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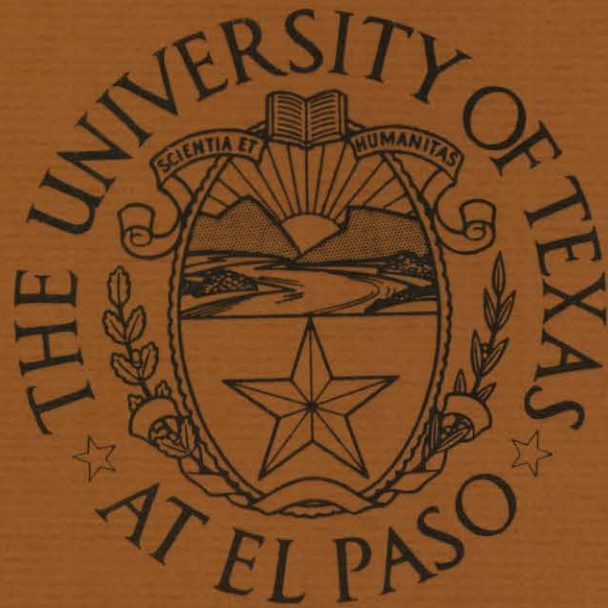
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TTS

**NEEDS ASSESSMENT FOR SPANISH**

**LANGUAGE TRANSPORTATION-RELATED**

**TRAINING MATERIALS**



**DEPARTMENT OF CIVIL ENGINEERING**

**NEEDS ASSESSMENT FOR TRANSPORTATION-RELATED SPANISH LANGUAGE  
TRAINING MATERIALS**

**FINAL REPORT**

Submitted to

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By

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## INTRODUCTION

Recent surveys have shown that by the year 2000, hispanics will be the largest minority group in the United States. Many of these hispanics are recent migrants from Mexico and, hence, may or may not speak or understand English. Since a language handicap could affect communication in the workplace and thus could affect job performance, a study was undertaken to determine if Spanish language training materials would be beneficial for some of the hispanic workers in the transportation industry. This report presents the results of that study.

## PROCEDURE

It was understood at the outset that we would be dealing with a bifurcated sample, with a majority of the workers being fairly fluent in English, and a minority speaking mainly Spanish. The border area between Brownsville, Texas and San Diego, California was the targeted region. A balance in the audience selection process was attempted, with questionnaires being submitted to large urban areas, medium-sized cities, and small towns. The intent of the project was to have only Spanish-speaking workers respond to the questionnaire, but it was recognized that a small portion of the results would come from workers outside this group. The questionnaire was developed in both English and Spanish-language versions. This was an attempt to help separate the sample into those most comfortable in English and those most comfortable in Spanish, so that their responses could also be segregated.

In addition to questionnaires submitted to actual workers in the field, a special questionnaire was developed and submitted to supervisory personnel to determine their knowledge of language preferences of their workers, as well as the recommended content for training materials their workers would be using.

#### TARGET AUDIENCE SELECTION

Consultation with supervisors in the El Paso transportation agencies gave some insight into the type of information that would be useful, as well as the size of the sample that might be expected in typical border area agencies. This was followed by visits to transportation agencies in Phoenix, San Diego and Tucson to gain their views of the problems. The selection of the cities to be polled, subdivisions of the audience by city size, and selection of a formula for figuring out the number of questionnaires to be sent to each city were based on the interview results as described below.

The cities selected to receive the questionnaire were determined by three means:

- 1) Cities located on the U.S. - Mexico border,
- 2) Cities located within 100 miles of the U.S. -Mexico border,
- 3) Large cities in the border states (California, Arizona, New Mexico, and Texas) with a large hispanic population that are located more than 100 miles from the border.

At the outset of the project, meetings were held with personnel from the El Paso public works and city streets departments to determine the number of hispanic transportation workers in the El Paso area. On the basis of these meetings, it was determined that a total

of 175 questionnaires would be needed for the city of El Paso. This sample was then used to support the estimate that there should be one questionnaire per two thousand total population of a city, (e.g. 175 questionnaires for the 425,000 population of El Paso).

For each selected city, the total population was obtained from the 1980 census report. The populations of the selected cities were then divided by two thousand to obtain the theoretical number of questionnaires to be mailed, with a minimum of ten sent to each city. Since this procedure represented only a crude estimate of the number of questionnaires required, it was decided that cities which were going to receive 35 or more questionnaires (i.e. populations of 70,000 or more) would be contacted in order to obtain a better count of the number of hispanic workers in transportation-related fields in the city departments. In addition, all of the border cities were contacted by phone regardless of their population. Finally, since the number of selected cities in the states of New Mexico and Arizona were less than 10, each city in those states was contacted directly by phone.

This procedure resulted in about fifty percent of the cities being contacted by phone. For these cities, the address of the streets, public works, or transportation departments was obtained directly from the person contacted. The rest of the addresses were found in the 1985 Municipal Index. A list of the cities contacted, the number of questionnaires mailed, and the number of responses received is shown in Appendix A.

## QUESTIONNAIRE DEVELOPMENT

Ideas for inclusion in the questionnaire were the product of the interviews which had been conducted with transportation officials of the cities which were visited and from the staff of the El Paso Subcenter of the Transportation Technology Center. It was decided that the information sought should include:

- 1) Language used in home and at work
- 2) Ability to understand and read English and Spanish
- 3) Need for training materials about Transportation Technology
- 4) Preference for media to be used in presenting these materials
- 5) Preference for language used in these materials.

Two questionnaires were developed for use in the project, one for supervisors and the other for lower-echelon workers.

The questionnaire for workers was printed in both English and Spanish versions, one on each side of the paper. This was done as a means of determining the language in which the respondent was most comfortable and for comparing the results from the English and Spanish language versions.

It was decided that the supervisors would not be an appropriate audience for the Spanish language materials because all of them were determined to be fluent in English and were receiving training in that language. Thus, it was decided that the only persons to profit from the Spanish language materials would be the lower level-workmen. A sample of each questionnaire is shown in Appendix B.

The supervisor questionnaire was developed primarily for the purpose of determining the supervisor's perception of the training needs of the workers. It included questions about ethnic makeup of

their workers and the types of training presently in use. It also requested information about the topics and media they felt should be used in materials developed for training their workers.

#### QUESTIONNAIRE MAILOUT

After completing the trial mailout in the City of El Paso, the appropriate number of questionnaires and at least three administrator questionnaires were sent to the other target cities in November and December of 1985. The questionnaires and a corresponding number of postage-paid return envelopes were packaged and sent to a transportation supervisor in each city. The addressee was generally the streets department supervisor and, in most cases, he or she had been contacted by phone prior to the questionnaire mailout. A cover letter was included which explained the purpose of the project and requested their help in distributing the questionnaire. A copy of the cover letter is shown in Appendix C.

The supervisors to whom the questionnaires were sent were asked to include their opinions and suggestions on the supervisor's questionnaire, in the form of comments, if there was no place on the form that was appropriate. Even information about unique individual problems of supervisors with training procedures, results, or materials was solicited.

In some cases the questionnaire distribution procedure broke down, as the task of distribution of questionnaires was relegated to assistants of those contacted, and the distribution was aborted or the importance of responding was downplayed by the distributor. This contributed to the complete lack of response from some of the cities

surveyed, including Los Angeles. For the cities from which no questionnaires were returned by the end of January, follow-up phone calls were made in an attempt to resolve the problem.

In some cases, a new packet of questionnaires was sent when the person contacted indicated that the original questionnaires had been lost. Nearly all of the people contacted by phone indicated a willingness to participate in the project, but if the follow-up effort failed to generate a response from the city in question, no further attempts were made to enlist their support.

#### RESULTS AND DISCUSSION

Completed questionnaires were received from 27 of the 61 cities that comprised the mailing list, yielding a 44% participation rate. The number of questionnaires received ranged from 1 (Mesa, Arizona, Calexico, California and Mission, Texas) to 142 (El Paso, Texas). The total number of worker questionnaires returned was 465, with 22% of them completed in Spanish and 78% in English. A total of 61 supervisor questionnaires were received from 21 different cities.

A summary of the worker and supervisor questionnaire responses is shown in Appendix D, with the worker questionnaire responses summarized as follows: cities with less than 70,000 people, cities with more than 70,000 people, worker questionnaires in Spanish, worker questionnaires in English, and an overall total summary. Table 1 is a more condensed version of the overall results from the worker questionnaire. Appendix E contains a listing of the written comments from the worker questionnaire.



TABLE 1- Summary of Results From Worker Questionnaire

	English	Spanish	Combined	
<b>Question 1: LEARNING METHOD</b>				
taught by foreman	23%	17%	22%	
taught by others	27%	17%	25%	
take training courses	8%	6%	8%	
read materials	13%	8%	12%	
are self-taught	21%	31%	23%	
know everything	8%	21%	10%	
<b>Question 2: TRAINING MATERIALS</b>				
better if more training materials available	89%	92%	90%	
would not benefit from training materials	11%	8%	10%	
<b>Question 3: MATERIALS/MEDIUM PREFERENCE</b>				
	written	videotape	oral	other
Preventive maintenance	22%	36%	38%	3%
Construction	14%	29%	31%	5%
Installation	16%	31%	30%	4%
Repairs	22%	31%	34%	4%
Equipment operation	20%	40%	41%	7%
Inspection	14%	22%	22%	3%
Surveying	14%	22%	22%	4%
<b>Question 4: TRAINING MATERIALS LANGUAGE PREFERENCE</b>				
Prefer materials in English	84%	20%	71%	
Prefer them in Spanish	16%	80%	29%	
<b>Question 5: SPANISH LANGUAGE USE ON JOB</b>				
Less than 10%	27%	3%	22%	
about 25%	9%	1%	7%	
about 50%	28%	8%	24%	
about 75%	13%	12%	13%	
more than 90%	23%	76%	34%	

Question 6: SPANISH LANGUAGE USE AT HOME

Less than 10%	22%	2%	18%
about 25%	10%	1%	8%
about 50%	25%	8%	21%
about 75%	14%	11%	14%
more than 90%	29%	78%	39%

Question 7: ABILITY TO READ SPANISH

not at all	17%	--
a little	36%	--
adequately	19%	--
well	28%	--

Question 7A: ABILITY TO READ ENGLISH

not at all	--	32%
a little	--	38%
adequately	--	11%
well	--	19%

Question 8: ABILITY TO SPEAK SPANISH

not at all	4%	0%	3%
a little	14%	0%	11%
adequately	32%	0%	25%
well	50%	100%	61%

Question 9: ABILITY TO UNDERSTAND SPOKEN SPANISH

not at all	4%	--
a little	10%	--
adequately	26%	--
well	60%	--

Question 9A: ABILITY TO UNDERSTAND SPOKEN ENGLISH

not at all	--	2%
a little	--	1%
adequately	--	29%
well	--	68%

## WORKER QUESTIONNAIRE ANALYSIS

Question number 1 sought information about how the workers learn tasks related to their job. Most of the responses occurred in three categories: Taught by others (25%), self taught (23%), and taught by foreman (22%). Only 7.5% of the workers stated that they learned their job by taking training courses. These results are shown graphically in Figure 1. The results were similar from both the Spanish and English versions. There were several interesting written responses for question number 1 as shown in Appendix E.

Question number 2 dealt with the worker's perception of their need for more training materials and, as might be expected in light of the response from question one, there was a high positive response to this question. Approximately 90% of the respondents on both the Spanish and English versions indicated that they could do their job better if more training materials were available.

From question number 3, it is clear that the workers would prefer either videotape or oral presentations for job training. Written materials were a distant third, with others such as slide/tape presentations far behind the rest. Again, the results were similar in both the English and Spanish questionnaire responses.

The greatest difference in responses between the English and Spanish versions of the worker questionnaire occurred on question number 4, which referred to the language preferred for training materials. Those who responded in English also wanted the training materials in English by about 9 to 1. On the other hand, those who responded in Spanish wanted the training materials to be in Spanish by a similar margin. The weighted average between the two showed that

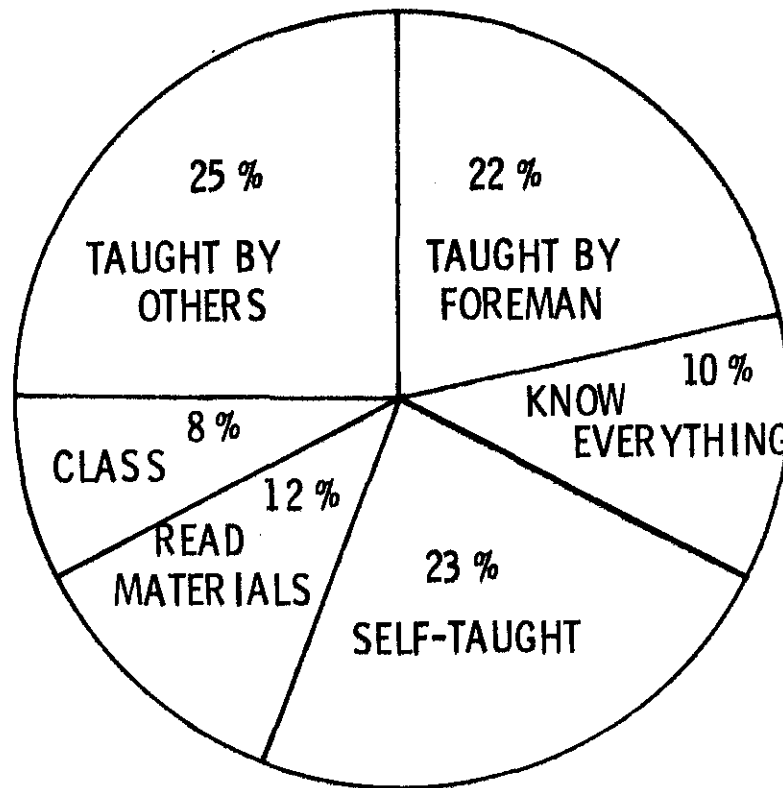


FIG. 1 - DISTRIBUTION OF HOW WORKERS LEARN TO PERFORM A NEW TASK RELATED TO THEIR JOB

nearly 30% of the respondents wanted training materials in the Spanish language. Thus, it seems clear that at least some transportation workers would benefit from selected Spanish language training materials.

Questions 5 through 9 dealt with the workers' facility with the English and Spanish languages. Question 5 queried the workers about the percentage of time they spoke Spanish on the job and both the English and Spanish respondents reported that this occurs a very high percentage of the time. In the case of the English respondents, about 65% of them indicated that they spoke Spanish at least 50% of the time on the job. For the Spanish respondents, nearly 75% of them reported that they spoke Spanish more than 90% of the time that they were on the job. The figures regarding the percentage of time the workers speak Spanish at home (question number six) were very similar to those for question five. Some of the written responses to questions 5 and 6 were rather poignant as shown in Appendix E.

Question 7 dealt with the respondent's ability to read in either language and while about 50% of the English respondents said they could read Spanish at least adequately, only 29% of the Spanish respondents said they could read English adequately. Obviously, then, even if written training materials were available, those workers who predominately speak Spanish could not learn from them if they were prepared in English.

Questions 8 and 9 refer to the workers ability to speak and understand Spanish, respectively. Over 80% of those who responded in English said they speak and understand Spanish at least adequately. Of the Spanish respondents, over 97% said they understand English at least adequately. Thus, although the workers cannot read English

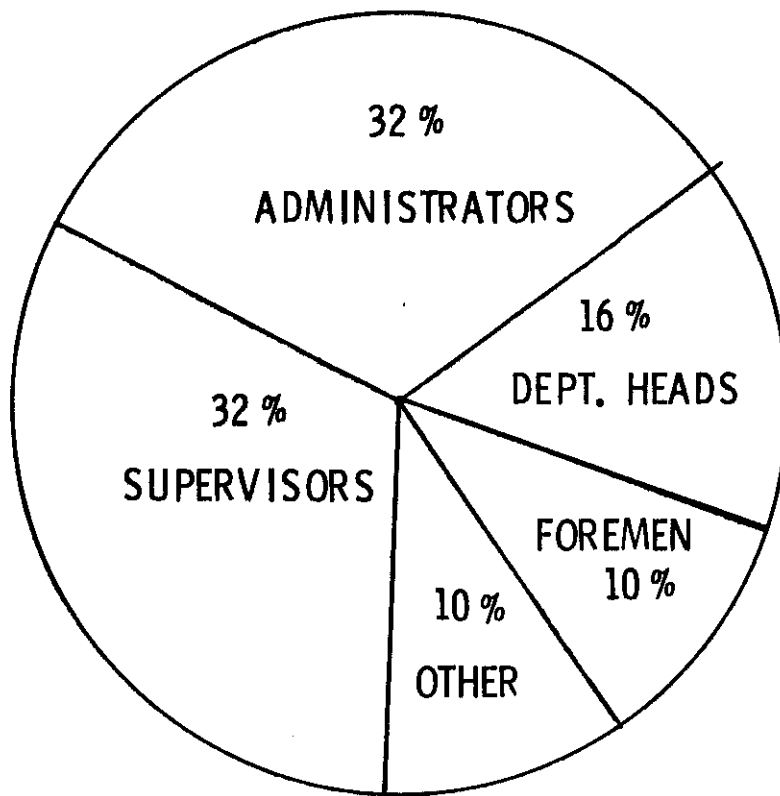
very well (a number of supervisors have said their workers cannot read Spanish very well either), the respondents indicated that they do understand English and this probably explains why oral presentations and video tapes were their first choices for the delivery of training materials.

#### ADMINISTRATOR QUESTIONNAIRE ANALYSIS

A total of 61 administrator questionnaires were returned from 27 different cities representing 44% of the cities surveyed. This percentage figure is the same as that derived from the worker questionnaire, but the cities represented are not exactly the same because, in some cases, the administrator questionnaire was returned but no worker questionnaires were and vice versa. This happened in four cases. The administrators who did respond were from cities which represented 54% of the workers surveyed.

Appendix D shows a summary of the responses from the administrator questionnaire. Questions 1 and 2 sought information about the administrator respondent. The results reveal that about one third of the respondents were college graduates, with 23% of them having engineering degrees. The breakdown by job title indicated that approximately one third of the respondents were administrators and one third were supervisors. The total classification breakdown is shown in Figure 2.

Question number 3 was included for the purpose of estimating the number of transportation employees who could possibly benefit from Spanish language materials. The administrator responses indicate that the number of transportation workers in the categories of foreman,



**FIG. 2 - CLASSIFICATION OF ADMINISTRATOR RESPONDENTS**

technician, laborer, and other total 2046 in the cities which responded. The pattern of responses indicates that approximately 80% of them have Spanish surnames, or 1636. Since the administrator data are from cities comprising 54% of the workers queried, it can be estimated that there are about 3030 (i.e.  $1636/0.54$ ) lower echelon transportation workers in the public sector along the U.S.-Mexico border. This figure compares favorably to the 3250 worker questionnaires mailed, which was based on information provided by secretaries and personnel department employees in most of the cities surveyed.

Although this project is intended to evaluate the potential impact of Spanish language materials on transportation employees in the public sector only, it is recognized that private sector transportation employees could benefit as well. Private contractors are sometimes employed for completing tasks normally handled by city crews, especially when city crews are overextended. An article in the May 16, 1986 issue of Engineering News Record, based on a report by the Michigan Road Builders Association, states that an increasing number of states and municipalities are calling on contractors to do routine highway and bridge maintenance normally performed by public employees. It is obviously as important to have the work done properly in this case as when city employees undertake the job.

In order to estimate the potential number of private sector transportation employees, phone calls were made to selected supervisory personnel in private sector transportation related companies. (The companies involved in the survey, along with the number of hispanic workers each has, is shown in Appendix F). From these calls, it was determined that there are at least twice as many



hispanic workers in the private sector (i.e. 6000-7000) as there are in the public sector. An additional large group of hispanic workers exists in the areas of southern Florida, Puerto Rico, New York City and other large cities where migrant workers tend to settle. In light of the preceding discussion, it is likely that the work force of transportation related employees of hispanic origin will easily exceed 10,000, and this does not include county, state, and federal employees.

Questions 4 through 7 were intended to provide information about the administrators impression of their workers' ability to read English or Spanish. The results show that the administrators think that most of the workers know how to read English and Spanish, with slightly greater facility in English than in Spanish. On the other hand, it is important to note that a significant number of workers apparently do not know how to read in either language.

The responses to question 8 reveal that at least some training materials are used in all areas of transportation-related activities. The most prevalent method of presentation at the present time is via field training, with oral presentation next, followed by written materials and video tape last.

Over half of the administrators responded that having training materials available in the Spanish language would definitely be or would probably be beneficial to their workers. Figure 3 is a graphical representation of these results. When asked about the preferred medium of presentation for such materials, film and videotape were preferred by more than a two-to-one margin over written materials and by more than four-to-one over slide tape presentations. These results are shown in Figure 4. As pointed out earlier, the

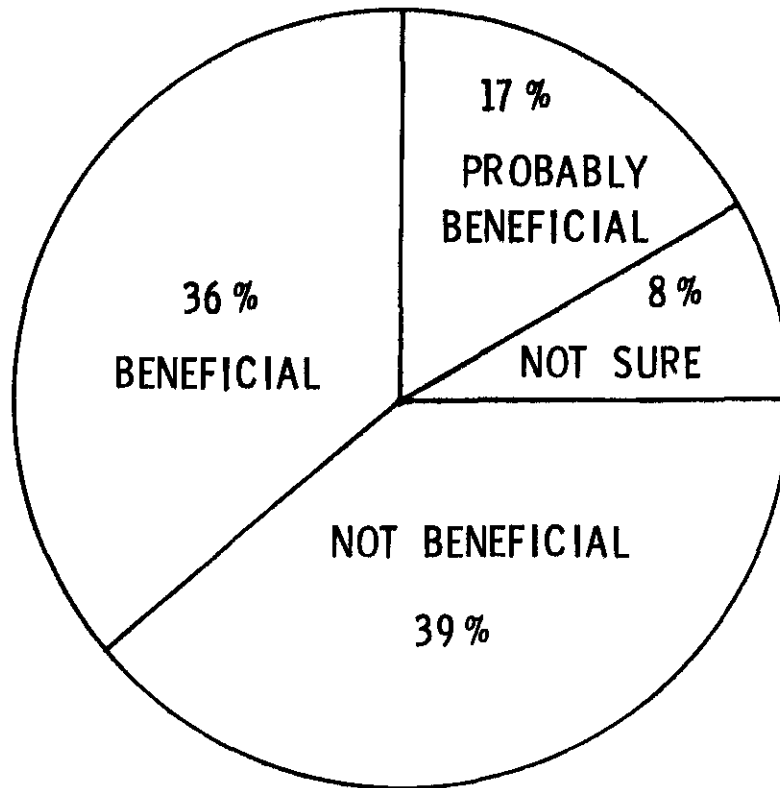
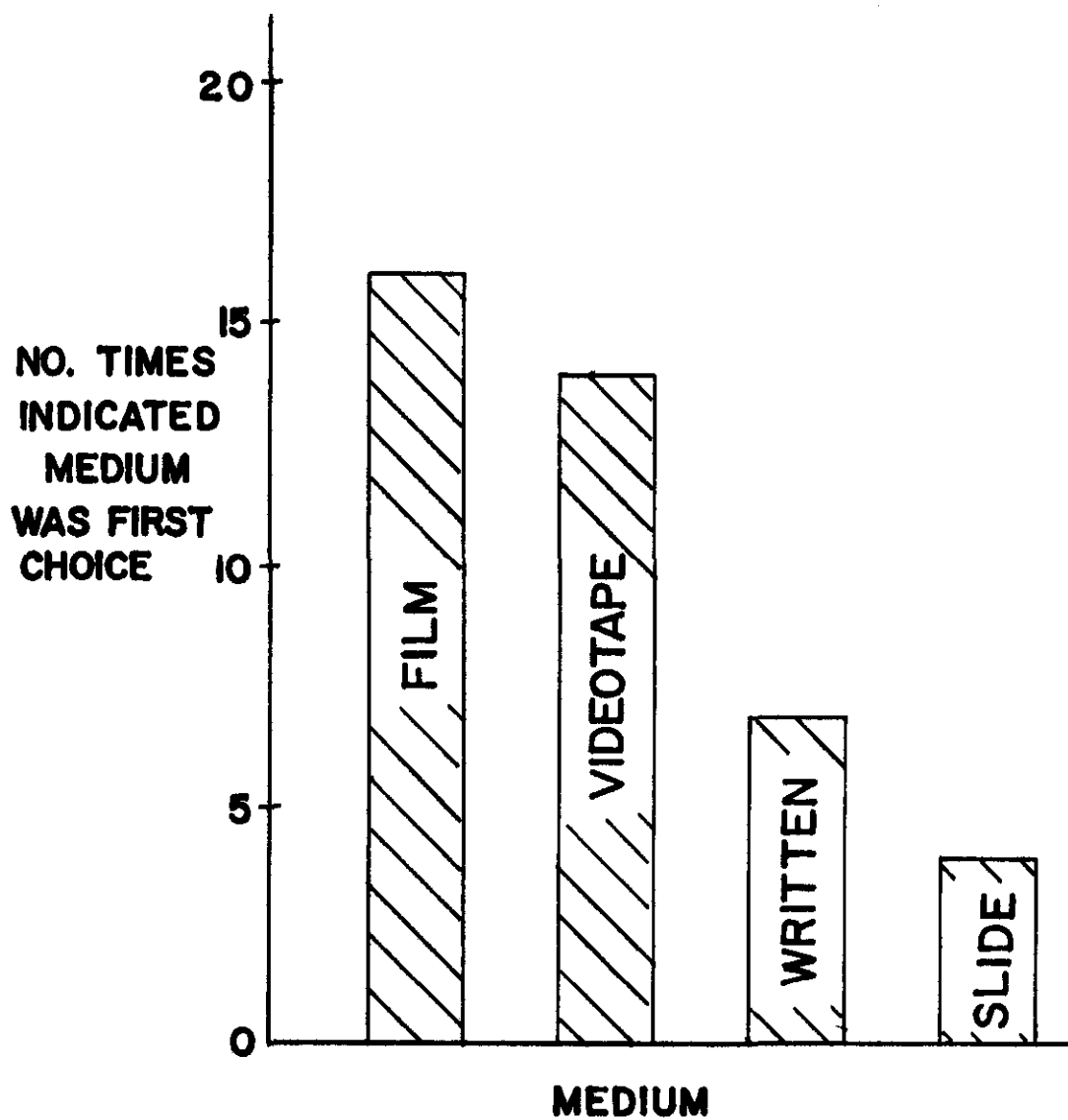


FIG. 3. - ADMINISTRATOR RESPONSE TO BENEFITS OF TRAINING MATERIALS IN SPANISH



**FIG. 4 - CHOICE OF TRAINING MATERIAL MEDIUM  
BY ADMINISTRATORS**

workers also preferred videotaped materials by a two-to-one margin over written materials.

The training material topics for which the administrators indicated a need are about the same as those specified by the workers. The topics suggested along with the number of times each was listed are shown in Table 2.

### CONCLUSIONS

From the results of this study, the following conclusions can be made with reasonable certainty:

1. Even without considering workers in county, state, and federal agencies, it is estimated that there are well over 10,000 hispanic employees engaged in transportation-related activities in the United States, with about 3,000 of these employed in the public sector along the U.S.-Mexico border,
2. Additional training materials are needed for lower-echelon employees in transportation-related activities, especially in the areas of equipment operation, preventive maintenance, installation, and repairs,
3. Spanish language training materials would be beneficial for about 30 percent of the hispanic workers in transportation-related activities along the U.S.-Mexico border, and
4. For training materials, the presentation medium most favored by both workers and administrators is videotape.

**Table 2-Training Material Topics Suggested by Administrators**

<u>Topic</u>	<u>English preferred</u>	<u>Spanish preferred</u>
Preventative Maintenance	17	10
Equipment Operation	16	11
Inspection	16	8
Construction	13	9
Repairs	11	8
Installation	8	8
Surveying	4	3
Traffic marking systems & layout	3	2
Rules and regulations	1	1
Employee benefits	1	1
Autotransmission tune up	1	0
Waste water collection systems	1	0
Garbage collection	0	1

## RECOMMENDATIONS

The results of this study indicate rather clearly that some Spanish language training materials would be beneficial for hispanic workers engaged in transportation-related activities. It is also clear that some of the workers who could benefit most from the availability of such materials do not know how to read either English or Spanish. With this limitation considered, the following recommendations are made regarding Spanish language training materials:

1. A pilot program should be undertaken for evaluating the effectiveness of selected Spanish language transportation-related training materials.
2. The Spanish language training materials should be prepared in the areas of equipment operation, pothole repair, maintenance of gravel roads, or other similar routine transportation-related functions.
3. The training materials selected for evaluation should be prepared on a one-half inch videotape format.
4. If the Spanish language materials are shown to be effective and well-received by the workers, additional materials should be prepared on an on-going basis as deemed necessary for serving the increasing number of hispanic workers in transportation-related activities.

**APPENDIX A**

**QUESTIONNAIRES MAILED/RECEIVED**

The following tables indicate what cities were selected in each state and the number of questionnaires mailed and received:

**STATE OF ARIZONA**

<u>CITY</u>	<u>CITY ID NUMBER</u>	<u>WORKER QUESTIONNAIRES</u>		<u>ADMINISTRATOR QUESTIONNAIRES RECEIVED</u>
		<u>SENT</u>	<u>RECEIVED</u>	
Tucson	39	108	16	2
Nogales	40	80	0	1
Douglas	41	42	39	5
Mesa	42	17	1	2
Phoenix	43	218	0	0

**STATE OF NEW MEXICO**

<u>CITY</u>	<u>CITY ID NUMBER</u>	<u>WORKER QUESTIONNAIRES</u>		<u>ADMINISTRATOR QUESTIONNAIRES RECEIVED</u>
		<u>SENT</u>	<u>RECEIVED</u>	
Alamogordo	31	12	5	0
Artesia	32	3	2	0
Roswell	33	20	16	1
Deming	34	12	0	0
Las Cruces	35	28	0	0
Las Vegas	36	22	6	1
Santa Fe	(37)	0	0	0
Albuquerque	38	127	0	0

**STATE OF CALIFORNIA**

<u>CITY</u>	<u>CITY ID NUMBER</u>	<u>WORKER QUESTIONNAIRES</u>		<u>ADMINISTRATOR QUESTIONNAIRES RECEIVED</u>
		<u>SENT</u>	<u>RECEIVED</u>	
Sacramento	2	10	0	0
Modesto	4	5	3	3
Richmond	9	3	0	0
Oakland	10	21	0	0
San Francisco	11	29	24	0
Salinas	13	23	3	1
Fresno	14	16	0	0
Santa Maria	16	12	12	2
Santa Barbara	20	16	13	2
Santa Ana	21	37	*	1
San Bernardino	22	40	0	0
Redlands	23	12	2	1
Calexico	25	28	1	0
Los Angeles	29	600	0	0
San Diego	30	46	12	4

\*Street Superintendent surveyed the majority of the workers and answered on one questionnaire.



CITY	NUMBER	STATE OF TEXAS WORKER QUESTIONNAIRES		ADMINISTRATOR
		SENT	RECEIVED	QUESTIONNAIRES RECEIVED
El Paso	1	175	142	10
Odessa	44	24	9	3
Big Spring	45	12	0	0
Midland	46	39	2	4
Abilene	47	20	15	2
Sweetwater	48	10	0	0
Lubbock	49	106	19	1
Brownfield	50	10	10	0
Eagle Pass	51	11	0	0
Del Rio	52	15	0	0
Uvalde	53	10	0	0
Austin	54	70	0	0
San Marcos	55	12	0	0
Weslaco	56	10	0	0
San Benito	57	10	0	0
Pharr	58	11	0	0
Mission	59	11	1	1
Mercedez	60	10	0	1
Harlingen	61	22	0	0
Donna	62	10	0	0
Brownsville	63	37	35	1
McAllen	64	27	**	0
Portland	65	10	0	0
Kingsville	66	14	0	0
Alice	67	10	0	0
San Antonio	68,69,70	417	15	3
Beeville	71	10	0	0
Laredo	72	142	57	5
Kerrville	73	10	0	0
Victoria	74	25	0	0
Lake Jackson	75	10	2	1
San Angelo	(76)	0	0	0
Waco	77	16	0	0
Ft. Worth	(78)	0	0	0
Arlington	(79)	0	0	0
Dallas	80	322	3	2
Sherman	81	15	0	1
Irving	(82)	0	0	0
<b>Overall totals</b>		<b>3250</b>	<b>465</b>	<b>61</b>

\*\*Street Superintendent thought workers had to travel to El Paso so he threw them away. "My workers don't have the money to travel to El Paso."

NOTE: Parentheses indicate questionnaire not sent (unable to determine number of hispanic workers).

**APPENDIX B**

**SAMPLE QUESTIONNAIRES**

Name .....

1. Circle all items below which apply to you.

- a. college graduate
- b. engineer
- c. elected official
- d. appointed official
- e. other (specify) .....

2. Circle the job title which most appropriately fits your position.

- a. Dept. head(public works director,city engineer, etc.)
- b. Administrator(asst. dept. head, section head, etc.)
- c. supervisor
- d. foreman
- e. other (specify) .....

3. Indicate approximately how many people under your jurisdiction would fall into each of the categories below and the approximate percentage with Spanish surnames.

	no. people	Approximate % with Spanish surnames				
		0-15%	15-40%	40-60%	60-80%	80-100%
a. administrator	-----	0-15%	15-40%	40-60%	60-80%	80-100%
b. supervisor	-----	0-15%	15-40%	40-60%	60-80%	80-100%
c. foreman	-----	0-15%	15-40%	40-60%	60-80%	80-100%
d. technician	-----	0-15%	15-40%	40-60%	60-80%	80-100%
e. laborer	-----	0-15%	15-40%	40-60%	60-80%	80-100%
f. other	-----	0-15%	15-40%	40-60%	60-80%	80-100%

4. Estimate the approximate percentage of TECHNICIANS under your jurisdiction who know how to READ English.

- a. 1-15%    b. 15-40%    c. 40-60%    d. 60-80%    e. 80-100%

5. Estimate the approximate percentage of TECHNICIANS under your jurisdiction who know how to READ Spanish.

- a. 1-15%    b. 15-40%    c. 40-60%    d. 60-80%    e. 80-100%

6. Estimate the approximate percentage of LABORERS under your jurisdiction who know how to READ English.

- a. 1-15%    b. 15-40%    c. 40-60%    d. 60-80%    e. 80-100%

7. Estimate the approximate percentage of LABORERS under your jurisdiction who know how to READ Spanish.

- a. 1-15%    b. 15-40%    c. 40-60%    d. 60-80%    f. 80-100%

8. Indicate the types of training materials you now use, if any, for your laborers and technicians in the following activities.  
 (Mark only those activities for which you have jurisdiction).

	Written	Videotape film	Oral presentation	Field training	Other
Construction					
Preventative Maintenance					
Installation(signs, barriers, equipment, etc)					
Repairs(roads, signs, equip.,etc.)					
Equipment operation					
Inspection					
Surveying					

9. Would it be beneficial to have training materials available in Spanish for your laborers?

- a. Yes            b. No            c. Probably        d. Not sure

10. If you answered (a), (c), or (d) in question 9 above, indicate by 1 and 2 your first two choices regarding the format in which you would prefer to have the materials.

- a. written \_\_\_\_\_ b. videotape \_\_\_\_\_ c. film \_\_\_\_\_  
 d. slide/tape \_\_\_\_\_ e. other(specify) \_\_\_\_\_

11. List below those TOPICS for which you would like to have training materials available:

In English  
 .....

In Spanish  
 .....

Other Comments:

TRANSPORTATION EMPLOYEE QUESTIONNAIRE

PLEASE CIRCLE THE RESPONSE WHICH MOST NEARLY DESCRIBES YOUR SITUATION. FEEL FREE TO ADD COMMENTS IN THE SPACE PROVIDED, IF YOU SO DESIRE.

1. HOW DO YOU LEARN HOW TO DO A NEW TASK RELATED TO YOUR JOB? (FOR EXAMPLE, HOW TO REPAIR A POTHOLE, HOW TO OPERATE A BACKHOE ETC.)  
(CIRCLE ALL THAT APPLY).

- A. THE FOREMAN TEACHES ME
- B. THE OTHER WORKERS TEACH ME
- C. I TAKE TRAINING COURSES RELATED TO THE SUBJECT
- D. I READ MATERIALS RELATED TO THE TASK
- E. I LEARN BY MYSELF WITH VERY LITTLE TRAINING
- F. I ALREADY KNOW EVERYTHING I NEED FOR THIS JOB

COMMENTS:

2. WOULD YOU BE ABLE TO DO YOUR JOB BETTER IF MORE TRAINING MATERIALS WERE AVAILABLE TO YOU?

A. YES

B. NO

COMMENTS:

3. WHAT FORM OF PRESENTATION WOULD YOU PREFER FOR THE TRAINING MATERIALS (CHECK THE APPROPRIATE BOXES ONLY IN THOSE CATEGORIES WHICH ARE RELATED TO YOUR JOB)

	WRITTEN	VIDEO TAPE	ORAL PRESENTATION	OTHER
PREVENTIVE MAINTENANCE				
CONSTRUCTION				
INSTALLATION(SIGNS, BARRIERS, EQUIPMENT, ETC.)				
REPAIRS (ROADS, SIGNS, EQUIPMENT, ETC.)				
EQUIPMENT OPERATION				
INSPECTION				
SURVEYING				

COMMENTS:

4. SI HUBIERA MAS MATERIAL DE ENTRENAMIENTO DISPONIBLE, COMO LE GUSTARIA QUE ESTUVIERA EN INGLES O EN ESPANOL?

A. INGLES

B. ESPANOL

COMENTARIOS:

5. EN QUE PORCENTAJE DEL TIEMPO QUE UD. TRABAJA HABLA UD. ESPANOL?

A. MENOS DEL 10%

B. ALREDEDOR DEL 25%

C. ALREDEDOR DEL 50%

D. ALREDEDOR DEL 75%

E. MAS DEL 90%

COMENTARIOS:

6. EN QUE PORCENTAJE DEL TIEMPO QUE ESTA UD. EN SU CASA HABLA UD. EL ESPANOL?

A. MENOS DEL 10%

B. ALREDEDOR DEL 25%

C. ALREDEDOR DEL 50%

D. ALREDEDOR DEL 75%

E. MAS DEL 90%

COMENTARIOS:

7. SABE UD. LEER EL INGLES?

A. NADA

B. UN POCO

C. ADECUADAMENTE

D. MUY BIEN

COMENTARIOS:

8. SABE UD. HABLAR EL ESPANOL?

A. NADA

B. UN POCO

C. ADECUADAMENTE

D. MUY BIEN

COMENTARIOS:

**CUESTIONARIO PARA EMPLEADOS**

OR FAVOR MARQUE CON UN CIRCULO LA RESPUESTA QUE DESCRIBA SU CASO MEJOR. SI UD. ESEA HACER ALGUN COMENTARIO, ESCRIBALO EN EL ESPACIO MARCADO "COMENTARIOS".

COMO APRENDE UD. A DESEMPEÑAR UNA NUEVA FAENA RELACIONADA CON SU TRABAJO? (POR EJEMPLO, COMO REPARAR UN BACHE, COMO UTILIZAR UNA RETROEXCAVADORA, ETC.) (MARQUE CON UN CIRCULO LAS RESPUESTAS QUE UD. CREE QUE SON APROPRIADAS)

- A. EL MAYORDOMO ME ENSEÑA
- B. LOS DEMAS TRABAJADORES ME ENSEÑAN
- C. ATIENDO A CLASES DE ENTRENAMIENTO EN EL TEMA
- D. LEO INSTRUCCIONES RELACIONADAS CON LA FAENA
- E. APRENDO YO SOLO CON MUY POCO ENTRENAMIENTO
- F. YO YA SE TODO LO QUE NECESITO SABER PARA DESEMPEÑAR LA FAENA

COMENTARIOS:

. CREE UD. QUE PODRIA DESEMPEÑAR MEJOR SU TRABAJO SI TUVIERA MAS MATERIAL DE ENTRENAMIENTO A SU DISPOSICION?

A. SI

B. NO

COMENTARIOS:

. QUE FORMA DE PRESENTACION PREFERIRIA UD. QUE TUVIERA EL MATERIAL DE ENTRENAMIENTO? (MARQUE SOLAMENTE EN LOS ESPACIOS APROPRIADOS A LAS CATEGORIAS QUE SE RELACIONEN CON SU TRABAJO).

	MATERIAL DE LECTURA	PELICULAS CINEMATO- GRAFICAS	PRESENTA- CIONES VERBALES	OTRO MEDIO
MANTENIMIENTO PREVENTIVO				
INSTALACION (SENALES, BARRE- RAS, MAQUINARIA, ETC.)				
REPARACIONES (CARRETERAS, SENALES, MAQUINARIA, ETC.)				
UTILIZACION DE MAQUINARIA				
INSPECCION				
TOPOGRAFIA				

COMENTARIOS:

4. IF TRAINING MATERIALS WERE AVAILABLE, WOULD YOU WANT THEM TO BE IN ENGLISH OR SPANISH?

A. ENGLISH

B. SPANISH

COMMENTS:

5. WHAT PERCENTAGE OF TIME DO YOU SPEAK SPANISH WHEN YOU ARE ON THE JOB?

A. LESS THAN 10%

B. ABOUT 25%

C. ABOUT 50%

D. ABOUT 75%

E. MORE THAN 90%

COMMENTS:

6. WHAT PERCENTAGE OF TIME DO YOU SPEAK SPANISH WHEN YOU ARE AT HOME?

A. LESS THAN 10%

B. ABOUT 25%

C. ABOUT 50%

D. ABOUT 75%

E. MORE THAN 90%

COMMENTS:

7. DO YOU KNOW HOW TO READ SPANISH?

A. NOT AT ALL    B. A LITTLE    C. ADEQUATELY    D. WELL

COMMENTS:

8. DO YOU KNOW HOW TO SPEAK SPANISH?

A. NOT AT ALL    B. A LITTLE    C. ADEQUATELY    D. WELL

COMMENTS:

9. DO YOU UNDERSTAND SPOKEN SPANISH?

A. NOT AT ALL    B. A LITTLE    C. ADEQUATELY    D. WELL

COMMENTS:



**APPENDIX C**

**COVER LETTER**

Dear Sir,

The Federal Highway Administration (FHWA) has requested that the Civil Engineering Department of the University of Texas at El Paso help determine the need for training aids in Spanish on the topics of Highway and Transportation Technology. We have chosen to use questionnaires as the mechanism for obtaining the information to make a judgement in this matter. These questionnaires are being sent to transportation-related service agencies in cities and towns of all sizes along the U.S. - Mexico border.

There are two questionnaires involved in this survey. One is for responses by the administrators regarding present training methods and their perception of the magnitude of the problems. The other is for responses by laborers and technicians who would be the targets for the training. The laborer questionnaire represents an attempt to obtain their feelings about the need for the training as well as what type of training methods and materials they would prefer. You will notice that their questionnaire has been provided in both English and Spanish versions.

If the results of this survey indicate that Spanish language training materials are needed, they would be developed under the FHWA Transportation Technology Transfer program and made available at little or no cost to public transportation agencies. The Transportation Technology Transfer centers will serve as distribution points for such materials. We will keep you informed of their availability through newsletters and other communications.

The materials included with this letter are the following:

1. An administrator questionnaire,
2. A group of laborer questionnaires, and
3. Self-addressed envelopes for returning the questionnaires.

We need your help on two things: (1) filling out the administrator questionnaire and (2) distributing one laborer questionnaire and return envelope to each laborer and technician under your general supervision.

If there are other people in your department with titles of assistant foreman or higher who you think should fill out an admin-

istrator questionnaire, we will be glad to send one to them. Simply write their name and title in the comment space of your questionnaire. (This will also get their name on our mailing list for receiving future communications).

We realize that your participation in this project will add to your already busy schedule. Hopefully, however, your efforts will be as amply rewarded as they are appreciated.

**APPENDIX D**

**SUMMARY OF RESPONSES**

OVERALL ANALYSIS OF THE ADMINISTRATOR QUESTIONNAIRE

For Question 1: 26.67%, are a college graduate  
 18.67%, are an engineer  
 0.00%, are an elected official  
 20.00%, are an appointed official  
 34.67%, specified other

For Question 2: 15.26%, are the head of the department  
 32.20%, are administrators  
 32.20%, are supervisors  
 10.17%, are foremen  
 10.17%, specified other

Question 3: Spanish surname table

	no. people	0-15%	15-40%	40-60%	60-80%	80-100%
Admin.	88	67	5	1	0	15
Supervisor	128	18	10	22	22	56
Foreman	124	13	29	24	18	40
Technician	447	22	42	41	168	174
Laborer	1103	49	38	263	401	352
Other	372	87	0	37	87	161

TECHNICIANS able to READ English:

12.50%, in the 1-15% range  
 8.33%, in the 15-40% range  
 2.08%, in the 40-60% range  
 8.33%, in the 60-80% range  
 68.75%, in the 80-100% range

TECHNICIANS able to read SPANISH:

30.61%, in the 1-15% range  
 18.37%, in the 15-40% range  
 12.24%, in the 40-60% range  
 20.41%, in the 60-80% range  
 18.37%, in the 80-100% range

LABORERS that can READ English :

11.54%, in the 1-15% range  
 7.69%, in the 15-40% range  
 9.62%, in the 40-60% range  
 32.69%, in the 60-80% range  
 38.46%, in the 80-100% range

LABORERS that can READ Spanish :

28.85%, in the 1-15% range  
 13.46%, in the 15-40% range  
 13.46%, in the 40-60% range  
 19.23%, in the 60-80% range  
 25.00%, in the 80-100% range

Training materials and media presently used:

	Written	Videotape Film	Oral Presentation	Field Training	Other
Construction	17	9	27	41	2
Prev. Maint.	23	15	34	40	2
Installation	24	6	24	36	0
Repairs	23	11	30	42	1
Equip. Oper.	20	15	34	43	1
Inspection	16	3	19	24	0
Surveying	8	1	4	15	0

Benefits of training materials in Spanish.

36.06%, specified that it would be a great help  
 39.35%, specified that it would not be of help  
 16.40%, specified that it would probably help  
 8.19%, were not sure if it would help

Preferences of material presentation in Spanish,

	First Choice	Second Choice
Written	7	7
Videotape	14	6
Film	16	8
Slide/Tape	4	9
Other	2	2

Number of surveys counted= 61.

ANALYSIS OF THE WORKER QUESTIONNAIRE  
FOR CITIES POPULATION < 70,000

For Question 1 :    27.00%, taught by foreman  
                          26.00%, taught by others  
                          11.00%, take training classes  
                          12.00%, read materials  
                          17.00%, are self-taught  
                          7.00%, Know everything

For Question 2 :  
   88.00%, would benefit if more training materials available  
 12.00%, would not benefit from any such material

Presentation and material preference.

	Written	Video Tape	Oral Presentation	Other
Preventative Maintenance	24	38	35	6
Construction	15	28	34	6
Installation	18	35	29	8
Repairs	25	46	34	7
Equipment Operation	22	43	37	12
Inspection	12	24	24	3
Surveying	7	20	22	4

83.00%, would prefer the materials to be in English, while  
 17.00%, would prefer them in Spanish.

Time that Spanish is spoken on the job.

Less than 10%	48.00%
About 25%	10.00%
About 50%	29.00%
About 75%	4.00%
More than 90%	9.00%

Time that Spanish is spoken at home.

Less than 10%	38.00%
About 25%	11.00%
About 50%	24.00%
About 75%	10.00%
More than 90%	17.00%

Percentage of those that know how to read Spanish :

Not at all	20.00%
A little	47.00%
Adequately	11.00%
Well	22.00%

Percentage of those that know how to speak Spanish :

Not at all	8.00%
A little	18.00%
Adequately	23.00%
Well	51.00%

Percentage of those that understand spoken Spanish :

Not at all	7.00%
A little	14.00%
Adequately	20.00%
Well	59.00%

Number of surveys counted= 100.



ANALYSIS OF THE WORKER QUESTIONNAIRE  
FOR CITIES POPULATION > 70,000

For Question 1 :   20.15%, taught by foreman  
                   24.95%, taught by others  
                   6.53%, take training classes  
                   12.09%, read materials  
                   24.57%, are self-taught  
                   11.71%, Know everything

For Question 2 :  
   90.44%, would benefit if more training materials available  
   9.56%, would not benefit from any such materials.

Presentation and material preference.

	Written	Video Tape	Oral Presentation	Other
Preventative Maintenance	75	106	116	6
Construction	39	68	71	11
Installation	62	96	98	9
Repairs	71	102	99	10
Equipment Operation	69	107	134	19
Inspection	46	64	73	9
Surveying	52	63	70	12

67.71%, would prefer the materials to be in English, while  
 32.29%, would prefer them in Spanish.

Time that Spanish is spoken on the job.

Less than 10%	13.99%
About 25%	6.55%
About 50%	22.32%
About 75%	15.77%
More than 90%	41.36%

Time that Spanish is spoken at home.

Less than 10%	11.80%
About 25%	7.08%
About 50%	20.65%
About 75%	14.45%
More than 90%	46.02%

Percentage of those that know how to read Spanish :

Not at all	20.00%
A little	32.94%
Adequately	19.71%
Well	27.35%

Percentage of those that know how to speak Spanish :  
Not at all 2.31%  
A little 8.67%  
Adequately 25.44%  
Well 63.58%

Percentage of those that understand spoken Spanish :  
Not at all 2.36%  
A little 6.78%  
Adequately 28.62%  
Well 62.24%

Number of surveys counted= 365.

OVERALL ANALYSIS OF THE SPANISH QUESTIONNAIRE

For Question 1 : 16.95%, taught by foreman  
 16.95%, taught by others  
 5.93%, take training classes  
 7.62%, read materials  
 30.51%, are self-taught  
 22.03%, Know everything

For Question 2 :  
 92.14%, would benefit if more training materials available  
 7.86%, would not benefit from any such materials.

Presentation and material preference.

	Written	Video Tape	Oral Presentation	Other
Preventative Maintenance	16	25	29	0
Construction	0	0	0	0
Installation	18	25	25	0
Repairs	18	25	21	1
Equipment Operation	16	18	29	2
Inspection	10	11	13	0
Surveying	11	9	13	0

19.57%, would prefer the materials to be in English, while  
 80.43%, would prefer them in Spanish.

Time that Spanish is spoken on the job.

Less than 10% 3.33%  
 About 25% 1.11%  
 About 50% 7.78%  
 About 75% 12.22%  
 More than 90% 75.56%

Time that Spanish is spoken at home.

Less than 10% 2.17%  
 About 25% 1.09%  
 About 50% 7.61%  
 About 75% 10.87%  
 More than 90% 78.27%

Percentage of those that know how to read English :

Not at all 31.87%  
 A little 38.46%  
 Adequately 10.99%  
 Well 18.69%

Percentage of those that know how to speak Spanish :

Not at all	0.00%
A little	0.00%
Adequately	0.00%
Well	100.00%

Percentage of those that understand spoken English :

Not at all	2.22%
A little	1.11%
Adequately	28.89%
Well	67.78%

Number of surveys counted= 98.

OVERALL ANALYSIS OF THE ENGLISH QUESTIONNAIRE

For Question 1 : 22.97%, taught by foreman  
 26.77%, taught by others  
 7.94%, take training classes  
 12.96%, read materials  
 21.07%, are self-taught  
 8.29%, Know everything

For Question 2 :  
 89.47%, would benefit if more training materials available  
 10.53%, would not benefit from any such materials.

Presentation and material preference.

	Written	Video Tape	Oral Presentation	Other
Preventative Maintenance	83	119	122	12
Construction	54	96	105	17
Installation	62	106	102	17
Repairs	78	123	112	16
Equipment Operation	75	132	142	29
Inspection	48	77	84	12
Surveying	48	74	79	16

83.65%, would prefer the materials to be in English, while  
 16.35%, would prefer them in Spanish.

Time that Spanish is spoken on the job.

Less than 10% 26.59%  
 About 25% 8.96%  
 About 50% 28.03%  
 About 75% 13.29%  
 More than 90% 23.12%

Time that Spanish is spoken at home.

Less than 10% 21.81%  
 About 25% 9.88%  
 About 50% 25.00%  
 About 75% 14.24%  
 More than 90% 29.07%

Percentage of those that know how to read Spanish :

Not at all 16.91%  
 A little 35.53%  
 Adequately 19.48%  
 Well 28.08%

Percentage of those that know how to speak Spanish :

Not at all	4.60%
A little	13.79%
Adequately	31.90%
Well	49.71%

Percentage of those that understand spoken Spanish :

Not at all	3.72%
A little	10.32%
Adequately	26.08%
Well	59.88%

Number of surveys counted= 367.

OVERALL ANALYSIS OF THE WORKER QUESTIONNAIRE

For Question 1 : 21.95%, taught by foreman  
 25.11%, taught by others  
 7.61%, take training classes  
 12.05%, read materials  
 22.67%, are self-taught  
 10.62%, Know everything

For Question 2 :  
 90.02%, would benefit if more training materials available  
 9.98%, would not benefit from any such materials

Presentation and material preference.

	Written	Video Tape	Oral Presentation	Other
Preventative Maintenance	99	144	151	12
Construction	54	96	105	17
Installation	80	131	127	17
Repairs	96	148	133	17
Equipment Operation	91	150	171	31
Inspection	58	88	97	12
Surveying	59	83	92	16

70.97%, would prefer the materials to be in English, while  
 29.03%, would prefer them in Spanish.

Time that Spanish is spoken on the job.

Less than 10%	21.79%
About 25%	7.34%
About 50%	23.86%
About 75%	13.07%
More than 90%	33.94%

Time that Spanish is spoken at home.

Less than 10%	17.66%
About 25%	8.03%
About 50%	21.33%
About 75%	13.53%
More than 90%	39.45%

Percentage of those that know how to read Spanish :

Not at all	20.00%
A little	36.14%
Adequately	17.73%
Well	26.14%

Percentage of those that know how to speak Spanish :

Not at all	3.59%
A little	10.76%
Adequately	24.89%
Well	60.77%

Percentage of those that understand spoken Spanish :

Not at all	3.42%
A little	8.43%
Adequately	26.65%
Well	61.50%

Number of surveys counted= 465.



APPENDIX E

WRITTEN COMMENTS FROM WORKER QUESTIONNAIRES

COMMENTS FROM WORKER QUESTIONNAIRES

<u>Question No.</u>	<u>Comment</u>
1.	<p>20 years experience with U.S. Army (on the job training)</p> <p>Most foremen leave the teaching to their lead men and they do very little of teaching anything because they might get dirty.</p> <p>If one employee doesn't know, the other one does.</p> <p>I have attended the New Mexico State Highway Department Equipment operation &amp; maintenance training classes.</p> <p>Foreman doesn't have the patience to teach or explain purpose of task.</p> <p>Before work with D.P.W. Civil Service, I worked with a private contractor doing the same type of work.</p> <p>Most of the time I learn alone, but other employees help me out and the job I'm learning now, foreman shows me.</p> <p>Visual, vocal and trial and error successions are common usage within department.</p> <p>I observe other workers and then practice what I observe.</p> <p>I like to do my best in every job they give me.</p> <p>I have been working for the City for more than 10 years and nobody has taken the time to teach me the duties and responsibilities of the Department.</p> <p>It mostly takes nothing more than common sense to complete.</p> <p>For instance, if your foreman or workers forget to teach you, its your responsibility (to) ask questions.</p> <p>Para aprender el trabajo necesito verlo para hacerlo y estudiar el sistema que se lleva en el trabajo para yo mismo hacer mi mismo sistema de trabajo a modo de que todos trabajemos en acuerdo.</p> <p>Creo saber todo respecto a mi trabajo, porque me gusta y siempre trato de hacerlo bien para que el mayordomo no tenga que llamarme la atención.</p>
2.	<p>Because (the) more materials are available, the better job you can do.</p>

I know everything I need to know for my job.

I believe that what is really needed here are the job procedures. The Department heads have never written these procedures. If they are written, I have never seen them.

Even though most duties just require common sense; there are some jobs which would require extra training and guidance.

Because we got most materials for the job we do. But there are other jobs that you need to have more training material for a better job.

We need films on operating equipment and on safety.

Setting up a training school for operating engineers would be nice.

There is very little material for us, if there is, no one tells us where it is.

There is never no end to learning.

Procedures on job duty and do's and don'ts. Some kind of standard or pattern to go by!

I feel more comfortable with on the job training.

Don't need it for the type of work I do.

Todo depende del sistema que se planea para hacer dicho trabajo; a veces la cantidad de material no hace todo el trabajo, el planear y el pensar como hacerse el trabajo nos ahorra tiempo, retrasos, material, y hasta mano de obra.

3. Would like all three presentations if possible.

Oral presentation should be given only if the instructor takes pride in his or her job skill.

Videotape work orders would be better because the written work orders we get are wrong.

"Hands on" applications.

It would (be) nice to have videos for new employees.

Practical (oral) presentations is the best.

How to perform duties the way they would like it done.

Video, yes!

Aprendo más pronto con una persona que sepa el trabajo.

4. Most classes would be better if they were given in both languages due to the gap between Spanish and English speaking personnel.

Many city employees are bilingual and many do not speak English.

This is the United States not Mexico.

I feel it would be better in both Spanish and in English. There are more Spanish speaking people with the city who don't understand most of the materials because they are in English.

Both, because there are alot of Mexicans working for the city and mostly everyone relates in Spanish.

I speak Spanish at home with my wife, but at work I would prefer to read and speak English.

En realidad eso no importaría por la razón de que todos los que vivimos en frontera hablamos y escribimos los dos idiomas español, inglés.

Aunque en realidad muchos de nosotros pediríamos en Español, pero a veces es bueno tambien que venga todo en inglés porque a veces nos sentiríamos obligados a saber el contenido de lo escrito en inglés y asi mismo seríamos un poco más responsables.

5. If I want to speak Italian thats my business.

I speak English only to the foreman.

In the Department which I work out of, there are only two Spanish speaking people there: my boss and myself.

If spoken, it is spoken out of the job crew (i.e. sometimes not allowed).

When working in America we should speak English!

Todos mis compañeros son mexicanos.

Por lo regular el hablar español se usa más porque la mayoría de todos los trabajadores hablamos español o si sabiendo el hablar inglés no lo utilizamos por la sencilla razón que como le gente vive en un lugar fronterizo la costumbre no se pierde.

6. My mother in law sees to that!

My son's baby sitter speaks Spanish only. I try and speak to my son so he will speak (English) fluently.\*

Why is this question about Spanish, there are other languages spoken in the U.S.

English is what should be used or taught to the English non-speaker.

You have made an assumption that everyone that is a transportation employee is a mexican. Because I live in Texas, doesn't mean I like chili & beans.

Mi contestación es parecida a la pregunta no. 5 todos en la casa tenemos la costumbre de hablar en español menos cuando por compromiso hay algun motivo de que haya alguna persona que pregunte algo en inglés siempre la contestación será en inglés y si la pregunta es en español la contestación será en español si sabe dicho idioma.

8. En mi modo de pensar lo más seguro es que porque toda mi vida lo he hablado, y me considero que lo hablo y lo leo muy bien.

**APPENDIX F**

**CONTRACTORS CONTACTED**

Number of Hispanic workers employed  
by transportation related  
contractors in El Paso

<u>Name of Company</u>	<u>Number of Hispanic workers</u>
El Paso Sand	68
BAP	40
Borsberry	20
Eaton & Foster	54
Esco	15
Hughes Les	15
JDC	15
Malott & Peterson--Grundy	3
Omega	10
W. L. Sensiba	5
Sunshine Services	40
Van Haselen	59
Villegas & Sons	12
<u>Wardson</u>	<u>90</u>
Total	446