

ORIGIN-DESTINATION STUDY

The focus of the Origin-Destination (O-D) study is the Chickasha area traffic. A complete O-D study was not conducted for the Northern section as it is assumed that the majority of traffic would be through traffic and would thereby make use of any proposed bypass. In the Chickasha area, the license plate surveys were conducted to determine the amount of traffic that could potentially make use of a Chickasha bypass.

Traffic for a bypass would consist of 'external local' and 'external through' traffic. External local traffic consists of those vehicles traveling from an origin outside the study area to a destination within the study area. Due to the nature of the study and proposed bypass location, a true number for 'external local' traffic would be difficult to determine and would only involve limited movements.

External through traffic has both an origin and destination outside the study area and is only passing through the area. Traffic that has a temporary destination within Chickasha and a final destination outside of the study area is difficult to summarize as the temporary destination may prove to allow for use of the bypass for some portion of the trip. It is possible that this traffic was captured as part of the study but is dependent on the duration or time taken to complete the temporary destination objective (such as stopping at a retail store). The resultant data is a major factor in determining the need for a bypass of the City of Chickasha and in selecting its alignment.

Data Collection Methodology and Execution

License plate surveys were conducted on a typical weekday with at least one surveyor designated at each survey point. This surveyor was responsible for recording the last three characters of a license plate for one direction of traffic.

In survey points with high traffic volumes (or a multi-lane roadway), at least two surveyors were present (one to record and one to account). The license plate data of the roadways were recorded for both directions during the morning (AM) and evening (PM) peak hours, from 6:30 AM to 9:30 AM and 2:30 PM to 5:30 PM. A total of twenty (20) survey points were established to collect license plate data.

In advance of the license plate survey effort, survey sites were scouted and details of surveyor responsibilities, assignments, and placements were marked for each location. Survey points were selected based on safety, lighting, site lines, areas where traffic may be slowing or coming to a stop (such as a signal or immediately proceeding a turn), and other site specific factors to ensure the greatest capture rate while maintaining safety.

Each survey location was staffed with at least one surveyor with the high-speed, heavy-traffic locations staffed with at least two. In addition, each zone had one zone manager from the consultant that was familiar with the study and study area and provided support to surveyors. One overall study manager from the consultant was available to provide support to all areas. Each area was equipped with radios and cellular phones and the surveyors were able to communicate with each other at all times.

Preprinted survey sheets with required information on survey point (zone) number, study period, time interval, vehicle type (passenger car or semi-trailer) and license plate number were provided to the surveyors to record data. These preprinted sheets were sorted in envelopes for the AM and PM peak periods for each survey point. Surveyors were instructed to record the rear license plates, since majority of the vehicles do not have front plates (such as Oklahoma tags). In the event of a vehicle towing a trailer, the license plate of the trailer was used.

Surveyors were instructed to fill in the respective survey point (zone) number prior to the beginning of the data collection. The data were recorded at 15-minute intervals (called out by the zone manager), during the morning and evening peak hour periods. Surveyors were stationed at the same survey points (zones) during the AM and PM peak hours to maintain consistency and location familiarity. Extra staff was available during the PM survey to assist surveyors and were allocated to areas of heavy traffic flow.

Factors Affecting Data Collection

In some instances not all vehicles were able to be recorded due to uncontrollable factors in the field which are common in these types of surveys. Noted affecting factors on the missed out vehicles widely experienced by surveyors include:

- ❑ Multiple vehicles traveling at a high rate of speed, possibly grouped closely together
- ❑ Newly registered vehicles where paper license is in rear window,
- ❑ Dirty license plates
- ❑ Poorly lit vehicles with burnt out license plate illumination bulbs during the early AM and late PM hours

The cumulative impact of these factors is that some matching vehicles may have been missed and are not represented in the O-D summary, thereby decreasing the match numbers slightly. The overall impact of these factors and their effect on the data is relatively insignificant.

Rationale for Traffic Travel in Chickasha Area

A rationale for traffic travel in the Chickasha area was developed in order to identify plausible origin and destination points for vehicles that would potentially

make use of a proposed Chickasha bypass. This rationale was based on the assumption that vehicles would deviate from using US 81 through town and use one of the proposed bypasses instead and that they did not have a secondary destination within Chickasha. The proposed bypass alternatives include:

- A proposed west bypass having a southern terminus near the intersection of US 81 and SH 19 and a northern terminus at the US 81 and US 62/SH 9 intersection (herein referenced as 'West Bypass').

OR

- A proposed north bypass having an eastern terminus along I-44, north of US 62/US 277/ SH 9 interchange and a western terminus along US 81 north of the US 81 and US 62/ SH 9 intersection (herein referenced as 'North Bypass').

Exhibit 2-5: 'Rationale Matrix for 'Origin' Location Traffic Travel Along West Bypass' and Exhibit 2-6: 'Rationale Matrix for 'Origin' Location Traffic Travel Along North Bypass', demonstrate the possible bypass travel routes that the vehicles from the surveyed 'Origin' locations would be adopting to reach their respective 'Destination' locations. Rationale matrices were also developed for traffic from the surveyed 'Destination' locations that would adopt the bypass travel routes to reach their 'Origin' points. These however, were not included in the license plate analysis to avoid double counting of vehicles. The analyzed data and the results from the 'Destination' locations were used to double check the results obtained from the 'Origin' point analysis to ensure the accuracy of the results.

The analyses have been performed based on Exhibits 2-5 and 2-6 with the west and north bypasses treated exclusively; with only the west bypass in-place for Exhibit 2-5 rationale scenario analysis and only the north bypass in-place for Exhibit 2-6 rationale scenario analysis. In referring to the exhibits, one can see

that Chickasha area 'External through' traffic from most of the survey locations could somewhat benefit from both the proposed bypass routes. However, the percent of traffic benefiting from either of the proposed bypass routes would be the key deciding factor for the recommended bypass alternative. It is possible for the sum of vehicles at any survey location to have traveled through routes differing from those considered in the rationale. However, for data analysis purposes, only the most likely travel route adopted by the Chickasha area traffic is considered. The likelihood of traffic taking any other route is very low due to factors like perception of time taken to complete the trip (may feel out of the way), existing capacity and service issues, and the driver's temporary destination points.

In Exhibits 2-5 and 2-6, the traffic exiting I44 westbound at 62/277/SH9 (3A) were matched only with vehicles with destination points along east-west US 62 and US 81, north of the City of Chickasha. Traffic with possible destinations within the City of Chickasha or south of the City were not matched since the vehicles desiring to travel so would use the I44 westbound exit at 81/277 (5A). Also, the vehicles accessing the I44 eastbound on ramp at US81/277 (5D) and I44 eastbound on ramp at SH9/US62/US277 (3D) would not benefit from any of the bypasses since they have their destination points north and south of the City of Chickasha and hence were not analyzed for matching vehicles.

Of particular note was a field observed route that traffic currently takes in order to bypass US 81 through Chickasha. Traffic originating from the south, specifically US 81 and SH 19 would travel northbound on US 81 to Country Club Road, then westbound to 29th Street, then northbound to US 62 just west of US 81, thereby avoiding downtown. The reverse of this bypass route was also observed in the field. The majority of this traffic at the north end heads eastbound on US 62/ US 81 to industrial and commercial facilities (such as Delta Faucet) in the northwest section of Chickasha or continues north along US 81 or west on US 62.

Survey Location	Zone No.	Traffic Surveyed	West Bypass		Proposed Travel Route
			Rationale for Traffic Travel	Survey Locations	
1 - US 62, W of US 81	1B	EB traffic	to 44W, 19E, 81/277S and 92S	to 3B, 5B, 6B, 7A and 8A	S on W Bypass
2 - US 81, N of US 62	2A	SB traffic	to 44W, 19E, 81/277S and 92S	to 3B, 5B, 6B, 7A and 8A	S on W Bypass
3 - I 44 at US 62	3B	WB on ramp	to 19E, 81/277S and 92S	to 6B, 7A and 8A	N or S on W Bypass
	3C	EB off ramp	to 62W and 81N	to 1A and 2B	N on W Bypass
4 - US 62, E of I 44	4A	WB traffic	to 19E, 81/277S and 92S	to 6B, 7A and 8A	N or S on W Bypass
5 - I 44 at US 81	5A	WB off ramp	to 19E, 81/277S and 92S	to 6B, 7A and 8A	N or S on W Bypass
	5C	EB off ramp	to 62W, 81N, 19E, 81/277S, and 92S	to 1A, 2B, 6B, 7A and 8A	N or S on W Bypass
6 - SH 19, E of US 81	6A	WB traffic	to 62W, 81N, 44W, 44E and 92S	to 1A, 2B, 5B, 5D and 8A	N on W Bypass
7 - US 81, S of SH 19	7B	NB traffic	to 62W, 81N, 44W, 44E and 92S	to 1A, 2B, 5B, 5D and 8A	N on W Bypass
8 - SH 92, S of Country Club Road	8B	NB traffic	to 62W, 81N, 9/62/277E, 44W, 44E, 19E and 81/277S	to 1A, 2B, 4B, 5B, 5D, 6B and 7A	N or S on W Bypass

Exhibit 2-5: Rationale Matrix for 'Origin' Location Traffic Travel Along West Bypass

Survey Location	Zone No.	Traffic Surveyed	North Bypass		Proposed Travel Route
			Rationale for Traffic Travel	Survey Locations	
1 - US 62, W of US 81	1B	EB traffic	to 44E	to 3D	E on N Bypass
2 - US 81, N of US 62	2A	SB traffic	to 44E and 9/62/277E	to 3D and 4B	E on N Bypass
3 - I 44 at US 62	3A	WB off ramp	to 62W and 81N	to 1A, 2B	W on N Bypass
	3C	EB off ramp	to 81N	to 2B	W on N Bypass
4 - US 62, E of I 44	4A	WB traffic	to 81N	to 2B	W on N Bypass
5 - I 44 at US 81	5C	EB off ramp	to 81N	to 2B	W on N Bypass
6 - SH 19, E of US 81	6A	WB traffic	to 81N	to 2B	W on N Bypass
7 - US 81, S of SH 19	7B	NB traffic	to 81N	to 2B	W on N Bypass

Exhibit 2-6: Rationale Matrix for 'Origin' Location Traffic Travel Along North Bypass

Note: The above directions indicate the directions of travel and not the roadway direction.

Data

Analysis

Following the license plate survey data collection effort, recorded data from each survey zone location package was input into a database for analysis. Analysis of

either the 'Origin' or 'Destination' survey point recorded data would produce necessary results. Data was analyzed for all the 'Origin' points of the survey locations to determine matching vehicles traveling 'to' specific locations within the Chickasha area as shown in the rationale matrix. The combined analysis of 'Origin' and 'Destination' points to determine the number of vehicles traveling 'from' and 'to' specific locations would result in double counting of vehicles and hence was not performed. A computer module was written to perform multiple location-specific queries within the database, and was capable of performing the following sequential tasks:

- ❑ Match license plates from every survey zone ('Origin' point) with its related zones as outlined in Exhibit 2-5 and Exhibit 2-6
- ❑ Return unique license plate matches along with recorded times, and
- ❑ Compute travel time difference for each matched trip and count according to the estimated travel time criteria.

(Note: Database module was structured to organize the time difference calculation appropriately based on origin and destination. For origin point analysis at survey locations, the origin times of the matched license plates would be subtracted from the destination 'to' zone(s) times as per the rationale matrix criteria. Values that were negative or greater than the estimated time travel would not be counted; in the event of a match between locations, it was logical that the vehicle had to originate first before it reached its destination.)

The module results were used to compile a matrix summarizing trip movements from every 'Origin' point survey location that would use the proposed bypass travel routes during the AM and PM peak hour study periods (Exhibit 2-7). It was assumed for 'Origin' traffic from I44 Westbound off ramp at US81 (5A) traveling to SH19E (6B), only a 50% of the matched vehicles would use the west bypass. The remainder of the 50% was assumed to travel along US81/277, south of the City of Chickasha.

Exhibit 2-7 shows the total number of recorded license plates at all the 'Origin' survey points (Total Sum) and the total number of matched license plates traveling 'to' the destinations as outlined in the rationale (Match Sum). For example, 'Origin' zone 1B during the AM period recorded a total of 633 surveyed vehicles, of which 202 matched vehicles at zones 3B, 5B, 6B, 7A and 8A would benefit from the west bypass and 136 matched vehicles at zone 3D would benefit from the north bypass. The reverse would hold true for all the 'Destination' survey points.

ZONE	AM			PM			
	TOTAL SURVEYED	WEST BYPASS	NORTH BYPASS	TOTAL SURVEYED	WEST BYPASS	NORTH BYPASS	
		MATCH SUM	MATCH SUM		MATCH SUM	MATCH SUM	
1A	-	-	-	-	-	-	Destination
1B	633	202	136	867	376	181	Origin
2A	402	130	72	451	192	197	Origin
2B	-	-	-	-	-	-	Destination
3A	363	-	95	452	-	151	Origin
3B	248	69	-	241	95	-	Origin
3C	198	19	6	317	82	35	Origin
4A	751	156	33	851	355	91	Origin
4B	-	-	-	-	-	-	Destination
5A	501	102	-	819	262	-	Origin
5C	217	97	15	241	158	25	Origin
6A	657	391	41	666	313	56	Origin
6B	-	-	-	-	-	-	Destination
7A	-	-	-	-	-	-	Destination
7B	346	69	11	948	360	67	Origin
8A	-	-	-	-	-	-	Destination
8B	413	261	-	304	309	-	Origin
	4,729	1,496	409	6,157	2,502	803	

Exhibit 2-7: Peak Period License Plate Travel Direction Summary

The six-hour peak period (both morning and evening) survey data was compared against the Chickasha area ADT (2004) matrix (Exhibit 2-3) to determine the percent of the daily traffic that traveled during the survey periods (6:30AM - 9:30AM & 2:30PM - 5:30PM) (Exhibit 2-8). This compared data was utilized in the development of an ADT and peak-period trip movement summary matrix (Exhibit 2-9).

ZONE NO.	SURVEYED VEHICLES		TOTAL SURVEYED VEHICLES	ADT	PERCENT (%) SURVEYED VOLUME vs. ADT
	AM (6:30 AM -9:30 AM)	PM (2:30 PM -5:30 PM)			
1A	498	836	1,334	3,986	33%
1B	633	867	1,500	4,318	35%
2A	402	451	853	2,191	39%
2B	289	455	744	2,106	35%
3A	363	452	815	2,738	30%
3B	248	241	489	1,162	42%
3C	198	317	515	1,168	44%
3D	354	477	831	4,051	21%
4A	751	851	1,602	4,903	33%
4B	466	1,215	1,681	4,710	36%
5A	501	819	1,320	3,156	42%
5B	81	109	190	703	27%
5C	217	241	458	763	60%
5D	522	800	1,322	3,959	33%
6A	657	666	1,323	2,594	51%
6B	533	618	1,151	3,045	38%
7A	400	660	1,060	4,299	25%
7B	346	948	1,294	4,474	29%
8A	175	426	601	1,557	39%
8B	413	304	717	1,620	44%
	8,047	11,753			

Exhibit 2-8: ADT and Peak-Hour Survey Periods Traffic Volume Comparison

Exhibit 2-8 shows the total surveyed vehicle volume during the AM and PM peak periods at all the survey point locations and their corresponding ADT along with the ADT percent of the survey period volume. It can be seen that the six-hour peak period survey volume represented about 30-40% of the ADT, with the value as low as 21% along I44 EB on ramp at SH9/US62/US277 (Zone 3D) and as high as 60% along I44 EB off ramp at US81/US277 (Zone 5C). This percent value was used in extrapolating the peak-period matched vehicles to the ADT matched vehicles.

Exhibit 2-9 shows the total number of license plates recorded at all the 'Origin' survey points (Total Sum), the total number of matched license plates at their respective destination points (Match Sum) for the surveyed AM and PM peak periods and the extrapolated values of the matched vehicles for the ADT for the different bypass routes. For example, 'Origin' zone 1B during the AM and PM survey periods recorded a total of 1,500 surveyed vehicles, which is 35% of the ADT (Exhibit 2-8). This percent value was used in extrapolating the peak-period

west bypass matched sum of 578 vehicles to an ADT matched sum of 1,664 vehicles that would totally benefit from the west bypass, and the peak-period north bypass matched sum of 317 vehicles to an ADT matched sum of 913 vehicles that would totally benefit from the north bypass in the Chickasha area.

ZONE NO.	AM & PM PEAK PERIOD			ADT			
	TOTAL SURVEYED	WEST BYPASS	NORTH BYPASS	TOTAL SURVEYED	WEST BYPASS	NORTH BYPASS	
		MATCH SUM	MATCH SUM		MATCH SUM	MATCH SUM	
1A	-	-	-	-	-	-	Destination
1B	1,500	578	317	4,318	1,664	913	Origin
2A	853	322	269	2,191	827	691	Origin
2B	-	-	-	-	-	-	Destination
3A	815	-	246	2,738	-	826	Origin
3B	489	164	-	1,162	390	-	Origin
3C	515	101	41	1,168	229	93	Origin
3D	-	-	-	-	-	-	Destination
4A	1,602	511	124	4,903	1,564	380	Origin
4B	-	-	-	-	-	-	Destination
5A	1,320	364	-	3,156	870	-	Origin
5B	-	-	-	-	-	-	Destination
5C	458	255	40	763	425	67	Origin
5D	-	-	-	-	-	-	Origin
6A	1,323	704	97	2,594	1,380	190	Origin
6B	-	-	-	-	-	-	Destination
7A	-	-	-	-	-	-	Destination
7B	1,294	429	78	4,474	1,483	270	Origin
8A	-	-	-	-	-	-	Destination
8B	717	570	-	1,620	1,288	-	Origin
	10,886	3,998	1,212	29,087	10,120	3,430	

Exhibit 2-9: ADT Travel Direction Summary

The data from Exhibits 2-7 and 2-9 are further analyzed to show conclusive results regarding the highest traveled bypass route and the percent total 'External through' traffic in the Chickasha area that would be benefited by the proposed bypass routes. The analyzed data is summarized into three tables for the AM and PM peak period and ADT volume as shown in Exhibits 2-10, 2-11 and 2-12.

AM SUMMARY							
TOTAL 'ORIGIN' POINT SURVEYED VEHICLES	TOTAL MATCHED		PERCENT (%) MATCHED		PERCENT (%) MATCHED vs. TOTAL VEHICLES		BYPASS TRAVEL
4,729	648	1,496	34%	79%	14%	32%	N on W bypass
	848		45%		18%		S on W bypass
	201	409	10%	21%	4%	8%	W on N bypass
	208		11%		4%		E on N bypass
	1,905						

Exhibit 2-10: Proposed Bypass Routes Trip Distribution Summary-AM Peak

PM SUMMARY							
TOTAL 'ORIGIN' POINT SURVEYED VEHICLES	TOTAL MATCHED		PERCENT (%) MATCHED		PERCENT (%) MATCHED vs. TOTAL VEHICLES		BYPASS TRAVEL
6,157	1,223	2,502	37%	76%	20%	41%	N on W bypass
	1,279		39%		21%		S on W bypass
	425	803	13%	24%	7%	13%	W on N bypass
	378		11%		6%		E on N bypass
	3,305						

Exhibit 2-11: Proposed Bypass Routes Trip Distribution Summary-PM Peak

ADT SUMMARY							
TOTAL 'ORIGIN' POINT SURVEYED VEHICLES	TOTAL MATCHED		PERCENT (%) MATCHED		PERCENT (%) MATCHED vs. TOTAL		BYPASS TRAVEL
29,087	4,592	10,120	34%	75%	16%	35%	N on W bypass
	5,528		41%		19%		S on W bypass
	1,826	3,430	13%	25%	6%	12%	W on N bypass
	1,604		12%		6%		E on N bypass
	13,550						

Exhibit 2-12: Proposed Bypass Routes Trip Distribution Summary-ADT

The first title in Exhibits 2-10, 2-11 and 2-12, 'Total Origin Point (Surveyed) Vehicles' represents the traffic volume at all the 'Origin' points and is the total number of license plates surveyed (extrapolated for the 'ADT Summary') at all 'Origin' point zones distributed based upon logical directions of travel for the two bypass alternatives. The significance of this column is that it represents the maximum possible 'external thru' vehicles (unidirectional) that could make use of a bypass based on a specific direction of travel. In the AM summary, a total of 4,729 vehicles were surveyed at all the 'Origin' survey points during the AM peak period that represent the total group from which matched license plates for

vehicles traveling north and south on a west bypass, and east and west on a north bypass could be drawn from.

The second title 'Total Matched' shows the total number of matched license plates between the 'Origin' and 'Destination' points for the proposed bypass travel routes as outlined in the rationales (Exhibits 2-5 and 2-6). The significance of this column is that it represents the total number of vehicles that could make use of a bypass route. It is assumed that all matched vehicles will make use of a bypass as it will decrease travel times to destinations, meet driver expectancy of corridor travel and improve vehicle performance. Thus in the AM period, 1,496 vehicles out of the total of 4,729 would likely travel on the west bypass and 409 vehicles out of the total of 4,729 would likely travel on the north bypass. In the PM period, 2,502 vehicles out of the total of 6,157 would likely travel on the west bypass and 803 vehicles out of the total of 6,157 would travel on the north bypass. Overall, 10,120 vehicles out of a total 29,087 average daily traffic (ADT) would likely travel on the west bypass and 3,430 vehicles out of a total 29,087 ADT would likely travel on the north bypass.

The third heading 'Percent (%) Matched', shows the percentage distribution of the total matched vehicles to the different bypass travel routes. The significance of this column is that it comparatively assesses which bypass route will be 'the most traveled route' based solely on the matched license plates. Thus in the AM summary, 79% of the total 'Origin' base point matched vehicles would benefit from the west bypass and 21% would benefit from the north bypass. In the PM summary, 76% of the total 'Origin' base point matched vehicles would benefit from the west bypass and 24% would benefit from the north bypass. In the ADT summary, 75% of the total 'Origin' base point matched vehicles would benefit from the west bypass and 25% would benefit from the north bypass. The above summaries show that during the AM, PM and daily analyzed periods, the west bypass of Chickasha is more likely to be traveled than the north bypass.

The fourth title 'Percent Matched vs. Total Vehicles' shows the percentage comparison of traffic distributed along the different bypass travel routes against the total surveyed vehicles. The significance of this column is that it shows the total percent of Chickasha area 'External through' traffic that would benefit from the west and north bypasses. In the AM summary, 32% of the total surveyed vehicles would use the west bypass with 14% traveling north and 18% traveling south. Similarly, 8% of the total surveyed vehicles would use the north bypass with 4% traveling east and 4% traveling west. In the PM summary, 41% of the total surveyed vehicles would use the west bypass with 20% traveling north and 21% traveling south. Similarly, 13% of the total surveyed vehicles would use the north bypass, with 7% of the surveyed vehicles traveling west and 6% traveling east. In the ADT summary, 35% of the total surveyed vehicles would use the west bypass with 16% traveling north and 19% traveling south. Similarly, 12% of the total surveyed vehicles would use the north bypass, with 6% of the surveyed vehicles traveling west and 6% traveling east.

The analysis of potential use of the north bypass included traffic which was not solely US 81 bypassable traffic, e.g., traffic originating from US 62 east of Chickasha destined for US 81 north of Chickasha would use the north bypass, but would not be considered as solely US 81 bypassable traffic. Because this corridor study focused on US 81 traffic only, a second analysis was performed to study only the US 81 traffic that would benefit from the north bypass. The origin point was US 81 north of Chickasha and the destination point was US 81 south of SH 19. License plates were matched for the AM and PM peak period traffic and the ADT similar to the above explained methodology. Based on the peak period and ADT matched license plates, it was observed that only 6% of the total surveyed US 81 vehicles would benefit from a north US 81 bypass, with 3% of the surveyed vehicles traveling west and 3% traveling east.

West Bypass Analysis

As an additional analysis effort, a segmental analysis of the west bypass was performed to determine the Chickasha area traffic that would benefit exclusively from the west bypass. The segments were developed based on the proposed possible west bypass interchanges at US 62, SH 92, I-44, and US 81 South.

The analyzed segments include:

- Segment 1 – Proposed west bypass with its northern terminus at the US81 and US62/SH9 intersection and southern terminus at the Country Club Rd and SH92 intersection, with a proposed interchange
- Segment 2 – Proposed west bypass with its northern terminus at the Country Club Road and SH92 intersection and southern terminus along I44, immediately south of Cottonwood Road, with a proposed interchange
- Segment 3 – Proposed west bypass with its northern terminus along I44, south of Cottonwood Road and southern terminus along US81 South near the US81 and SH19 intersection

Exhibit 2-13: 'Rationale Matrix for West Bypass Travel' was developed to identify the plausible origin and destination points of vehicles that would benefit from the west bypass. This rationale was based on the assumption that vehicles would deviate from using US 81 through town and use the proposed west bypass instead and that they did not have a secondary destination within Chickasha. The rationale accounts only for the 'origin' point traffic that would travel along these segments. It is possible for traffic from other surveyed zones to travel through the proposed west bypass segments but the likelihood of it is very low due to the perception of time taken to complete the trip (may feel out of the way).

The database module that was developed for the Chickasha area O-D study was utilized to match license plates and compile trip movement summary matrices for

West Bypass	Zone No.	Traffic Surveyed	Rationale for Traffic Travel	Survey Locations	Proposed Travel Route
Segment 1	1B	SB traffic	to 44W, 19E, 81/277S and 92S	to 3B, 5B, 6B, 7A and 8A	S on W Bypass
	2A	SB traffic	to 44W, 19E, 81/277S and 92S	to 3B, 5B, 6B, 7A and 8A	S on W Bypass
	3C	NB traffic	to 62W and 81N	to 1A and 2B	N on W Bypass
	5C	NB traffic	to 62W and 81N	to 1A and 2B	N on W Bypass
	6A	NB traffic	to 62W and 81N	to 1A and 2B	N on W Bypass
	7B	NB traffic	to 62W and 81N	to 1A and 2B	N on W Bypass
	8B	NB traffic	to 62W and 81N	to 1A and 2B	N on W Bypass
	Segment 2	1B	SB traffic	to 44W, 19E and 81/277S	to 3B, 5B, 6B and 7A
2A		SB traffic	to 44W, 19E and 81/277S	to 3B, 5B, 6B and 7A	S on W Bypass
3B		SB traffic	to 92S	to 8A	N on W Bypass
3C		NB traffic	to 62W and 81N	to 1A and 2B	N on W Bypass
4A		NB traffic	to 92S	to 8A	N on W Bypass
5A		NB traffic	to 92S	to 8A	N on W Bypass
5C		NB traffic	to 62W, 81N and 92S	to 1A, 2B and 8A	N on W Bypass
6A		NB traffic	to 62W, 81N and 92S	to 1A, 2B and 8A	N on W Bypass
7B		NB traffic	to 62W, 81N and 92S	to 1A, 2B and 8A	N on W Bypass
8B		SB traffic	to 9/62/277E, 44W, 44E, 19E and 81/277S	to 4B, 5B, 5D, 6B and 7A	S on W Bypass
Segment 3	1B	SB traffic	to 19E and 81/277S	to 6B and 7A	S on W Bypass
	2A	SB traffic	to 19E and 81/277S	to 6B and 7A	S on W Bypass
	3B	SB traffic	to 19E and 81/277S	to 6B and 7A	S on W Bypass
	4A	SB traffic	to 19E and 81/277S	to 6B and 7A	S on W Bypass
	5A	SB traffic	to 19E and 81/277S	to 6B and 7A	S on W Bypass
	5C	SB traffic	to 19E and 81/277S	to 6B and 7A	S on W Bypass
	6A	NB traffic	to 62W, 81N, 44W, 44E and 92S	to 1A, 2B, 5B, 5D and 8A	N on W Bypass
	7B	NB traffic	to 62W, 81N, 44W, 44E and 92S	to 1A, 2B, 5B, 5D and 8A	N on W Bypass
	8B	SB traffic	to 19E and 81/277S	to 6B and 7A	S on W Bypass

Exhibit 2-13: Rationale Matrix for West Bypass Segment Travel

the

west bypass travel. As adopted earlier, only the 'Origin' point surveyed traffic was utilized in the license plate match analysis. 'Destination' point traffic was not included to avoid double counting of vehicles. Exhibit 2-14: 'Peak Period and ADT Trip Movement Summary' shows the total and matched number of recorded license plates for the peak period and ADT at all the survey locations benefited by the west bypass (Source: Exhibit 2-12-Rationale Matrix for West Bypass Travel).

WEST BYPASS	ZONE NO.	AM		PM		ADT		TRAVEL ROUTE
		TOTAL SUM	MATCH SUM	TOTAL SUM	MATCH SUM	TOTAL SUM	MATCH SUM	
Segment 1	1B	633	202	867	376	4,318	1,664	S on W Bypass
	2A	402	130	451	192	2,191	827	S on W Bypass
	3C	198	19	317	82	1,168	229	N on W Bypass
	5C	217	32	241	75	763	178	N on W Bypass
	6A	657	103	666	134	2,594	465	N on W Bypass
	7B	346	45	948	248	4,474	1,013	N on W Bypass
	8B	413	62	304	92	1,620	348	N on W Bypass
	Total	2,866	593	3,794	1,199	17,128	4,724	
Segment 2	1B	633	170	867	274	4,318	1,278	S on W Bypass
	2A	402	108	451	154	2,191	673	S on W Bypass
	3B	248	9	241	34	1,162	102	N on W Bypass
	3C	198	19	317	82	1,168	229	N on W Bypass
	4A	751	29	851	225	4,903	777	N on W Bypass
	5A	501	29	819	104	3,156	318	N on W Bypass
	5C	217	40	241	108	763	247	N on W Bypass
	6A	657	135	666	205	2,594	667	N on W Bypass
	7B	346	60	948	344	4,474	1,397	N on W Bypass
8B	413	199	304	217	1,620	940	S on W Bypass	
	Total	4,366	798	5,705	1,747	26,349	6,628	
Segment 3	1B	633	134	867	217	4,318	1,010	S on W Bypass
	2B	289	71	455	115	2,106	527	S on W Bypass
	3B	248	60	241	61	1,162	288	S on W Bypass
	4A	751	127	851	130	4,903	787	S on W Bypass
	5A	501	73	819	158	3,156	552	S on W Bypass
	5C	217	57	241	50	763	178	S on W Bypass
	6A	657	391	666	313	2,594	1,380	N on W Bypass
	7B	346	30	948	360	4,474	1,348	N on W Bypass
8B	413	73	304	68	1,620	319	S on W Bypass	
	Total	4,055	1,016	5,392	1,472	25,096	6,389	

Exhibit 2-14: Peak Period and ADT Trip Movement Summary

In the above exhibit, total sum represents the total number of surveyed vehicles at the reference locations. Match sum represents the number of vehicles that would benefit from the west bypass and would travel along its segments, thus bypassing the urban area of the City of Chickasha. The peak period traffic at the survey locations were compared with their respective ADT; and the matched vehicle data extrapolated to obtain the ADT number of matched vehicles.

The data in Exhibit 2-14 was further summarized into three tables to demonstrate the percent of the total number of vehicles that would benefit from the west bypass route segments (Exhibits 2-15, 2-16 and 2-17).

AM SUMMARY			
WEST BYPASS	TOTAL SURVEYED VEHICLES	TOTAL MATCHED	PERCENT (%) MATCHED vs. TOTAL VEHICLES
Segment 1	2,866	593	21%
Segment 2	4,366	798	18%
Segment 3	4,055	1,016	25%

Exhibit 2-15: Proposed West Bypass Routes Trip Distribution Summary-AM Peak

PM SUMMARY			
WEST BYPASS	TOTAL SURVEYED VEHICLES	TOTAL MATCHED	PERCENT (%) MATCHED vs. TOTAL VEHICLES
Segment 1	3,794	1,199	32%
Segment 2	5,705	1,747	31%
Segment 3	5,392	1,472	27%

Exhibit 2-16: Proposed West Bypass Routes Trip Distribution Summary-PM Peak

ADT SUMMARY			
WEST BYPASS	TOTAL VEHICLES	TOTAL MATCHED	PERCENT (%) MATCHED vs. TOTAL VEHICLES
Segment 1	17,128	4,724	28%
Segment 2	26,349	6,628	25%
Segment 3	25,096	6,389	25%

Exhibit 2-17: Proposed West Bypass Routes Trip Distribution Summary-ADT

From the above Exhibits 2-15, 2-16 and 2-17, it can be seen that an overall 18%-32% of the total surveyed 'External through' traffic would benefit from the west bypass segments 1, 2 and 3, with a high of 32% travel recorded along Segment

1, with its northern terminus at the Country Club Road and SH92 intersection and southern terminus along I44, immediately south of Cottonwood Road. It can be observed from the exhibits that at least 25% or more of the surveyed vehicles would be benefited from the west bypass, and thus avoid travel through the urban area of the City of Chickasha thus improving travel time through the US81 corridor and limiting fuel consumption and emissions.

Origin-Destination Findings

The Origin-Destination Study results for the proposed west and north bypass alternatives were studied for the AM and PM peak hour and average daily traffic conditions using 'Origin' point analysis. Results indicate that the AM peak hour, PM peak hour and average daily traffic show similar trip distribution characteristics with a significantly high percentage of traffic estimated to travel the west bypass.

Based on the representative sample, the study substantiates that the west bypass is likely to reduce the total traffic traveled on US 81 through Chickasha by approximately 32% in the AM, 41% in the PM and 35% daily. The exclusive west bypass analysis shows that an approximate 25% to 27% of the 'External through' traffic would bypass downtown Chickasha by traveling the west bypass.

Based on the representative sample, the study substantiates that the north bypass is likely to reduce the total traffic traveled on US 81 through Chickasha by approximately 8% in the AM, 13% in the PM and 12% daily. The exclusive north bypass analysis shows that an approximate 6% to 7% of the 'External through' traffic would bypass downtown Chickasha by traveling the north bypass.

Identical traffic distribution characteristics were observed for the 'Destination' point analysis thus validating the results of the 'Origin' point analysis. Hence, the

'West Bypass' alternative was chosen to benefit the future US 81 study corridor traffic in the Chickasha Section.