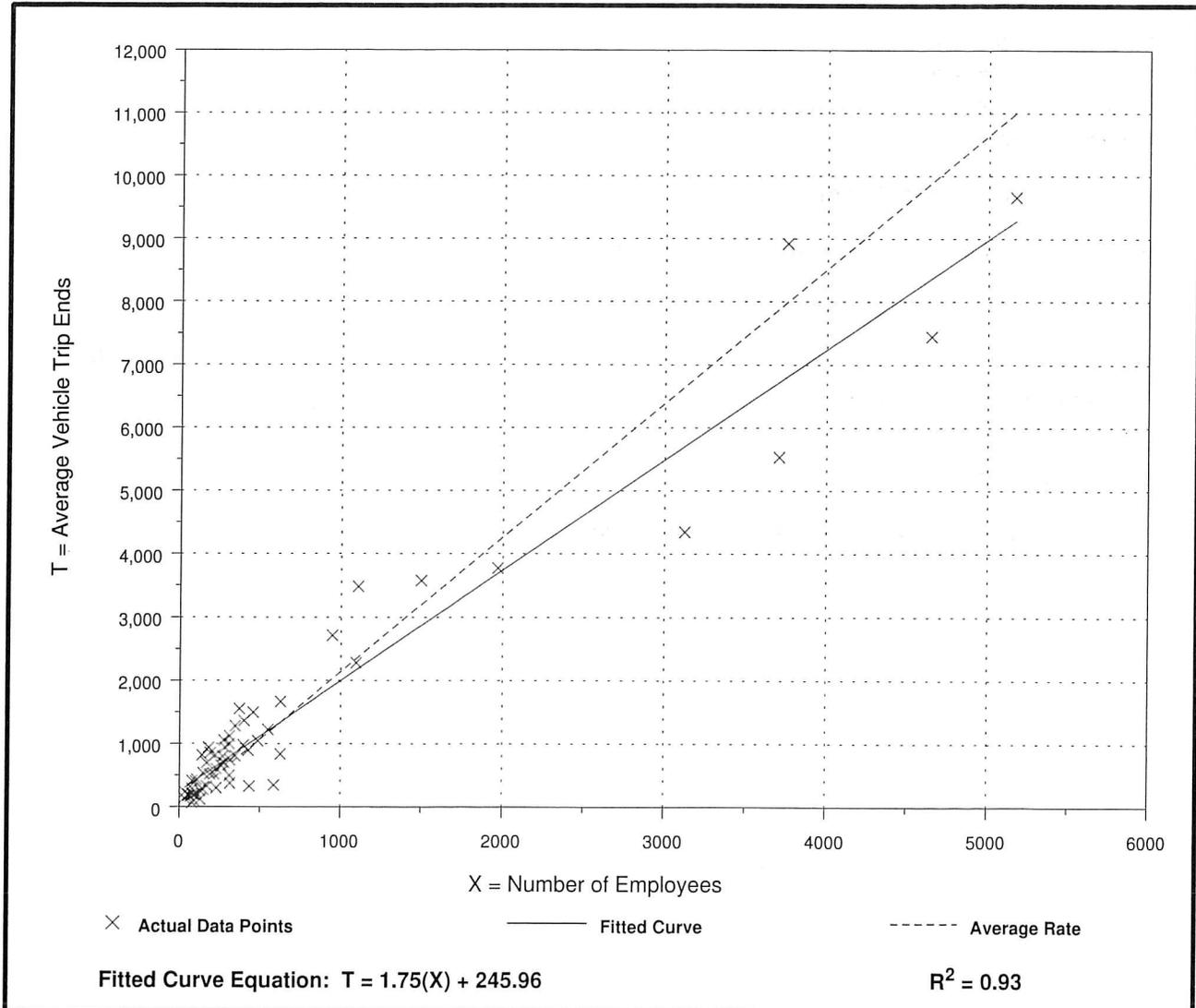
Average Vehicle Trip Ends vs: Employees On a: Weekday

Number of Studies: 62
 Avg. Number of Employees: 648
 Directional Distribution: 50% entering, 50% exiting

Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
2.13	0.60 - 6.66	1.66

Data Plot and Equation



Manufacturing (140)

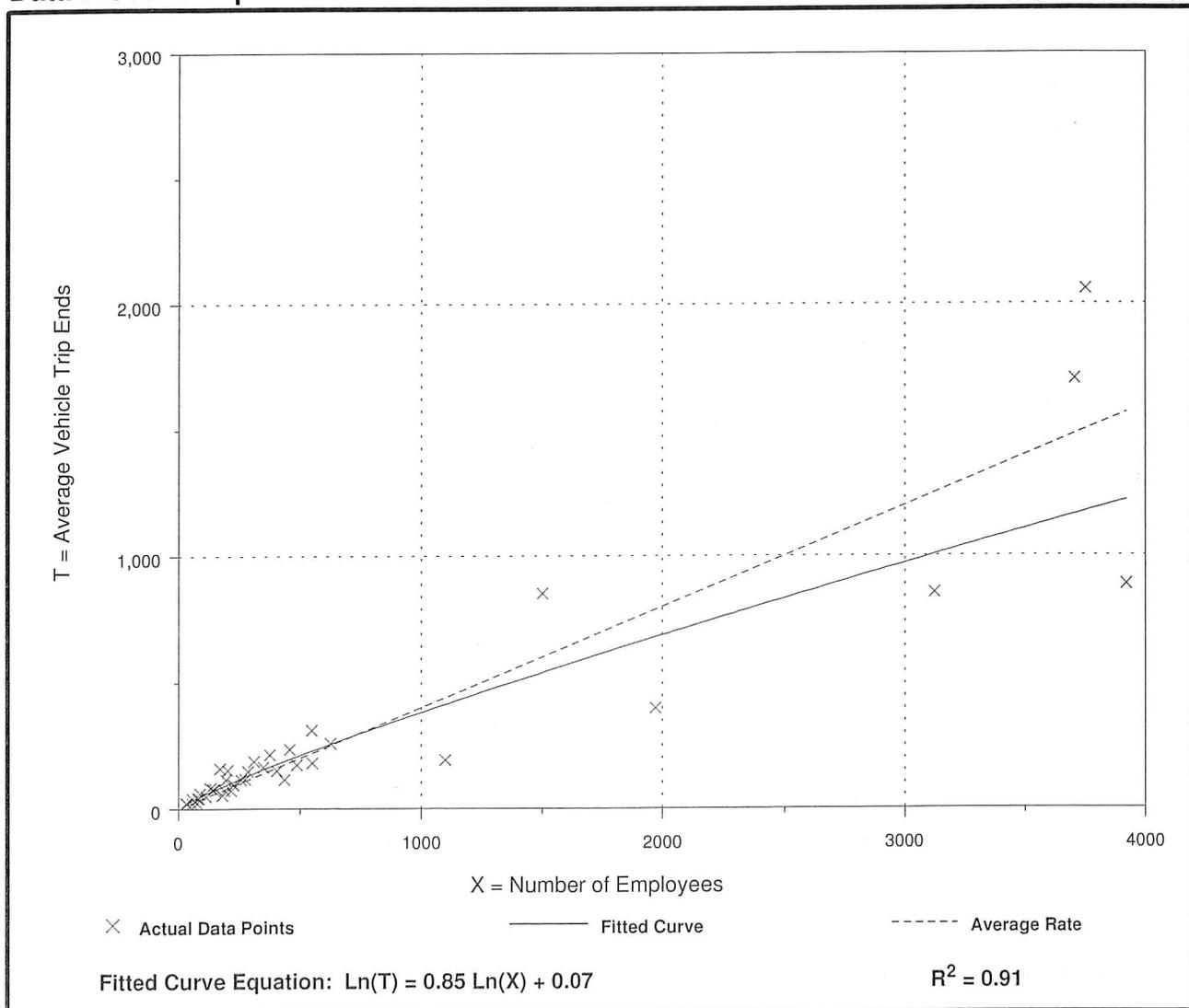
Average Vehicle Trip Ends vs: **Employees**
 On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 45
 Avg. Number of Employees: 628
 Directional Distribution: 73% entering, 27% exiting

Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.40	0.18 - 0.94	0.65

Data Plot and Equation



Manufacturing (140)

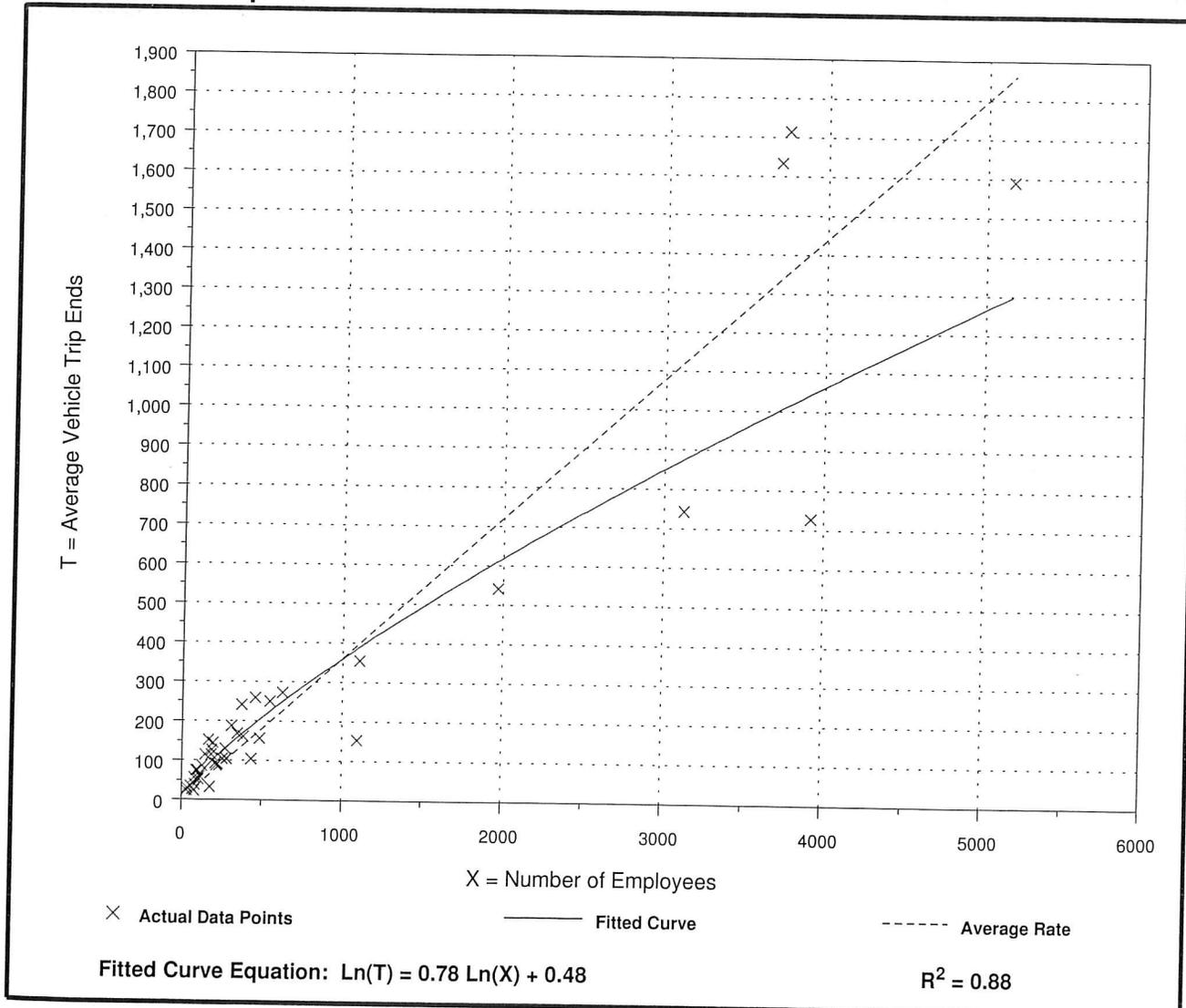
Average Vehicle Trip Ends vs: Employees
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 46
Avg. Number of Employees: 711
Directional Distribution: 44% entering, 56% exiting

Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.36	0.14 - 0.90	0.62

Data Plot and Equation



Warehousing (150)

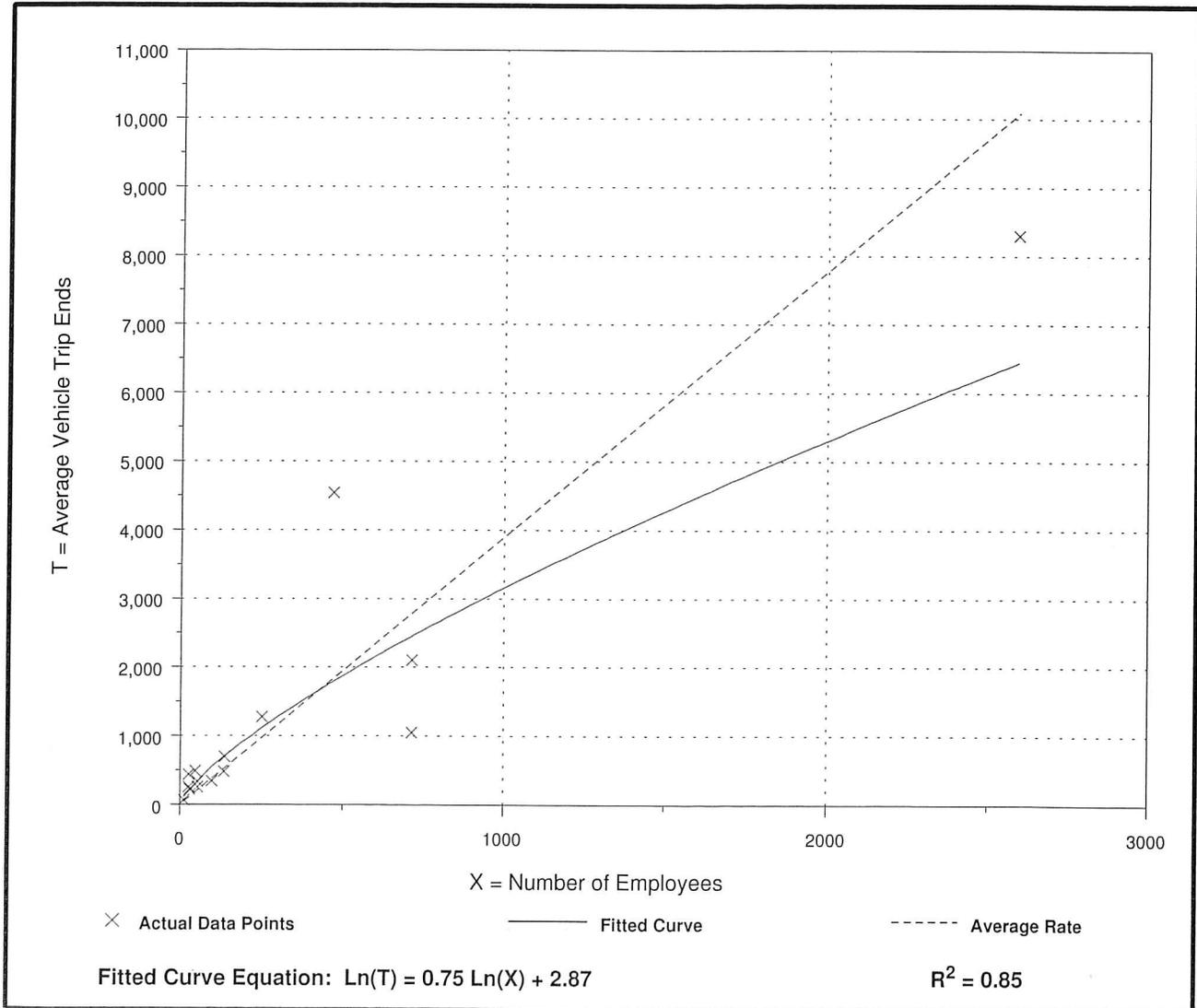
Average Vehicle Trip Ends vs: Employees
On a: **Weekday**

Number of Studies: 15
Avg. Number of Employees: 358
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
3.89	1.47 - 15.71	3.08

Data Plot and Equation



Warehousing (150)

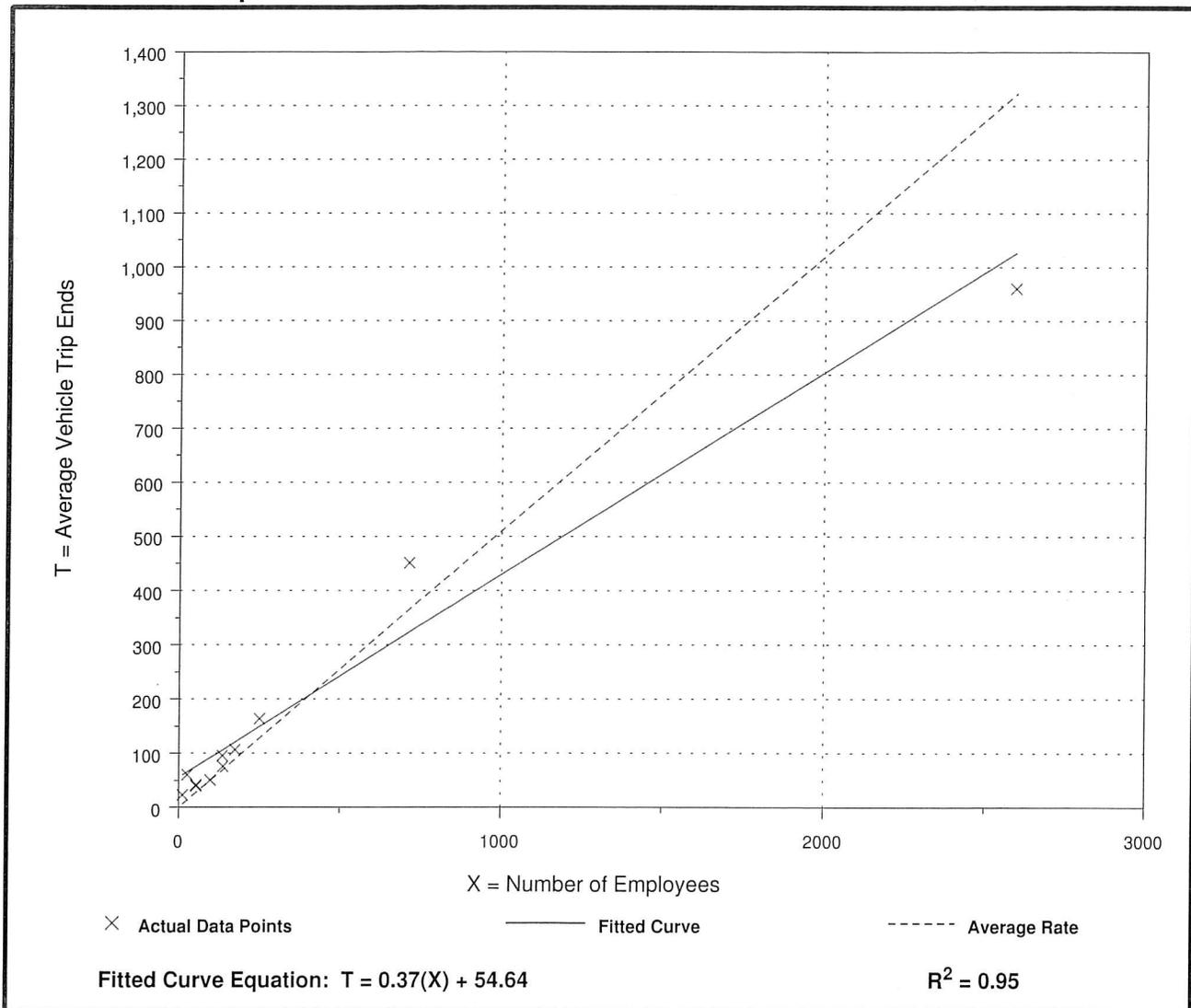
Average Vehicle Trip Ends vs: Employees
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 12
Avg. Number of Employees: 414
Directional Distribution: 72% entering, 28% exiting

Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.51	0.37 - 2.14	0.74

Data Plot and Equation



Warehousing (150)

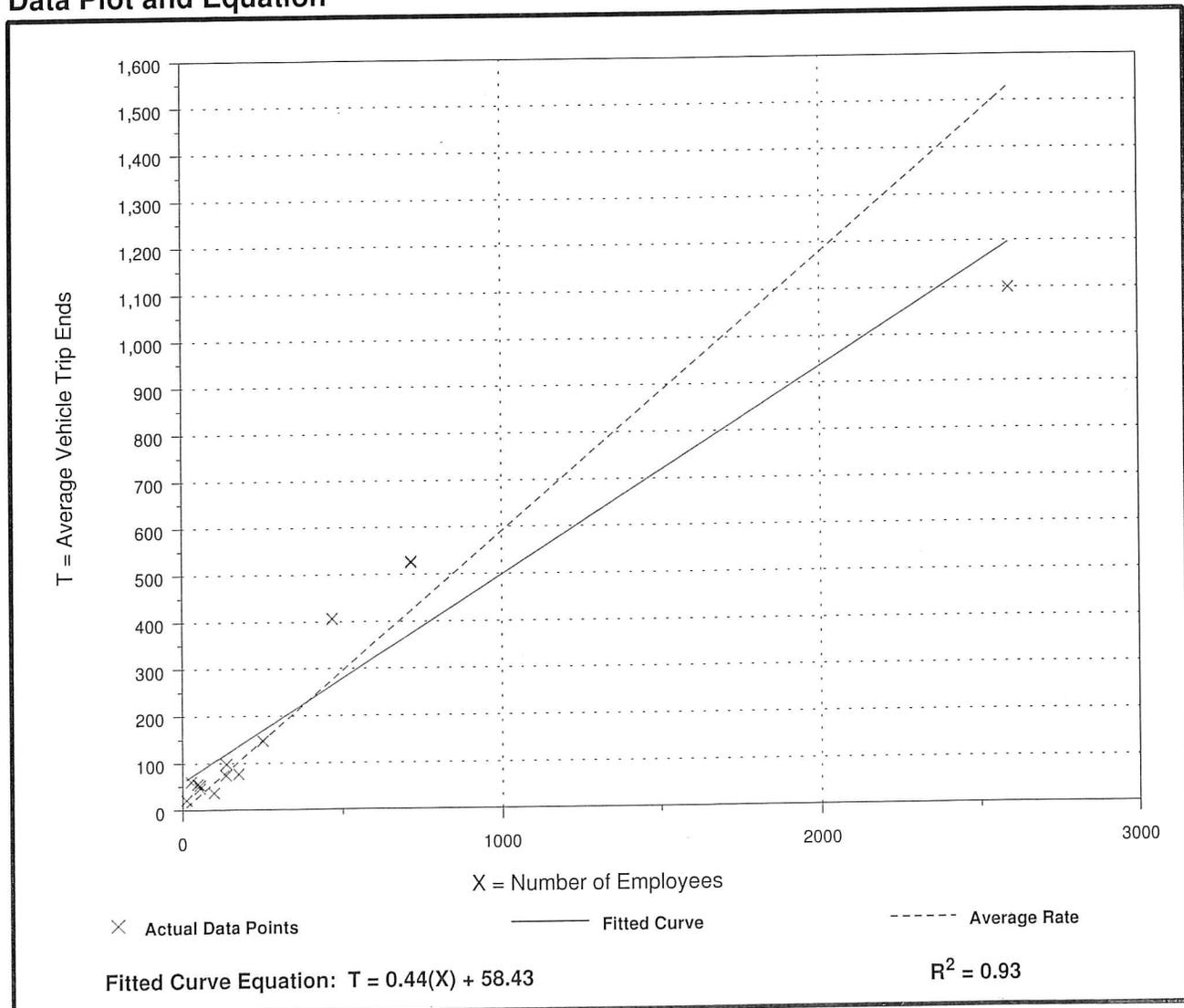
Average Vehicle Trip Ends vs: Employees
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Number of Studies: 14
 Avg. Number of Employees: 392
 Directional Distribution: 35% entering, 65% exiting

Trip Generation per Employee

Average Rate	Range of Rates	Standard Deviation
0.59	0.37 - 2.22	0.80

Data Plot and Equation



Warehousing (150)

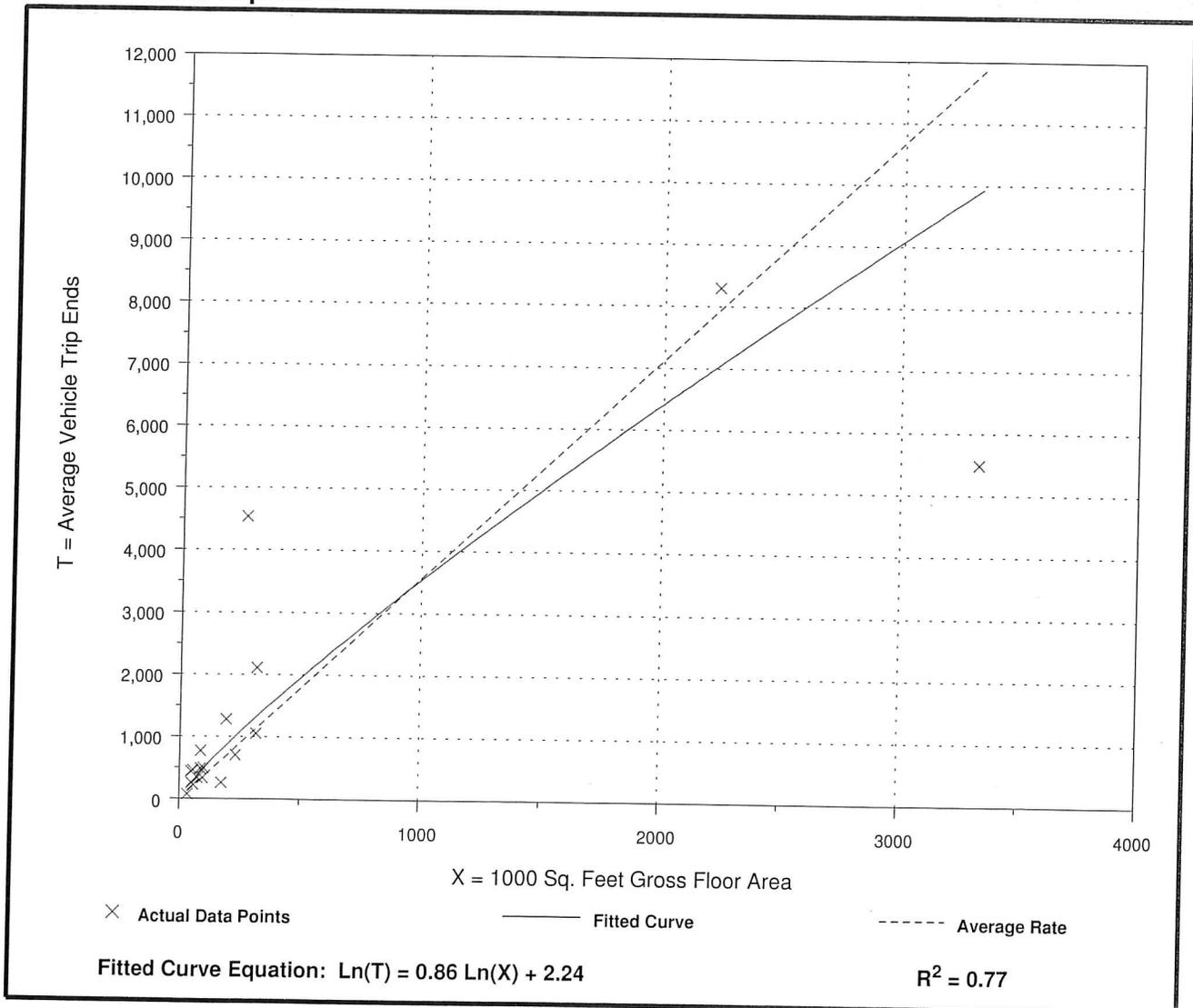
**Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday**

Number of Studies: 18
Average 1000 Sq. Feet GFA: 431
Directional Distribution: 50% entering, 50% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
3.56	1.51 - 17.00	3.58

Data Plot and Equation



Warehousing (150)

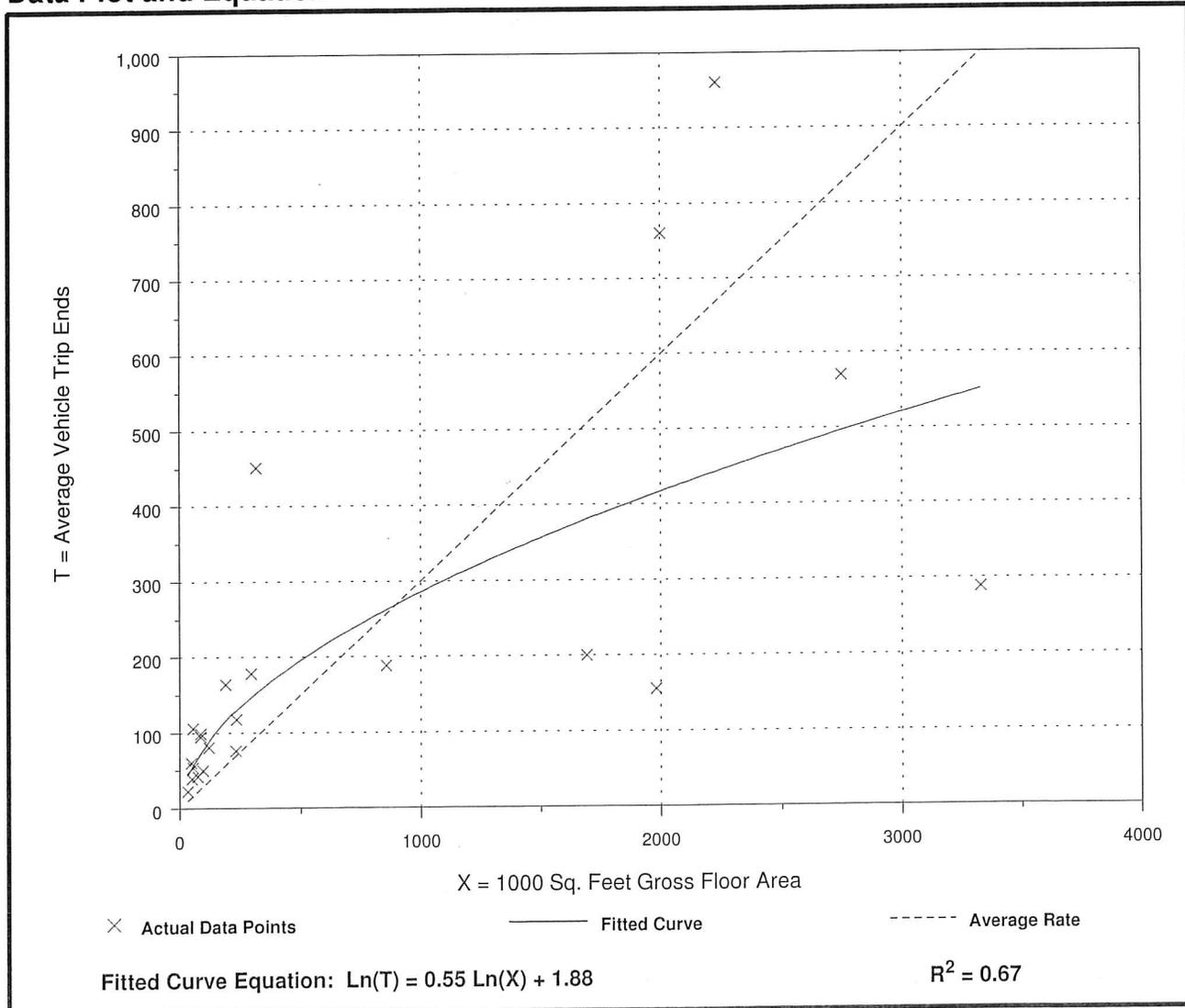
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Number of Studies: 23
 Average 1000 Sq. Feet GFA: 745
 Directional Distribution: 79% entering, 21% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.30	0.08 - 1.93	0.63

Data Plot and Equation



Warehousing (150)

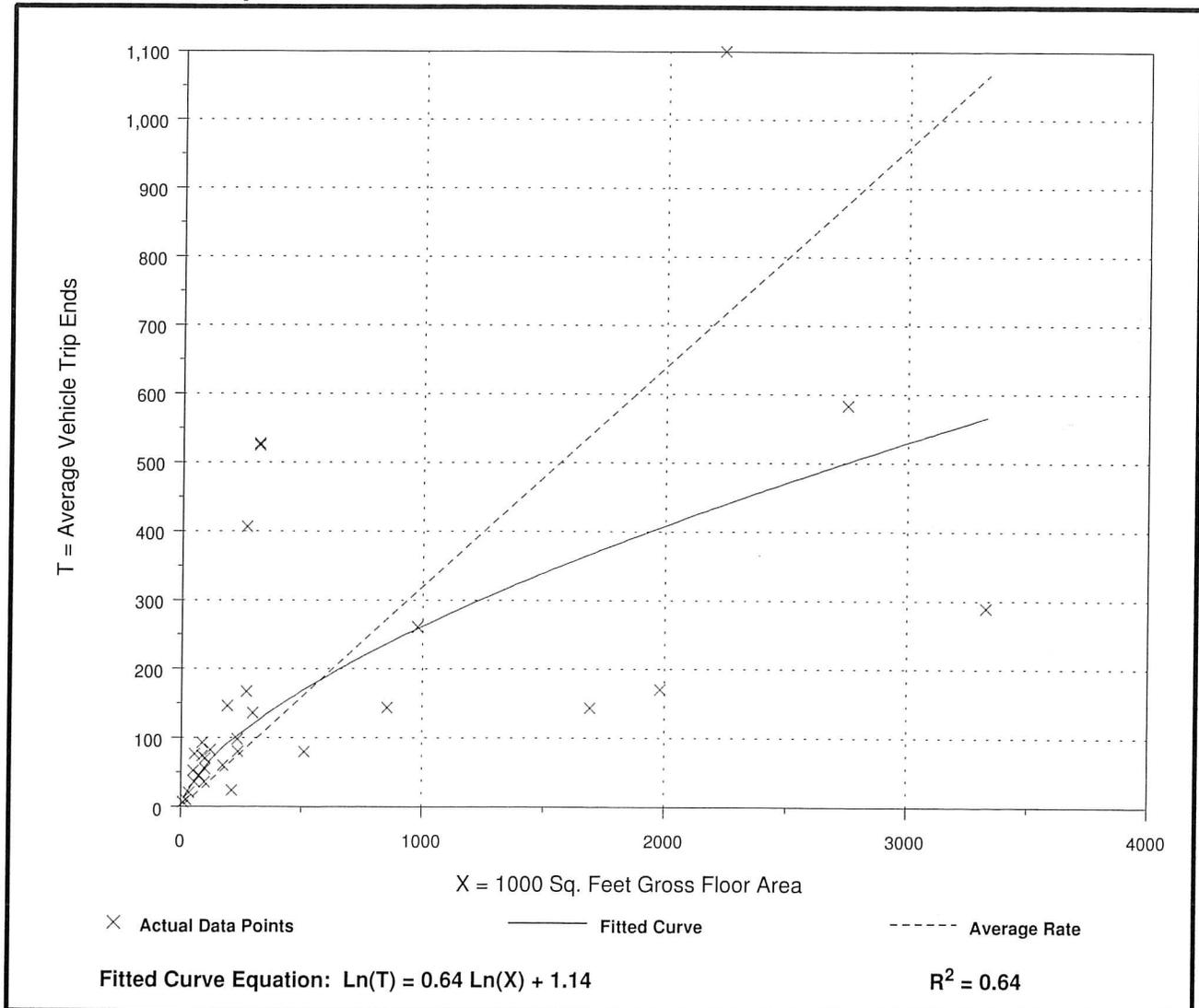
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.

Number of Studies: 31
 Average 1000 Sq. Feet GFA: 572
 Directional Distribution: 25% entering, 75% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
0.32	0.09 - 1.66	0.67

Data Plot and Equation



Resers Fine Foods, Inc.
Proposed Warehouse & Distribution Center
545 SE Croco Road
Topeka, Kansas 66607
CFS Project No. 16-5226

Traffic Impact Analysis

Appendix-4

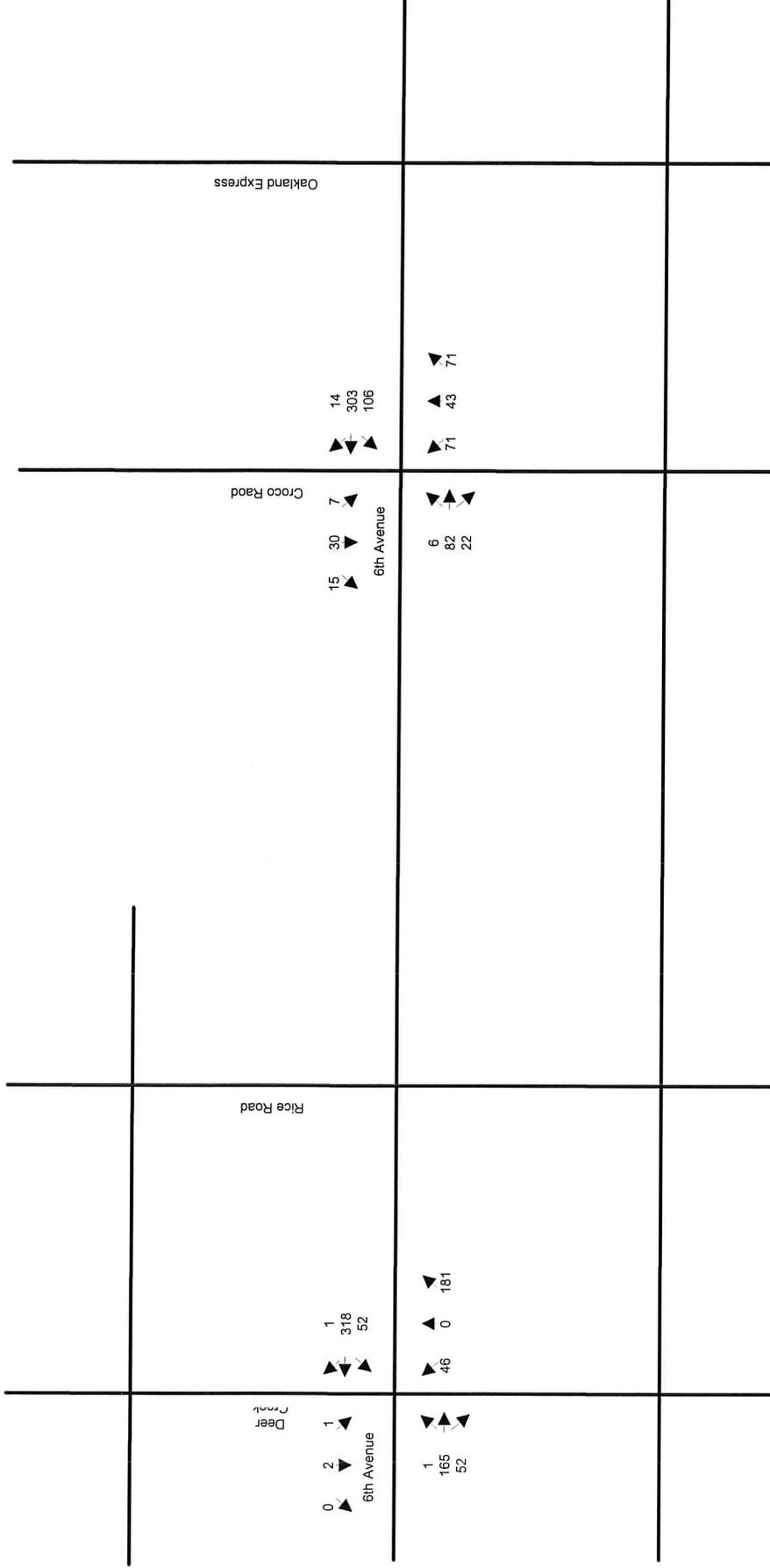
AM Pk Hr Exist Conditions Present Day Traffic (Distribution & Synchro Output)



Prepared by:
Cook, Flatt & Strobel Engineers, P.A.
2930 Woodside Drive
Topeka, Kansas 66614
785.272.4706

AM Peak Hour Existing Conditions Present Day Traffic

Resers Truck Depot & Distribution Center, 6th & Croco



Intersection													
Int Delay, s/veh	3.6												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	165	52	52	318	1	46	0	181	1	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	None
Storage Length	350	-	-	500	-	-	120	-	0	120	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	1	194	61	61	374	1	54	0	213	1	2	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	375	0	0	194	0	0	507	694	97	596	693	188
Stage 1	-	-	-	-	-	-	196	196	-	497	497	-
Stage 2	-	-	-	-	-	-	311	498	-	99	196	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	1166	-	-	1362	-	-	444	361	934	383	361	816
Stage 1	-	-	-	-	-	-	781	733	-	518	538	-
Stage 2	-	-	-	-	-	-	669	538	-	891	733	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1166	-	-	1362	-	-	426	345	934	285	345	816
Mov Cap-2 Maneuver	-	-	-	-	-	-	426	345	-	285	345	-
Stage 1	-	-	-	-	-	-	780	732	-	518	514	-
Stage 2	-	-	-	-	-	-	636	514	-	687	732	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.1	11	16.2
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	426	-	934	1166	-	-	1362	-	-	285	345
HCM Lane V/C Ratio	0.127	-	0.228	0.001	-	-	0.045	-	-	0.004	0.007
HCM Control Delay (s)	14.7	0	10	8.1	-	-	7.8	-	-	17.7	15.5
HCM Lane LOS	B	A	B	A	-	-	A	-	-	C	C
HCM 95th %tile Q(veh)	0.4	-	0.9	0	-	-	0.1	-	-	0	0



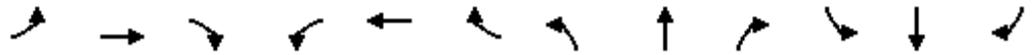
Lanes, Volumes, Timings
3: Croco & 6th Avenue

12/7/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	82	22	106	303	14	71	43	71	7	30	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	210		0	200		200	220		565
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25		25			
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.968			0.994				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3360	0	1736	3450	0	1736	1827	1553	1736	1827	1553
Flt Permitted	0.531			0.675			0.734			0.724		
Satd. Flow (perm)	970	3360	0	1233	3450	0	1341	1827	1553	1323	1827	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			13				84			27
Link Speed (mph)		45			45			40				40
Link Distance (ft)		6413			3500			2871				2801
Travel Time (s)		97.2			53.0			48.9				47.7
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	7	96	26	125	356	16	84	51	84	8	35	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	122	0	125	372	0	84	51	84	8	35	18
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2				6
Permitted Phases	4			8			2		2	6		6
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.40	0.40	0.40	0.40	0.40	0.40
v/c Ratio	0.02	0.09		0.25	0.27		0.16	0.07	0.13	0.02	0.05	0.03
Control Delay	7.5	6.4		9.8	8.4		8.7	7.8	3.1	7.4	7.6	3.3

Lanes, Volumes, Timings
3: Croco & 6th Avenue

12/7/2016

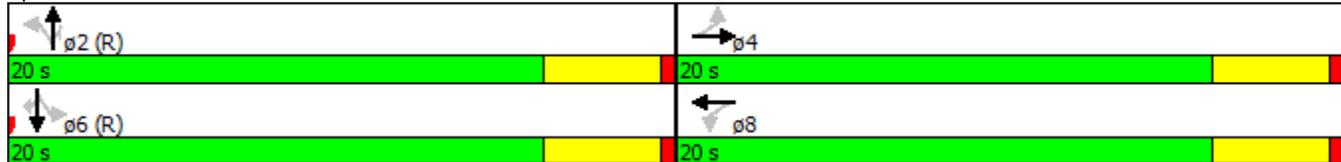


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	6.4		9.8	8.4		8.7	7.8	3.1	7.4	7.6	3.3
LOS	A	A		A	A		A	A	A	A	A	A
Approach Delay		6.5			8.8			6.3			6.3	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	1	6		17	26		11	7	0	1	4	0
Queue Length 95th (ft)	5	15		40	43		28	19	15	6	14	6
Internal Link Dist (ft)		6333			3420			2791			2721	
Turn Bay Length (ft)	210			210			200		200	220		565
Base Capacity (vph)	388	1359		493	1387		536	730	671	529	730	637
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.09		0.25	0.27		0.16	0.07	0.13	0.02	0.05	0.03

Intersection Summary

Area Type:	Other
Cycle Length:	40
Actuated Cycle Length:	40
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	40
Control Type:	Pretimed
Maximum v/c Ratio:	0.27
Intersection Signal Delay:	7.7
Intersection LOS:	A
Intersection Capacity Utilization	29.8%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 3: Croco & 6th Avenue





Resers Fine Foods, Inc.
Proposed Warehouse & Distribution Center
545 SE Croco Road
Topeka, Kansas 66607
CFS Project No. 16-5226

Traffic Impact Analysis

Appendix-5

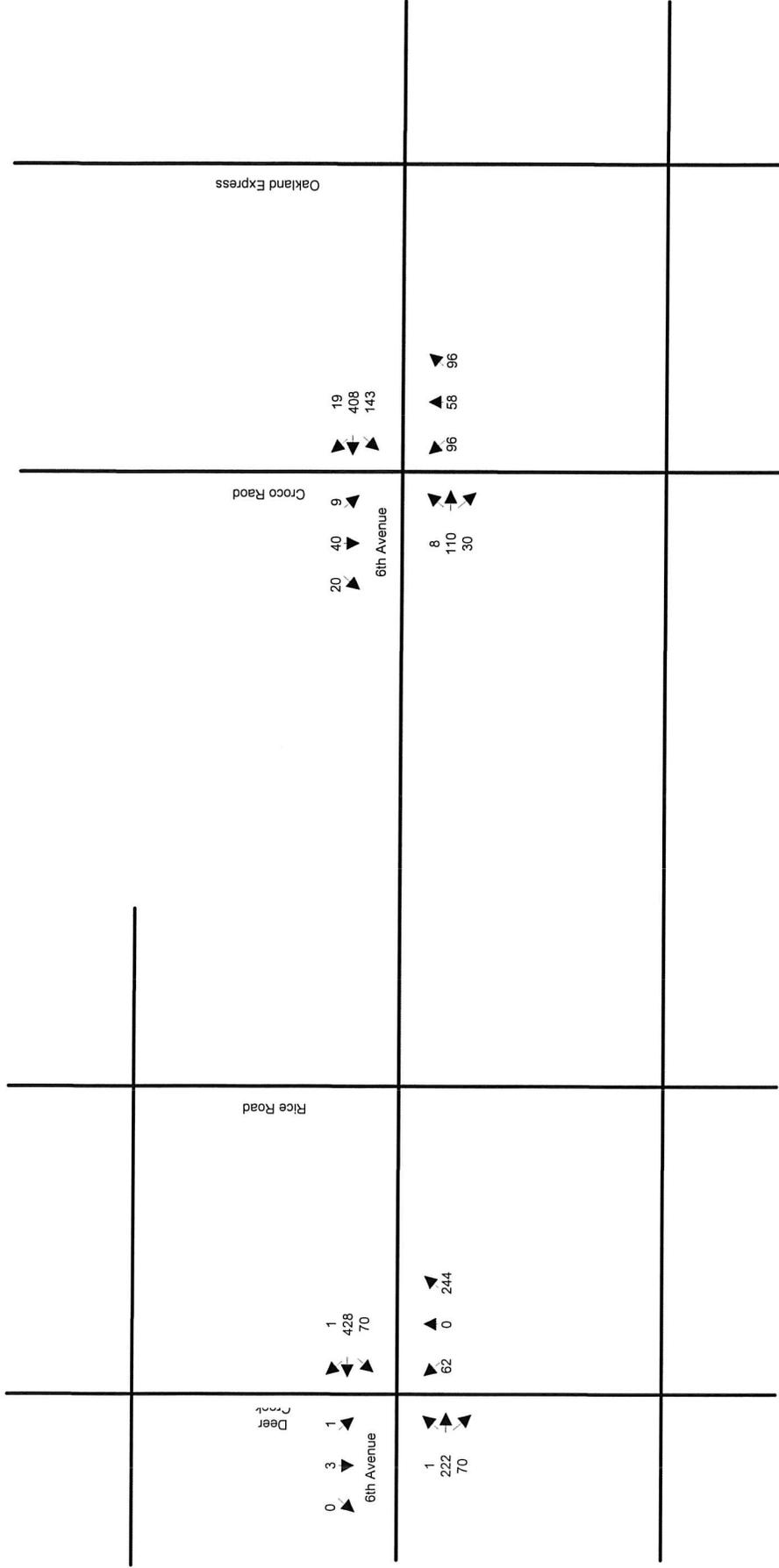
AM Pk Hr Exist Conditions Future Growth Traffic (Distribution & Synchro Output)



Prepared by:
Cook, Flatt & Strobel Engineers, P.A.
2930 Woodside Drive
Topeka, Kansas 66614
785.272.4706

AM Peak Hour Existing Conditions Future Growth Traffic

Resers Truck Depot & Distribution Center, 6th & Croco



Intersection													
Int Delay, s/veh	4.1												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	222	70	70	428	1	62	0	244	1	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	None
Storage Length	350	-	-	500	-	-	120	-	0	120	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	1	261	82	82	504	1	73	0	287	1	4	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	505	0	0	261	0	0	682	933	131	802	933	252
Stage 1	-	-	-	-	-	-	264	264	-	669	669	-
Stage 2	-	-	-	-	-	-	418	669	-	133	264	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	1042	-	-	1286	-	-	332	261	888	272	261	742
Stage 1	-	-	-	-	-	-	713	684	-	409	449	-
Stage 2	-	-	-	-	-	-	578	449	-	851	684	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1042	-	-	1286	-	-	312	244	888	175	244	742
Mov Cap-2 Maneuver	-	-	-	-	-	-	312	244	-	175	244	-
Stage 1	-	-	-	-	-	-	712	683	-	409	420	-
Stage 2	-	-	-	-	-	-	537	420	-	575	683	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.1	12.8	21.4
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	312	-	888	1042	-	-	1286	-	-	175	244
HCM Lane V/C Ratio	0.234	-	0.323	0.001	-	-	0.064	-	-	0.007	0.014
HCM Control Delay (s)	20	0	11	8.5	-	-	8	-	-	25.7	20
HCM Lane LOS	C	A	B	A	-	-	A	-	-	D	C
HCM 95th %tile Q(veh)	0.9	-	1.4	0	-	-	0.2	-	-	0	0



Lanes, Volumes, Timings

3: Croco & 6th Avenue

12/7/2016



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	110	30	143	408	19	96	58	96	9	40	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	210		0	200		200	220		565
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.968			0.993				0.850			0.850
Fl _t Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3360	0	1736	3447	0	1736	1827	1553	1736	1827	1553
Fl _t Permitted	0.464			0.648			0.726			0.713		
Satd. Flow (perm)	848	3360	0	1184	3447	0	1326	1827	1553	1303	1827	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			14				113			27
Link Speed (mph)		45			45			40				40
Link Distance (ft)		6413			3500			2871				2801
Travel Time (s)		97.2			53.0			48.9				47.7
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	9	129	35	168	480	22	113	68	113	11	47	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	164	0	168	502	0	113	68	113	11	47	24
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2				6
Permitted Phases	4			8			2		2	6		6
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.40	0.40	0.40	0.40	0.40	0.40
v/c Ratio	0.03	0.12		0.36	0.36		0.21	0.09	0.16	0.02	0.06	0.04
Control Delay	7.6	6.5		11.1	9.1		9.2	8.0	2.9	7.4	7.8	3.8

Lanes, Volumes, Timings
3: Croco & 6th Avenue

12/7/2016

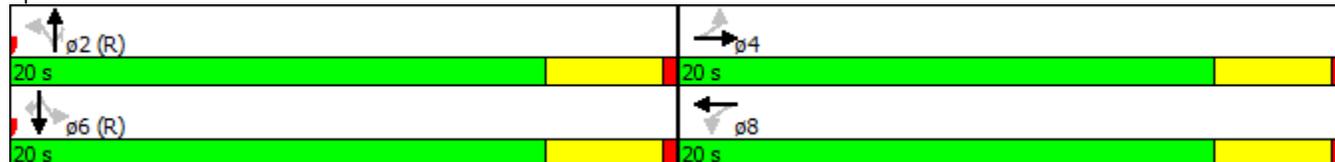


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	6.5		11.1	9.1		9.2	8.0	2.9	7.4	7.8	3.8
LOS	A	A		B	A		A	A	A	A	A	A
Approach Delay		6.5			9.6			6.5			6.6	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	1	8		24	37		16	9	0	1	6	0
Queue Length 95th (ft)	6	19		54	58		36	23	17	7	18	8
Internal Link Dist (ft)		6333			3420			2791			2721	
Turn Bay Length (ft)	210			210			200		200	220		565
Base Capacity (vph)	339	1365		473	1387		530	730	689	521	730	637
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.12		0.36	0.36		0.21	0.09	0.16	0.02	0.06	0.04

Intersection Summary

Area Type:	Other
Cycle Length:	40
Actuated Cycle Length:	40
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	40
Control Type:	Pretimed
Maximum v/c Ratio:	0.36
Intersection Signal Delay:	8.2
Intersection LOS:	A
Intersection Capacity Utilization:	37.2%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 3: Croco & 6th Avenue





Resers Fine Foods, Inc.
Proposed Warehouse & Distribution Center
545 SE Croco Road
Topeka, Kansas 66607
CFS Project No. 16-5226

Traffic Impact Analysis

Appendix-6

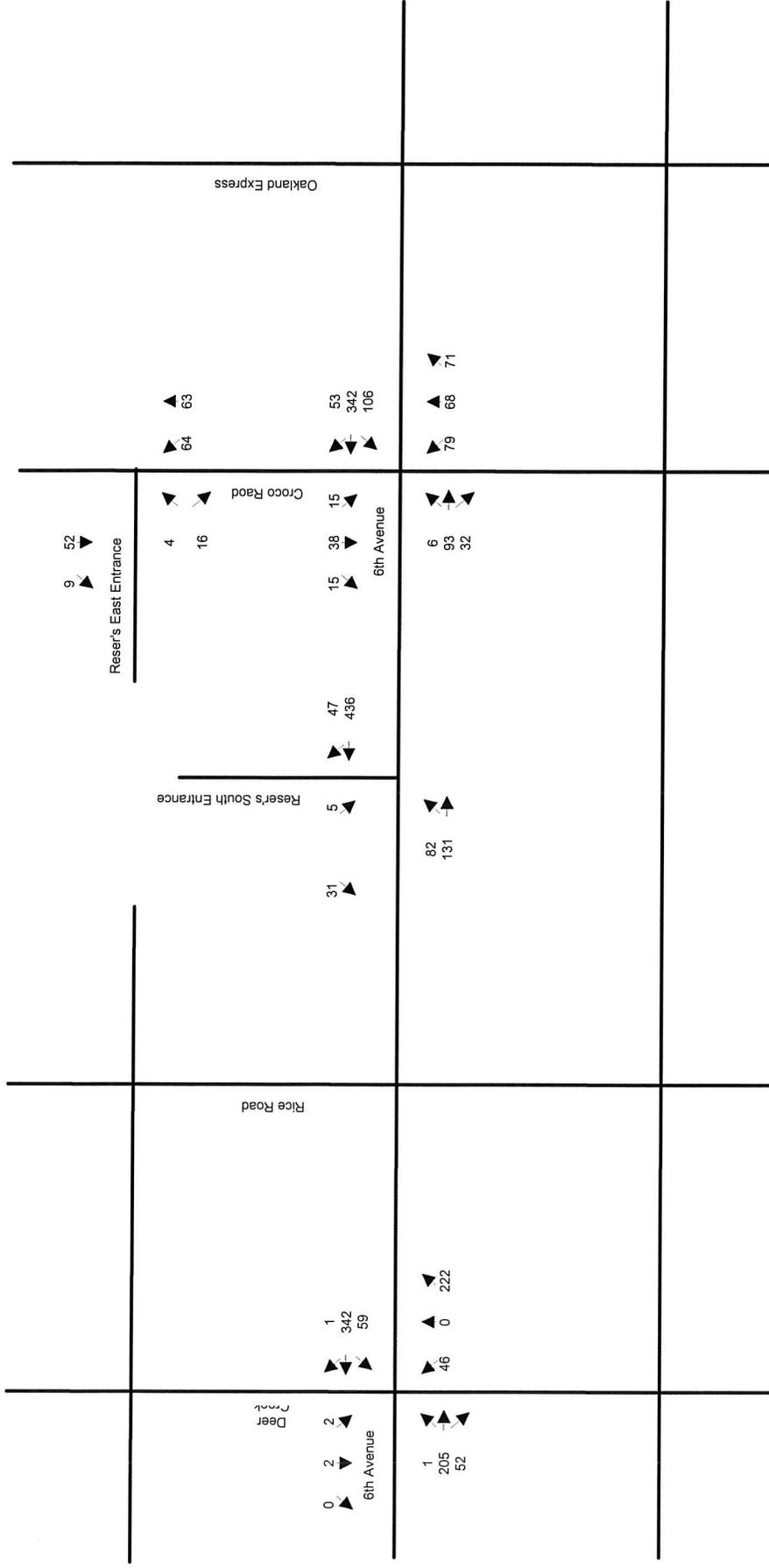
AM Pk Hr Post-Dev Conditions Present Day Traffic (Distribution & Synchro Output)



Prepared by:
Cook, Flatt & Strobel Engineers, P.A.
2930 Woodside Drive
Topeka, Kansas 66614
785.272.4706

AM Peak Hour Post-Development Conditions Present Day Traffic

Resers Truck Depot & Distribution Center, 6th & Croco



Intersection													
Int Delay, s/veh	3.9												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	205	52	59	342	1	46	0	222	2	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	None
Storage Length	350	-	-	500	-	-	120	-	0	120	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	1	241	61	69	402	1	54	0	261	2	2	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	404	0	0	241	0	0	585	786	121	665	786	202
Stage 1	-	-	-	-	-	-	244	244	-	542	542	-
Stage 2	-	-	-	-	-	-	341	542	-	123	244	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	1137	-	-	1308	-	-	390	319	901	342	319	799
Stage 1	-	-	-	-	-	-	732	698	-	487	513	-
Stage 2	-	-	-	-	-	-	642	513	-	862	698	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1137	-	-	1308	-	-	372	302	901	233	302	799
Mov Cap-2 Maneuver	-	-	-	-	-	-	372	302	-	233	302	-
Stage 1	-	-	-	-	-	-	731	697	-	487	486	-
Stage 2	-	-	-	-	-	-	605	486	-	612	697	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.2	11.6	18.8
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	372	-	901	1137	-	-	1308	-	-	233	302
HCM Lane V/C Ratio	0.145	-	0.29	0.001	-	-	0.053	-	-	0.01	0.008
HCM Control Delay (s)	16.3	0	10.6	8.2	-	-	7.9	-	-	20.6	17
HCM Lane LOS	C	A	B	A	-	-	A	-	-	C	C
HCM 95th %tile Q(veh)	0.5	-	1.2	0	-	-	0.2	-	-	0	0



Lanes, Volumes, Timings
3: Croco & 6th Avenue

12/7/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	93	32	106	342	53	79	68	71	15	38	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	210		0	200		200	220		565
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25		25			
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.961			0.980				0.850			0.850
Fl _t Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3336	0	1736	3402	0	1736	1827	1553	1736	1827	1553
Fl _t Permitted	0.485			0.659			0.728			0.705		
Satd. Flow (perm)	886	3336	0	1204	3402	0	1330	1827	1553	1288	1827	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			51				84			27
Link Speed (mph)		45			45			40				40
Link Distance (ft)		825			3500			2871				552
Travel Time (s)		12.5			53.0			48.9				9.4
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	7	109	38	125	402	62	93	80	84	18	45	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	147	0	125	464	0	93	80	84	18	45	18
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2				6
Permitted Phases	4			8			2		2	6		6
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.40	0.40	0.40	0.40	0.40	0.40
v/c Ratio	0.02	0.11		0.26	0.33		0.17	0.11	0.13	0.03	0.06	0.03
Control Delay	7.5	6.2		9.9	8.2		8.9	8.1	3.1	7.6	7.7	3.3

Lanes, Volumes, Timings
3: Croco & 6th Avenue

12/7/2016

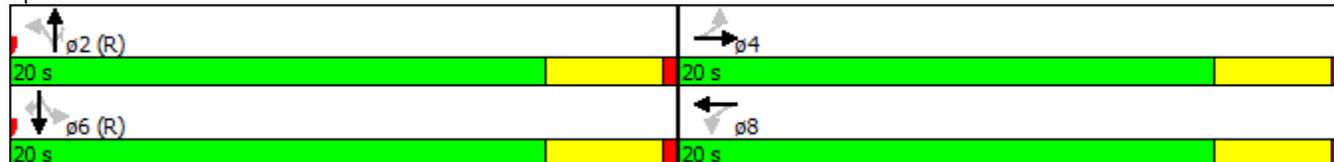


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	6.2		9.9	8.2		8.9	8.1	3.1	7.6	7.7	3.3
LOS	A	A		A	A		A	A	A	A	A	A
Approach Delay		6.3			8.5			6.7			6.7	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	1	7		17	31		13	10	0	2	6	0
Queue Length 95th (ft)	5	17		40	51		31	26	15	9	17	6
Internal Link Dist (ft)		745			3420			2791			472	
Turn Bay Length (ft)	210			210			200		200	220		565
Base Capacity (vph)	354	1357		481	1391		532	730	671	515	730	637
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.11		0.26	0.33		0.17	0.11	0.13	0.03	0.06	0.03

Intersection Summary

Area Type:	Other
Cycle Length:	40
Actuated Cycle Length:	40
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	40
Control Type:	Pretimed
Maximum v/c Ratio:	0.33
Intersection Signal Delay:	7.6
Intersection LOS:	A
Intersection Capacity Utilization	35.5%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 3: Croco & 6th Avenue





AM Post-Dev Present Day

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Resers Fine Foods, Inc.
Proposed Warehouse & Distribution Center
545 SE Croco Road
Topeka, Kansas 66607
CFS Project No. 16-5226

Traffic Impact Analysis

Appendix-7

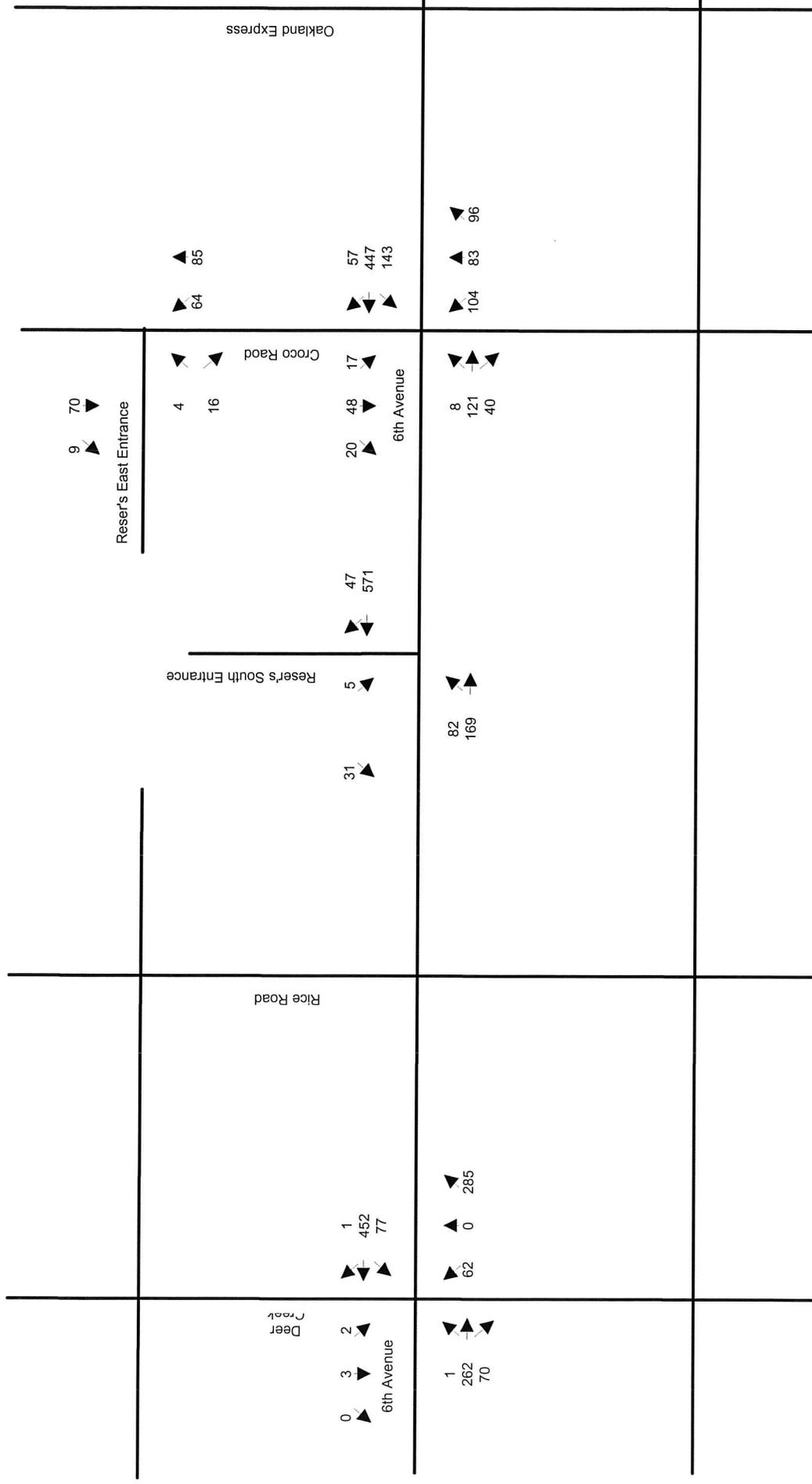
AM Pk Hr Post-Dev Conditions Future Growth Traffic (Distribution & Synchro Output)



Prepared by:
Cook, Flatt & Strobel Engineers, P.A.
2930 Woodside Drive
Topeka, Kansas 66614
785.272.4706

AM Peak Hour Post-Development Conditions Future Growth Traffic

Resers Truck Depot & Distribution Center, 6th & Croco



Intersection													
Int Delay, s/veh	4.6												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	1	262	70	77	452	1	62	0	285	2	3	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	None
Storage Length	350	-	-	500	-	-	120	-	0	120	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	1	308	82	91	532	1	73	0	335	2	4	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	533	0	0	308	0	0	760	1025	154	870	1025	266
Stage 1	-	-	-	-	-	-	311	311	-	714	714	-
Stage 2	-	-	-	-	-	-	449	714	-	156	311	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	1017	-	-	1235	-	-	291	230	858	242	230	726
Stage 1	-	-	-	-	-	-	669	652	-	384	428	-
Stage 2	-	-	-	-	-	-	554	428	-	825	652	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1017	-	-	1235	-	-	271	213	858	139	213	726
Mov Cap-2 Maneuver	-	-	-	-	-	-	271	213	-	139	213	-
Stage 1	-	-	-	-	-	-	668	651	-	384	396	-
Stage 2	-	-	-	-	-	-	509	396	-	502	651	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.2	13.9	25.8
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	271	-	858	1017	-	-	1235	-	-	139	213
HCM Lane V/C Ratio	0.269	-	0.391	0.001	-	-	0.073	-	-	0.017	0.017
HCM Control Delay (s)	23.1	0	11.9	8.5	-	-	8.1	-	-	31.3	22.2
HCM Lane LOS	C	A	B	A	-	-	A	-	-	D	C
HCM 95th %tile Q(veh)	1.1	-	1.9	0	-	-	0.2	-	-	0.1	0.1



AM Post-Dev Future

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Lanes, Volumes, Timings
3: Croco & 6th Avenue

12/7/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	121	40	143	447	57	104	83	96	17	48	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	210		0	200		200	220		565
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25		25			
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.963			0.983				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3343	0	1736	3412	0	1736	1827	1553	1736	1827	1553
Flt Permitted	0.400			0.633			0.720			0.694		
Satd. Flow (perm)	731	3343	0	1156	3412	0	1315	1827	1553	1268	1827	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		47			41				113			27
Link Speed (mph)		45			45			40				40
Link Distance (ft)		825			3500			2871				552
Travel Time (s)		12.5			53.0			48.9				9.4
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	9	142	47	168	526	67	122	98	113	20	56	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	189	0	168	593	0	122	98	113	20	56	24
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2				6
Permitted Phases	4			8			2		2	6		6
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.40	0.40	0.40	0.40	0.40	0.40
v/c Ratio	0.03	0.14		0.36	0.43		0.23	0.13	0.16	0.04	0.08	0.04
Control Delay	7.8	6.2		11.3	9.2		9.4	8.3	2.9	7.6	7.9	3.8

Lanes, Volumes, Timings

3: Croco & 6th Avenue

12/7/2016



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.8	6.2		11.3	9.2		9.4	8.3	2.9	7.6	7.9	3.8
LOS	A	A		B	A		A	A	A	A	A	A
Approach Delay		6.3			9.7			6.9			6.8	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	1	10		25	43		17	13	0	3	7	0
Queue Length 95th (ft)	6	21		54	66		39	30	17	10	20	8
Internal Link Dist (ft)		745			3420			2791			472	
Turn Bay Length (ft)	210			210			200		200	220		565
Base Capacity (vph)	292	1365		462	1389		526	730	689	507	730	637
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.14		0.36	0.43		0.23	0.13	0.16	0.04	0.08	0.04

Intersection Summary

Area Type: Other

Cycle Length: 40

Actuated Cycle Length: 40

Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 40

Control Type: Pretimed

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 8.3

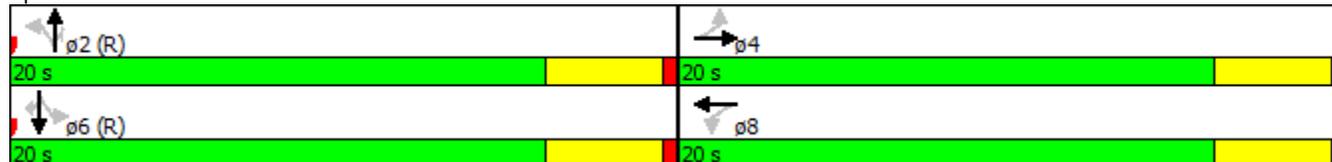
Intersection LOS: A

Intersection Capacity Utilization 39.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3: Croco & 6th Avenue





Resers Fine Foods, Inc.
Proposed Warehouse & Distribution Center
545 SE Croco Road
Topeka, Kansas 66607
CFS Project No. 16-5226

Traffic Impact Analysis

Appendix-8

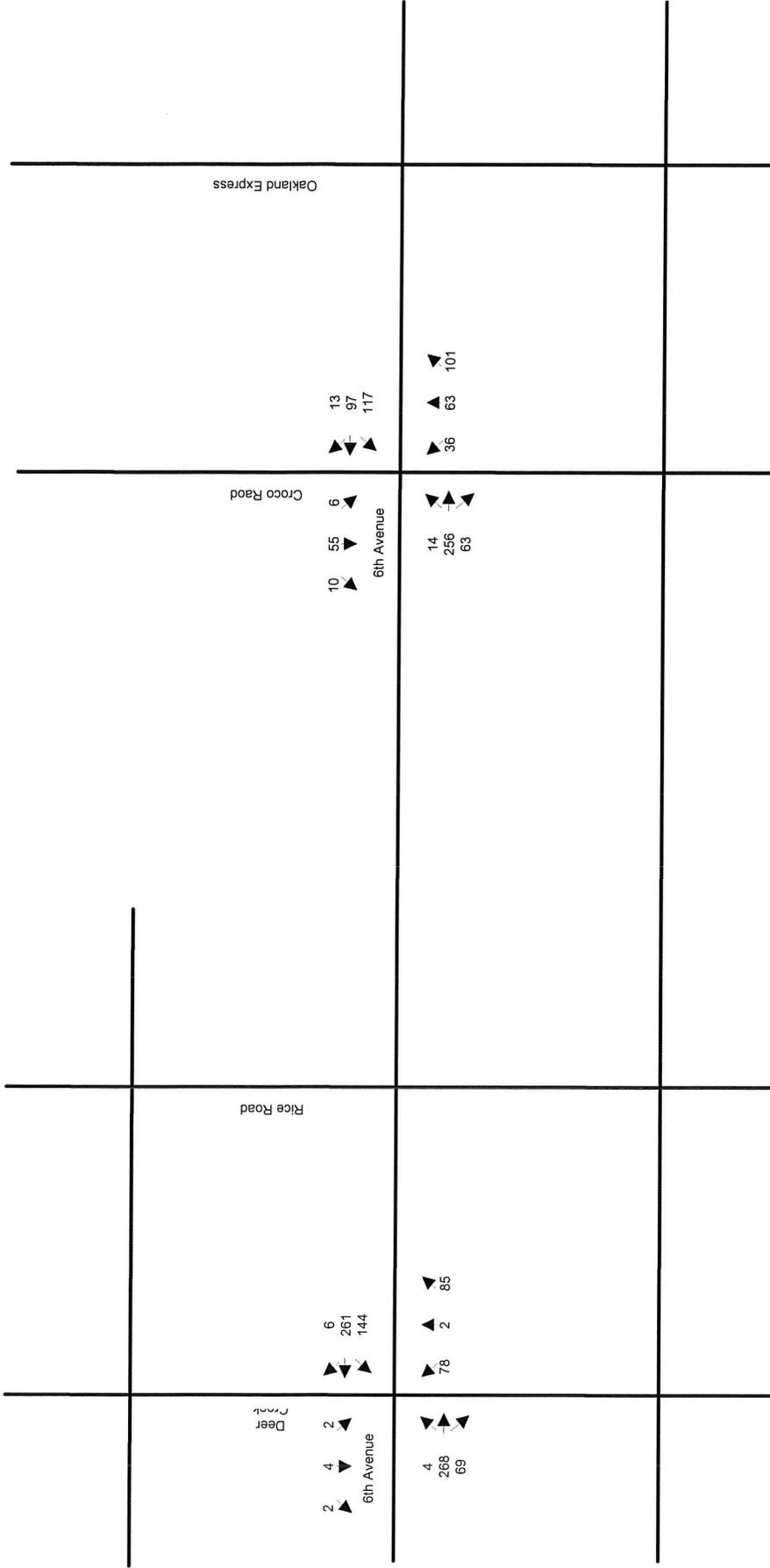
PM Pk Hr Exist Conditions Present Day Traffic (Distribution & Synchro Output)



Prepared by:
Cook, Flatt & Strobel Engineers, P.A.
2930 Woodside Drive
Topeka, Kansas 66614
785.272.4706

PM Peak Hour Existing Conditions Present Day Traffic

Resers Truck Depot & Distribution Center, 6th & Croco



Intersection

Int Delay, s/veh 5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	268	69	144	261	6	78	2	85	2	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	None
Storage Length	350	-	-	500	-	-	120	-	0	120	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	5	315	81	169	307	7	92	2	100	2	5	2

Major/Minor

	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	314	0	0	315	0	0	820	978	158	817	974	157
Stage 1	-	-	-	-	-	-	325	325	-	649	649	-
Stage 2	-	-	-	-	-	-	495	653	-	168	325	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	1229	-	-	1228	-	-	264	246	853	265	247	854
Stage 1	-	-	-	-	-	-	656	643	-	420	459	-
Stage 2	-	-	-	-	-	-	520	457	-	812	643	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1229	-	-	1228	-	-	231	211	853	207	212	854
Mov Cap-2 Maneuver	-	-	-	-	-	-	231	211	-	207	212	-
Stage 1	-	-	-	-	-	-	653	640	-	418	396	-
Stage 2	-	-	-	-	-	-	442	394	-	711	640	-

Approach

	EB	WB	NB	SB
HCM Control Delay, s	0.1	2.9	19.7	19.2
HCM LOS			C	C

Minor Lane/Major Mvmt

	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	231	211	853	1229	-	-	1228	-	-	207	283
HCM Lane V/C Ratio	0.397	0.011	0.117	0.004	-	-	0.138	-	-	0.011	0.025
HCM Control Delay (s)	30.5	22.3	9.8	7.9	-	-	8.4	-	-	22.6	18
HCM Lane LOS	D	C	A	A	-	-	A	-	-	C	C
HCM 95th %tile Q(veh)	1.8	0	0.4	0	-	-	0.5	-	-	0	0.1



Lanes, Volumes, Timings

3: Croco & 6th Avenue

12/7/2016



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	256	63	117	97	13	36	63	101	6	55	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	210		0	200		200	220		565
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.970			0.983				0.850			0.850
Fl _t Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3367	0	1736	3412	0	1736	1827	1553	1736	1827	1553
Fl _t Permitted	0.670			0.529			0.715			0.709		
Satd. Flow (perm)	1224	3367	0	966	3412	0	1306	1827	1553	1295	1827	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		74			15				119			27
Link Speed (mph)		45			45			40				40
Link Distance (ft)		6413			3500			2871				2801
Travel Time (s)		97.2			53.0			48.9				47.7
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	16	301	74	138	114	15	42	74	119	7	65	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	375	0	138	129	0	42	74	119	7	65	12
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2				6
Permitted Phases	4			8			2		2	6		6
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Maximum Green (s)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	16.0	16.0		16.0	16.0		16.0	16.0	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.40	0.40	0.40	0.40	0.40	0.40
v/c Ratio	0.03	0.27		0.36	0.09		0.08	0.10	0.17	0.01	0.09	0.02
Control Delay	7.6	7.0		11.8	7.0		8.0	8.0	2.9	7.3	7.9	2.3

Lanes, Volumes, Timings
3: Croco & 6th Avenue

12/7/2016

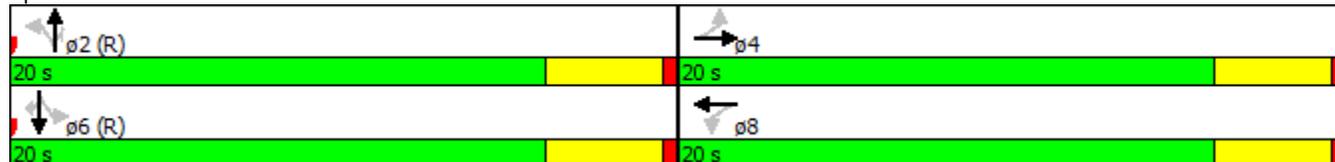


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	7.0		11.8	7.0		8.0	8.0	2.9	7.3	7.9	2.3
LOS	A	A		B	A		A	A	A	A	A	A
Approach Delay		7.1			9.5			5.4			7.1	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	2	22		20	7		5	10	0	1	8	0
Queue Length 95th (ft)	9	38		48	17		17	25	17	5	22	4
Internal Link Dist (ft)		6333			3420			2791			2721	
Turn Bay Length (ft)	210			210			200		200	220		565
Base Capacity (vph)	489	1391		386	1373		522	730	692	518	730	637
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.27		0.36	0.09		0.08	0.10	0.17	0.01	0.09	0.02

Intersection Summary

Area Type:	Other
Cycle Length:	40
Actuated Cycle Length:	40
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	40
Control Type:	Pretimed
Maximum v/c Ratio:	0.36
Intersection Signal Delay:	7.3
Intersection LOS:	A
Intersection Capacity Utilization	34.2%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 3: Croco & 6th Avenue





Resers Fine Foods, Inc.
Proposed Warehouse & Distribution Center
545 SE Croco Road
Topeka, Kansas 66607
CFS Project No. 16-5226

Traffic Impact Analysis

Appendix-9

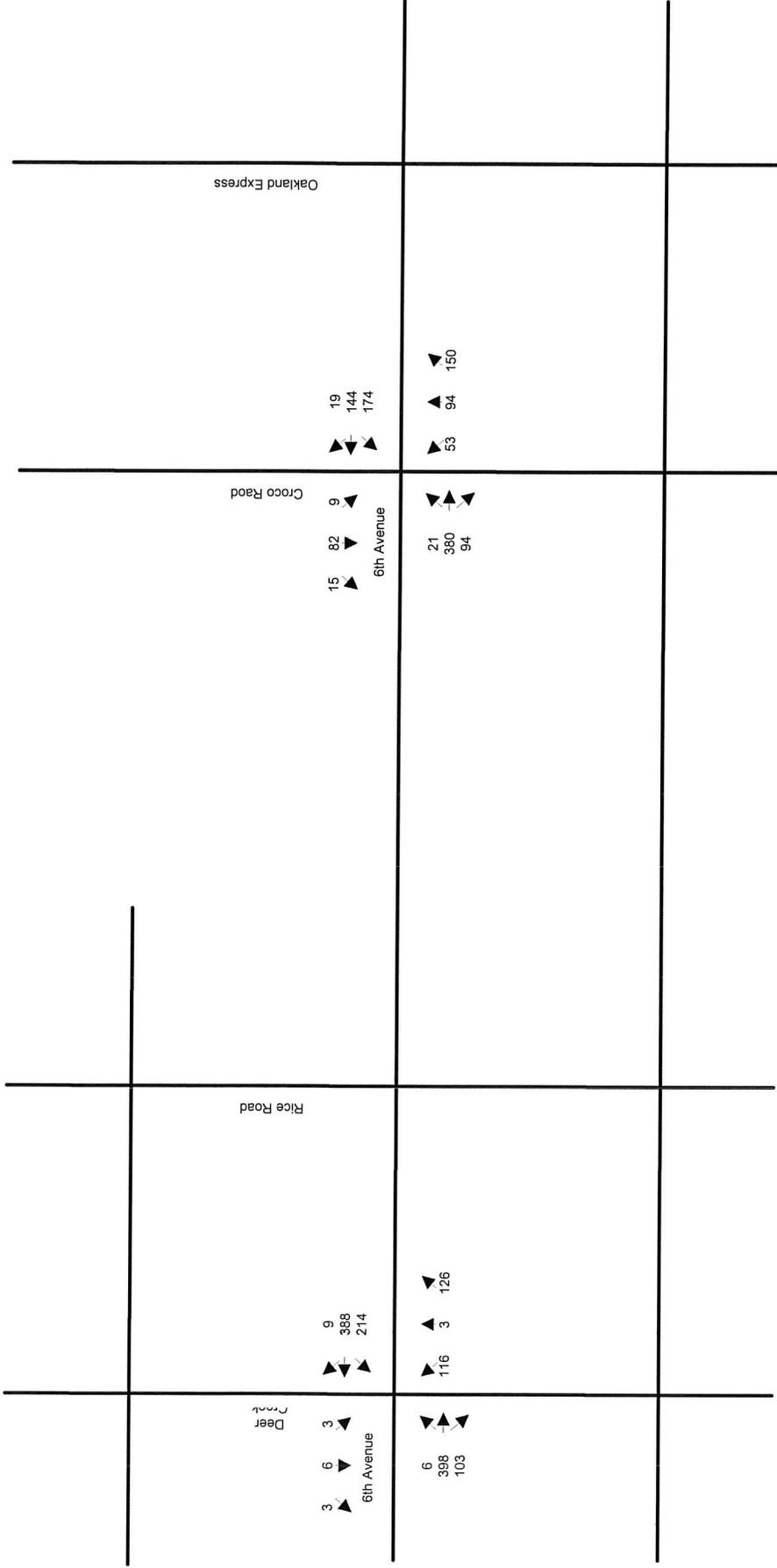
PM Pk Hr Exist Conditions Future Growth Traffic (Distribution & Synchro Output)



Prepared by:
Cook, Flatt & Strobel Engineers, P.A.
2930 Woodside Drive
Topeka, Kansas 66614
785.272.4706

PM Peak Hour Existing Conditions Future Growth Traffic

Resers Truck Depot & Distribution Center, 6th & Croco



Intersection												
Int Delay, s/veh	26.1											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	398	103	214	388	9	116	3	126	3	6	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	None
Storage Length	350	-	-	500	-	-	120	-	0	120	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	7	468	121	252	456	11	136	4	148	4	7	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	467	0	0	468	0	0	1217	1453	234	1215	1447	234
Stage 1	-	-	-	-	-	-	482	482	-	965	965	-
Stage 2	-	-	-	-	-	-	735	971	-	250	482	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	1077	-	-	1076	-	-	~ 134	127	762	135	128	762
Stage 1	-	-	-	-	-	-	529	547	-	270	327	-
Stage 2	-	-	-	-	-	-	373	325	-	726	547	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1077	-	-	1076	-	-	~ 103	97	762	86	97	762
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 103	97	-	86	97	-
Stage 1	-	-	-	-	-	-	526	543	-	268	250	-
Stage 2	-	-	-	-	-	-	276	249	-	577	543	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	3.3	136.3	37.3
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	103	97	762	1077	-	-	1076	-	-	86	137
HCM Lane V/C Ratio	1.325	0.036	0.195	0.007	-	-	0.234	-	-	0.041	0.077
HCM Control Delay (s)	274.9	43.5	10.9	8.4	-	-	9.4	-	-	48.6	33.5
HCM Lane LOS	F	E	B	A	-	-	A	-	-	E	D
HCM 95th %tile Q(veh)	9.5	0.1	0.7	0	-	-	0.9	-	-	0.1	0.2

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Lanes, Volumes, Timings
3: Croco & 6th Avenue

12/7/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	380	94	174	144	19	53	94	150	9	82	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	210		0	200		200	220		565
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25		25			
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.970			0.983				0.850			0.850
Fl _t Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3367	0	1736	3412	0	1736	1827	1553	1736	1827	1553
Fl _t Permitted	0.632			0.427			0.695			0.685		
Satd. Flow (perm)	1155	3367	0	780	3412	0	1270	1827	1553	1251	1827	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		87			22				176			22
Link Speed (mph)		45			45			40				40
Link Distance (ft)		6413			3500			2871				2801
Travel Time (s)		97.2			53.0			48.9				47.7
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	25	447	111	205	169	22	62	111	176	11	96	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	558	0	205	191	0	62	111	176	11	96	18
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2				6
Permitted Phases	4			8			2		2	6		6
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	29.0	29.0		29.0	29.0		21.0	21.0	21.0	21.0	21.0	21.0
Total Split (%)	58.0%	58.0%		58.0%	58.0%		42.0%	42.0%	42.0%	42.0%	42.0%	42.0%
Maximum Green (s)	25.0	25.0		25.0	25.0		17.0	17.0	17.0	17.0	17.0	17.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	25.0	25.0		25.0	25.0		17.0	17.0	17.0	17.0	17.0	17.0
Actuated g/C Ratio	0.50	0.50		0.50	0.50		0.34	0.34	0.34	0.34	0.34	0.34
v/c Ratio	0.04	0.32		0.53	0.11		0.14	0.18	0.27	0.03	0.15	0.03
Control Delay	6.7	6.8		14.7	6.1		12.6	12.6	3.8	11.3	12.4	5.5

Lanes, Volumes, Timings
3: Croco & 6th Avenue

12/7/2016

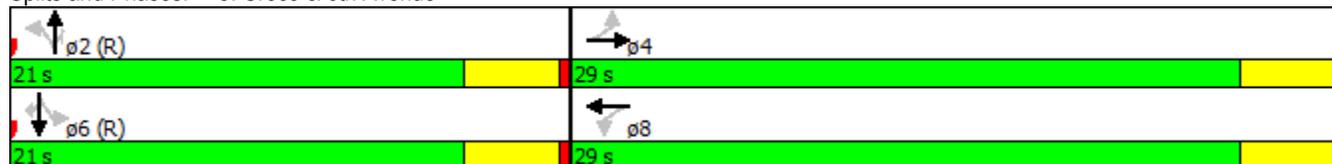


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	6.8		14.7	6.1		12.6	12.6	3.8	11.3	12.4	5.5
LOS	A	A		B	A		B	B	A	B	B	A
Approach Delay		6.8			10.5			8.2			11.3	
Approach LOS		A			B			A			B	
Queue Length 50th (ft)	3	37		37	12		12	22	0	2	19	0
Queue Length 95th (ft)	12	57		81	23		31	47	27	9	42	8
Internal Link Dist (ft)		6333			3420			2791			2721	
Turn Bay Length (ft)	210			210			200		200	220		565
Base Capacity (vph)	577	1727		390	1717		431	621	644	425	621	542
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.32		0.53	0.11		0.14	0.18	0.27	0.03	0.15	0.03

Intersection Summary

Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	50
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	45
Control Type:	Pretimed
Maximum v/c Ratio:	0.53
Intersection Signal Delay:	8.5
Intersection Capacity Utilization	42.7%
Analysis Period (min)	15
Intersection LOS:	A
ICU Level of Service	A

Splits and Phases: 3: Croco & 6th Avenue





Resers Fine Foods, Inc.
Proposed Warehouse & Distribution Center
545 SE Croco Road
Topeka, Kansas 66607
CFS Project No. 16-5226

Traffic Impact Analysis

Appendix-10

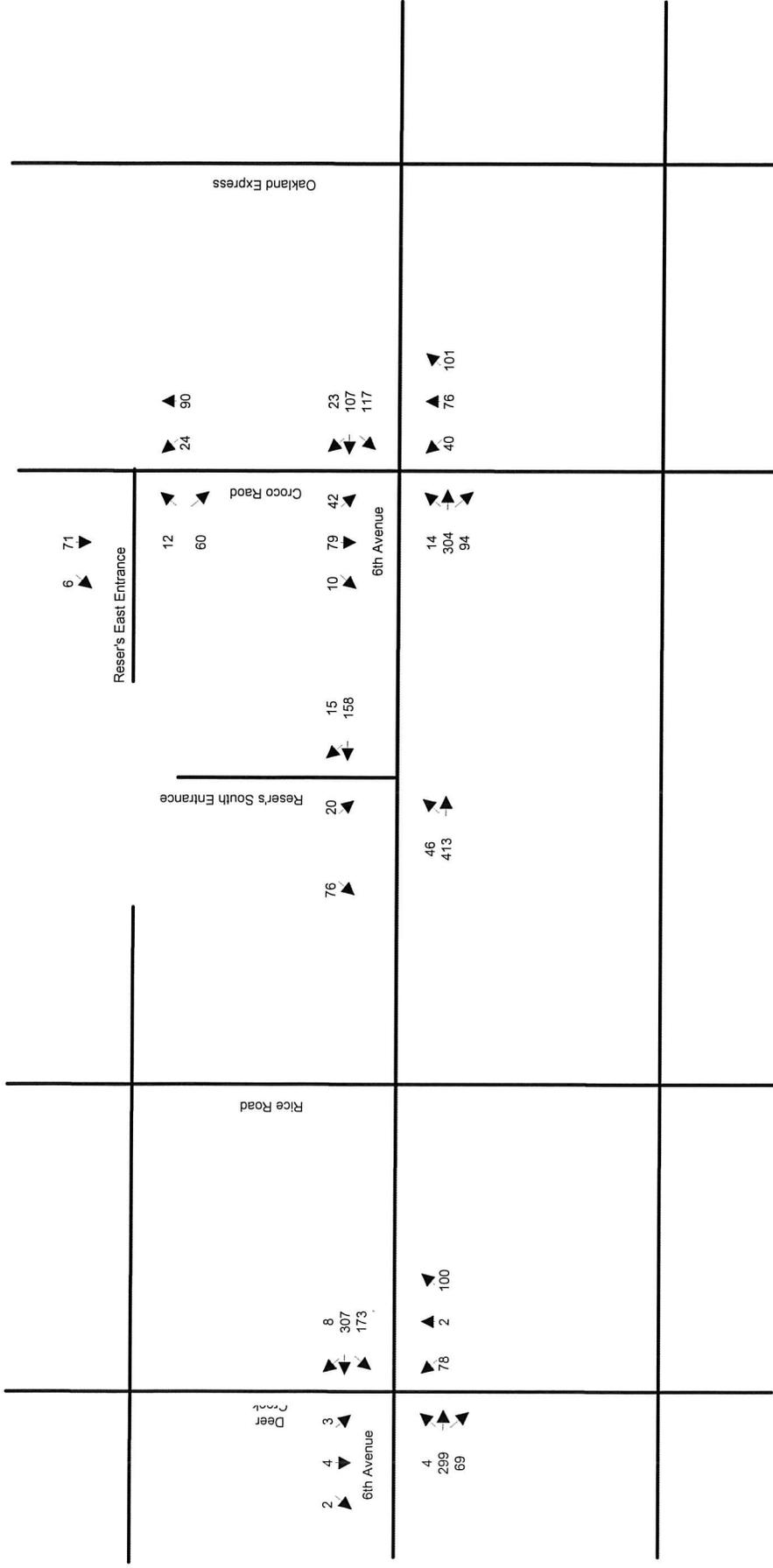
PM Pk Hr Post-Dev Conditions Present Day Traffic (Distribution & Synchro Output)



Prepared by:
Cook, Flatt & Strobel Engineers, P.A.
2930 Woodside Drive
Topeka, Kansas 66614
785.272.4706

PM Peak Hour Post-Development Conditions Present Day Traffic

Resers Truck Depot & Distribution Center, 6th & Croco



Intersection

Int Delay, s/veh 6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	4	299	69	173	307	8	78	2	100	3	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	None
Storage Length	350	-	-	500	-	-	120	-	0	120	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	5	352	81	204	361	9	92	2	118	4	5	2

Major/Minor

	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	371	0	0	352	0	0	951	1139	176	959	1134	185
Stage 1	-	-	-	-	-	-	361	361	-	773	773	-
Stage 2	-	-	-	-	-	-	590	778	-	186	361	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	1170	-	-	1189	-	-	211	197	830	209	198	819
Stage 1	-	-	-	-	-	-	625	619	-	353	402	-
Stage 2	-	-	-	-	-	-	456	400	-	792	619	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1170	-	-	1189	-	-	178	163	830	154	163	819
Mov Cap-2 Maneuver	-	-	-	-	-	-	178	163	-	154	163	-
Stage 1	-	-	-	-	-	-	622	616	-	351	333	-
Stage 2	-	-	-	-	-	-	371	331	-	674	616	-

Approach

	EB		WB		NB		SB
HCM Control Delay, s	0.1		3.1		25.4		24.1
HCM LOS					D		C

Minor Lane/Major Mvmt

	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	178	163	830	1170	-	-	1189	-	-	154	222
HCM Lane V/C Ratio	0.516	0.014	0.142	0.004	-	-	0.171	-	-	0.023	0.032
HCM Control Delay (s)	45	27.4	10.1	8.1	-	-	8.7	-	-	28.9	21.7
HCM Lane LOS	E	D	B	A	-	-	A	-	-	D	C
HCM 95th %tile Q(veh)	2.6	0	0.5	0	-	-	0.6	-	-	0.1	0.1



Lanes, Volumes, Timings
3: Croco & 6th Avenue

12/7/2016



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	14	304	94	117	107	23	40	75	101	42	79	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	210		0	200		200	220		565
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.964			0.974				0.850			0.850
Fl _t Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3346	0	1736	3381	0	1736	1827	1553	1736	1827	1553
Fl _t Permitted	0.655			0.477			0.697			0.700		
Satd. Flow (perm)	1197	3346	0	871	3381	0	1273	1827	1553	1279	1827	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		109			27				119			22
Link Speed (mph)		45			45			40				40
Link Distance (ft)		825			3500			2871				552
Travel Time (s)		12.5			53.0			48.9				9.4
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	16	358	111	138	126	27	47	88	119	49	93	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	16	469	0	138	153	0	47	88	119	49	93	12
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2				6
Permitted Phases	4			8			2		2	6		6
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	27.0	27.0		27.0	27.0		23.0	23.0	23.0	23.0	23.0	23.0
Total Split (%)	54.0%	54.0%		54.0%	54.0%		46.0%	46.0%	46.0%	46.0%	46.0%	46.0%
Maximum Green (s)	23.0	23.0		23.0	23.0		19.0	19.0	19.0	19.0	19.0	19.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	23.0	23.0		23.0	23.0		19.0	19.0	19.0	19.0	19.0	19.0
Actuated g/C Ratio	0.46	0.46		0.46	0.46		0.38	0.38	0.38	0.38	0.38	0.38
v/c Ratio	0.03	0.29		0.34	0.10		0.10	0.13	0.18	0.10	0.13	0.02
Control Delay	7.6	6.9		11.8	6.6		10.7	10.8	3.5	10.7	10.8	3.7

Lanes, Volumes, Timings
3: Croco & 6th Avenue

12/7/2016

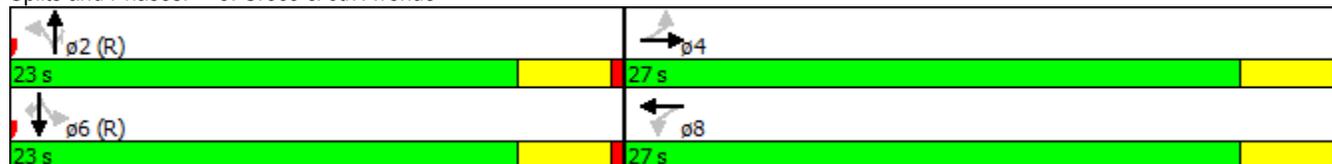


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	6.9		11.8	6.6		10.7	10.8	3.5	10.7	10.8	3.7
LOS	A	A		B	A		B	B	A	B	B	A
Approach Delay		7.0			9.0			7.4			10.2	
Approach LOS		A			A			A			B	
Queue Length 50th (ft)	2	31		24	10		9	16	0	9	17	0
Queue Length 95th (ft)	9	50		53	20		23	36	21	24	38	5
Internal Link Dist (ft)		745			3420			2791			472	
Turn Bay Length (ft)	210			210			200		200	220		565
Base Capacity (vph)	550	1598		400	1569		483	694	663	486	694	603
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.29		0.34	0.10		0.10	0.13	0.18	0.10	0.13	0.02

Intersection Summary

Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	50
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	40
Control Type:	Pretimed
Maximum v/c Ratio:	0.34
Intersection Signal Delay:	8.0
Intersection LOS:	A
Intersection Capacity Utilization	36.9%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 3: Croco & 6th Avenue





Resers Fine Foods, Inc.
Proposed Warehouse & Distribution Center
545 SE Croco Road
Topeka, Kansas 66607
CFS Project No. 16-5226

Traffic Impact Analysis

Appendix-11

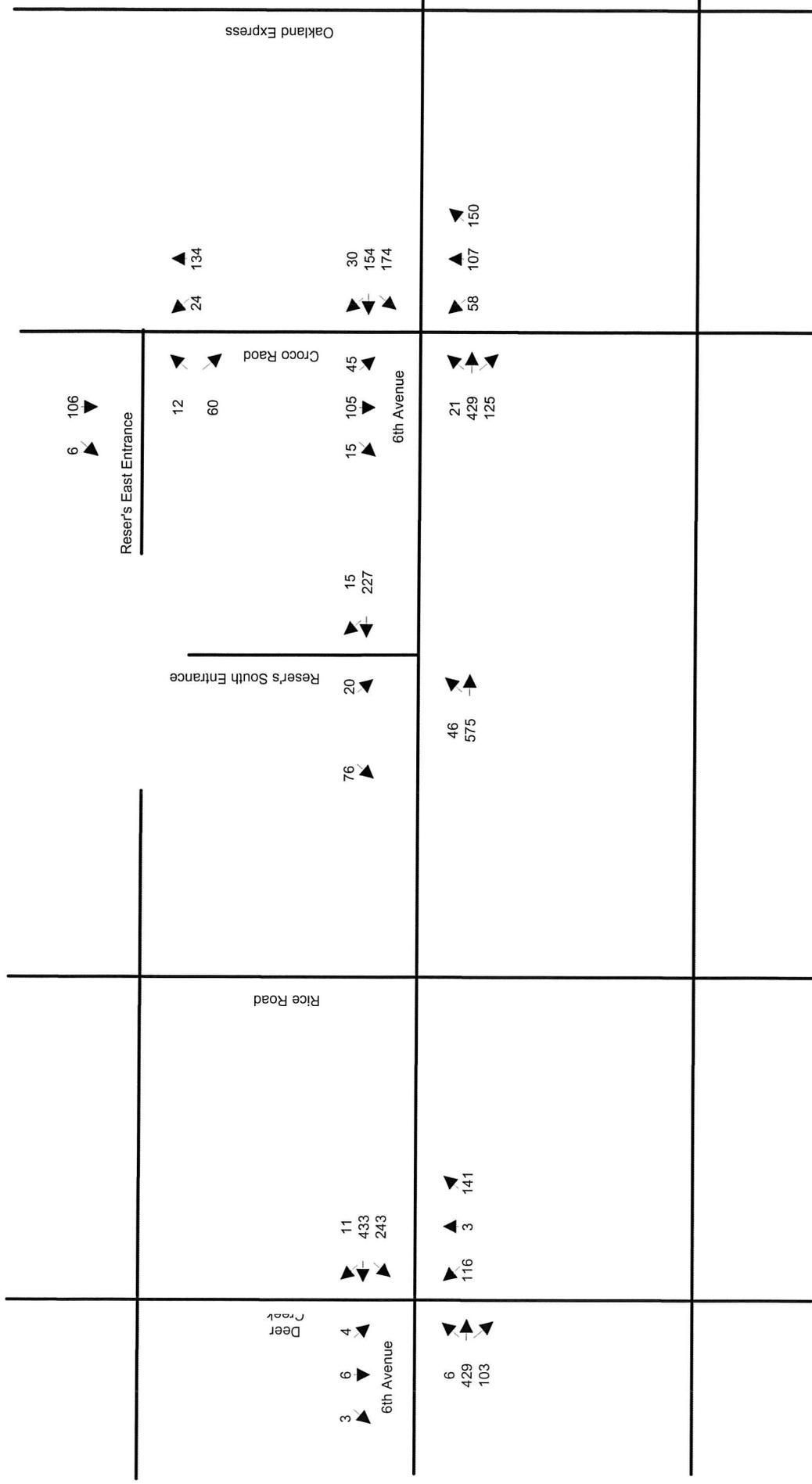
PM Pk Hr Post-Dev Conditions Future Growth Traffic (Distribution & Synchro Output)



Prepared by:
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2930 Woodside Drive
Topeka, Kansas 66614
785.272.4706

PM Peak Hour Post-Development Conditions Future Growth Traffic

Resers Truck Depot & Distribution Center, 6th & Croco



HCM 2010 TWSC
2: Deer Creek & 6th Avenue

12/7/2016

Intersection													
Int Delay, s/veh	40												

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	429	103	243	433	11	116	3	141	4	6	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	Yield	-	-	None	-	-	Yield	-	-	None
Storage Length	350	-	-	500	-	-	120	-	0	120	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	7	505	121	286	509	13	136	4	166	5	7	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	522	0	0	505	0	0	1349	1613	252	1356	1607	261
Stage 1	-	-	-	-	-	-	519	519	-	1088	1088	-
Stage 2	-	-	-	-	-	-	830	1094	-	268	519	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.58	6.58	6.98	7.58	6.58	6.98
Critical Hdwy Stg 1	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.58	5.58	-	6.58	5.58	-
Follow-up Hdwy	2.24	-	-	2.24	-	-	3.54	4.04	3.34	3.54	4.04	3.34
Pot Cap-1 Maneuver	1027	-	-	1042	-	-	~ 107	101	742	106	102	732
Stage 1	-	-	-	-	-	-	503	526	-	227	286	-
Stage 2	-	-	-	-	-	-	326	284	-	709	526	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1027	-	-	1042	-	-	~ 78	73	742	62	73	732
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 78	73	-	62	73	-
Stage 1	-	-	-	-	-	-	500	522	-	225	208	-
Stage 2	-	-	-	-	-	-	227	206	-	543	522	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	3.5	218.4	51
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	NBLn3	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	78	73	742	1027	-	-	1042	-	-	62	104
HCM Lane V/C Ratio	1.75	0.048	0.224	0.007	-	-	0.274	-	-	0.076	0.102
HCM Control Delay (s)	\$ 474.4	56.8	11.2	8.5	-	-	9.8	-	-	67.8	43.5
HCM Lane LOS	F	F	B	A	-	-	A	-	-	F	E
HCM 95th %tile Q(veh)	11.7	0.1	0.9	0	-	-	1.1	-	-	0.2	0.3

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Lanes, Volumes, Timings
3: Croco & 6th Avenue

12/7/2016

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	21	429	125	174	154	30	58	107	150	45	105	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	210		0	210		0	200		200	220		565
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (ft)	25			25			25		25			
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.966			0.976				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1736	3353	0	1736	3388	0	1736	1827	1553	1736	1827	1553
Flt Permitted	0.617			0.378			0.677			0.676		
Satd. Flow (perm)	1127	3353	0	691	3388	0	1237	1827	1553	1235	1827	1553
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		112			35				176			22
Link Speed (mph)		45			45			40				40
Link Distance (ft)		825			3500			2871				552
Travel Time (s)		12.5			53.0			48.9				9.4
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Adj. Flow (vph)	25	505	147	205	181	35	68	126	176	53	124	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	652	0	205	216	0	68	126	176	53	124	18
Enter Blocked Intersection	No	No	No	No	No	No						
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12				12
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases		4			8			2				6
Permitted Phases	4			8			2		2	6		6
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	30.0	30.0		30.0	30.0		20.0	20.0	20.0	20.0	20.0	20.0
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Maximum Green (s)	26.0	26.0		26.0	26.0		16.0	16.0	16.0	16.0	16.0	16.0
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	0.5	0.5		0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0		0	0	0	0	0	0
Act Effct Green (s)	26.0	26.0		26.0	26.0		16.0	16.0	16.0	16.0	16.0	16.0
Actuated g/C Ratio	0.52	0.52		0.52	0.52		0.32	0.32	0.32	0.32	0.32	0.32
v/c Ratio	0.04	0.36		0.57	0.12		0.17	0.22	0.29	0.13	0.21	0.04
Control Delay	6.2	6.5		16.2	5.3		13.7	13.7	4.1	13.2	13.6	5.8

Lanes, Volumes, Timings
3: Croco & 6th Avenue

12/7/2016

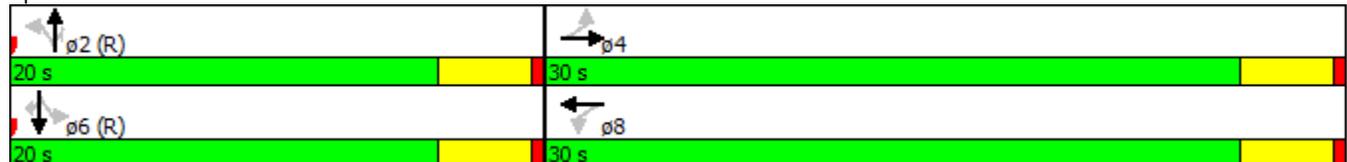


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.2	6.5		16.2	5.3		13.7	13.7	4.1	13.2	13.6	5.8
LOS	A	A		B	A		B	B	A	B	B	A
Approach Delay		6.4			10.6			9.1			12.8	
Approach LOS		A			B			A			B	
Queue Length 50th (ft)	3	42		37	12		14	26	0	11	26	0
Queue Length 95th (ft)	11	63		86	23		35	54	28	29	53	9
Internal Link Dist (ft)		745			3420			2791			472	
Turn Bay Length (ft)	210			210			200		200	220		565
Base Capacity (vph)	586	1797		359	1778		395	584	616	395	584	511
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.36		0.57	0.12		0.17	0.22	0.29	0.13	0.21	0.04

Intersection Summary

Area Type:	Other
Cycle Length:	50
Actuated Cycle Length:	50
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	50
Control Type:	Pretimed
Maximum v/c Ratio:	0.57
Intersection Signal Delay:	8.8
Intersection Capacity Utilization	45.4%
Analysis Period (min)	15
Intersection LOS:	A
ICU Level of Service	A

Splits and Phases: 3: Croco & 6th Avenue



Resers Fine Foods, Inc.
Proposed Warehouse & Distribution Center
545 SE Croco Road
Topeka, Kansas 66607
CFS Project No. 16-5226

Traffic Impact Analysis

Appendix-12

2009 MUTCD Section 4C.04, Warrant 3, Peak Hour



Prepared by:
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Option:

- 08 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, the traffic volumes in the 56 percent columns in Table 4C-1 may be used in place of the 80 percent columns.

Section 4C.03 Warrant 2, Four-Hour Vehicular Volume

Support:

- 01 The Four-Hour Vehicular Volume signal warrant conditions are intended to be applied where the volume of intersecting traffic is the principal reason to consider installing a traffic control signal.

Standard:

- 02 **The need for a traffic control signal shall be considered if an engineering study finds that, for each of any 4 hours of an average day, the plotted points representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) all fall above the applicable curve in Figure 4C-1 for the existing combination of approach lanes. On the minor street, the higher volume shall not be required to be on the same approach during each of these 4 hours.**

Option:

- 03 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-2 may be used in place of Figure 4C-1.

Section 4C.04 Warrant 3, Peak Hour

Support:

- 01 The Peak Hour signal warrant is intended for use at a location where traffic conditions are such that for a minimum of 1 hour of an average day, the minor-street traffic suffers undue delay when entering or crossing the major street.

Standard:

- 02 **This signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time.**
- 03 **The need for a traffic control signal shall be considered if an engineering study finds that the criteria in either of the following two categories are met:**
- A. If all three of the following conditions exist for the same 1 hour (any four consecutive 15-minute periods) of an average day:**
1. **The total stopped time delay experienced by the traffic on one minor-street approach (one direction only) controlled by a STOP sign equals or exceeds: 4 vehicle-hours for a one-lane approach or 5 vehicle-hours for a two-lane approach; and**
 2. **The volume on the same minor-street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes; and**
 3. **The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.**
- B. The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher-volume minor-street approach (one direction only) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4C-3 for the existing combination of approach lanes.**

Option:

- 04 If the posted or statutory speed limit or the 85th-percentile speed on the major street exceeds 40 mph, or if the intersection lies within the built-up area of an isolated community having a population of less than 10,000, Figure 4C-4 may be used in place of Figure 4C-3 to evaluate the criteria in the second category of the Standard.
- 05 If this warrant is the only warrant met and a traffic control signal is justified by an engineering study, the traffic control signal may be operated in the flashing mode during the hours that the volume criteria of this warrant are not met.

Guidance:

- 06 *If this warrant is the only warrant met and a traffic control signal is justified by an engineering study, the traffic control signal should be traffic-actuated.*

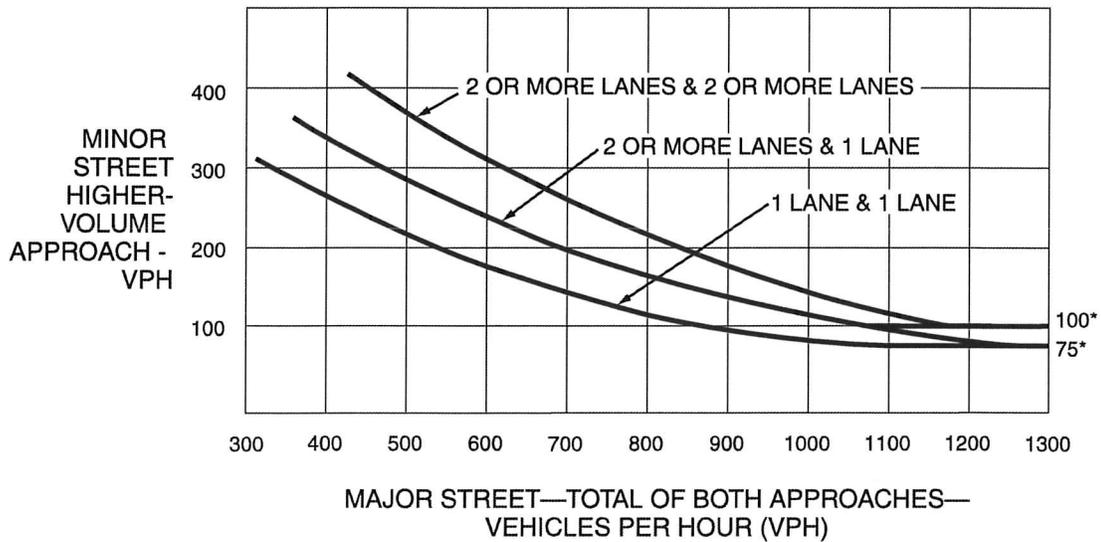
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.