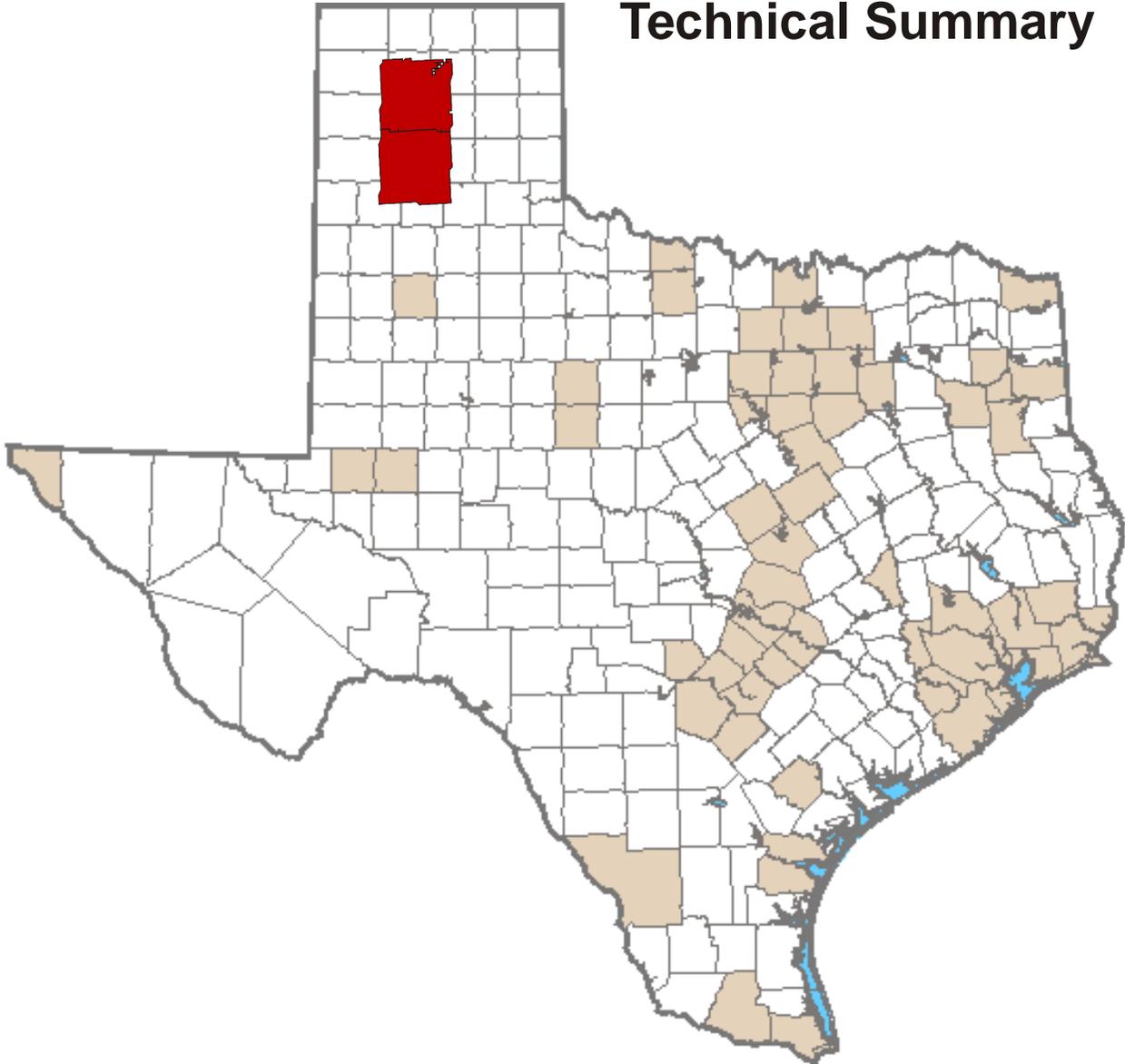


# 2009/2010 Amarillo Work Place Travel Survey Technical Summary



Prepared by the  
Texas A&M Transportation Institute  
October 2012



**2009/2010 Amarillo  
Work Place Travel Survey**

**TECHNICAL SUMMARY**

**Texas Department of Transportation Travel Survey Program**

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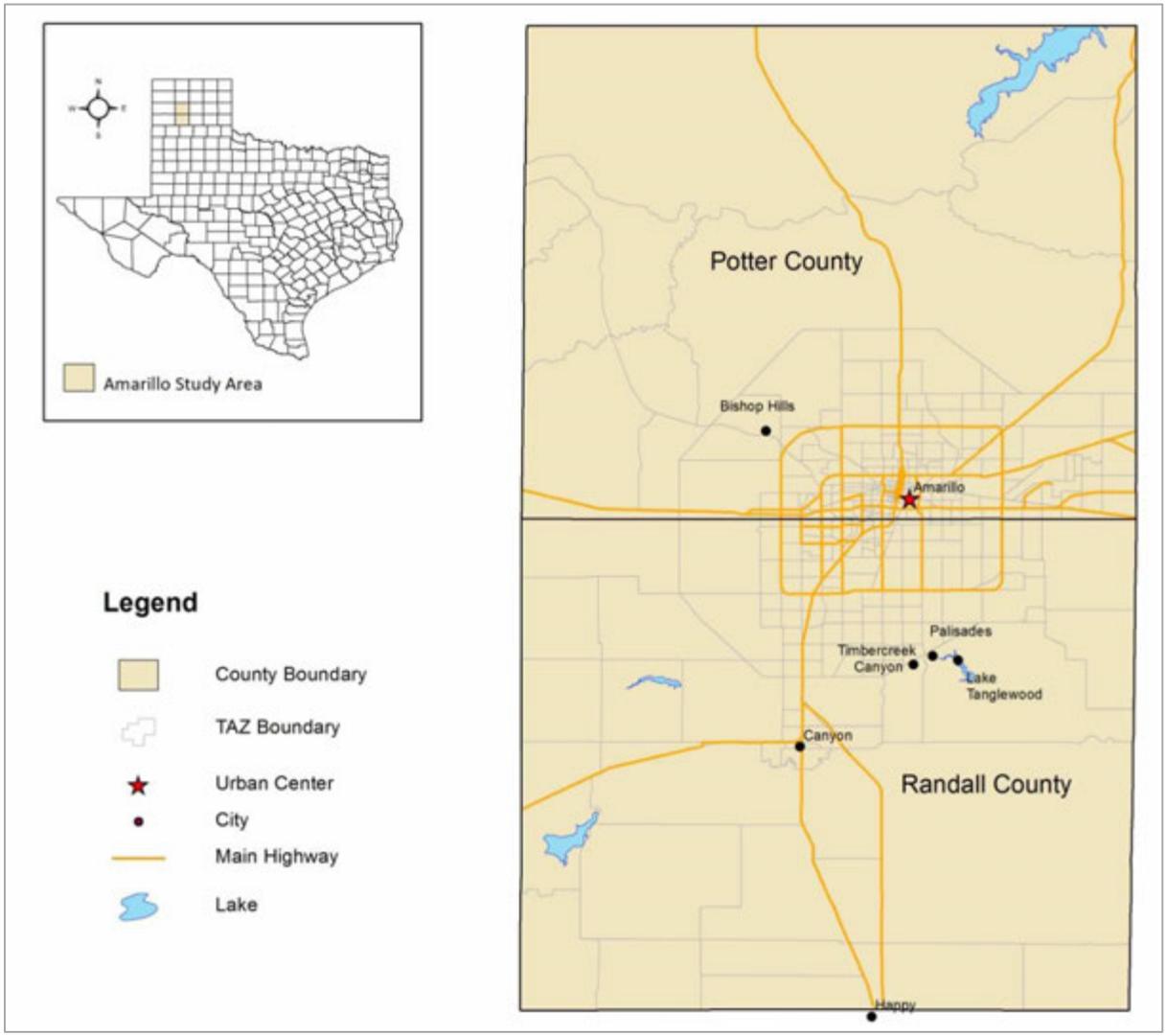
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## **INTRODUCTION**

In 2005, 2006, and 2009, the Transportation Planning and Programming (TPP) Division of the Texas Department of Transportation (TxDOT) sponsored a comprehensive set of travel surveys in the Amarillo Metropolitan Planning Organization (MPO) study area. The purpose of the surveys was to collect data and information needed as input to the Amarillo MPO travel demand model for Potter and Randall counties. The model is an important planning tool used to forecast future traffic levels on area roadways, evaluate the region's transportation plan, and aid in the region's air quality conformity analyses. Most urbanized areas in Texas (as well as in the U.S. and abroad) rely on travel forecasting models as a tool in their transportation planning and air quality analysis efforts. Since modeling results may be used in determining the conformity or non-conformity status of transportation plans to federal clean air regulations, the use of accurate and up-to-date data from the regional travel surveys is important to TxDOT and MPOs across the state.

This report summarizes the results of the work place and special generator surveys for the Amarillo MPO study area. A variety of work place and special generator summary information is presented in this report. The summary information is subject to modification as the survey data are further evaluated and analyzed within the context of all the travel surveys conducted. The purpose of the survey was to collect data on the travel characteristics of employees and non-employees at basic, retail, service, and education establishments that will enable TxDOT to develop and/or update trip attraction models to forecast travel demand within the Amarillo MPO study area.

The study area, shown in Figure 1, is located in the Texas Panhandle. It covers Potter and Randall counties, which has a combined total population of 241,798, a total land area of approximately 1,820 square miles, and a population density of 266 persons per square mile based on the 2010 Census. The city of Amarillo is the study area's urban center, with an estimated population of 190,695, and population density of nearly 1,917 persons per square mile. The city of Canyon, located south of Amarillo, is the county seat of Randall County, which has an estimated population of 13,303, and population density of 1,936 persons per square mile.



**Figure 1. Amarillo MPO Study Area.**

## SURVEY METHODOLOGY

The work place and special generator travel surveys were conducted during the months of October 2009 and February 2010. TxDOT contracted with Alliance Transportation Group, Inc. (ATG) to conduct the Amarillo Work Place Survey. The Texas A&M Transportation Institute (TTI) provided technical assistance to both TxDOT and ATG in the effort.

The Amarillo work place survey consisted of the following four data collection efforts:

- Establishment Survey. This survey determined whether the status of the work place was free standing (e.g., points of vehicle access and parking were clearly established and were designed to serve that work place only), or non-free standing (e.g., vehicle access points and parking were designed to serve more than one establishment). Data on total employment, number of employees at work during the travel survey day, amount of parking, number of daily deliveries, hours of operation, and other general information were collected from this survey.
- Intercept Interview Survey. This survey involved an intercept interview of persons as they entered and/or exited the establishments. All survey participants were randomly selected, and they included both employees and non-employees.
- Person or Vehicle Count. This task involved counting all vehicles entering and exiting surveyed establishments during their normal operating hours using Accumulative Count Recorders (ACRs) or video cameras. For those sites not suitable for vehicle counts, manual counts of persons were conducted. The counts were performed at each entrance and exit beginning a minimum of one hour prior to the location's normal operating hours and ending no later than one hour after normal operating hours.
- Commercial Vehicle Count. This task involved counting the number of commercial vehicles accessing the establishment (i.e., making deliveries or pick-ups or other purposes) using ACRs, video cameras, or manual counts.

The surveyed establishments were classified as either full survey sites or partial survey sites, and distinguished according to their free standing or non-free standing status. Full survey sites included all the aforementioned data collection activities, while partial survey sites only collected general information (e.g., establishment survey) and did not include intercept interview surveys. Counts were conducted at all surveyed sites.

The establishments were grouped into four types of employment – basic, retail, service, and education – based on the North American Industry Classification System (NAICS) code for establishments being used by TxDOT for the Texas Workforce Commission (TWC) employment data, shown in Table 1.

**Table 1. NAICS Groupings by Employment Type.**

<b>Employment Type</b>	<b>NAICS Code</b>	<b>Industry Group</b>
Basic	11	Agriculture, Forestry, Fishing and Hunting
	21	Mining
	22	Utilities
	23	Construction
	31-33	Manufacturing
	42	Wholesale Trade
	48-49	Transportation and Warehousing (except 491)
	5111	Newspaper Publishers/Book Publishers/Directory Publishers
	5112	Software Publishers
	512	Motion Picture and Sound Recording (except 51213)
	5151	Radio and TV Broadcasting
	5152	TW Cable
	5173	Telecommunications Resellers
	5174	Satellite Network
5175	Cable and Other Program Distribution	
Retail	44-45	Retail trade
	51213	Motion Picture Theaters
	71	Arts, Entertainment, and Recreation
	722	Accommodation (except Hotels) and Food Services
	491	Post Offices
Service	516 - 5172	Internet Publishing and Telecommunications
	5179	Other Telecommunications
	518 - 519	Internet Service Providers and News Syndicates
	52	Finance & Insurance
	53	Real Estate, Rental and Leasing
	54	Professional, Scientific and Technical Services
	55-56	Company Management and Administrative Support
	6114-6116	Business, Technical, Trade and Other Schools
	6117	Educational Support Services
	62	Health Care and Social Assistance (including hospitals)
	721	Accommodation (Hotels)
	81	Other Service, Repair and Maintenance
	92	Public Administration (including Justice, Public Order and Safety, i.e., Police, Fire, and Courts)
9999	Unknown	
Education	6111	Elementary and Secondary Schools
	6112-6113	Jr. Colleges, Colleges, Universities & Professional Schools

Source: TxDOT, 2004.

## SAMPLING PLAN AND RECRUITMENT

The sampling plan included 100 full surveys and 200 partial surveys. A greater number of partial surveys were used to control costs but still obtain adequate data for modeling purposes. Table 2 shows the sampling targets for each employment category by type of survey.

**Table 2. Sampling Targets by Employment Category and Survey Type.**

Employment Type	Type of Survey	
	Full	Partial
Basic	20	30
Retail	30	70
Service	30	70
Education	20	30
<b>Total</b>	<b>100</b>	<b>200</b>

The survey sample was drawn from a listing of establishments generated from the TWC database. The establishments were sorted by work place category and then placed in random order for sampling. Each listing included the name, address, and NAICS code of the work place. A total of 5,782 work places were included in the list, which consisted of 1,498 basic, 1,300 retail, 2,857 service, and 127 education types of establishments.

Overall, 1,103 establishments were contacted as part of the Amarillo work place survey recruitment, 267 of which were unsuccessful attempts. Table 3 shows the number of establishments that agreed and refused to participate in the work place survey by employment type and business location.

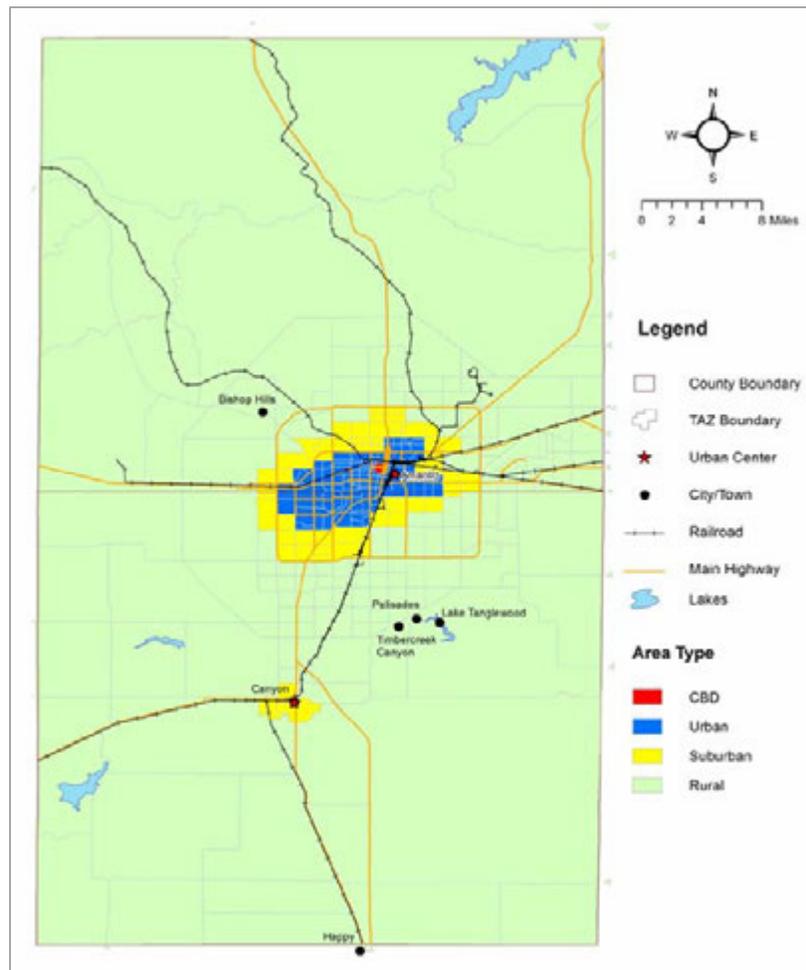
**Table 3. Work Place Survey Recruitment Participation.**

Employment Type	Recruitment Category		
	Agreed	Refused	Total
Basic	80	68	<b>148</b>
Retail	169	81	<b>250</b>
Service	121	241	<b>362</b>
Education	69	7	<b>76</b>
<b>Total</b>	<b>439</b>	<b>397</b>	<b>836</b>
<b>Business Location</b>			
Study Area	439	364	803
Unknown Location	0	33	33
<b>Total</b>	<b>439</b>	<b>397</b>	<b>836</b>

The longitude and latitude coordinates, zone, and area types of the establishments were not collected during the survey recruitment. Hence, a geocoding tool was used to generate the longitude and latitude coordinates for each site to determine the zone where it was located, and to determine its area type.

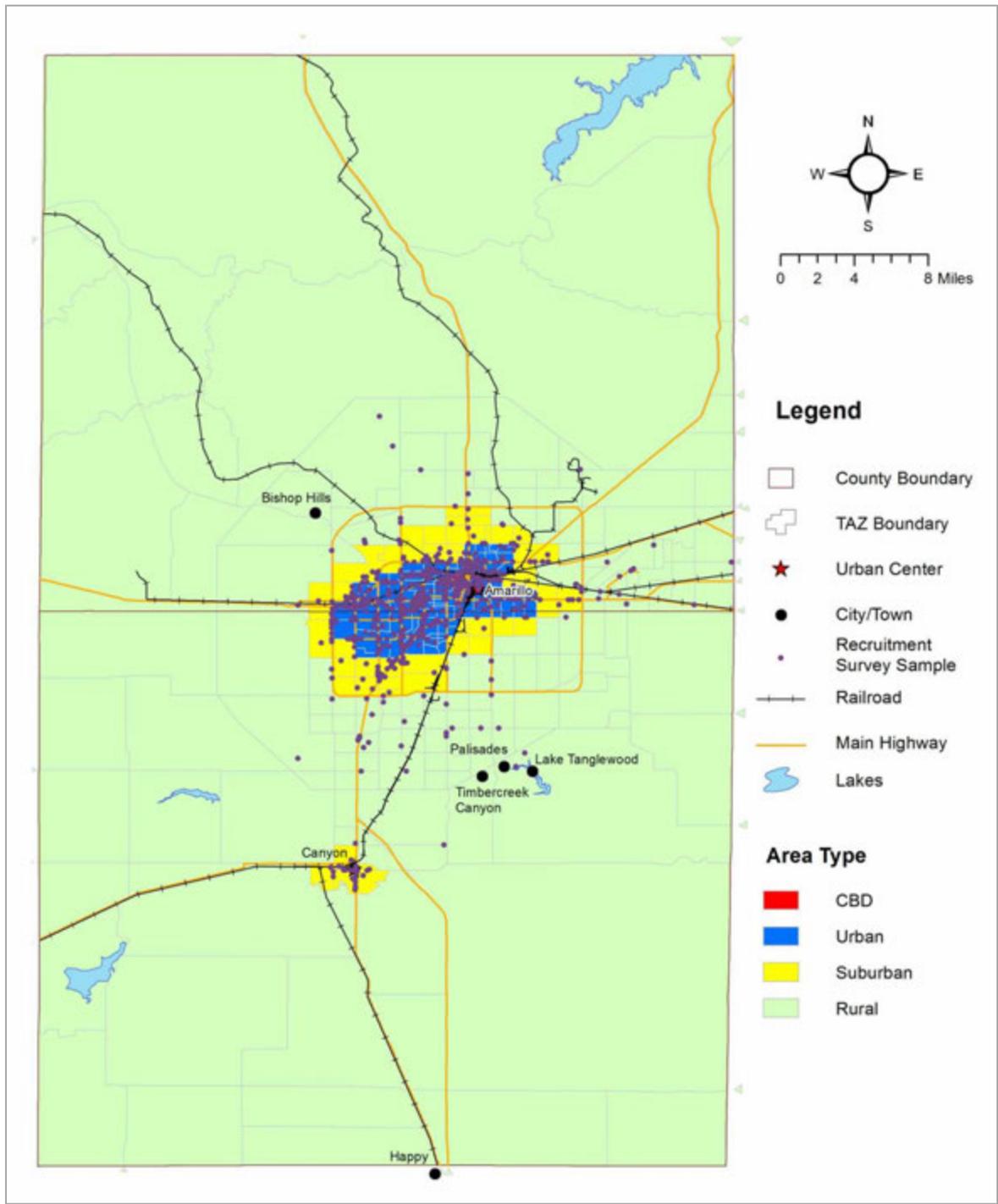
Area type is generally determined by land use activity within a Traffic Analysis Zone (TAZ). It is measured based on a combination of population and employment density in the zone. The density factors are classified into ranges of values that define each area type depending on the size of the urban area. Typically, the area types consist of a Central Business District (CBD), a CBD Fringe and/or Urban area, a Suburban and/or a Suburban Fringe area, and a Rural area.

As Figure 2 shows, the Amarillo study area consisted of four area types — CBD, Urban, Suburban, and Rural. The density factors for each area type were: CBD (historic), Urban (density > 8), Suburban (density between 1 and 8), and Rural (density < 1). The area types were based on 2005 data that were being used and carried forward for all transportation planning forecasts by the Amarillo MPO. There was no density value associated with the CBD since this represented the original business district of the study area, which was characterized by closely-spaced blocks, signals, and building densities.



**Figure 2. Amarillo MPO Area Types.**

Figure 3 shows the locations of the 836 work place survey sites contacted as part of recruitment within the Amarillo study area, while Table 4 shows the distribution of the sites by area type and employment type.



**Figure 3. Amarillo Study Area - Site Locations Contacted During Recruitment.**

**Table 4. Work Place Survey Recruitment Contacts by Area Type and Employment Category.**

<b>Area Type</b>	<b>Basic</b>	<b>Retail</b>	<b>Service</b>	<b>Education</b>	<b>Total</b>
CBD	14	2	45	0	61
Urban	70	166	221	50	507
Suburban	34	57	59	18	168
Rural	23	15	18	8	64
<b>Total</b>	<b>141</b>	<b>240</b>	<b>343</b>	<b>76</b>	<b>800</b>
<b>Unclassified Area</b>	<b>7</b>	<b>10</b>	<b>19</b>	<b>0</b>	<b>36</b>

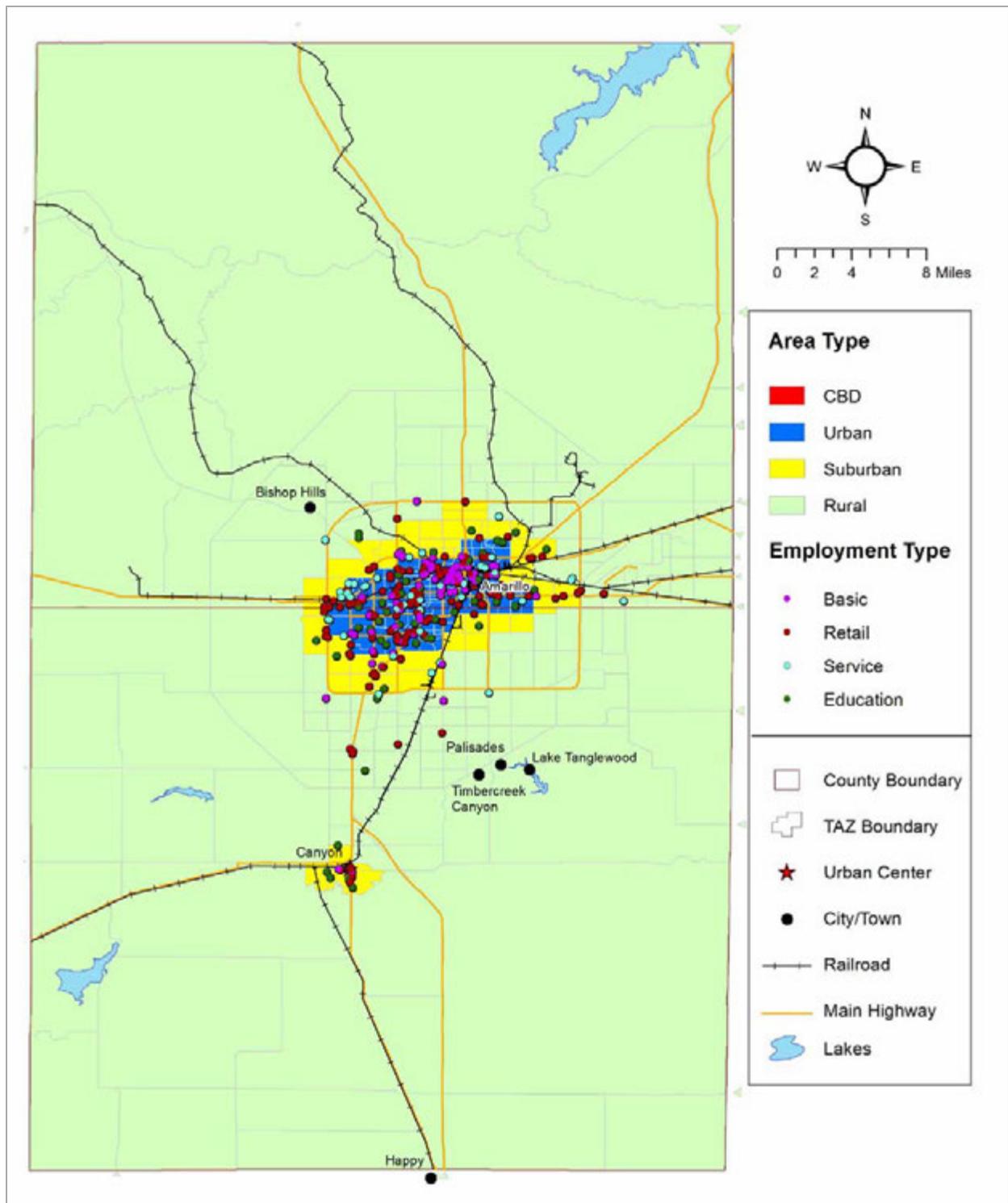
## **SURVEY RESULTS**

The Amarillo work place survey covered 304 establishments and one special generator. Excluding the special generator, 118 were full survey sites and 186 were partial survey sites. The distribution of these establishments by employment type slightly differed from the pre-determined sample targets. There were initially 439 establishments that agreed to participate during work place survey recruitment. The explanation could be that those establishments dropped out later or were determined as no longer needed to fulfill the survey sample requirements.

Figure 4 shows the general locations of surveyed establishments in the Amarillo study area by area and employment types. Table 5 shows the distribution of the full and partial survey sites by area and employment types. Tables 6 and 7 provide further detail on key outcomes, respectively, of full and partial survey sites. The results from the special generator survey are presented in another section of this report.

The full survey sites consisted of 118 sites (87 free standing and 31 non-free standing) that reported a total employment of 3,859. A total of 1,221 employees and 1,883 non-employees (referred to in this report as visitors) participated in the intercept survey. The surveyed employees represented approximately 38 percent of the total 3,244 employees reported to be at work during the travel survey day.

The partial survey sites consisted of 186 sites (145 free standing and 41 non-free standing) that reported a total employment of 5,148, of which 4,082 employees were reported to be at work during the travel survey day. No intercept surveys were conducted at these sites, but general information about the establishments was collected.



**Figure 4. Amarillo Study Area Surveyed Work Place Locations.**

**Table 5. Distribution of Full and Partial Surveys by Area Type and Employment Type.**

Area Type	Basic		Retail		Service		Education		Total	
	Full	Partial	Full	Partial	Full	Partial	Full	Partial	Full	Partial
CBD	6	3	3	2	1	0	0	0	10	5
Urban	18	36	27	56	10	16	11	20	66	128
Suburban	3	6	18	19	4	8	8	7	33	40
Rural	3		4	4	1	6	1	3	9	13
<b>Total</b>	<b>30</b>	<b>45</b>	<b>52</b>	<b>81</b>	<b>16</b>	<b>30</b>	<b>20</b>	<b>30</b>	<b>118</b>	<b>186</b>

**Table 6. Full Establishment Surveys.**

Area Type	Item	Basic	Retail	Service	Education	Total
CBD	Number of sites	6	3	1	0	10
	Surveyed employees	81	25	79	0	185
	Surveyed visitors	12	20	50	0	82
	Total employment	242	25	335	0	602
	Employees at work	215	25	335	0	575
Urban	Number of sites	18	27	10	11	66
	Surveyed employees	138	158	39	221	556
	Surveyed visitors	43	777	120	182	1,122
	Total employment	228	598	107	731	1,664
	Employees at work	218	353	103	721	1,395
Suburban	Number of sites	3	18	4	8	33
	Surveyed employees	34	140	59	131	364
	Surveyed visitors	11	524	32	81	648
	Total employment	52	706	149	439	1,346
	Employees at work	32	442	144	427	1,045
Rural	Number of sites	3	4	1	1	9
	Surveyed employees	16	30	3	67	116
	Surveyed visitors	6	23	2	0	31
	Total employment	46	28	3	170	247
	Employees at work	44	25	1	159	229
<b>Total</b>	<b>Number of sites</b>	<b>30</b>	<b>52</b>	<b>16</b>	<b>20</b>	<b>118</b>
	<b>Surveyed employees</b>	<b>269</b>	<b>353</b>	<b>180</b>	<b>419</b>	<b>1,221</b>
	<b>Surveyed visitors</b>	<b>72</b>	<b>1,344</b>	<b>204</b>	<b>263</b>	<b>1,883</b>
	<b>Total employment</b>	<b>568</b>	<b>1,357</b>	<b>594</b>	<b>1,340</b>	<b>3,859</b>
	<b>Employees at work</b>	<b>509</b>	<b>845</b>	<b>583</b>	<b>1,307</b>	<b>3,244</b>

**Table 7. Partial Establishment Surveys.**

<b>Area Type</b>	<b>Item</b>	<b>Basic</b>	<b>Retail</b>	<b>Service</b>	<b>Education</b>	<b>Total</b>
CBD	Number of sites	3	2	0	0	5
	Total employment	10	15	0	0	25
	Employees at work	10	15	0	0	25
Urban	Number of sites	36	56	16	20	128
	Total employment	644	1,280	201	1,440	3,565
	Employees at work	581	693	191	1397	2,862
Suburban	Number of sites	6	19	8	7	40
	Total employment	43	530	94	447	1,114
	Employees at work	38	319	92	441	890
Rural	Number of sites	0	4	6	3	13
	Total employment	0	160	145	139	444
	Employees at work	0	61	108	136	305
<b>Total</b>	<b>Number of sites</b>	<b>45</b>	<b>81</b>	<b>30</b>	<b>30</b>	<b>186</b>
	<b>Total employment</b>	<b>697</b>	<b>1,985</b>	<b>440</b>	<b>2,026</b>	<b>5,148</b>
	<b>Employees at work</b>	<b>629</b>	<b>1,088</b>	<b>391</b>	<b>1,974</b>	<b>4,082</b>

## **Trip Characteristics**

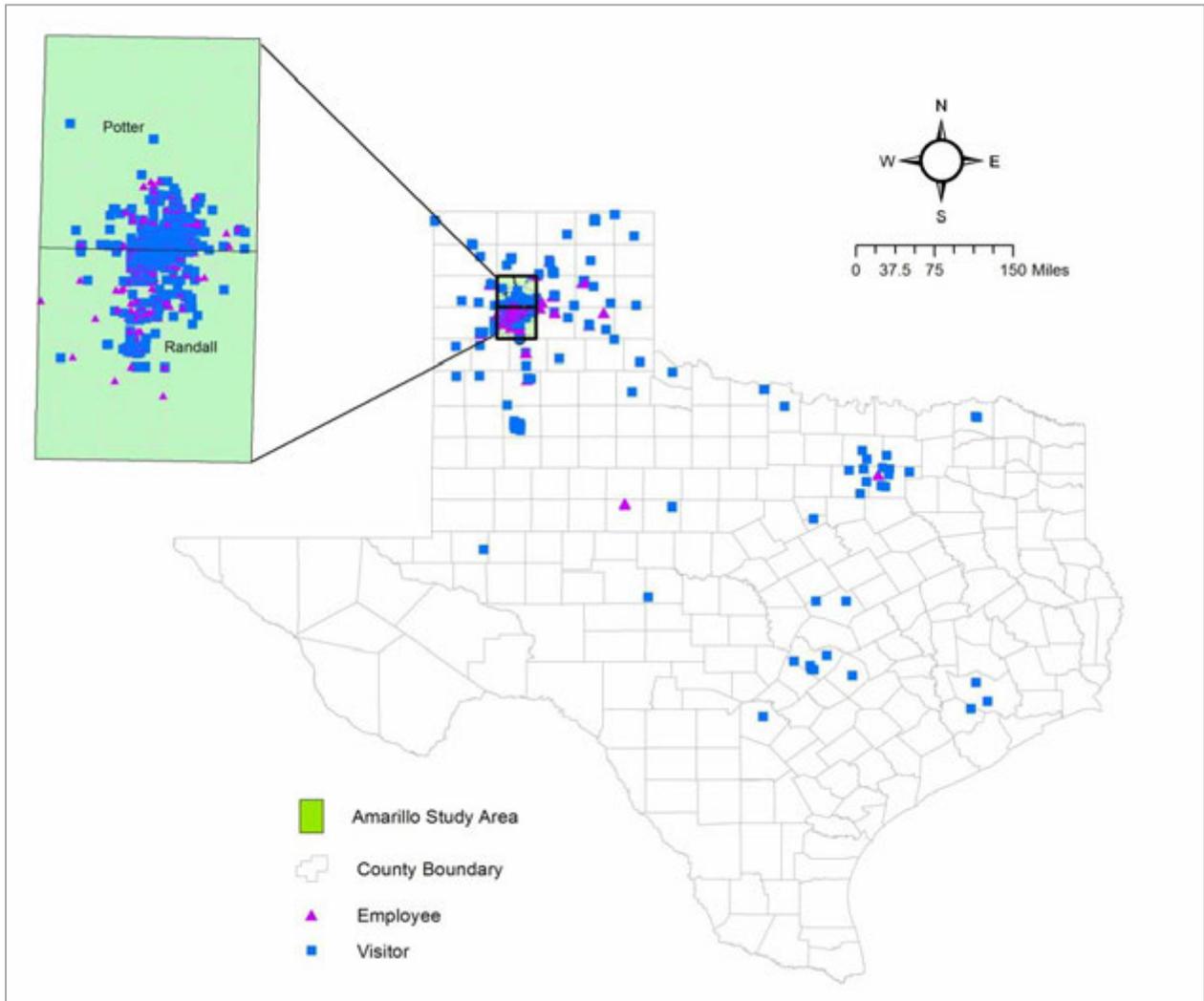
This section presents the trip characteristics of persons entering or exiting the surveyed work places. Information on residency, trip purpose, mode of travel and occupancy, trip origins, and trip destinations were analyzed to measure the amount of trip attractions to the sites.

### *Residence*

For all work place locations combined, the survey found that 98 percent of surveyed employees and 90 percent of surveyed visitors were residents of the study area, with the majority living within Amarillo, and a considerable number in Canyon. The remaining 2 percent of surveyed employees and 10 percent of surveyed visitors were non-residents. Approximately 48 percent of the surveyed non-residents lived within the Panhandle region, of which 8 percent were from Deaf Smith, 6 percent from Hutchinson, 5 percent from Carson, and 4 percent each from Gray, Moore, and Oldham counties. More than 5 percent were from the Capital Area region (Bell, Hays, and Travis counties), and 4 percent from North Central Texas (Dallas, Collin, and Denton counties). Approximately 19 percent were out-of-state visitors, with

more than 4 percent from Oklahoma, around 3 percent from New Mexico, more than 1 percent from California and Kansas, and less than 1 percent each from Alabama, Arizona, Colorado, Florida, Michigan, Minnesota, Missouri, Nebraska, Nevada, North Carolina, Oregon, South Dakota, South Carolina, Tennessee, Wisconsin, and Wyoming.

Figure 5 shows the residence locations of surveyed employees and visitors within the Amarillo study area and state of Texas.



**Figure 5. Residence Locations of Surveyed Employees and Visitors within Amarillo and Texas.**

### *Trip Purpose*

The trip purposes to and from the work place were identified as work-related, school-related, social/recreational visit, shop, eat out, personal business, pick-up/drop-off passenger, change travel mode, delivery, and other. In the analysis, the trip purposes were classified according to the following trip categories.

- 1) Home-based work (HBW) - when the purpose was work-related, the origin or destination was the home, and the origin or destination was located within the study area.
- 2) Home-based non-work (HBNW) - when the purpose was not work-related, the origin or destination was the home, and the origin or destination was located within the study area.
- 3) Non home-based destination (NHB-D) - when the origin was not the home, the destination was the establishment being surveyed, and the origin was located within the study area.
- 4) Non home-based origin (NHB-O) – when the reported destination when leaving the establishment being surveyed was not the home, and the destination was located within the study area.
- 5) External trip destination (EXT-D) – when the destination was outside the study area when leaving the establishment.
- 6) External trip origin (EXT-O) – when the origin was outside the study area.
- 7) Non-resident (NON-RES) - when the person making the trip to and from the establishment lived outside the study area and the origin or destination of the trip was inside the study area.

Table 8 shows the number and percentages of trip purposes to and from the work place. Note that these percentages significantly change after weighting is applied to the survey trip data during the expansion process.

**Table 8. Survey Trip Purposes to and from the Work Place.**

<b>Trip Purpose</b>	<b>Number of Trips</b>	<b>Percent of Total</b>
HBW	1,876	30.36
HBNW	1,971	31.89
NHB-D	852	13.79
NHB -O	1,029	16.65
EXT-D	6	0.10
EXT-O	24	0.38
NON RES	422	6.83
<b>Total</b>	<b>6,180</b>	<b>100.00</b>

Table 9 provides the breakdown of surveyed trips by trip purpose and by area and employment types. Twenty-eight (28) trips were not counted because they were reported as “not the first establishment visited” and therefore were not attractions to the work place.

**Table 9. Survey Trips to and from the Work Place.**

Area Type	Employment Type	Trip Purpose							Total
		HBW	HBNW	NHB-D	NHB-O	EXT-D	EXT-O	NON-RES	
CBD	Basic	117	6	27	28	0	0	6	184
	Retail	56	0	13	14	0	0	6	89
	Service	127	30	36	45	0	0	16	254
	Education	0	0	0	0	0	0	0	0
Urban	Basic	201	35	56	54	0	0	16	362
	Retail	259	701	277	377	3	13	222	1,852
	Service	63	139	44	44	0	0	28	318
	Education	304	216	117	167	0	0	2	806
Suburban	Basic	43	5	11	12	1	2	16	90
	Retail	214	640	200	181	1	5	84	1,325
	Service	99	45	10	13	0	1	14	182
	Education	219	128	27	45	0	1	4	424
Rural	Basic	31	5	1	7	0	0	0	44
	Retail	46	20	18	16	0	0	6	106
	Service	2	0	2	4	0	0	2	10
	Education	95	1	13	22	1	2	0	134
Total	Basic	300	36	76	87	0	0	28	527
	Retail	827	1,091	494	642	3	13	268	3,338
	Service	575	818	248	251	2	9	118	2,021
	Education	174	26	34	49	1	2	8	294
<b>Total Trips</b>		<b>1,876</b>	<b>1,971</b>	<b>852</b>	<b>1,029</b>	<b>6</b>	<b>24</b>	<b>422</b>	<b>6,180</b>

*Mode of Travel and Vehicle Occupancy*

Table 10 shows the distribution of surveyed trips by mode of travel to the work place. Approximately 95 percent of the trips to the work places were made by drivers of cars, trucks, or vans. More than 2 percent were passengers of a vehicle. The average occupancy was estimated at 1.4 persons per vehicle.

**Table 10. Survey Mode of Travel to the Work Place.**

<b>Mode</b>	<b>Number of Trips</b>	<b>Percent of Total Trips</b>	<b>Average Vehicle Occupancy</b>
Driver (car/truck/van)	2,932	94.46	1.38
Passenger (car/truck/van)	78	2.51	2.22
Walk	47	1.51	-
Bicycle	3	0.10	-
Transit Bus	3	0.10	-
School Bus	3	0.10	-
Taxi/Limo	4	0.13	1.75
Commercial Cargo Transport Vehicle	10	0.32	1.10
Commercial Service Vehicle	15	0.48	1.27
Motorcycle	8	0.26	1.00
Other/Unknown	1	0.03	-
<b>Total</b>	<b>3,104</b>	<b>100.00</b>	<b>1.38</b>

### *Trip Length*

Each trip in the survey, based on its reported origin location and destination location, was geocoded to either a TAZ system for the Amarillo study area, or to the statewide TAZ system when the location was outside the study area (but within the state of Texas). After the trips were geocoded, the travel distance and travel time for each trip to the surveyed work place was estimated using the transportation network available for the Amarillo study area that provides the zone-to-zone trip lengths and travel times based on network speeds.

The analyses of trip length presented in this section pertain only to inter-zonal trips by the auto-driver mode of travel to and from the work place, since the Amarillo network matrix only provides distances and travel times between zones and not within zones (i.e., intra-zonal). Out of the total 5,864 auto-driver trips to and from the surveyed work places, 300 were intra-zonal trips and 211 were external trips. There were also 150 trips whose origins and/or destinations were reported to be within the study area but the zones were not known. Twenty-two trips were reported to be not first stops to non-freestanding establishments and were therefore not included in the analysis.

Table 11 shows the trip lengths to and from the work place by trip purpose, while Tables 12 and 13 show the trip length frequency distributions (TLFDs), grouped at five-mile intervals. Table 14 shows the ungrouped results of the TLFDs for person and vehicle trips. The average inter-zonal trip length to and from the work place was 4.4 miles per person trip and 4.5 miles per vehicle trip. Approximately 78 percent of the total person trips and 73 percent of the total vehicle trips traveled a distance of not more than five miles. The estimates for NHB trips reflected the average of NHB-D and NHB-O trips.

**Table 11. Survey Inter-Zonal Trip Lengths to and from the Work Place by Trip Purpose.**

<b>Trip Purpose</b>	<b>Total Person Miles</b>	<b>Number of Person Trips</b>	<b>Average Person Miles</b>	<b>Total Vehicle Miles</b>	<b>Number of Vehicle Trips</b>	<b>Average Vehicle Miles</b>
HBW	10,794	1,979	5.45	9,412	1,718	5.48
HBNW	10,049	2,636	3.81	6,399	1,694	3.78
NHB	3,918	1,086	3.61	2,907	791	3.68
NON-RES	673	122	5.51	486	87	5.58
<b>Total</b>	<b>25,434</b>	<b>5,823</b>	<b>4.37</b>	<b>19,204</b>	<b>4,290</b>	<b>4.48</b>

**Table 12. Survey Person Trip TLFD (Grouped).**

<b>Trip Length</b>	<b>HBW</b>	<b>HBNW</b>	<b>NHB</b>	<b>NON-RES</b>	<b>Total</b>
≤ 5 miles	1,367	2,188	920	80	4,555
6 to 10 miles	439	338	133	25	935
11 to 15 miles	106	72	21	17	216
16 to 20 miles	57	25	11	0	93
> 20 miles	10	13	1	0	24
<b>Total</b>	<b>1,979</b>	<b>2,636</b>	<b>1,086</b>	<b>122</b>	<b>5,823</b>

**Table 13. Survey Vehicle Trip TLFD (Grouped).**

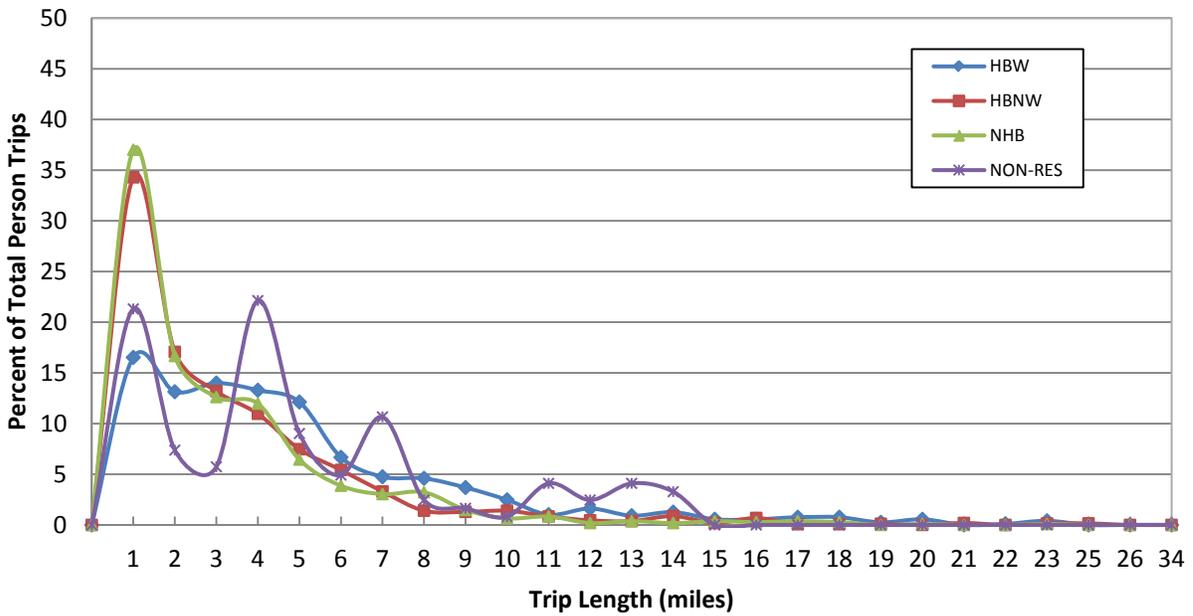
<b>Trip Length</b>	<b>HBW</b>	<b>HBNW</b>	<b>NHB</b>	<b>NON-RES</b>	<b>Total</b>
≤ 5 miles	1,173	1,406	662	54	3,295
6 to 10 miles	396	215	105	21	737
11 to 15 miles	93	48	15	12	168
16 to 20 miles	48	18	8	0	74
> 20 miles	8	7	1	0	16
<b>Total</b>	<b>1,718</b>	<b>1,694</b>	<b>791</b>	<b>87</b>	<b>4,290</b>

**Table 14. Person and Vehicle Trip TLFDs (Ungrouped).**

Miles	Person Trips				Vehicle Trips			
	HBW	HBNW	NHB	NON-RES	HBW	HBNW	NHB	NON-RES
1	327	904	402	26	275	601	287	17
2	260	450	181	9	206	292	131	7
3	277	348	137	7	252	218	96	5
4	263	289	130	27	224	175	90	19
5	240	197	70	11	216	120	58	6
6	132	143	42	6	127	84	36	6
7	94	87	33	13	87	59	24	10
8	91	37	35	3	80	25	28	3
9	73	34	16	2	57	23	12	1
10	49	37	7	1	45	24	5	1
11	20	22	9	5	20	13	6	4
12	32	12	2	3	26	9	2	2
13	18	10	4	5	18	10	2	4
14	25	23	2	4	20	11	2	2
15	11	5	4	0	9	5	3	0
16	11	18	3	0	9	13	2	0
17	15	2	4	0	13	2	3	0
18	15	2	3	0	14	1	2	0
19	5	3	0	0	5	2	0	0
20	11	0	1	0	7	0	1	0
21	0	5	0	0	0	3	0	0
22	2	0	0	0	2	0	0	0
23	8	4	1	0	6	2	1	0
25	0	4	0	0	0	2	0	0
26	0	0	0	0	0	0	0	0
34	0	0	0	0	0	0	0	0
<b>Total</b>	<b>1,979</b>	<b>2,636</b>	<b>1,086</b>	<b>122</b>	<b>1,718</b>	<b>1,694</b>	<b>791</b>	<b>87</b>

Figures 6a and 6b show the ungrouped TLFDs by percentage of total person and vehicle trips by trip purpose, respectively.

(a) Person Trips



(b) Vehicle Trips

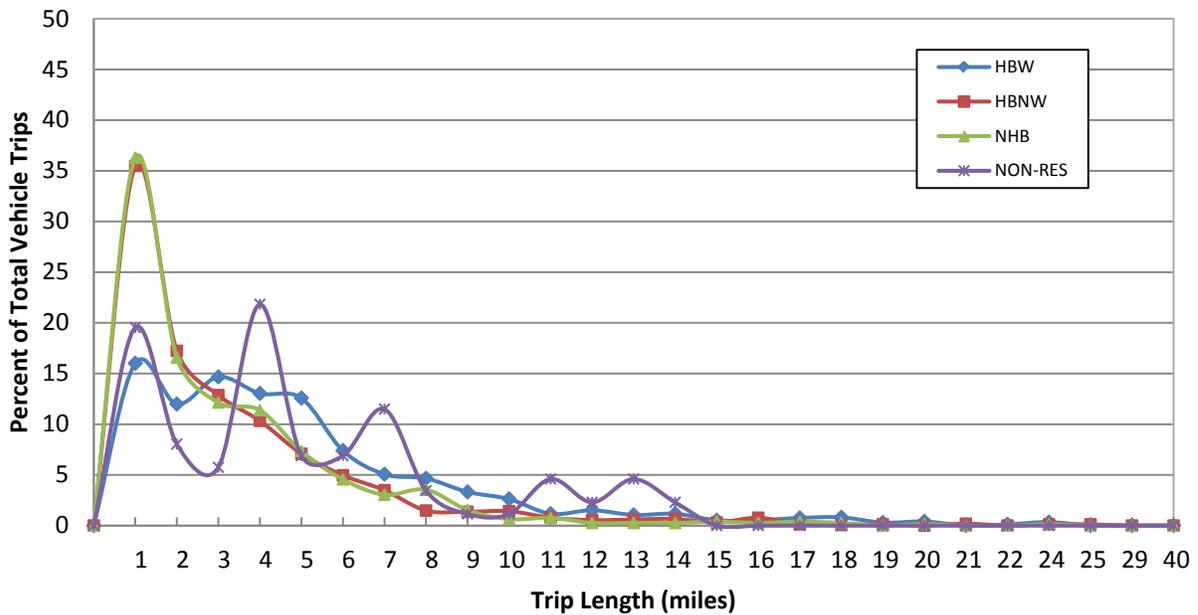


Figure 6. TLFDs of Person and Vehicle Trips to and from the Work Place.

Table 15 shows the travel times to and from the work place by trip purpose, while Tables 16 and 17 show the travel time distributions, grouped at five-minute intervals. Table 18 shows the ungrouped travel times for person and vehicle trips. The average travel time to and from the work place was 5.5 minutes per person trip and 5.7 minutes per vehicle trip.

**Table 15. Survey Inter-Zonal Travel Times to and from the Work Place by Trip Purpose.**

<b>Trip Purpose</b>	<b>Total Person Minutes</b>	<b>Number of Person Trips</b>	<b>Average Person Minutes</b>	<b>Total Vehicle Minutes</b>	<b>Number of Vehicle Trips</b>	<b>Average Vehicle Minutes</b>
HBW	13,213	1,979	6.68	11,538	1,718	6.72
HBNW	12,955	2,636	4.91	8,236	1,694	4.86
NHB	5,227	1,086	4.81	3,868	791	4.89
NON-RES	811	122	6.65	588	87	6.76
<b>Total</b>	<b>32,206</b>	<b>5,823</b>	<b>5.53</b>	<b>24,230</b>	<b>4,290</b>	<b>5.65</b>

**Table 16. Survey Person Travel Time Distribution (Grouped).**

<b>Travel Time</b>	<b>HBW</b>	<b>HBNW</b>	<b>NHB</b>	<b>NON-RES</b>	<b>Total</b>
≤ 5 minutes	995	1,894	809	62	3,760
6 to 10 minutes	740	603	231	43	1,617
11 to 15 minutes	175	99	33	17	324
16 to 20 minutes	45	29	9	0	83
21 to 25 minutes	24	3	2	0	30
> 25 minutes	0	8	1	0	9
<b>Total</b>	<b>1,979</b>	<b>2,636</b>	<b>1,086</b>	<b>122</b>	<b>5,823</b>

**Table 17. Survey Vehicle Travel Time Distribution (Grouped).**

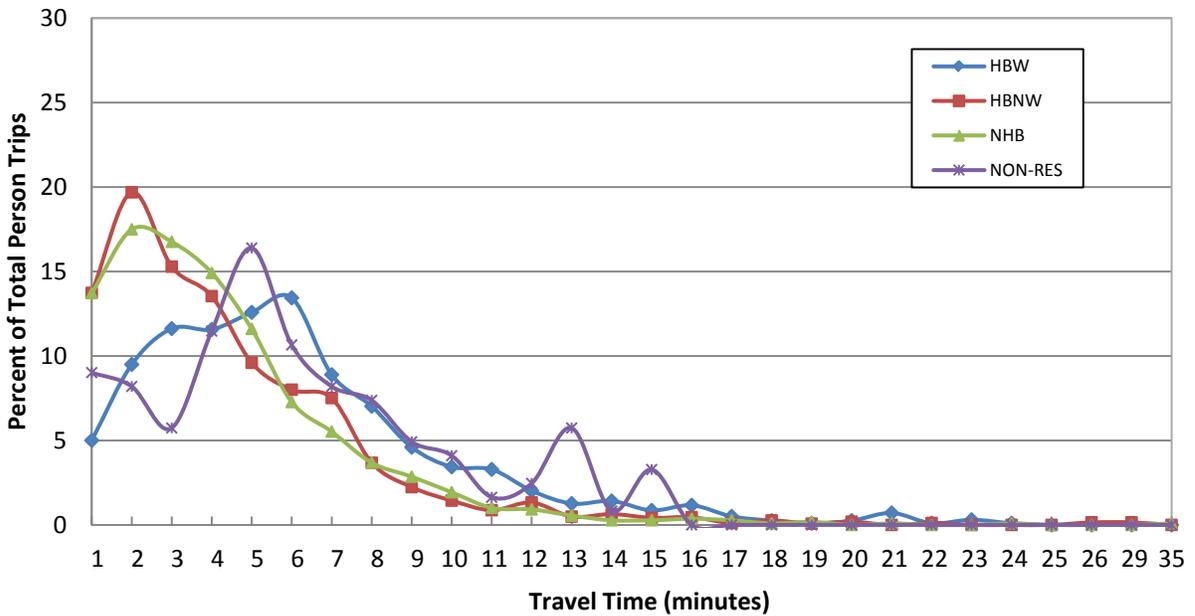
<b>Travel Time</b>	<b>HBW</b>	<b>HBNW</b>	<b>NHB</b>	<b>NON-RES</b>	<b>Total</b>
≤ 5 minutes	835	1,229	575	43	2,682
6 to 9 minutes	675	373	183	32	1,263
10 to 14 minutes	148	65	24	12	249
15 to 19 minutes	42	21	6	0	69
20 to 24 minutes	18	2	2	0	22
> 25 minutes	0	4	1	0	5
<b>Total</b>	<b>1,718</b>	<b>1,694</b>	<b>791</b>	<b>87</b>	<b>4,290</b>

**Table 18. Person and Vehicle Travel Time Distributions (Ungrouped).**

Minutes	Person Trips				Vehicle Trips			
	HBW	HBNW	NHB	NON-RES	HBW	HBNW	NHB	NON-RES
1	99	362	149	11	77	244	111	7
2	188	519	190	10	164	336	133	7
3	230	403	182	7	187	272	128	5
4	229	357	162	14	195	221	114	11
5	249	253	126	20	212	156	89	13
6	266	211	79	13	242	133	59	8
7	176	198	60	10	161	110	50	8
8	139	97	40	9	138	66	33	7
9	91	59	31	6	80	39	24	5
10	68	38	21	5	54	25	17	4
11	65	23	11	2	51	18	7	1
12	40	35	10	3	40	20	7	2
13	25	13	6	7	21	7	6	6
14	28	17	3	1	23	13	2	1
15	17	11	3	4	13	7	2	2
16	23	12	4	0	20	9	2	0
17	10	3	3	0	10	2	2	0
18	5	7	1	0	5	6	1	0
19	2	2	2	0	2	1	1	0
20	5	5	0	0	5	3	0	0
21	14	0	1	0	10	0	1	0
22	2	3	0	0	2	2	0	0
23	6	0	0	0	4	0	0	0
24	2	0	1	0	2	0	1	0
25	0	0	0	0	0	0	0	0
26	0	4	0	0	0	2	0	0
29	0	4	0	0	0	2	0	0
35	0	0	1	0	0	0	1	0
<b>Total</b>	<b>1,979</b>	<b>2,636</b>	<b>1,086</b>	<b>122</b>	<b>1,718</b>	<b>1,694</b>	<b>791</b>	<b>87</b>

Figures 7a and 7b show the ungrouped travel times in percentage values of total person and vehicle trips by trip purpose.

(a) Person Trips



(b) Vehicle Trips

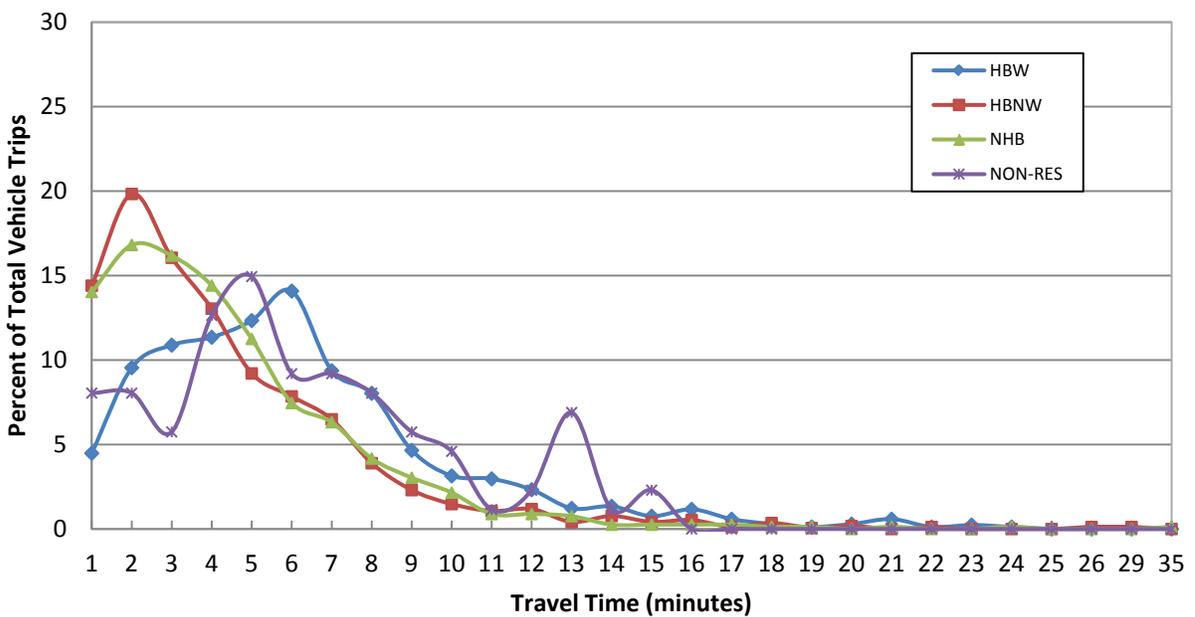
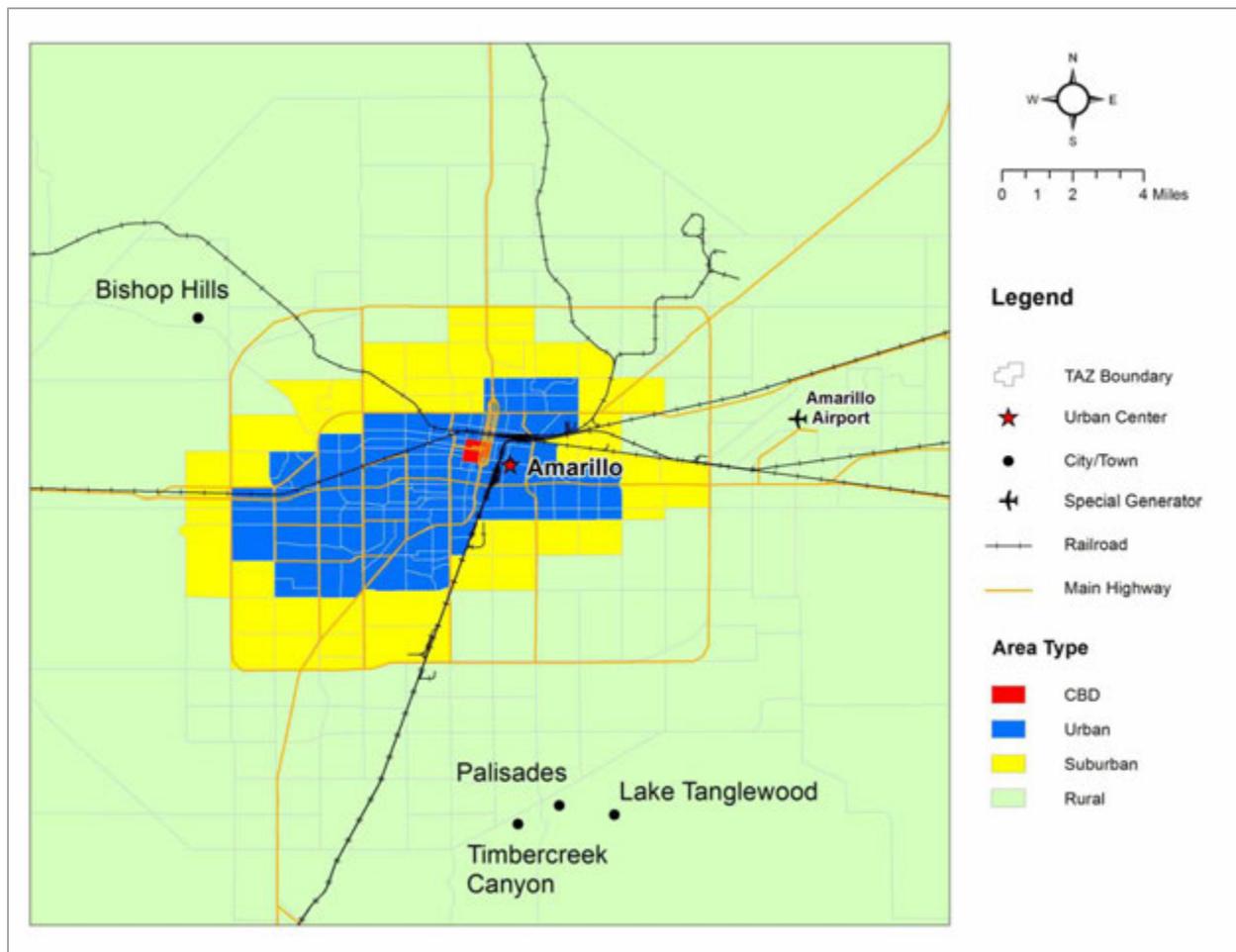


Figure 7. Travel Times of Person and Vehicle Trips to and from the Work Place.

## SPECIAL GENERATORS

Special generators are those establishments that are considered unique trip attractors. These may include major shopping centers, hospitals, colleges/universities, recreational facilities, military bases, airports, and other land use developments that have unique trip generation characteristics and therefore require modeling outside the typical travel demand modeling framework.

The Amarillo Airport was surveyed as part of the Amarillo Special Generator Survey. Figure 8 shows the location and corresponding area type of this special generator.



**Figure 8. Location of the Amarillo Study Area Special Generator.**

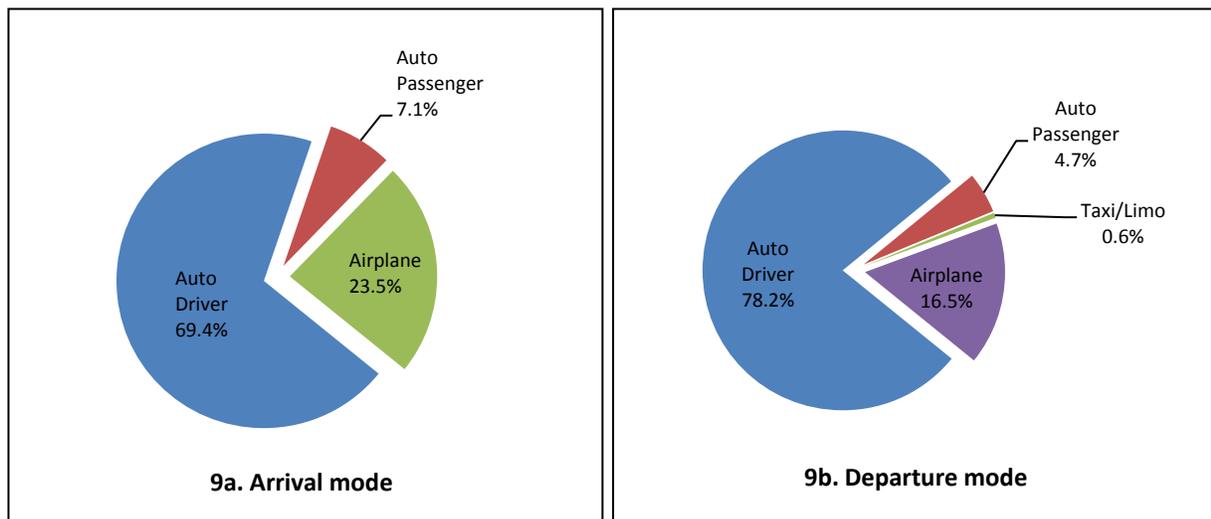
The methodology used to survey special generators was the same as that used for full work place surveys, except to a much larger scale (see page 3 of this report). It included a general survey, an intercept survey, vehicle counts, and commercial vehicle counts.

The trip characteristics observed from the Amarillo special generator survey are described by mode of travel, trip purpose, and trip length. The analyses of trip length pertain to inter-zonal trips since the Amarillo network matrix provides only distances and travel times between zones and not within zones based on vehicle speeds. It is important to note that the results presented throughout this section were based on survey trip data. These results may change after weighting is applied to the trip data during the survey expansion.

### Amarillo Airport

The Amarillo Airport had a reported total employment of 630, with 200 of these employees estimated to be at work during the travel survey day. A total of 31 employees and 139 visitors participated in the survey. The surveyed employees represented approximately 16 percent of the total employees at work. Vehicle counts were conducted for a 24-hour period (6:00 a.m. to 6:00 a.m.), with a total count of 3,430 non-commercial vehicles and 168 commercial vehicles.

Figures 9a and 9b show the mode of travel used by survey participants traveling to and from Amarillo Airport, respectively. By arrival mode, approximately 69 percent were drivers of cars, trucks, or vans, 7 percent were passengers of cars, trucks, or vans, and 24 percent traveled by airplane. By departure mode, approximately 78 percent were drivers of cars, trucks, or vans, nearly 5 percent were passengers of cars, trucks, or vans, and more than 16 percent traveled by airplane. The average occupancy for the auto-driver mode of travel by surveyed residents were 1.3 persons for employee trips and 1.8 persons for visitor trips. For surveyed non-residents, the average occupancy rates were 1.0 person per employee trip and 1.7 persons per visitor trip.



**Figure 9. Mode of Travel to and from the Amarillo Airport.**

Table 19 shows the number and percentage of surveyed trips to and from the Amarillo Airport by trip purpose.

**Table 19. Survey Trips by Purposes to and from the Amarillo Airport.**

<b>Trip Purpose</b>	<b>To Work Place</b>	<b>From Work Place</b>	<b>Total Trips</b>	<b>Percent of Total</b>
HBW	33	42	75	22.06
HBNW	59	35	94	27.65
NHB-D	20	0	20	5.88
NHB-O	0	31	31	9.12
EXT-D	2	0	2	0.58
EXT -O	0	6	6	1.77
NON RES	56	56	112	32.94
<b>Total</b>	<b>170</b>	<b>170</b>	<b>340</b>	<b>100.00</b>

Tables 20 and 21 show the trip lengths and travel times by trip purpose for person and vehicle trips, respectively. The number of trips slightly differed from the number of trips shown in Table 21 since these represented inter-zonal trips for the auto-driver mode of travel only. The estimates for NHB trips reflected the average of NHB-D and NHB-O trips. The average trip length per person trip was 12.7 miles and 12.8 miles per vehicle trip. The average travel time per person trip was 12.5 minutes and 12.6 minutes per vehicle trip.

**Table 20. Survey Inter-Zonal Trip Lengths to and from the Amarillo Airport by Trip Purpose.**

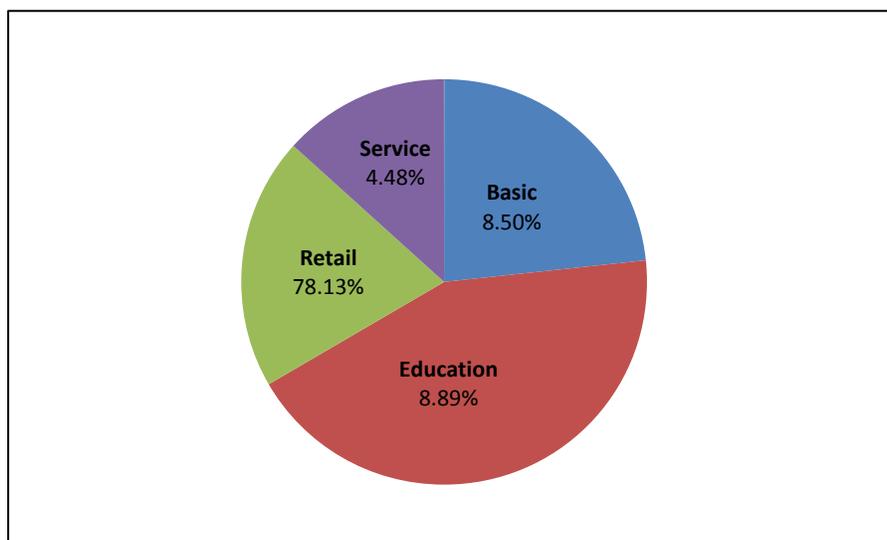
<b>Trip Purpose</b>	<b>Total Person Miles</b>	<b>Number of Person Trips</b>	<b>Average Person Miles</b>	<b>Total Vehicle Miles</b>	<b>Number of Vehicle Trips</b>	<b>Average Vehicle Miles</b>
HBW	873	70	12.47	773	61	12.67
HBNW	1,914	137	13.97	1,038	73	14.22
NHB	459	43	10.81	233	22	10.60
NON-RES	176	19	9.25	112	13	8.62
<b>Total</b>	<b>3,422</b>	<b>269</b>	<b>12.74</b>	<b>2,156</b>	<b>169</b>	<b>12.76</b>

**Table 21. Survey Inter-Zonal Travel Times to and from the Amarillo Airport by Trip Purpose.**

Trip Purpose	Total Person Minutes	Number of Person Trips	Average Person Minutes	Total Vehicle Minutes	Number of Vehicle Trips	Average Vehicle Minutes
HBW	869	70	12.41	771	61	12.65
HBNW	1,854	137	13.53	1,009	73	13.82
NHB	456	43	10.73	234	22	10.65
NON-RES	176	19	9.26	112	13	8.62
<b>Total</b>	<b>3,355</b>	<b>269</b>	<b>12.50</b>	<b>2,127</b>	<b>169</b>	<b>12.58</b>

### COMMERCIAL VEHICLE COUNTS

The commercial vehicle counts involved counting the number of cargo and service vehicles traveling to and from the surveyed establishments during the work place travel survey day. The counts were conducted using ACRs, video cameras, or manual counts. The counts were conducted for a 24-hour period beginning at 6:00 a.m. and ending at 6:00 a.m. on the following day of the survey. A total of 4,307 commercial vehicles were observed at 74 out of the total 304 surveyed establishments. It was not certain whether the remaining 230 sites did or did not have commercial vehicles traveling to and from the sites. Based on the total counts, approximately 78 percent were at retail establishments, 9 percent were at basic, 4 percent were at service, and 9 percent were at education establishments. Figure 10 shows the distribution of commercial vehicle counts by employment type while Table 22 shows the distribution by area and employment types for the Amarillo study area.



**Figure 10. Commercial Vehicle Counts by Employment Type.**

**Table 22. Commercial Vehicle Counts by Area and Employment Types.**

<b>Area Type</b>	<b>Basic</b>	<b>Retail</b>	<b>Service</b>	<b>Education</b>	<b>Total</b>
CBD	0	0	0	0	0
Urban	366	85	24	175	650
Suburban	0	95	21	134	250
Rural	0	3,185	148	74	3,407
<b>Total</b>	<b>366</b>	<b>3,365</b>	<b>193</b>	<b>383</b>	<b>4,307</b>

## **SURVEY DATA EXPANSION**

The expansion of work place and special generator survey data involved a series of procedures. This section provides a general description of the expansion process while step by step procedures are provided in Appendix A.

The employee and visitor survey trip data were aggregated for each site and then linked with the employment and count data collected from the establishment survey. The person and vehicle counts at each site were used to expand the survey trip data. The total trips were counted separately for employees and visitors, and distinguished between residents and non-residents of the Amarillo study area. The total trips were classified by purpose, both from the origin to the work place and from the work place to the next destination. Average vehicle occupancy rates were based on the auto-driver mode of travel, and estimated separately for resident and non-resident employee and visitor trips. The average between resident employee and visitor vehicle occupancy rates were used to convert the vehicle counts into person counts or vice versa, depending on whether a vehicle count or a person count was conducted at the site. The results from the full survey sites were used to estimate the number of trips by purpose and employment type at the partial survey sites.

The survey employee trips were expanded first to estimate the total employee trips by purpose. The process involved dividing the survey employee trips for each category of purpose by the number of employee surveys and then multiplying this number by the total number of employees reported to be at work during the survey day. The expanded employee vehicle trips were subtracted from the total vehicle count at the site to yield the total visitor vehicle trips to the site. The expanded employee person trips, calculated by multiplying the employee vehicle trips by the average employee occupancy rate, were subtracted from the total person count at the site to yield the total visitor person trips to the site.

The survey visitor trips were used to establish the proportion of visitor trips for each category of trip purpose. These percentages were applied to the total estimated visitor trips to yield the visitor vehicle trips by purpose.

After the data were expanded for each site, the results were aggregated by employment type and area type. Table 23 provides the work place survey data summary by area and employment types.

**Table 23. Work Place Survey Data Summary by Area Type and Employment Type.**

<b>Area Type</b>	<b>Item</b>	<b>Basic</b>	<b>Retail</b>	<b>Service</b>	<b>Education</b>	<b>Total</b>
<b>CBD</b>	Number of sites	9	5	1	0	15
	Total employment	252	40	335	0	627
	Employees at work	225	40	335	0	600
	Total person count	993	395	1,958	0	3,346
	Total vehicle count	960	352	1,616	0	2,928
	Total commercial vehicle count	0	0	0	0	0
<b>Urban</b>	Number of sites	54	83	26	31	194
	Total employment	872	1,878	308	2,171	5,229
	Employees at work	799	1,046	294	2,118	4,257
	Total person count	3,759	48,453	6,110	69,061	127,383
	Total vehicle count	3,454	38,942	4,633	46,811	93,840
	Total commercial vehicle count	366	85	24	175	650
<b>Suburban</b>	Number of sites	9	37	12	15	73
	Total employment	95	1,236	243	886	2,460
	Employees at work	70	761	236	868	1,935
	Total person count	457	36,936	2,053	31,505	70,951
	Total vehicle count	428	28,407	1,510	19,598	49,943
	Total commercial vehicle count	0	95	21	134	250
<b>Rural</b>	Number of sites	3	8	7	4	22
	Total employment	46	188	148	309	691
	Employees at work	44	86	109	295	534
	Total person count	154	7,100	654	7,540	15,448
	Total vehicle count	111	5,803	472	5,674	12,059
	Total commercial vehicle count	0	3,185	148	74	3,407
<b>Total</b>	<b>Number of sites</b>	75	133	46	50	304
	<b>Total employment</b>	1,265	3,342	1,034	3,366	9,007
	<b>Employees at work</b>	1,138	1,933	974	3,281	7,326
	<b>Total person count</b>	5,362	92,885	10,775	108,106	217,128
	<b>Total vehicle count</b>	4,953	73,504	8,231	72,083	158,771
	<b>Total commercial vehicle count</b>	366	3,365	193	383	4,307

The expanded trips by purpose, shown in Tables 24 and 25 for each category of employment and area type, were divided by the total employment presented in Table 23 to develop the attraction rates, shown in Tables 26 and 27.

**Table 24. Survey Person Trips by Trip Purpose, Area Type, and Employment Type.**

Area Type	BASIC					
	HBW Attractions	HBNW Attractions	NHB-D	NHB-O	NON-RES	Total Person Trips
CBD	359	378	118	113	21	989
Urban	1,745	717	507	536	252	3,757
Suburban	207	63	48	56	74	448
Rural	122	15	1	16	0	154
<b>Total</b>	<b>2,432</b>	<b>1,173</b>	<b>673</b>	<b>722</b>	<b>347</b>	<b>5,356</b>
Area Type	RETAIL					
	HBW Attractions	HBNW Attractions	NHB-D	NHB-O	NON-RES	Total Person Trips
CBD	74	85	40	66	124	389
Urban	3,688	17,331	7,449	8,217	10,366	47,051
Suburban	1,958	20,023	6,113	4,553	4,098	36,745
Rural	1,299	2,871	835	1,701	395	7,101
<b>Total</b>	<b>7,019</b>	<b>40,310</b>	<b>14,437</b>	<b>14,537</b>	<b>14,983</b>	<b>91,286</b>
Area Type	SERVICE					
	HBW Attractions	HBNW Attractions	NHB-D	NHB-O	NON-RES	Total Person Trips
CBD	593	425	366	412	145	1941
Urban	529	2,767	1,088	981	696	6,061
Suburban	423	946	165	192	289	2015
Rural	74	0	142	220	202	638
<b>Total</b>	<b>1,619</b>	<b>4,138</b>	<b>1,761</b>	<b>1,805</b>	<b>1,332</b>	<b>10,655</b>
Area Type	EDUCATION					
	HBW Attractions	HBNW Attractions	NHB-D	NHB-O	NON-RES	Total Person Trips
CBD	0	0	0	0	0	0
Urban	10,633	37,968	8,669	11,778	13	69,061
Suburban	4,116	24,930	1,196	1,174	21	31,437
Rural	1,120	4,879	649	872	0	7,520
<b>Total</b>	<b>15,869</b>	<b>67,777</b>	<b>10,514</b>	<b>13,824</b>	<b>34</b>	<b>108,018</b>

**Table 25. Survey Vehicle Trips by Trip Purpose, Area Type, and Employment Type.**

Area Type	BASIC					
	HBW Attractions	HBNW Attractions	NHB-D	NHB-O	NON-RES	Total Vehicle Trips
CBD	356	364	108	108	20	956
Urban	1,665	634	447	483	223	3,452
Suburban	196	57	42	53	71	419
Rural	83	12	1	15	0	111
<b>Total</b>	<b>2,300</b>	<b>1067</b>	<b>598</b>	<b>659</b>	<b>314</b>	<b>4,938</b>
Area Type	RETAIL					
	HBW Attractions	HBNW Attractions	NHB-D	NHB-O	NON-RES	Total Vehicle Trips
CBD	73	72	36	60	107	348
Urban	3,265	13,720	5,963	6,611	8,250	37,809
Suburban	1,768	15,105	4,630	3,557	3,189	28,249
Rural	1,085	2,330	683	1,383	322	5,803
<b>Total</b>	<b>6,191</b>	<b>31,227</b>	<b>11,312</b>	<b>11,611</b>	<b>11,868</b>	<b>72,209</b>
Area Type	SERVICE					
	HBW Attractions	HBNW Attractions	NHB-D	NHB-O	NON-RES	Total Vehicle Trips
CBD	575	284	288	332	120	1,599
Urban	497	2,081	816	748	490	4,632
Suburban	421	629	121	144	194	1,509
Rural	74	0	100	174	125	473
<b>Total</b>	<b>1,567</b>	<b>2,994</b>	<b>1,325</b>	<b>1,398</b>	<b>929</b>	<b>8,215</b>
Area Type	EDUCATION					
	HBW Attractions	HBNW Attractions	NHB-D	NHB-O	NON-RES	Total Vehicle Trips
CBD	0	0	0	0	0	0
Urban	8,398	24,437	5,908	8,056	13	46,812
Suburban	3,187	14,761	800	789	17	19,554
Rural	939	3,567	490	660	0	5,656
<b>Total</b>	<b>12,524</b>	<b>42,765</b>	<b>7,198</b>	<b>9,505</b>	<b>30</b>	<b>72,022</b>

Tables 26 and 27 show the survey person and vehicle trip attraction rates by purpose for each employment category and area type, respectively. The NHB trips represented the average of NHB origin and destination trips. The NON-RES trips were divided by two to develop a rate for non-resident trip attractions. The external trips were removed from the analysis because such trips were estimated using the external survey and input to the travel demand model directly.

**Table 26. Survey Person Trip Attraction Rates.**

Trip Purpose	Area Type	Person Trips			
		Per Basic Employee	Per Retail Employee	Per Service Employee	Per Education Employee
HBW	CBD	1.425	1.859	1.769	0.000
	Urban	2.001	1.964	1.718	4.898
	Suburban	2.174	1.584	1.741	4.646
	Rural	2.652	6.909	0.500	3.624
HBNW Retail	CBD		2.135		
	Urban		9.229		
	Suburban		16.200		
	Rural		15.269		
HBNW Other	CBD	1.498		1.270	
	Urban	0.823		8.983	
	Suburban	0.665		3.892	
	Rural	0.322		0.000	
HBNW School	CBD				0.000
	Urban				17.489
	Suburban				28.138
	Rural				15.791
NHB	CBD	0.459	1.329	1.161	0.000
	Urban	0.598	4.171	3.359	4.709
	Suburban	0.547	4.315	0.734	1.338
	Rural	0.187	6.744	1.221	2.461
NON-RES	CBD	0.042	1.550	0.216	0.000
	Urban	0.144	2.760	1.131	0.003
	Suburban	0.389	1.658	0.595	0.012
	Rural	0.000	1.051	0.682	0.000

**Table 27. Survey Vehicle Trip Attraction Rates.**

Trip Purpose	Area Type	Vehicle Trips			
		Per Basic Employee	Per Retail Employee	Per Service Employee	Per Education Employee
HBW	CBD	1.414	1.831	1.717	0.000
	Urban	1.909	1.739	1.614	3.868
	Suburban	2.063	1.430	1.730	3.597
	Rural	1.793	5.769	0.500	3.039
HBNW Retail	CBD		1.797		
	Urban		7.306		
	Suburban		12.221		
	Rural		12.393		
HBNW	CBD	1.443		0.847	
	Urban	0.728		6.758	
	Suburban	0.604		2.589	
	Rural	0.261		0.000	
HBNW	CBD				0.000
	Urban				11.256
	Suburban				16.660
	Rural				11.542
NHB	CBD	0.428	1.198	0.925	0.000
	Urban	0.533	3.348	2.539	3.216
	Suburban	0.500	3.312	0.546	0.897
	Rural	0.176	5.496	0.923	1.861
NON-RES	CBD	0.040	1.334	0.179	0.000
	Urban	0.128	2.196	0.796	0.003
	Suburban	0.372	1.290	0.399	0.010
	Rural	0.000	0.856	0.423	0.000

The commercial vehicle counts taken at each site were aggregated by area type and employment type, and then divided by the total employment to develop a trip rate for commercial vehicle travel. Table 28 shows the survey commercial vehicle trip rates as computed from the count and employment data shown in Table 23.

**Table 28. Survey Commercial Vehicle Trip Rates.**

Area Type	Commercial Vehicle Trips			
	Per Basic Employee	Per Retail Employee	Per Service Employee	Per Education Employee
CBD	0.000	0.000	0.000	0.000
Urban	0.420	0.045	0.078	0.081
Suburban	0.000	0.077	0.086	0.151
Rural	0.000	16.941	1.000	0.239

Table 29 shows the data summary for the Amarillo Airport special generator survey, while Table 30 shows the expanded survey trip attractions and attraction rates by purpose. The expansion procedures used were similar to the full work place sites, except that the survey trips were stratified by trip purpose only. The attraction rates were developed by dividing the expanded trips by purpose by the total employment at the airport. The external trips were removed from the analysis. The NHB trips represented the average of the NHB origin and destination trips. The NON-RES trips were divided by two to develop a rate for non-resident trip attractions. The commercial vehicle count at the airport was divided by two to develop a rate for commercial vehicle trip attractions.

**Table 29. Amarillo Special Generator Survey Data Summary.**

<b>Data Elements</b>	<b>Amarillo Airport</b>
Total Employment	630
Employees at Work	200
Commercial Vehicle Count	168
Non-Commercial Vehicle Count	3,430
Person Count	5,927
Employee Surveys	31
Visitor Surveys	139

**Table 30. Amarillo Airport Survey Person and Vehicle Trip Attractions and Rates.**

<b>Trip Purpose</b>	<b>Person Trips</b>	<b>Person Trips Per Employee</b>	<b>Vehicle Trips</b>	<b>Vehicle Trips Per Employee</b>
HBW Attractions	810	1.286	595	0.945
HBNW Attractions	1,920	3.048	1,025	1.626
NHB Attractions	441	0.700	256	0.406
NON-RES Attractions	1,080	1.714	606	0.962
Commercial Vehicle Trips	84	0.133	84	0.133
<b>Total</b>	<b>4,335</b>	<b>6.881</b>	<b>2,566</b>	<b>4.072</b>

## Model Rate Development

The work place survey data must be converted into recommended attraction rates to be used as inputs to the travel demand model. Attraction rates, defined as the estimated number of trips per employee attracted to a site and/or zone, were developed for each trip purpose, area type, and employment type. The NHB origin and destination trips were combined and divided by two to develop an attraction rate for NHB trips. The NON-RES trips were divided by two to develop an attraction rate for non-resident travel.

Tables 31 and 32 show the total trip attraction rates by purpose and employment type for all area types, as calculated from the survey trip data. The next step in model rate development involved applying these survey attraction rates to the total MPO employment estimates, shown in Table 33, to calculate the total trip attractions to the Amarillo study area.

**Table 31. Survey Total Person Trip Attraction Rates.**

Employment Type	HBW	HBNW	NHB	NON-RES	Total
Basic	1.923	0.927	0.552	0.137	3.539
Retail	2.100	12.062	4.335	2.242	20.739
Service	1.565	4.101	1.724	0.644	8.034
Education	4.715	20.136	3.615	0.005	28.471

**Table 32. Survey Total Vehicle Trip Attraction Rates.**

Employment Type	HBW	HBNW	NHB	NON-RES	Total
Basic	1.818	0.844	0.497	0.124	3.283
Retail	1.852	9.344	3.429	1.776	16.401
Service	1.515	2.896	1.316	0.449	6.176
Education	3.721	12.705	2.481	0.004	18.911

**Table 33. Total Employment in the Amarillo Study Area by Employment Type and Area Type.**

Area Type	Total Employment				
	Basic	Retail	Service	Education	Total
CBD	1,494	331	4,201	0	7,128
Urban	9,722	16,441	23,434	6,869	56,267
Suburban	4,559	5,273	7,133	2,509	17,932
Rural	9,569	876	2,984	584	14,652
<b>Total</b>	<b>25,344</b>	<b>22,921</b>	<b>37,752</b>	<b>9,962</b>	<b>95,979</b>

Source: Amarillo MPO and TWC 2005 Employment Data.

Tables 34 and 35 show the estimated total person and vehicle trip attractions to the Amarillo study area by employment type and trip purpose, respectively.

**Table 34. Total Person Trip Attractions by Employment Type and Trip Purpose.**

<b>Employment Type</b>	<b>HBW</b>	<b>HBNW</b>	<b>NHB</b>	<b>NON-RES</b>	<b>Total</b>
Basic	48,732	23,499	13,977	3,474	89,682
Retail	48,139	276,467	99,357	51,384	475,348
Service	59,100	151,081	65,078	24,323	299,583
Education	46,967	200,593	36,015	51	283,626
<b>Total</b>	<b>202,938</b>	<b>651,640</b>	<b>214,428</b>	<b>79,233</b>	<b>1,148,239</b>

**Table 35. Total Vehicle Trip Attractions by Employment Type and Trip Purpose.**

<b>Employment Type</b>	<b>HBW</b>	<b>HBNW</b>	<b>NHB</b>	<b>NON-RES</b>	<b>Total</b>
Basic	46,076	21,385	12,595	3,142	83,198
Retail	42,458	214,167	78,607	40,698	375,929
Service	57,202	109,320	49,698	16,965	233,184
Education	37,066	126,565	24,716	44	188,390
<b>Total</b>	<b>182,802</b>	<b>471,437</b>	<b>165,616</b>	<b>60,848</b>	<b>880,702</b>

Table 36 shows the commercial vehicle trip attraction rates and total commercial vehicle attractions by employment type. It is important to note that the estimates may not be representative of the actual commercial vehicle movement in the study area given the incomplete count data from the work place surveys.

**Table 36. Total Commercial Vehicle Trip Attractions by Employment Type.**

<b>Employment Type</b>	<b>Total Commercial Vehicle Trips Per Employee</b>	<b>Total Commercial Vehicle Trip Attractions</b>
Basic	0.289	7,333
Retail	1.007	23,079
Service	0.187	7,047
Education	0.114	1,133
<b>Total</b>	<b>1.597</b>	<b>38,592</b>

The total trip attractions estimated from the work place survey were then compared with the estimated total trip productions from the household survey and commercial vehicle survey. Table 37 provides a summary of the trip estimates from the travel surveys conducted in the Amarillo study area. The results show significant differences in the HBNW trips from the work place survey and the estimates from the household survey, specifically in the retail and education establishments that generated the most attractions. The estimates of commercial vehicle trips from the work place survey were close to half the estimate from the commercial vehicle survey.

**Table 37. Travel Estimates from the Amarillo Travel Surveys.**

Trip Purpose	Work Place Survey		Household Survey		Commercial Vehicle Survey
	Person	Vehicle	Person	Vehicle	Vehicle
HBW	202,938	182,802	140,560	129,728	-
HBNW Retail	276,467	214,167	163,467	104,126	-
HBNW Other	174,580	130,705	157,457	97,076	-
HBNW School	200,593	126,565	142,812	51,766	-
NHB	214,428	165,616	228,027	142,991	-
NON-RES	79,233	60,848	-	-	-
Commercial Vehicle Trips	-	38,592	-	-	81,403

The attraction rates by trip purpose from the work place survey required further adjustments to balance the aggregate estimates of trip attractions with the aggregate estimates of trip productions from the household survey and commercial vehicle survey. Correction factors for HBW and HBNW trips were calculated by dividing the number of person and vehicle trips from the household survey with the number of person and vehicle trips from the work place survey for HBW and HBNW trips, respectively. The NHB destination and origin trips from the work place survey were summed and averaged to reflect the adjustment when calculating the correction factor for the total NHB trips from the household survey. The NON-RES trips from the work place survey were calculated, summed, and divided by the total employment. The resulting rates were applied to the employment data to develop an estimate of the total internal trips made by persons that did not live in the study area. A general estimate for non-resident travel in an urban area such as Amarillo is about 10 percent of the total household internal travel. It is important to note that this percentage varies with the size of the study area. Applying this percentage to the total household trips of 832,423 yields an estimate of 83,242. The total non-resident trips from the Amarillo work place survey when converted to trip productions and attractions yield an estimate of 79,233 person trips and 60,848 vehicle trips. These estimates are recommended for use in the travel demand model for non-resident travel.

Tables 38 and 39 show the recommended person and vehicle trip attraction rates by area type for each category of trip purpose and employment type, respectively, including rates per household. In addition to the adjustment factors developed from the trip balancing, manual smoothing of trip rates was also used in developing the recommended attraction rates. This procedure was by no means ideal, and required careful judgment based on visual plots of the trip rates by trip purpose, area type, and employment type, and making adjustments to produce smoother curves and yield trip estimates that matched the initial total trip attraction estimates.

**Table 38. Recommended Person Trip Attraction Rates.**

Trip Purpose	Area Type	Person Trips				
		Per Basic Employee	Per Retail Employee	Per Service Employee	Per Education Employee	Per Household
HBW Attractions	CBD	0.796	1.312	1.316	3.027	0.070
	Urban	1.130	1.394	1.055	3.431	0.070
	Suburban	1.221	1.619	1.133	3.068	0.070
	Rural	1.673	1.660	0.872	2.523	0.070
HBNW Retail	CBD		2.183			
	Urban		6.351			
	Suburban		9.617			
	Rural		8.691			
HBNW Other Attractions	CBD	1.376		1.266		0.563
	Urban	1.146		4.747		0.563
	Suburban	0.791		2.321		0.563
	Rural	0.459		1.055		0.563
HBNW School Attractions	CBD				12.491	
	Urban				13.428	
	Suburban				18.737	
	Rural				11.253	
NHB Attractions	CBD	0.508	2.200	0.905	3.095	0.150
	Urban	0.747	4.568	2.437	4.761	0.150
	Suburban	0.697	4.690	0.731	1.647	0.150
	Rural	0.383	5.813	1.031	2.476	0.150
NON-RES Attractions	CBD	0.042	1.550	0.216	0.000	
	Urban	0.144	2.760	1.131	0.003	
	Suburban	0.389	1.658	0.595	0.012	
	Rural	0.000	1.051	0.682	0.000	

**Table 39. Recommended Vehicle Trip Attraction Rates.**

Trip Purpose	Area Type	Vehicle Trips				
		Per Basic Employee	Per Retail Employee	Per Service Employee	Per Education Employee	Per Household
HBW Attractions	CBD	0.742	1.463	1.307	2.125	0.062
	Urban	1.086	1.362	1.046	2.851	0.062
	Suburban	1.195	1.150	1.121	2.333	0.062
	Rural	1.629	1.362	0.872	2.022	0.062
HBNW Retail	CBD		1.344			
	Urban		3.997			
	Suburban		6.124			
	Rural		6.486			
HBNW Other Attractions	CBD	1.185		0.677		0.327
	Urban	0.889		2.707		0.327
	Suburban	0.652		1.874		0.327
	Rural	0.261		0.521		0.327
HBNW School Attractions	CBD				4.213	
	Urban				4.845	
	Suburban				6.635	
	Rural				4.972	
NHB Attractions	CBD	0.406	1.707	0.732	1.961	0.086
	Urban	0.558	2.919	1.477	2.615	0.086
	Suburban	0.519	3.026	0.429	0.934	0.086
	Rural	0.259	3.831	0.724	1.494	0.086
NON-RES Attractions	CBD	0.040	1.334	0.179	0.000	
	Urban	0.128	2.196	0.796	0.003	
	Suburban	0.372	1.290	0.399	0.010	
	Rural	0.000	0.856	0.423	0.000	

Table 40 shows the recommended commercial vehicle (CV) trip attraction rates stratified by area type for each category of employment and household. These rates were developed using data from the 2005 Amarillo Commercial Vehicle Survey and 2010 Waco Work Place Survey to develop more acceptable results.

The number of observed trips to different land uses at the destination from the CV survey were used to calculate the percentage of trips for each employment category and household. The land use types were classified to the categories of basic, retail, service, education, and household. The CV trips to each category were then summed and divided by the total trips from the survey to calculate the percentage of trips for each employment category and household. These percentages were applied to the total CV trip estimates of 81,403 from the CV survey to estimate the CV attractions in each category of employment and household. These totals were divided by the total employment (and households) to calculate the overall attraction rate in each category.

Since the data from the Amarillo work place survey were too sparse to produce the CV rates by area type, it was necessary to use developed CV trip rates from another study area (Waco) that has a similar urban form as Amarillo. The distribution of CV rates from the 2010 Waco Work Place Survey were used to develop the Amarillo CV rates by area type. The overall attraction rate for Amarillo in each employment category was divided by the weighted CV rate for Waco, and then multiplied by the rate in that employment category for each area type. The results are the recommended attraction rates by employment category stratified by area type. The CV rates for households were held constant across area types.

**Table 40. Recommended Commercial Vehicle Trip Attraction Rates.**

Area Type	Commercial Vehicle Trips				
	Per Basic Employee	Per Retail Employee	Per Service Employee	Per Education Employee	Per Household
CBD	0.588	1.422	0.161	0.012	0.153
Urban	1.087	1.049	0.315	0.019	0.153
Suburban	2.174	0.924	0.228	0.046	0.153
Rural	0.823	1.191	0.241	0.046	0.153
<b>All Area Types</b>	<b>1.352</b>	<b>1.031</b>	<b>0.254</b>	<b>0.033</b>	<b>0.153</b>

## **SURVEY SUMMARY**

In 2009, the TPP Division of TxDOT funded a work place and special generator survey in the Amarillo MPO study area. The purpose of the survey was to collect data on the travel characteristics of employees and non-employees at basic, retail, service, and education establishments that would enable TxDOT to develop and/or update trip attraction models to forecast travel demand within the Amarillo urban area.

The work place survey consisted of four data collection efforts which involved a general establishment survey, an intercept interview survey, a person or vehicle count, and a commercial vehicle count. The surveyed establishments were classified as either full survey sites or partial survey sites. The full survey sites consisted of 118 establishments with total reported employment of 3,859. A total of 1,221 employees and 1,883 non-employees/visitors participated in the intercept interviews. The partial survey sites consisted of 186 establishments with total reported employment of 5,148. The partial sites did not include intercept interview surveys. The survey findings indicated that approximately 217,129 persons and 158,771 non-commercial vehicles were traveling to and from the surveyed establishments during the travel survey period. There were 4,307 commercial vehicles counted at the surveyed establishments during their normal operating hours.

One special generator, the Amarillo Airport, was surveyed in the study area. A total of 31 employees and 139 non-employees participated in the intercept interview survey. There were 3,430 non-commercial vehicles and 168 commercial vehicles observed to be entering and exiting the Amarillo Airport during their normal operating hours.

The expansion of work place and special generator survey data involved a series of procedures to develop the trip rate estimates for each category of trip purpose based on employment and count data. In the final analysis, the aggregate estimates of trip attractions from the work place survey were compared with the aggregate estimates of trip productions from the household survey, and further adjustments were made to balance the estimated trip attractions with the estimated trip productions. In addition to the adjustment factors developed from the trip balancing, manual smoothing of trip rates was also used in developing the recommended attraction rates. Since no surveys of education facilities were conducted in the CBD, average attraction rates were used for education in the CBD. This insures that if future education employment is allocated to the CBD, the model will still be applicable.

The total non-resident trip attractions, which amounted to 79,232 person trips and 60,848 vehicle trips, were recommended for use in the travel demand model for non-resident travel. These estimates were close to the general estimate of 10 percent of total household internal trips being used to estimate non-resident travel in an urban area such as Amarillo.

The commercial vehicle trip attraction rates developed from the Amarillo Work Place Survey were deemed not reasonable for model rate development. It was apparent that the estimates were not representative of the commercial vehicle movement of the study area because of incomplete count data. Therefore, the trip attraction rates recommended for use in the travel demand model for commercial vehicle travel were developed using data from the 2005 Amarillo Commercial Vehicle Survey and the 2010 Waco Work Place Survey.

Adjustments made to the observed trip rates are highly sensitive to the amount of employment and distribution of employment. Therefore, the recommended attraction rates presented in this report may require further adjustments during the calibration phase of the travel demand model for the Amarillo study area to achieve more acceptable results.



**APPENDIX A:  
WORK PLACE SURVEY DATA EXPANSION PROCEDURES**



## Work Place Survey Data Expansion Procedures

This section provides a detailed description of the procedures used to expand the Amarillo work place survey data.

1. Count the number of employee trips at each site by trip purpose. The trip purpose categories included HBW, HBNW, NHB-D, NHB-O, EXT-D, EXT-O, and NON-RES. Each trip was counted by purpose from the origin to the work place and from the work place to the next destination. The survey employee trips were treated as employee vehicle trips and were later weighted by the number of employee surveys, and expanded using employment data for each site.
2. Estimate the average vehicle occupancy for each site by trip purpose and by the auto-driver mode of travel only. All other vehicle modes of travel were not included in the analysis to avoid the possibility of double counting the number of persons for each reported trip. The average vehicle occupancy was estimated separately for resident and non-resident employee and visitor trips at each site. Note that the average employee vehicle occupancy was assumed to be one person per employee trip, regardless of the employee vehicle occupancy that was reported. Since the trip purposes of the other occupants traveling with the employee could not be determined from the survey, it was assumed that such trips were non-work related.
3. Based on the results in Step 2, estimate the average vehicle occupancy for each site. Each site conducted either a vehicle count or a person count, but not both. If a vehicle count was conducted, the total person count was determined by multiplying the vehicle count with the average vehicle occupancy. If a person count was conducted, the total vehicle count was estimated by dividing the total person count by the average vehicle occupancy.
4. Based on the results in Steps 1 and 2, multiply the survey employee vehicle trips by trip purpose with the average employee vehicle occupancy by trip purpose for each site to estimate the total employee person trips by trip purpose. The total employee vehicle and person trips were later subtracted from the total vehicle and person counts determined in Step 3 to estimate the visitor vehicle and person trips for each site. Note that the average visitor vehicle occupancy that was estimated for each site was mainly used in the estimation of the average vehicle occupancy and not in the estimation of visitor person trips.
5. The estimated visitor vehicle and person trips developed in Step 4 were not stratified by trip purpose. To establish the proportion of visitor trips for each category of trip purpose, the number of surveyed visitor trips was counted by trip purpose and divided by the total number of raw visitor trips. The resulting percentages were applied to the total visitor vehicle and person trips for each site to estimate the number of visitor and person trips by trip purpose.

6. For those visitors at non-free standing establishments who reported that the site was not their first stop, such trips were counted separately and were not included in the analysis. These “not-counted” trips represented trips that were not attracted to the establishment. However, when these trips left the establishment, they were considered as trip productions and were included in the analysis in this capacity.
7. For each category of trip purpose, the employee trip rate was developed by dividing the number of survey employee trips with the total number of employees surveyed at each site. This rate by trip purpose was applied to the total number of employees at work at each site to estimate the expanded number of employee vehicle trips by trip purpose per site. The expanded employee person trips by trip purpose were estimated by multiplying the employee vehicle trips by trip purpose with the average employee vehicle occupancy for each site.
8. The survey data expansion was first performed by individual site and then later aggregated by area type and employment type to estimate the total vehicle and person trips. Employee trip rates were not calculated directly from the aggregated survey employee trips and employment data by area type and employment type because of discrepancies in the trip totals resulting from the data aggregation. To avoid any discrepancies in the estimation of total trips and trip rates, data aggregation was only performed based on the data expansion procedure by site.
9. The employee and visitor trips by trip purpose for each site were then summed by area type and employment type. The employee and visitor trips by trip purpose for each site were also summed by employment type.
10. For each category of area type and employment type, the number of employees at work, total employment, vehicle counts, and person counts were summed for all establishments.
11. For those sites that were identified as partial survey sites and where no intercept surveys were conducted, the expansion procedure was based on the average vehicle occupancy rates, trip rates, and proportion of visitor trips that were observed from the full survey sites.
12. The average vehicle occupancy rates from the full survey sites that were developed for each category of employment were used in each partial survey site of the same employment type. These rates were used to estimate the total vehicle count in sites where vehicle counts were conducted or to estimate the total person count in sites where person counts were conducted. The resulting estimates were the total vehicle counts and total person counts in each partial survey site.

13. The trip rates from the full survey sites that were developed for each category of area and employment type were used in each partial survey site of the same area and employment type. These rates were multiplied by the total number of employees at work at each partial survey site to estimate the expanded number of employee vehicle trips by trip purpose. The average employee vehicle occupancy by employment type from the full survey sites was applied to the number of employee vehicle trips for each category of trip purpose to estimate the expanded number of employee person trips at each partial survey site.
14. The total number of vehicle and person visitor trips at the partial survey sites were estimated by subtracting the number of employee vehicle trips from the total vehicle counts, and subtracting the employee person trips from the total person counts, respectively. The resulting estimates were the total number of visitor vehicle trips and visitor person trips at each partial survey site.
15. The proportion of survey visitor trips by trip purpose from the full survey sites were estimated by area type and employment type, and were used in each partial survey site of the same area and employment type. The resulting percentages of visitor trips by trip purpose were multiplied to the total visitor vehicle and person trips at the partial survey sites, respectively, to estimate the visitor vehicle and person trips by trip purpose.
16. The total expanded vehicle and person trips by trip purpose were estimated by summing the total vehicle trips and total person trips at the full and partial survey sites, respectively. The results were then aggregated by area type and employment type for all sites to establish the trip rates by trip purpose. Trip rates were calculated by dividing the number of vehicle and person trips by trip purpose for each category of area type and employment type with the total employment of the same area type and employment type.
17. The trip rates for commercial vehicles were calculated by dividing the commercial vehicle counts by the total employment.



**APPENDIX B:  
WORK PLACE SURVEY FORMS**



Record Type 9

**WORK PLACE GENERAL SURVEY  
Form A**

NAICS Code: \_\_\_\_\_

TAZ No. \_\_\_\_\_

Employment Type: \_\_\_\_\_

Free Standing

Non-Free Standing

Name

Street Address

City

State

Zip Code

Telephone

CEO/Administrator

Name: \_\_\_\_\_ Telephone: \_\_\_\_\_

Title: \_\_\_\_\_

Personnel Manager

Name: \_\_\_\_\_ Telephone: \_\_\_\_\_

or Other Contact

Title: \_\_\_\_\_

Security Director

Name: \_\_\_\_\_ Telephone: \_\_\_\_\_

Title: \_\_\_\_\_

Weekday Hours of Operation: \_\_\_\_\_

Commercial Vehicle Count \_\_\_\_\_ Non-Commercial Vehicle Count \_\_\_\_\_ Person Count \_\_\_\_\_

Total Employees (Full and part time): \_\_\_\_\_ Number at Work on Survey Day: \_\_\_\_\_

Delivery Hours (If Restricted) \_\_\_\_\_ No. of Deliveries on Day of Survey \_\_\_\_\_

**Number/Type of Vehicles owned/Leased for Commercial/Business Purposes**

\_\_\_\_\_ Commercial Cargo Transport Vehicles \_\_\_\_\_ Commercial Service Vehicles

\_\_\_\_\_ Cars/SUVs \_\_\_\_\_ Cargo Vans \_\_\_\_\_ Service Vans \_\_\_\_\_ Pickup Trucks

**Record Type A10**

**AMARILLO WORK PLACE  
INTERCEPT TRAVEL SURVEY  
Form B**

Free Standing Work Place  
TAZ \_\_\_\_\_ Survey Area \_\_\_\_\_  
Site # \_\_\_\_\_  
Date: \_\_\_\_/\_\_\_\_/\_\_\_\_  
Interviewer \_\_\_\_\_  
Employment Type \_\_\_\_\_

Address: \_\_\_\_\_

Date: \_\_\_\_\_ Location: \_\_\_\_\_

<u>Questions</u>	<u>Person 1</u>	<u>Person 2</u>
Time Interview Began		
Time Interview Ended		
1. Do you work in this building or at this location?	1) Yes 2) No	1) Yes 2) No
2. In what city or county do you live?		
3a. Is that outside of Amarillo county? (If NO go to question 4)	a. <input type="checkbox"/> Yes <input type="checkbox"/> No (If NO go to Question 4)	a. <input type="checkbox"/> Yes <input type="checkbox"/> No (If NO go to Question 4)
3b. If YES – Which roadway did you use to enter Amarillo County? (airport is an option)	b. _____	b. _____
4. What is your home address or nearest two intersecting streets?		
5a. Did you travel here directly from your home with no stops? (if YES go to Question 7)	a. <input type="checkbox"/> Yes (Go to 7) <input type="checkbox"/> No	a. <input type="checkbox"/> Yes (Go to 7) <input type="checkbox"/> No
5b. If NO where did you start your trip that brought you to _____?	b. _____ (Address or nearest intersection)	b. _____ (Address or nearest intersection)
6a. Is that location:	a. <input type="checkbox"/> In Amarillo County? <input type="checkbox"/> Other	a. <input type="checkbox"/> In Amarillo County? <input type="checkbox"/> Other
6b. If outside of Amarillo county, what street or highway were you on when you entered the area?	b. _____	b. _____
7. What approximate time did you arrive at this location today?	_____ a.m. / _____ p.m.	_____ a.m. / _____ p.m.
8. How did you arrive here at the _____? (Choose from arrival options)		
9a. If car/truck/van ask: How many people, including yourself, were in the vehicle? 9b. If bus, ask: What fare did you pay?	a) # people _____ b) Fare \$ _____.	a) # people _____ b) Fare \$ _____.
10. What is the reason for coming here today? (Choose from trip purpose options)	Number _____ Other _____	Number _____ Other _____
11. When you leave here are you going straight home with no stops?	<input type="checkbox"/> Yes (Terminate interview) <input type="checkbox"/> No (Go to 12)	<input type="checkbox"/> Yes (Terminate interview) <input type="checkbox"/> No (Go to 12)
12. What is the address of the place you will be going?	_____ _____ (Address or nearest intersection)	_____ _____ (Address or nearest intersection)

**Work Place Intercept Survey, Form B Continued**

Questions	Person 1	Person 2
<p>13a. Is that location:</p> <p>13b. If outside of Amarillo county what street or highway will you be on when you leave this area?</p>	<p>a. <input type="checkbox"/> In Amarillo County? <input type="checkbox"/> Other</p> <p>b. _____</p>	<p>a. <input type="checkbox"/> In Amarillo County? <input type="checkbox"/> Other</p> <p>b. _____</p>

<p><b><u>Arrival Option</u></b>            Driver (car/truck/van)            Passenger (car/truck/van)            Walk            Bicycle            Bus            School Bus            Taxi/Paid Limousine            Commercial Cargo Transport Vehicle            Commercial Service Vehicle            Motorcycle            Other – specify in block            99. No-Response</p>	<p><b><u>Trip Purpose Options</u></b>            Work related            School            Social/recreational/visit            Shop            Eat out            Pick up/drop off passenger            Change travel mode            Delivery – pick up/drop off            Other – specify in block            99. No response</p>	
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**AMARILLO WORK PLACE**

Record Type A11

**INTERCEPT TRAVEL SURVEY**

Non-Free Standing Work Place

**Form C**

TAZ \_\_\_\_\_ Survey Area \_\_\_\_\_

Site # \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Interviewer \_\_\_\_\_

Employment Type \_\_\_\_\_

Address: \_\_\_\_\_

Date: \_\_\_\_\_ Location: \_\_\_\_\_

<u>Questions</u>	<u>Person 1</u>	<u>Person 2</u>
Time interview began		
Time interview ended		
1. Do you work in this building or at this location?	1) Yes 2) No	1) Yes 2) No
2. In what city or county do you live?		
3a. Is that outside of Amarillo county? (If NO go to question 4)	a. <input type="checkbox"/> Yes <input type="checkbox"/> No (If NO go to Question 4)	a. <input type="checkbox"/> Yes <input type="checkbox"/> No (If NO go to Question 4)
3b. If YES – Which roadway did you use to enter the area? (airport is an option)	b. _____	b. _____
4. What is your home address or nearest two intersecting streets?		
5a. Did you travel here directly from your home with no stops? (if YES go to Question 7)	a. <input type="checkbox"/> Yes <input type="checkbox"/> No (If YES go to Question 7)	a. <input type="checkbox"/> Yes <input type="checkbox"/> No (If YES go to Question 7)
5b. If NO where did you start your trip that brought you to _____?	b. _____ (Address or nearest intersection)	b. _____ (Address or nearest intersection)
6a. Is that location in Amarillo county?	a. <input type="checkbox"/> In Amarillo County? <input type="checkbox"/> Other	a. <input type="checkbox"/> In Amarillo County? <input type="checkbox"/> Other
6b. If outside of Amarillo County, what street or highway were you on when you entered this area?	b. _____	b. _____
7. What approximate time did you arrive at this location today?	_____ a.m. / _____ p.m.	_____ a.m. / _____ p.m.
8. How did you arrive here at the _____ today? (Choose from arrival options)		
9a. If car/truck/van ask: How many people, including yourself, were in the vehicle? 9b. If bus, ask: What fare did you pay?	a) # people _____ b) Fare \$ _____.	a) # people _____ b) Fare \$ _____.
10. What is the reason for coming here today? (Choose from trip purpose options)	Number _____ Other _____	Number _____ Other _____
11. Is this the 1 <sup>st</sup> store / establishment you have visited since arriving at this location?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

**Work Place Intercept Survey, Form C Continued**

<b><u>Questions</u></b>	<b><u>Person 1</u></b>	<b><u>Person 2</u></b>
12. How many stores/ establishments have you visited in this center during this trip?		
13. How many more stores or businesses do you plan to visit in this center / building?		
14. When you leave here are you going straight home with no stops?	<input type="checkbox"/> Yes (Terminate interview) <input type="checkbox"/> No (Go to 15)	<input type="checkbox"/> Yes (Terminate interview) <input type="checkbox"/> No (Go to 15)
15. What is the address of the place you will be going?	<p>_____</p> <p>_____</p> <p>(Address or nearest intersection)</p>	<p>_____</p> <p>_____</p> <p>(Address or nearest intersection)</p>
<p>16a. Is that location in:</p> <p>16c. If outside Amarillo County, what street or highway will you be on when you leave this area.?</p>	<p>a. <input type="checkbox"/> In Amarillo County? <input type="checkbox"/> Other</p> <p>b. _____</p>	<p>a. <input type="checkbox"/> In Amarillo County? <input type="checkbox"/> Other</p> <p>b. _____</p>

<p><b><u>Arrival Option</u></b>          Driver (car/truck/van)          Passenger (car/truck/van)          Walk          Bicycle          Bus          School Bus          Taxi/Paid Limousine          Commercial Cargo Transport Vehicle          Commercial Service Vehicle          Motorcycle          Other – specify in block          99) Non-Response</p>	<p><b><u>Trip Purpose Options</u></b>          Work related          School          Social/recreational/visit          Shop          Eat out          Pick up/drop off passenger          Change travel mode          Delivery – pick up/drop off          Other – specify in block          99) Non-response</p>	
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**Record Type SAA**

**Amarillo Airport Intercept Survey  
Form B**

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Interviewer \_\_\_\_\_ Location: \_\_\_\_\_

<u>Questions</u>	<u>Person 1</u>	<u>Person 2</u>
Time interview began		
Time interview ended		
1. Do you work here at the airport?	1) Yes 2) No	1) Yes 2) No
2. In what city or county do you live?		
3. Is that outside Amarillo County?	<input type="checkbox"/> Yes (Go to 4) <input type="checkbox"/> No (Go to 5)	<input type="checkbox"/> Yes (Go to 4) <input type="checkbox"/> No (Go to 5)
If they live outside the Amarillo county area, ask:		
4. Which roadway did you use to enter the Amarillo county area?	_____	_____
If they live in the Amarillo county area, ask:		
5. What is your home address or nearest two intersecting streets?	_____	_____
6. How did you arrive here at the airport today? (Choose from arrival options below) If by airplane, go to 10	Arrival Option # _____ Other _____ If by airplane, go to 10	Arrival Option # _____ Other _____ If by airplane, go to 10
Arrival Options:            3) Walk                            6) School bus                            9) Commercial Service Vehicle    12) Hotel/Motel Shuttle Bus 1) Driver (car/truck/van)    4) Bicycle                            7) Taxi/Paid Limousine            10) Motorcycle                            13) Other Parking Shuttle 2) Passenger (car/truck/van)    5) Metro Bus                            8) Commercial Cargo Vehicle    11) Airplane                            14) Other – Specify in box 99) Refused		
7. If arrival was by car/truck/van, How many people, including yourself were in the vehicle when you arrived at the airport? If arrival was by bus or taxi, what fare did you pay?	# of People _____ Fare \$ _____	# of People _____ Fare \$ _____
8. Did you travel here directly from your home to the airport with no stops?  If NO where did you start your trip that brought you to the airport?	a. <input type="checkbox"/> Yes <input type="checkbox"/> No  (If YES go to Question 9)  _____  _____  (Address or nearest intersection)	a. <input type="checkbox"/> Yes <input type="checkbox"/> No  (If YES go to Question 9)  _____  _____  (Address or nearest intersection)
9. Is that location in Amarillo County?  If No, what street or highway were you on when you entered Amarillo County?	<input type="checkbox"/> Yes <input type="checkbox"/> No  _____	<input type="checkbox"/> Yes <input type="checkbox"/> No  _____

**Airport Intercept Survey Form B – Continued**

10. What approximate time did you arrive at the airport today?	_____ a.m. / _____ p.m.	_____ a.m. / _____ p.m.
11. What is the reason for coming here today? (Choose from trip purpose options below)	Number _____ Other _____	Number _____ Other _____
Trip Purpose Options: 1) Return Home      4) Social Recreation/Visit      7) Personal Business      10) Delivery – pick up or drop off 2) Work Related      5) Shop      8) Pick Up/Drop Off Passenger      11) Other – specify in block 3) School      6) Eat Out      9) Change Travel Mode      99) Refused		
12. When you leave the airport, what mode will you use? (Choose from options below)	Option # _____ Other _____	Option # _____ Other _____
Departure Options: 1) Driver (car/truck/van)      2) Passenger (car/truck/van)      3) Walk      4) Bicycle      5) Metro Bus      6) School bus      7) Taxi/Paid Limousine      8) Commercial Cargo Vehicle      9) Commercial Service Vehicle      10) Motorcycle      11) Airplane      12) Hotel/Motel Shuttle Bus      13) Other Parking Shuttle      14) Other – Specify in box 99) Refused		
13. When you leave the airport are you going straight home with no stops?	<input type="checkbox"/> Yes (Terminate Interview) <input type="checkbox"/> No (Go to 14)	<input type="checkbox"/> Yes (Terminate Interview) <input type="checkbox"/> No (Go to 14)
14. What is the name and address of the place you will be going?	_____ _____ (Address or nearest intersection)	_____ _____ (Address or nearest intersection)
15. Is that outside Amarillo County?  If no, what street or highway will you be on when you leave the Amarillo County area?	<input type="checkbox"/> Yes <input type="checkbox"/> No  _____	<input type="checkbox"/> Yes <input type="checkbox"/> No  _____



**APPENDIX C:  
ASCII FILE FORMATS**

## Work Place Recruitment Survey Form G File Format

This file contains the recruitment information, call disposition results, and data collected during recruitment using Form G: Work Place Recruitment Survey. The data are in an ASCII file format.

<u>Item</u>	<u>Begin</u>	<u>End</u>	<u>Type</u>	<u>Format</u>	<u>Description</u>
1. Record Type	1	3	Alphanum. LJ	A3	Code indicating type of record. Here it should be RS.
2. Month	4	5	Numeric RJ	I2	Month establishment was contacted.
3. Day	6	7	Numeric RJ	I2	Day of month establishment was contacted.
4. Site Number	8	12	Numeric RJ	I5	Unique non-zero number assigned to each work place.
5. Name	13	62	Alphanum. LJ	A50	Name of establishment.
6. Address	63	112	Alphanum. LJ	A50	Address of establishment.
7. City	113	137	Alphanum. LJ	A25	City where establishment is located.
8. Employment Type	138	140	Numeric RJ	I3	Code indicating the type of employment at the work place. 1 – Basic; 2 – Retail; 3 – Service; 4 – Education; 5 - Other
9. Other Employment Type	141	170	Alphanum. LJ	A30	If employment type is coded as other, this field contains a description of the employment type.
10. Study Area	171	172	Alphanum. LJ	A2	Code indicating study area work place is located. A – Amarillo; L – Amarillo
11. Zone	173	177	Numeric RJ	I5	Transportation analysis zone where work place is located.
12. Phone No.	178	187	Numeric RJ	I10	Phone number of work place
13. Number of Attempts	188	190	Numeric RJ	I3	Number of attempts made to contact work place
14. Call Disposition Code	191	192	Numeric RJ	I2	Code indicating results of call attempts. See code definitions.
15. Recruitment	193	194	Numeric RJ	I2	Code indicating results of recruitment attempts. 1 – Full Survey; 2 – Partial Survey; 3 – Refusal w/Data; 4 – Refusal w/No data.
16. Employment	195	200	Numeric RJ	I6	Total number of full and part time employees.
17. No. Visitors	201	205	Numeric RJ	I5	Average number of visitors to work place during weekday.
18. No. Employees	206	210	Numeric RJ	I5	Average number of employees at work during weekday
19. Begin Operations	211	215	Numeric RJ	I5	Normal time (military) operations begin at work place.
20. End Operations	216	220	Numeric RJ	I5	Normal time (military) operations end at work place
21. Location Code	221	222	Numeric RJ	I2	Code indicating type of location. 1 – Shopping center or office building; 2 – Other
22. Others at Location	223	224	Numeric RJ	I2	Code indicating if other businesses are located at the same location. 1 – Yes; 2 - No
23. Parking	225	226	Numeric RJ	I2	Code indicating if work place has its own parking. 1 – Yes; 2 – No
24. Cut Thru Traffic	227	228	Numeric RJ	I2	Code indicating if traffic cuts through parking lot to access other businesses. 1 – Yes; 2 – No
25. Arrival Time	229	233	Numeric RJ	I5	Normal time of arrival for first employee
26. Departure Time	234	238	Numeric RJ	I5	Normal time of departure for last employee
27. Deliveries	239	241	Numeric RJ	I3	Number of deliveries on an average week day.
28. Special Access	242	243	Numeric RJ	I2	Code indicating if special access is provided for deliveries or employees. 1 – Yes; 2 - No
29. Business Vehicles	244	250	Numeric RJ	I7	Number of vehicles owned or leased by work place for business purposes.
30. Cars / SUVs	251	255	Numeric RJ	I5	Number of cars and SUVs owned or leased by work place for business purposes
31. Pickup Trucks	256	260	Numeric RJ	I5	Number of pickup trucks owned or leased by work place for business purposes
32. Cargo Vans	261	265	Numeric RJ	I5	Number of vans owned or leased by work place used for delivery or pick up of cargo
33. Service Vans	266	270	Numeric RJ	I5	Number of vans owned or leased by work place used for commercial service or other purposes
34. Cargo Vehicles	271	275	Numeric RJ	I5	Number of cargo transport vehicles owned or leased by work place for business purposes that do not fall into the other categories.
35. Service Vehicles	276	280	Numeric RJ	I5	Number of service vehicles owned or leased by work place for business purposes that do not fall into the other categories

### Call Disposition Codes

1 – Contact Made	6 – Non-Business
2 – No Answer	7 – Computer/Fax
3 – Phone Disconnected	8 – Other
4 – Answering Machine	
5 – Busy	

## Work Place General Survey Form A File Format

This file contains the recruitment information, call disposition results, and data collected during recruitment using Form A: Work Place General Survey. The data are in ASCII file format.

<u>Item</u>	<u>Begin</u>	<u>End</u>	<u>Type</u>	<u>Field Columns</u>	
				<u>Format</u>	<u>Description</u>
1. Record Type	1	3	Alphanum. LJ	A3	Code indicating type of record. Here it should be 9.
2. Month	4	5	Numeric RJ	I2	Month work place was surveyed.
3. Day	6	7	Numeric RJ	I2	Day of month work place was surveyed.
4. Site Number	8	12	Numeric RJ	I5	Unique non-zero number assigned to each work place.
5. NAICS Code	13	17	Numeric RJ	I5	North American Industrial Classification System code of the work place.
6. Establishment Type	18	19	Numeric RJ	I2	Code indicating the type of work place; 1- free standing, 2- non-free standing.
7. Employment Type	20	21	Numeric RJ	I2	Code indicating the type of employment at the work place. See code descriptions.
8. Name	22	51	Alphanum. LJ	A30	Name of work place.
9. Address	52	81	Alphanum. LJ	A30	Address of work place.
10. City	82	96	Alphanum. LJ	A15	City where work place is located.
11. Zip Code	97	101	Numeric RJ	I5	Zip code for work place location.
12. Phone No.	102	111	Numeric RJ	I10	Phone number for work place.
13. Longitude	112	121	Numeric RJ	F10.0	Longitude of work place address. If unknown, it should be coded 888.888888.
14. Latitude	122	131	Numeric RJ	F10.0	Latitude of work place address. If unknown, it should be coded 888.888888.
15. Area Location	132	133	Alphanum. LJ	A2	Code indicating location of work place. A – Amarillo study area; L – Amarillo study area
16. Zone	134	138	Numeric RJ	I5	Zone where work place is located.
17. Hours of Operation	139	140	Numeric RJ	I2	Number of hours in operation during a normal weekday.
18. Number of Vehicles	141	146	Numeric RJ	I6	Total number of non-commercial vehicles entering and exiting the work place during the 24 hours the travel survey was conducted.
19. Number of Persons	147	153	Numeric RJ	I7	Total number of persons counted entering and exiting the work place during the 24 hours the travel survey was conducted.
20. Commercial Vehicles	154	158	Numeric RJ	I5	Total number of commercial vehicles counted entering and exiting the work place during the 24 hours the travel survey was conducted.
21. Total Employment	159	163	Numeric RJ	I5	Total number of persons (full and part time) employed at the establishment.
22. Employees at Work	164	168	Numeric RJ	I5	Total number of employees at work on day the travel survey was conducted.
23. Deliveries	169	171	Numeric RJ	I3	Number of deliveries to work place on day of travel survey.
24. Delivery Hours	172	174	Numeric RJ	I3	Hours allowed for deliveries.
25. Cars & SUVs	175	179	Numeric RJ	I5	Number of cars and SUVs owned or leased by work place for business purposes
26. Cargo Transport Vans	180	184	Numeric RJ	I5	Number of vans owned or leased by work place for business cargo delivery and pick up purposes
27. Service Vans	185	189	Numeric RJ	I5	Number of vans owned or leased by work place for business service purposes
28. Pickup Trucks	190	194	Numeric RJ	I5	Number of pickup trucks owned or leased by work place for business purposes
29. Cargo Transport Vehicles	195	199	Numeric RJ	I5	Number of cargo transport vehicles owned or leased by work place for business purposes
30. Service Vehicles	200	204	Numeric RJ	I5	Number of service vehicles owned or leased by work place for business purposes
31. Other Employment Type	205	254	Alphanum. LJ	A50	If employment type is coded as 15- Other, this field contains a description of the employment type at the work place.

### Employment Type

1 – Office (Non Government)	7 – Government/City/County/State/Federal Offices	13 – Wholesale Trade
2 – Retail	8 – Convenience Store/Gas Station	14 – Construction
3 – Industrial	9 – Grocery Store	15 – Other
4 – Medical	10 – Restaurant/Fast Food/Bar & Grill	99 – Unknown/Refused
5 – Education – Day Care / K-12 <sup>th</sup>	11 – Bank/Financial Institution	
6 – Education – College, trade, other	12 – Manufacturing	

## Work Place Intercept Survey, Free Standing Work Place Form B File Format

This file contains the travel data for employees and visitors at surveyed free standing work places using Form B, Intercept Travel Survey, Free Standing Work Place. The data are in ASCII file format.

<u>Item</u>	<u>Begin</u>	<u>End</u>	<u>Type</u>	<u>Field Columns</u> <u>Format</u>	<u>Description</u>
1. Record Type	1	3	Alphanum. LJ	A3	Code which indicates the type of record. Here it should be A10 or L10 depending on area work place is located.
2. Month	4	5	Numeric RJ	I2	Month work place was surveyed.
3. Day	6	7	Numeric RJ	I2	Day of the month work place was surveyed.
4. Site Number	8	12	Numeric RJ	I5	Unique non-zero number assigned to the establishment where these interviews were conducted.
5. Person Number	13	13	Numeric RJ	I1	Number of person being interviewed. This corresponds to the column number on the interview form.
6. Time Began	14	18	Numeric RJ	I5	Time interview began. Military time
7. Time Ended	19	23	Numeric RJ	I5	Time interview ended. Military time
8. Person Interviewed	24	25	Numeric RJ	I2	Code indicating if person being interviewed is an employee or a visitor. 1 – employee; 2 - visitor
9. Residence	26	50	Alphanum. LJ	A25	Name of city, county or country where person lives.
10. Residence Code	51	52	Numeric RJ	I2	Code indicating if residence is not located within a county in the study area. 1-Yes, 2-No, 99-Refused / Unknown.
11. Entry Road	53	82	Alphanum. LJ	A30	If person does not live in study area, this field should contain the name of the street/highway/bridge the person was on when they entered the study area. If person stayed overnight, this field should be blank. Note that airport is a valid entry.
12. Study Area	83	84	Alphanum. LJ	A2	Code indicating study area where person entered. If person lives in study area, this field should be blank.
13. Entry Zone	85	89	Numeric RJ	I5	Zone number associated with the street/highway/bridge person was on when they entered study area. If person lives in study area, this field should be blank.
14. Home Address	90	119	Alphanum. LJ	A30	Address where person lives. If person gives nearest intersecting streets, this should be the first street name.
15. Intersecting Street	120	149	Alphanum. LJ	A30	If person gave nearest intersecting streets for their home address, this field should have the second street name, otherwise it is blank.
16. Longitude	150	159	Numeric RJ	F10.0	Longitude of person's home address. If address is in Mexico, this should be coded 777.7777. If address is outside Texas this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
17. Latitude	160	169	Numeric RJ	F10.0	Latitude of person's home address. If address is in Mexico, this should be coded 777.7777. If address is outside Texas, this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
18. Zone Location	170	171	Alphanum. LJ	A2	Code indicating location of address. A – Amarillo; L – Amarillo If address is not located in a study area but within Texas, this field should contain the number 1 indicating the zone number in the next field is for the state zone system. Otherwise this field should be blank.
19. Zone	172	176	Numeric RJ	I5	Zone number where person lives. Locations in Mexico should be coded 7777. Locations outside of the study area but within Texas should be coded to the state zone system. Unknown zone numbers in within a study area county should be coded as 8888. Unknown zone numbers outside of the study area but within Texas should be coded as 6666. Locations outside Texas and not in Mexico should be coded as 9999.
20. Origin Code	177	178	Numeric RJ	I2	Code indicating origin of trip; 1-Home, 2-Other.
21. Origin Location	179	238	Alphanum. LJ	A60	Location that trip originated from (i.e. name, address, etc).

**Intercept Survey, Free Standing Work Place Survey, Form B Format, Continued.**

<b><u>Item</u></b>	<b><u>Begin</u></b>	<b><u>End</u></b>	<b><u>Type</u></b>	<b><u>Field Columns Format</u></b>	<b><u>Description</u></b>
22. Longitude	239	248	Numeric RJ	F10.0	Longitude of location trip originated from. If location is in Mexico, this should be coded 777.7777. If location is outside Texas , this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
23. Latitude	249	258	Numeric RJ	F10.0	Latitude of location trip originated from. If location is in Mexico, this should be coded 777.7777. If location is outside Texas , this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
24. Zone Location	259	260	Alphanum. LJ	A2	Code indicating location of address. A – Amarillo; L – Amarillo If address not located in a county within the study area, but within Texas, this field should contain the number 1 indicating the zone number in the next field is for the state zone system. Otherwise this field should be blank.
25. Origin Zone	261	265	Numeric RJ	I5	Zone where trip originated. Locations in Mexico should be coded 7777. Locations outside of the study area, but within Texas should be coded to the state zone system. Unknown zone numbers in a study area county should be coded as 8888. Unknown zone numbers outside of the study area but within Texas should be coded as 6666. Locations outside Texas and not in Mexico should be coded as 9999.
26. Entry Facility	266	295	Alphanum. LJ	A30	If origin is outside of a study area county, this field should contain the name of the bridge, street, or highway used to enter the study area.
27. Entry Study Area	296	297	Alphanum. LJ	A2	If origin is outside of a study area county, this field should contain a code indicating the study area where the bridge, street, or highway used to enter is located. A – Amarillo; L - Amarillo
28. Entry External Zone	298	302	Numeric RJ	I5	If origin is outside of the study area, this field should contain the external station number associated with the bridge, street, or highway used to enter the study area.
29. Arrival Hour	303	305	Numeric RJ	I3	Hour person arrived at this site. This hour should be in terms of military time.
30. Arrival Minute	306	308	Numeric RJ	I3	Minute person arrived at this site.
31. Mode	309	310	Numeric RJ	I2	Code indicating mode of travel to this location. See definitions below.
32. Other Mode	311	320	Alphanum. LJ	A10	If mode is coded “other”, this field should contain a description of the mode given.
33. Number Persons	321	322	Numeric RJ	I2	If mode of travel was driver, passenger, taxi, commercial vehicle or motorcycle, this is the number of persons in the vehicle including the person being interviewed. This field is blank for all other modes.
34. Bus Fare	323	328	Numeric RJ	F6.2	If mode of travel was bus, this is the bus fare paid.
35. Trip Purpose	329	330	Numeric RJ	I2	Code indicating purpose of trip. See code definitions below.
36. Other Purpose	331	340	Alphanum. LJ	A10	If purpose is coded as “other”, this contains description of purpose given.
37. Depart Destination	341	342	Numeric RJ	I2	Code indicating destination when person departs from this site; 1-Home, 2-Other.
38. Destination Location	343	402	Alphanum. LJ	A60	Location of destination person is going.

**Intercept Survey, Free Standing Work Place Survey Form B Format Continued.**

<b><u>Item</u></b>	<b><u>Begin</u></b>	<b><u>End</u></b>	<b><u>Type</u></b>	<b><u>Field Columns Format</u></b>	<b><u>Description</u></b>
39. Destination Longitude	403	412	Numeric RJ	F10.0	Longitude of destination location. If location is in Mexico, this should be coded 777.7777. If location is outside Texas , this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
40. Destination Latitude	413	422	Numeric RJ	F10.0	Latitude of destination location. If address is in Mexico, this should be coded 777.7777. If address is outside Texas , this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
41. Zone Location	423	424	Alphanum. LJ	A2	Code indicating location of address. A – Amarillo; L – Amarillo If address is not in a study area county, but within Texas, this field should contain the number 1 indicating the zone number in the next field is for the state zone system. Otherwise this field should be blank.
42. Destination Zone	425	429	Numeric RJ	I5	Zone where individual is going when they leave this location. Locations in Mexico should be coded 7777. Locations not in a study area county, but within Texas should be coded to the state zone system. Unknown zone numbers in a study area county should be coded as 8888. Unknown zone numbers not in a study area county but within Texas should be coded as 6666. Locations outside Texas and not in Mexico should be coded as 9999.
43. Exit Facility	430	459	Alphanum. LJ	A30	If destination is outside of the study area, this field should contain the name of the bridge, street, or highway used to enter the study area.
44. Exit Study Area	460	461	Alphanum. LJ	A2	If destination is outside of the study area, this field should contain a code indicating the study area where the bridge, street, or highway used to exit is located. A – Amarillo; L - Amarillo
45. Exit External Zone	462	466	Numeric RJ	I5	If destination is outside of a study area county this field should contain the external station number associated with the bridge, street, or highway used to enter the study area.
46. Form Number	467	472	Numeric RJ	I6	Survey form number which contains raw survey data.

**Item 31. Mode of Transportation Codes**

- 1 – Driver (car/truck/van)
- 2 – Passenger (car/truck/van)
- 3 – Walk
- 4 – Bicycle
- 5 – Bus / Public Transportation
- 6 – School Bus
- 7 – Taxi / Limo
- 8 – Commercial Cargo Transport Vehicle
- 9 – Commercial Service Vehicle
- 10 – Motorcycle
- 11 – Other
- 99. No Response

**Item 35. Trip Purpose Codes**

- 1 – Work Related
- 2 – School Related
- 3 – Social / Recreational / Visit
- 4 – Shop
- 5 – Eat Out
- 6 – Pick Up / Drop Off Passenger
- 7 – Change Travel Mode
- 8 – Delivery – Pick Up / Drop Off
- 9 – Other
- 99 – No Response

## Work Place Intercept Survey, Non-Free Standing Work Place Form C Format

This file contains the travel data for employees and visitors at surveyed non-free standing work places using Form C, Intercept Travel Survey, Non-Free Standing Work Place. The data are in ASCII file format.

<u>Item</u>	<u>Begin</u>	<u>End</u>	<u>Type</u>	<u>Field Columns</u> <u>Format</u>	<u>Description</u>
1. Record Type	1	3	Alphanum. LJ	A3	Code which indicates the type of record. Here it should be A11 or L11 depending on area work place is located.
2. Month	4	5	Numeric RJ	I2	Month work place was surveyed.
3. Day	6	7	Numeric RJ	I2	Day of the month work place was surveyed.
4. Site Number	8	12	Numeric RJ	I5	Unique non-zero number assigned to the work place where these interviews were conducted.
5. Person Number	13	13	Numeric RJ	I1	Number of person being interviewed. This corresponds to the column number on the interview form.
6. Time Began	14	18	Numeric RJ	I5	Time interview began. Military time
7. Time Ended	19	23	Numeric RJ	I5	Time interview ended. Military time
8. Person Interviewed	24	25	Numeric RJ	I2	Code indicating if person being interviewed is an employee or a visitor. 1 – employee; 2 - visitor
9. Residence	26	50	Alphanum. LJ	A25	Name of city, county or country where person lives.
10. Residence Code	51	52	Numeric RJ	I2	Code indicating if residence is not located within a county in the study area. 1-Yes, 2-No, 99-Refused / Unknown.
11. Entry Road	53	82	Alphanum. LJ	A30	If person does not live in study area, this field should contain the name of the street/highway/bridge the person was on when they entered the study area. If person stayed overnight, this field should be blank. Note that airport is a valid entry.
12. Study Area	83	84	Alphanum. LJ	A2	Code indicating study area where person entered. If person lives in study area, this field should be blank.
13. Entry Zone	85	89	Numeric RJ	I5	Zone number associated with the street/highway/bridge person was on when they entered study area. If person lives in study area, this field should be blank.
14. Home Address	90	119	Alphanum. LJ	A30	Address where person lives. If person gives nearest intersecting streets, this should be the first street name.
15. Intersecting Street	120	149	Alphanum. LJ	A30	If person gave nearest intersecting streets for their home address, this field should have the second street name, otherwise it is blank.
16. Longitude	150	159	Numeric RJ	F10.0	Longitude of person's home address. If address is in Mexico, this should be coded 777.7777. If address is outside Texas this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
17. Latitude	160	169	Numeric RJ	F10.0	Latitude of person's home address. If address is in Mexico, this should be coded 777.7777. If address is outside Texas , this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
18. Zone Location	170	171	Alphanum. LJ	A2	Code indicating location of address. A – Amarillo; L – Amarillo If address is not located in a study area but within Texas, this field should contain the number 1 indicating the zone number in the next field is for the state zone system. Otherwise this field should be blank.
19. Zone	172	176	Numeric RJ	I5	Zone number where person lives. Locations in Mexico should be coded 7777. Locations outside of the study area but within Texas should be coded to the state zone system. Unknown zone numbers in within a study area county should be coded as 8888. Unknown zone numbers outside of the study area but within Texas should be coded as 6666. Locations outside Texas and not in Mexico should be coded as 9999.
20. Origin Code	177	178	Numeric RJ	I2	Code indicating origin of trip; 1-Home, 2-Other.
21. Origin Location	179	238	Alphanum. LJ	A60	Location that trip originated from (i.e. name, address, etc.

**Intercept Survey, Non-Free Standing Work Place Survey, Form C Format, Continued.**

<u>Item</u>	<u>Begin</u>	<u>End</u>	<u>Type</u>	<u>Field Columns Format</u>	<u>Description</u>
22. Longitude	239	248	Numeric RJ	F10.0	Longitude of location trip originated from. If location is in Mexico, this should be coded 777.7777. If location is outside Texas, this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
23. Latitude	249	258	Numeric RJ	F10.0	Latitude of location trip originated from. If location is in Mexico, this should be coded 777.7777. If location is outside Texas, this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
24. Zone Location	259	260	Alphanum. LJ	A2	Code indicating location of address. A – Amarillo; L – Amarillo If address not located in a county within the study area, but within Texas, this field should contain the number 1 indicating the zone number in the next field is for the state zone system. Otherwise this field should be blank.
25. Origin Zone	261	265	Numeric RJ	I5	Zone where trip originated. Locations in Mexico should be coded 7777. Locations outside of the study area, but within Texas should be coded to the state zone system. Unknown zone numbers in a study area county should be coded as 8888. Unknown zone numbers outside of the study area but within Texas should be coded as 6666. Locations outside Texas and not in Mexico should be coded as 9999.
26. Entry Facility	266	295	Alphanum. LJ	A30	If origin is outside of a study area county, this field should contain the name of the bridge, street, or highway used to enter the study area.
27. Entry Study Area	296	297	Alphanum. LJ	A2	If origin is outside of a study area county, this field should contain a code indicating the study area where the bridge, street, or highway used to enter is located. A – Amarillo; L - Amarillo
28. Entry External Zone	298	302	Numeric RJ	I5	If origin is outside of the study area, this field should contain the external station number associated with the bridge, street, or highway used to enter the study area.
29. Arrival Hour	303	305	Numeric RJ	I3	Hour person arrived at this site. This hour should be in terms of military time.
30. Arrival Minute	306	308	Numeric RJ	I3	Minute person arrived at this site.
31. Mode	309	310	Numeric RJ	I2	Code indicating mode of travel to this location. See definitions below.
32. Other Mode	311	320	Alphanum. LJ	A10	If mode is coded “other”, this field should contain a description of the mode given.
33. Number Persons	321	322	Numeric RJ	I2	If mode of travel was driver, passenger, taxi, commercial vehicle or motorcycle, this is the number of persons in the vehicle including the person being interviewed. This field is blank for all other modes.
34. Bus Fare	323	328	Numeric RJ	F6.2	If mode of travel was bus, this is the bus fare paid.
35. Trip Purpose	329	330	Numeric RJ	I2	Code indicating purpose of trip. See code definitions below.
36. Other Purpose	331	340	Alphanum. LJ	A10	If purpose is coded as “other”, this contains description of purpose given.
37. First Store	341	342	Numeric RJ	I2	Code indicating if this store/work place is the first visited in the location since arriving. 1 – Yes, 2 – No, 99 – Refused/Unknown.
38. Number Visited	343	344	Numeric RJ	I2	Number of stores/work places visited in this location.
39. More Visits	345	346	Numeric RJ	I2	Number of stores/work places in this location person plans on visiting during this trip.
40. Depart Destination	347	348	Numeric RJ	I2	Code indicating destination when person departs from this site; 1-Home, 2-Other.
41. Destination Location	349	408	Alphanum. LJ	A60	Name & address of destination person is going.

**Intercept Survey, Non-Free Standing Work Place Survey Form C Format Continued.**

<u>Item</u>	<u>Begin</u>	<u>End</u>	<u>Type</u>	<u>Field Columns</u> <u>Format</u>	<u>Description</u>
42. Destination Longitude	409	418	Numeric RJ	F10.0	Longitude of destination location. If location is in Mexico, this should be coded 777.7777. If location is outside Texas, this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
43. Destination Latitude	419	428	Numeric RJ	F10.0	Latitude of destination location. If address is in Mexico, this should be coded 777.7777. If address is outside Texas, this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
44. Zone Location	429	430	Alphanum. LJ	A2	Code indicating location of address. A – Amarillo; L – Amarillo If address is not in a study area county, but within Texas, this field should contain the number 1 indicating the zone number in the next field is for the state zone system. Otherwise this field should be blank.
45. Destination Zone	431	435	Numeric RJ	I5	Zone where individual is going when they leave this location. Locations in Mexico should be coded 7777. Locations not in a study area county, but within Texas should be coded to the state zone system. Unknown zone numbers in a study area county should be coded as 8888. Unknown zone numbers not in a study area county but within Texas should be coded as 6666. Locations outside Texas and not in Mexico should be coded as 9999.
46. Exit Facility	436	465	Alphanum. LJ	A30	If destination is outside of the study area, this field should contain the name of the bridge, street, or highway used to enter the study area.
47. Exit Study Area	466	467	Alphanum. LJ	A2	If destination is outside of the study area, this field should contain a code indicating the study area where the bridge, street, or highway used to exit is located. A – Amarillo; L - Amarillo
48. Exit External Zone	468	472	Numeric RJ	I5	If destination is outside of a study area county this field should contain the external station number associated with the bridge, street, or highway used to enter the study area.
49. Form Number	473	478	Numeric RJ	I6	Survey form number which contains raw survey data.

Item 31. Mode of Transportation Codes

- 1 – Driver (car/truck/van)
- 2 – Passenger (car/truck/van)
- 3 – Walk
- 4 – Bicycle
- 5 – Bus / Public Transportation
- 6 – School Bus
- 7 – Taxi / Limo
- 8 – Commercial Cargo Transport Vehicle
- 9 – Commercial Service Vehicle
- 10 – Motorcycle
- 11 – Other
- 99. No Response

Item 35. Trip Purpose Codes

- 1 – Work Related
- 2 – School Related
- 3 – Social / Recreational / Visit
- 4 – Shop
- 5 – Eat Out
- 6 – Pick Up / Drop Off Passenger
- 7 – Change Travel Mode
- 8 – Delivery – Pick Up / Drop Off
- 9 – Other
- 99 – No Response

## Special Generator Intercept Survey, Airport Work Place Form B Format

This file contains the travel data for employees and visitors at surveyed special generator work places using Form B, Intercept Travel Survey, Airport Work Place. The data are in ASCII file format.

<u>Item</u>	<u>Begin</u>	<u>End</u>	<u>Type</u>	<u>Field Columns</u> <u>Format</u>	<u>Description</u>
1. Record Type	1	3	Alphanum. LJ	A3	Code which indicates the type of record. Here it should be SAA or SLA depending on area airport is located.
2. Month	4	5	Numeric RJ	I2	Month work place was surveyed.
3. Day	6	7	Numeric RJ	I2	Day of the month work place was surveyed.
4. Site Number	8	12	Numeric RJ	I5	Unique non-zero number assigned to the airport where these interviews were conducted.
5. Person Number	13	13	Numeric RJ	I1	Number of person being interviewed. This corresponds to the column number on the interview form.
6. Time Began	14	18	Numeric RJ	I5	Time interview began. Military time
7. Time Ended	19	23	Numeric RJ	I5	Time interview ended. Military time
8. Person Interviewed	24	25	Numeric RJ	I2	Code indicating if person being interviewed is an employee or a visitor. 1 – employee; 2 - visitor
9. Residence	26	50	Alphanum. LJ	A25	Name of city, county or country where person lives.
10. Residence Code	51	52	Numeric RJ	I2	Code indicating if residence is not located within a county in the study area. 1-Yes, 2-No, 99-Refused / Unknown.
11. Entry Road	53	82	Alphanum. LJ	A30	If person does not live in study area, this field should contain the name of the street/highway/bridge the person was on when they entered the study area. Note that airport is a valid entry.
12. Study Area	83	84	Alphanum. LJ	A2	Code indicating study area where person entered. If person lives in study area, this field should be blank.
13. Entry Zone	85	89	Numeric RJ	I5	Zone number associated with the street/highway/bridge person was on when they entered study area. If person lives in study area, this field should be blank.
14. Home Address	90	119	Alphanum. LJ	A30	Address where person lives. If person gives nearest intersecting streets, this should be the first street name.
15. Intersecting Street	120	149	Alphanum. LJ	A30	If person gave nearest intersecting streets for their home address, this field should have the second street name, otherwise it is blank.
16. Longitude	150	159	Numeric RJ	F10.0	Longitude of person's home address. If address is in Mexico, this should be coded 777.7777. If address is outside Texas this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
17. Latitude	160	169	Numeric RJ	F10.0	Latitude of person's home address. If address is in Mexico, this should be coded 777.7777. If address is outside Texas , this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
18. Zone Location	170	171	Alphanum. LJ	A2	Code indicating location of address. A – Amarillo; L – Amarillo If address is not located in a study area but within Texas, this field should contain the number 1 indicating the zone number in the next field is for the state zone system. Otherwise this field should be blank.
19. Zone	172	176	Numeric RJ	I5	Zone number where person lives. Locations in Mexico should be coded 7777. Locations outside of the study area but within Texas should be coded to the state zone system. Unknown zone numbers in within a study area county should be coded as 8888. Unknown zone numbers outside of the study area but within Texas should be coded as 6666. Locations outside Texas and not in Mexico should be coded as 9999.
20. Arrival Mode	177	178	Numeric RJ	I2	Code indicating mode of arrival at this airport. See definitions below.

**Intercept Survey, Airport Work Place Survey, Form B Format, Continued.**

<u>Item</u>	<u>Begin</u>	<u>End</u>	<u>Type</u>	<u>Field Columns Format</u>	<u>Description</u>
21. Other Arrival Mode	179	188	Alphanum. LJ	A10	If arrival mode is coded "other", this field should contain a description of the mode given.
22. Number Persons	189	190	Numeric RJ	I2	If mode of travel was driver, passenger, taxi, commercial vehicle or motorcycle, this is the number of persons in the vehicle including the person being interviewed. This field is blank for all other modes.
23. Bus Fare	191	196	Numeric RJ	F6.2	If mode of travel was bus, this is the bus fare paid.
24. Origin Code	197	198	Numeric RJ	I2	Code indicating origin of trip; 1-Home, 2-Other.
25. Origin Location	199	258	Alphanum. LJ	A60	Location that trip originated from (i.e. name, address, etc).
26. Longitude	259	268	Numeric RJ	F10.0	Longitude of location trip originated from. If location is in Mexico, this should be coded 777.7777. If location is outside Texas, this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
27. Latitude	269	278	Numeric RJ	F10.0	Latitude of location trip originated from. If location is in Mexico, this should be coded 777.7777. If location is outside Texas, this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
28. Zone Location	279	280	Alphanum. LJ	A2	Code indicating location of address. A – Amarillo; L – Amarillo If address not located in a county within the study area, but within Texas, this field should contain the number 1 indicating the zone number in the next field is for the state zone system. Otherwise this field should be blank.
29. Origin Zone	281	285	Numeric RJ	I5	Zone where trip originated. Locations in Mexico should be coded 7777. Locations outside of the study area, but within Texas should be coded to the state zone system. Unknown zone numbers in a study area county should be coded as 8888. Unknown zone numbers outside of the study area but within Texas should be coded as 6666. Locations outside Texas and not in Mexico should be coded as 9999.
30. Entry Facility	286	315	Alphanum. LJ	A30	If origin is outside of a study area county, this field should contain the name of the bridge, street, or highway used to enter the study area.
31. Entry Study Area	316	317	Alphanum. LJ	A2	If origin is outside of a study area county, this field should contain a code indicating the study area where the bridge, street, or highway used to enter is located. A – Amarillo; L - Amarillo
32. Entry External Zone	318	322	Numeric RJ	I5	If origin is outside of the study area, this field should contain the external station number associated with the bridge, street, or highway used to enter the study area.
33. Arrival Hour	323	325	Numeric RJ	I3	Hour person arrived at this site. This hour should be in terms of military time.
34. Arrival Minute	326	328	Numeric RJ	I3	Minute person arrived at this site.
35. Trip Purpose	329	330	Numeric RJ	I2	Code indicating purpose of trip. See code definitions below.
36. Other Purpose	331	340	Alphanum. LJ	A10	If purpose is coded as "other", this contains description of purpose given.
37. Departure Mode	341	342	Numeric RJ	I2	Code indicating mode of departure from this airport. See definitions below.
38. Departure Mode Other	343	352	Alphanum. LJ	A10	If departure mode is coded "other", this field should contain a description of the mode given.
39. Depart Destination	353	354	Numeric RJ	I2	Code indicating destination when person departs from this site; 1-Home, 2-Other.
40. Destination Location	355	414	Alphanum. LJ	A60	Location of destination person is going.

**Intercept Survey, Airport Work Place Survey Form B Format Continued.**

<u>Item</u>	<u>Begin</u>	<u>End</u>	<u>Type</u>	<u>Field Columns Format</u>	<u>Description</u>
41. Destination Longitude	415	424	Numeric RJ	F10.0	Longitude of destination location. If location is in Mexico, this should be coded 777.7777. If location is outside Texas, this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
42. Destination Latitude	425	434	Numeric RJ	F10.0	Latitude of destination location. If address is in Mexico, this should be coded 777.7777. If address is outside Texas, this should be coded 999.9999. If unknown but in study area, it should be coded 888.8888. If unknown but in Texas, it should be coded as 666.6666.
43. Zone Location	435	436	Alphanum. LJ	A2	Code indicating location of address. A – Amarillo; L – Amarillo If address is not in a study area county, but within Texas, this field should contain the number 1 indicating the zone number in the next field is for the state zone system. Otherwise this field should be blank.
44. Destination Zone	437	441	Numeric RJ	I5	Zone where individual is going when they leave this location. Locations in Mexico should be coded 7777. Locations not in a study area county, but within Texas should be coded to the state zone system. Unknown zone numbers in a study area county should be coded as 8888. Unknown zone numbers not in a study area county but within Texas should be coded as 6666. Locations outside Texas and not in Mexico should be coded as 9999.
45. Exit Facility	442	471	Alphanum. LJ	A30	If destination is outside of the study area, this field should contain the name of the bridge, street, or highway used to enter the study area.
46. Exit Study Area	472	473	Alphanum. LJ	A2	If destination is outside of the study area, this field should contain a code indicating the study area where the bridge, street, or highway used to exit is located. A – Amarillo; L - Amarillo
47. Exit External Zone	474	478	Numeric RJ	I5	If destination is outside of a study area county this field should contain the external station number associated with the bridge, street, or highway used to enter the study area.
48. Form Number	479	484	Numeric RJ	I6	Survey form number which contains raw survey data.

Items 20 & 37. Mode of Transportation Codes

- 1 – Driver (car/truck/van)
- 2 – Passenger (car/truck/van)
- 3 – Walk
- 4 – Bicycle
- 5 – Bus / Public Transportation
- 6 – School Bus
- 7 – Taxi / Limo
- 8 – Commercial Cargo Transport Vehicle
- 9 – Commercial Service Vehicle
- 10 – Motorcycle
- 11 – Airplane
- 12 – Hotel/Motel Shuttle Bus
- 13 – Other Parking Shuttle
- 14 – Other
- 99. No Response

Item 35. Trip Purpose Codes

- 1 – Return Home
- 2 – Work Related
- 3 – School Related
- 4 – Social / Recreational / Visit
- 5 – Shop
- 6 – Eat Out
- 7 – Personal Business
- 8 – Pick Up / Drop Off Passenger
- 9 – Change Travel Mode
- 10 – Delivery – Pick Up / Drop Off
- 11 – Other
- 99 – No Response