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16. Abstract
This report describes the latest developments and activities related to the Rigid Pavement Database Project.

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Assessment of Data Collection and Supplementary Tasks Conducted for the Texas Rigid Pavement Database

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Disclaimers

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Research performed in cooperation with the Texas Department of Transportation.

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1. Introduction

1.1 Background

This report is the fourth of five reports to be prepared for Research Project 0-1778 "The Rigid Pavement Database (RPDB)," conducted by the Center for Transportation Research (CTR) of The University of Texas at Austin and funded by the Texas Department of Transportation (TxDOT). Project 0-1778 compiles the efforts conducted for the evaluation of hundreds of pavement test sections that rationally represent the concrete pavement network in Texas. Thousands of condition surveys have been conducted during the last 26 years and all the information collected has contributed to a better understanding of the materials and their performance. Additionally, the RPDB has catalyzed the development of other research studies that have focused on evaluating different variables such as aggregate type and placement season of concrete pavement. This report documents the tasks that have been conducted to update the information contained in the RPDB, and describes complementary activities conducted by CTR to maintain current information.

1.2 Objectives

The purpose of this report is to provide information about the activities that have been conducted continuously for Research Project 0-1778. Field data collection is an ongoing process that keeps the information recorded in the database up-to-date. Various activities conducted in the field are described in all the chapters. Special attention has been paid to documenting research studies that have a close relation to the RPDB project and, therefore, the information collected for those studies has also been added to the database.

1.3 Methodology

The report is organized in five chapters that describe different tasks that have been and are being pursued at the present time. The chapters in the report inform about various tasks as follows:

Chapter 2 describes the field data that have been collected and the districts that have been visited. The demographics of the data collected to date are presented graphically by a series of charts that describe the information contained in the RPDB. The demographics of the data are presented for both, continuously reinforced concrete pavement (CRCP) and jointed concrete pavement (JCP).

Chapter 3 focuses on the evaluation of two pavement sections constructed in Houston, Texas, in 1964, where two different coarse aggregate materials were used. These sections are part of what in the RPDB is called a satellite project. Furthermore, this chapter presents an algorithm that considers the severity and extent of some distresses to determine if a given pavement section requires prompt major rehabilitation. This mathematical procedure is a distress index that allows scheduling maintenance and rehabilitation tasks and could be applied to the sections in RPDB.

Chapter 4 contains a description of new tasks that have been conducted to improve and enrich the information contained in the database. Descriptions of new tasks like installation of temperature monitoring devices in the pavement, the addition of asphalt overlaid (CRCP) sections into the RPDB, and the addition of CRCPs thicker than 8 in. in the database, are provided.

Chapter 5 contains the general conclusions of the activities performed for the RPDB, achieved improvements, and recommendations for future endeavors.

2. Description of Data Collection

2.1 Type of Data Collected

This chapter describes the efforts conducted to collect field data during the last collection periods. As customarily done for every collection process, districts were visited and pavement sections contained in the rigid pavement database (RPDB) were surveyed. Detailed surveying tasks were performed and pavement sections were walked so that the condition of the pavement could be documented efficiently. When existing sections in the RPDB were revisited, the data collected updated the information about the sections in terms of distresses and failures, if they existed; this is defined as collection of performance data. When new sections were added to the database in addition to performance data, inventory data were also collected. These data included district number, county name, highway, reference markers (mile posts), global positioning system (GPS) coordinates, number of lanes per surveyed roadbed, surveyed lane, highway geometric characteristics (alignment and roadbed), coarse aggregate type, construction date, pavement thickness, and climatic information. To collect this information, district offices were contacted first to find out where new pavement projects were built or in progress. Then, the districts were visited and the sections were selected within the projects.

With regard to the type of surveyed pavements, jointed concrete pavement (JCP) and continuously reinforced concrete pavement (CRCP) sections were included. In both cases, overlaid and nonoverlaid pavements were rated. Additionally, and pursuing one of the primary objectives of the RPDB, recently constructed CRCP sections were added and some old sections were removed, according to necessity. Because JCPs are infrequently constructed, no new JCP sections have been added to the database in recent collection endeavors.

2.2 Districts Visited

Collection efforts were conducted within a predefined schedule, with adjustments made when required. For example, collection tasks for fiscal years (FY) 1998, 1999, and 2000 were very successful and the amount of data collected was beyond expectations. Unfortunately, for FY 2001 collection plans did not go as expected, primarily because of problems with the field crew. However, for FY 2002, data collection was again back on track and the collection of data reached record values.

Among the districts that have been visited are Paris, Fort Worth, Wichita Falls, Amarillo, Lubbock, Waco, Houston, Yoakum, San Antonio, Corpus Christi, Bryan, Dallas, Atlanta, Beaumont, and El Paso. Figure 2.1 shows the location of the districts within Texas and also their location in one of the four Thornwaite Moisture Index (TMI) climatic regions in which Texas is divided (Ref 1). Whenever possible, neighboring districts were visited in preplanned schedules, condition surveys were performed, and then the data were brought to the Center for Transportation Research (CTR) for storage in the RPDB. The following paragraphs briefly describe the activities performed in some districts and the type and number of sections surveyed in each case.

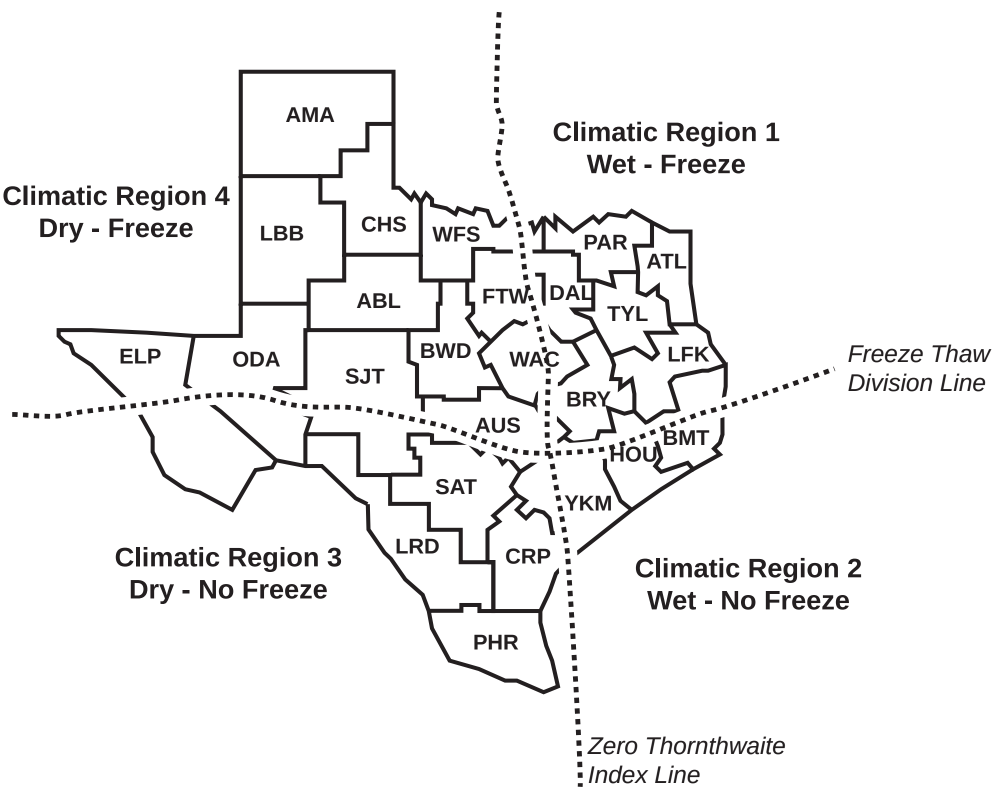


Figure 2.1 Climatic regions for Texas districts

2.2.2 Climatic Region 1

Region 1 is characterized by its wet-freezing climatic condition. Districts visited in this region included Paris, Atlanta, Wichita Falls, Dallas, Waco, and Bryan. Data collection tasks were conducted as follows.

Paris: surveys in this district included twenty-nine CRCP and five JCP sections. In all cases the relocation of the sections in the field went smoothly. No major problems were found, except that in many cases, the spray paint from the previous condition survey was not found on the shoulder of the pavement.

Atlanta: collection tasks gathered a total of thirty pavement sections, twenty-four CRCPs, and six JCPs. In this district, condition surveys were also conducted without problems. Furthermore, the office district was visited by the field crew to pick up information on recently built CRCP projects on US 59 in Panola, Cass, and Bowie Counties. Ten new 12 in. thick CRCP sections were added to the RPDB in a special effort to incorporate younger and thicker pavements into the database.

Wichita Falls: the collection of the data in this district presented some problems. All thirty CRCPs were easily found and surveyed. However, the collection of data for the JCPs was not as successful; only three out of nine sections were relocated. It is believed that the milepost numbering system on highway US 287 probably changed, therefore, most of the JCPs were not found.

Dallas: this district contains a great number of pavement sections that are part of the database. Although some sections were removed from the database owing to safety issues, most were removed because of the location of the sections. However, forty-four CRCP and twenty-six JCP sections were surveyed. Field tasks were conducted efficiently, but surveyor safety was an issue in highly trafficked routes such as IH35 and Loop IH635.

Waco: maintenance and rehabilitation tasks performed in this district allowed only collection of the CRCP sections. A total of fourteen sections were surveyed with no problems, and only one section was skipped because maintenance tasks were being performed at surveying time. Unfortunately, two JCP sections located on SH14 were not visited because weather conditions did not permit it.

Bryan: surveying tasks in this district were done rapidly compared to other districts, because most of the pavement sections were overlaid. Fieldwork included data collection for twenty-five CRCP and two JCP sections.

2.2.3 Climatic Region 2

Region 2 is characterized by its wet-nonfreezing climatic condition. Relative humidity levels in this area are similar to the ones observed in Region 1, but low temperatures are not as low. Among the districts visited in this region are Beaumont, Houston, and Yoakum. Data collection activities were as follows.

Beaumont: data collection tasks in this district went according to the predefined plan. Twenty-four JCP sections were surveyed, and two others were unable to be relocated.

Houston: the sections in this district represent nearly ten percent of the population of the RPDB. There were thirty-seven CRCP and twenty-six JCP sections spread throughout the district, with the bulk of the sections located in Harris County. The collection of data in Houston was done separately for CRCPs and JCPs.

Yoakum: this district also contains a large number of the sections contained in the RPDB. During the latest collection tasks, fifty-nine CRCP sections were surveyed with no major problems other than rainy weather. Likewise, seven JCP sections were revisited, and all of them were overlaid.

2.2.4 Climatic Region 3

Region 3, configured by the most southern districts, is characterized by its dry-nonfreezing climatic condition. In this region, high temperatures are usually a concern when producing concrete, but low temperatures are not so critical. There are few sections located in this region located in San Antonio and Corpus Christi Districts. The collection of the data was as follows.

San Antonio: only seven CRCP sections were surveyed in the district. At present, there are not many sections in this district in the RPDB; however, because considerable new construction of rigid pavements has taken place in the area, more sections are expected to be selected and added to the database. It is anticipated that at least fifteen to twenty new sections with thicknesses 10 in. or more will be added.

Corpus Christi: similar to San Antonio, this district contributes to the RPDB with only four JCP sections. Unfortunately, no recent construction of rigid pavements has been scheduled in this area, so that more recently constructed sections could be added to the RPDB.

2.2.5 Climatic Region 4

Region 4 is characterized by peculiar dry-freezing conditions. This is the region where climatic factors have the most severe effects in Texas during the cold season. Districts visited in this region included El Paso, Wichita Falls, Lubbock, and Amarillo. Data collection tasks were as follows.

El Paso: several CRCP sections from this district are included in the RPDB. In the last data collection effort, forty-three sections were surveyed and five more were skipped because maintenance tasks were underway. No JCP sections were recollected for this district and only two have been visited before.

Wichita Falls: this district falls within climatic conditions for Regions 1 and 4. As previously explained for Region 1, the collection of the data in this district presented some problems related to the milepost numbering system on US 287, which has probably changed.

Lubbock: data collection for this district included fourteen CRCP and two JCP sections. There are no records of recent construction of concrete pavements in the area, but if things change, more data from this district will be added to the RPDB.

Amarillo: this district has continuously been tracked because the data that it provides are very valuable for comparison to other districts. Data collected include thirty-two CRCP and only two JCP sections.

In addition to the regular data collection performed in Region 4, new tasks that highly enrich the value of the RPDB have included the installation of I-Buttons in three districts in Region 4. The districts are Wichita Falls, Childress, and Amarillo. Further details about these tasks are described in Chapter 4.

2.3 Evolution of the Database

The data contained in the RPDB have evolved according to research needs for the database project, and also for other research projects. The first data collection effort was conducted in 1974, and at that time, the type and amount of data collected were done according to the requirements. Collections performed at present time differ from the original collections as indicated in Table 2.1. This table summarizes the data collected at different times for CRCP, JCP, and overlaid pavements. The data in Table 2.1 correspond to CRCP sections (1), JCP (2), and overlaid CRCP and JCP (3).

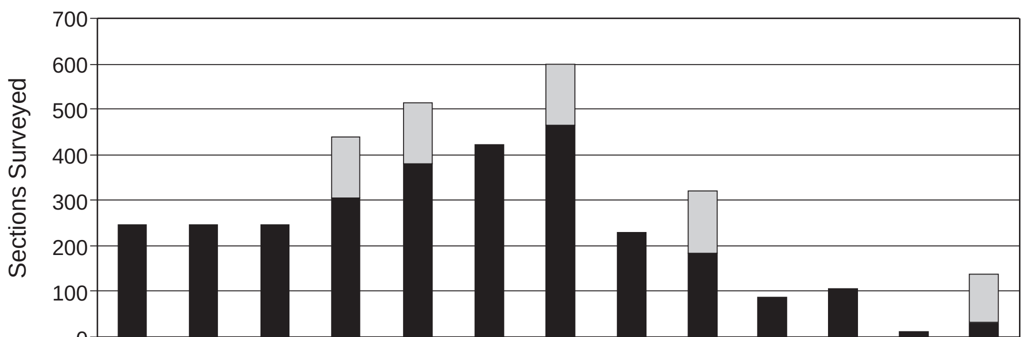
Table 2.1 Type of data collected for pavement sections

Distress	Type	Severity/ Extent	1974	1978	1980	1982	1984	1987	1994	1996	1998	1999	2000	2001	2002
Cracking	Transverse [1,2,3]	Spacing						x	x	x	x	x	x	x	x
	Longitudinal [1,2,3]	Length	x								x	x	x	x	x
	Spalling [1,2]	Minor	x	x	x	x	x				x	x	x	x	x
		Severe	x	x	x	x	x				x	x	x	x	x
	Alligator [3]	Minor								x	x	x	x	x	x
		Severe								x	x	x	x	x	x
	Block [3]	Minor								x	x	x	x	x	x
		Severe								x	x	x	x	x	x
	Faulting [2]	Minor									x	x	x	x	x
		Severe									x	x	x	x	x
Corner Break [2]										x	x	x	x	x	x
D-Cracking [2]											x	x	x	x	x
Rutting [3]		Shallow								x	x	x	x	x	x
		Deep								x	x	x	x	x	x
Patching	AC [1,2,3]	0-50 ft^2	x	x	x	x	x	x	x	x	x	x	x	x	x
		51-150 ft^2								x	x	x	x	x	x
		>150 ft^2								x	x	x	x	x	x
	PCC [1,2]	0-50 ft^2	x	x	x	x	x	x	x	x	x	x	x	x	x
		51-150 ft^2								x	x	x	x	x	x
		>150 ft^2								x	x	x	x	x	x
Punchout [1]		Minor	x	x	x	x	x	x	x	x	x	x	x	x	x
		Severe	x	x	x	x	x	x	x	x	x	x	x	x	x
GPS coordinates [1,2,3]											x	x	x	x	x

[1] Collected for CRCPs
[2] Collected for JCPs
[3] Collected for Overlaid Pavements

Table 2.1 shows that during the 1970s and 1980s, collection of distresses included longitudinal and transverse cracking, spalling, punchouts, and patches. Likewise, it was not until the 1990s that more detailed information was collected. Additions to the data included crack spacing for all types of sections and rutting, and alligator and block cracking for overlaid pavements. Incorporation of GPS coordinates into the database was not pursued until the late 1990s, when this type of technology became affordable and repeatable within acceptable limits. In fact, the relocation of pavement sections was done using the so-called redundant method. This method consisted of relocating a section in the field using the available mileposts, then applying spray paint on the shoulder of the pavement to delineate the limits of the section. Finally, the global positioning system (GPS) coordinates of the starting point of the section were recorded so that if the mileposts and spray paint were removed, the GPS data would help easily locate the section with accuracy in future visits.

Figure 2.2 below shows how collection tasks have progressed for a number of years since the RPDB started. As seen in Figure 2.2, JCP data collection was not started until 1982. At that time, the data collected included only crack and joint spacing, spalling, and patching. Subsequent JCP data collection efforts conducted during the 1990s focused on getting other distress information that was common for JCPs, such as joint faulting, corner breaks, and D-Cracking. Additionally, when the sections were overlaid, rutting, block cracking, and alligator cracking were also quantified for both JCP and CRCP sections.



Year	1974	1978	1980	1982	1984	1987	1994	1996	1998	1999	2000	2001	2002
JCP	0	0	0	135	135	0	135	0	137	0	0	0	107
CRCP	246	246	246	304	380	423	463	230	184	87	105	11	30

Figure 2.2 Evolution of condition surveys for JCP and CRCP sections

Similar to the evolution of JCPs, CRCP sections have been surveyed at various times; however, the data collection of this type of pavement started in 1974, eight years before JCPs were started. The type of information collected for CRCPs has also varied with time, and information has been collected according to necessity. For instance, in the 1970s and 1980s, lots of sections were visited, but little information was recorded for them.

Basically, crack spalling, patching, and punchouts were annotated. Later, after the collection conducted in 1994, field tasks started concentrating on fewer sections, but recording more relevant information other than that previously recorded. Starting in 1996, almost all known types of distresses for CRCPs have been recorded and are shown in Table 2.1. Additionally, the latest collection endeavors have been performed depending on the available budget for field tasks. When the budget was reduced for a given year, field tasks were reduced (traveling expenses) and office tasks were more inclusive.

2.4 Demographics of the Database

The most important component of the RPDB is the information containing the characteristics of the sections. Because the database contains over five hundred sections, it is necessary to sort the available information in a graphical and simplified form. This objective has been achieved by generating the demographics of the database. Every time a collection effort is conducted, the demographics of the database are updated. This has been a common practice during the development of this project. The task has served two main purposes: (1) to analyze and identify the nature of the data contained in the RPDB and (2) to determine what the trend should be for future data collection plans.

This section of the report describes the demographics for both JCP and CRCP sections surveyed from 1998 until 2002. The demographics, though, do not include additional pavement sections surveyed for some satellite projects, such as overlaid CRCP sections that were selected and added to the RPDB from Texas Department of Transportation (TxDOT) Research Project 0-4398, "Develop Guidelines for Designing and Constructing Thin Asphalt Concrete Pavement Overlays on Continuous Reinforcement Concrete Pavements." These overlaid sections are described with more detail later in this chapter.

2.4.1 CRCP Sections

These sections have been surveyed in thirteen districts in Texas. Fort Worth and Yoakum Districts are the ones that contain more sections, with fifty-nine in each. Likewise, forty-four sections are distributed in the Dallas District, forty-three in El Paso, and thirty-seven in Houston. The rest of the sections are distributed in eight districts as displayed in Figure 2.3.

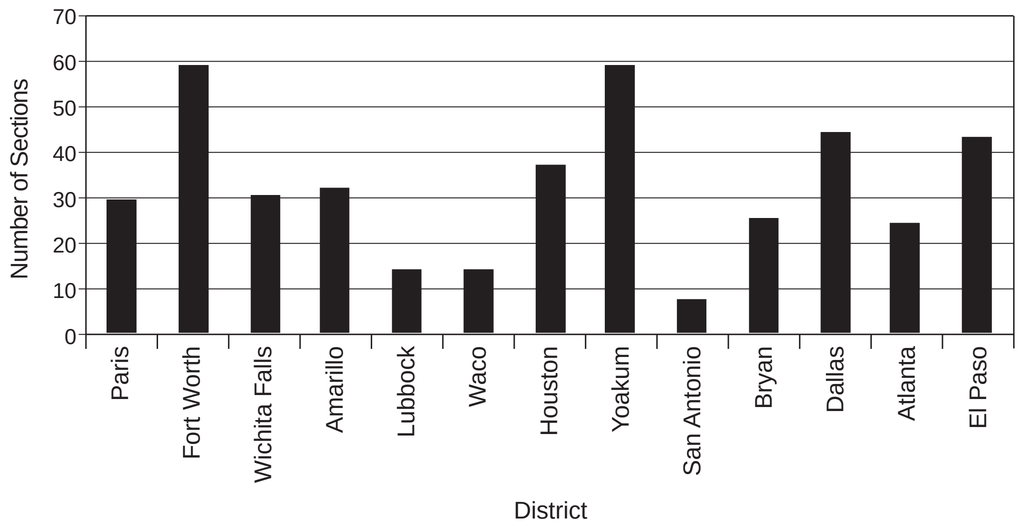


Figure 2.3 Number of CRCP sections in each district

Figure 2.4 shows the distribution of slab thicknesses within the RPDB. As can be seen, most of the sections are 8 in. thick. The reason for this positively skewed distribution is primarily the fact that most of the sections added to the RPDB during the 1980s and early 1990s were 8 in. thick. When more sections were added in the late 1990s, thicker sections were selected, so that the CRCP network was better represented in the RPDB.

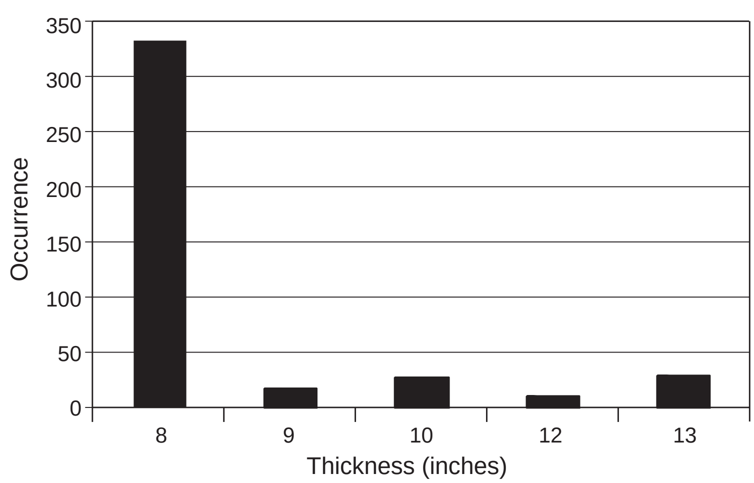


Figure 2.4 Thickness distribution of CRCP sections in the RPDB

The latest condition surveys conducted in the Houston and Atlanta Districts added new CRCP thicknesses of 10 in., 12 in., and 13 in. to the RPDB. These thicknesses will be targeted during future data collection efforts.

Figure 2.5 shows how overlaid and nonoverlaid asphalt CRCP sections are distributed in the RPDB. This graph provides useful information because it shows how the number of overlaid or nonoverlaid sections changes from one collection effort to the other, providing guidelines for addition or removal of sections. Once a section is overlaid, the evolution of the previously recorded distresses might look absurd when the section is analyzed for two or more different years. That is why the overlaid-nonoverlaid section rate should be carefully monitored and interpreted. There are 417 CRCP sections in the RPDB; overlaid sections represent 57 percent and nonoverlaid sections embody the remaining 43 percent.

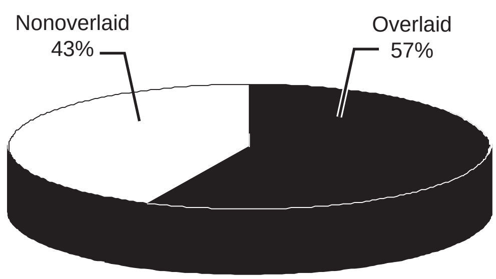


Figure 2.5 Distribution of overlaid and nonoverlaid CRCP sections

Figure 2.6 illustrates the distribution of the CRCPs according to the roadbed type. In the RPDB, roadbed types include at grade, cut, fill, and transition sections, and the sections are classified within these groups based on their profile. Previous analyzes of the data from the RPDB performed in the 1980s suggested that sections located in transition profiles (i.e., near overpasses) did not perform as well as sections located in fill, cut, or at grade profiles. However, it is necessary to conduct a more detailed analysis on this subject to truly define if roadbed is a variable of significance in pavement performance. Based on that, special recommendations would need to be drafted for those conditions. The distribution of the sections shown in Figure 2.5 reports that 61 percent of the CRCP sections in the RPDB are located at grade, 18 percent are in fill, 12 percent are in cut, and 9 percent are in transition profiles.

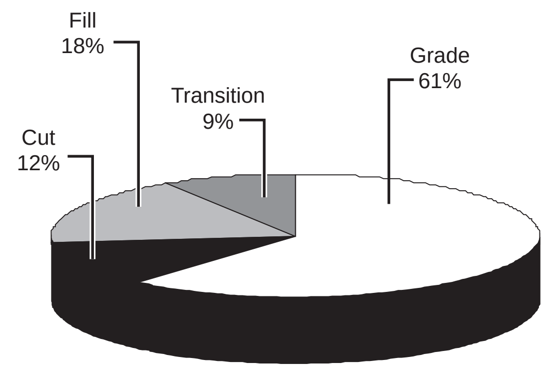


Figure 2.6 Roadbed classification distribution of CRCP sections

Figure 2.7 displays the distribution of the CRCPs in the highway system. The highways are classified, according to their functionality, in interstate (IH), United States (US), beltway (BW), and state (SH), etc. By identifying the type of highway in which a section is located, researchers can better understand the influence of other parameters, such as traffic volume and distribution, on its performance. As can be seen, 72 percent of the CRCP sections in the RPDB are located on the IH network, 22 percent are located on the US network, and SH and BW networks encompass 3 percent of the sections each.

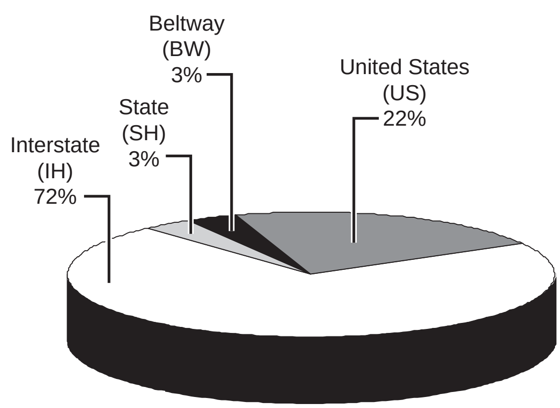


Figure 2.7 Distribution of CRCP sections in the highway system

Figure 2.8 displays a cumulative distribution of the crack spacing for the 417 CRCP sections in the RPDB. The performed analysis shows that 50 percent of the sections have between zero and twenty cracks per mile (when extrapolated for the entire length of the project). Likewise, 35 percent of the sections have more than twenty and less than 200 cracks per mile. The remaining 15 percent of the sections represent the most badly cracked sections with more than 200 cracks per mile. This graphical representation of the number of cracks per mile is very significant, and suggests three things: (1) since most of the sections are overlaid, cracks are not easily identified in the field with the naked eye and, therefore, were probably not recorded or they simply do not exist; (2) badly cracked sections (>200 cracks per mile) will soon need to be overlaid; and (3) once overlaid, the sections located on the right side of the graph will shift back to the left portion of the graph. Therefore, this type of trend shown in Figure 2.7 is not expected to change drastically over time.

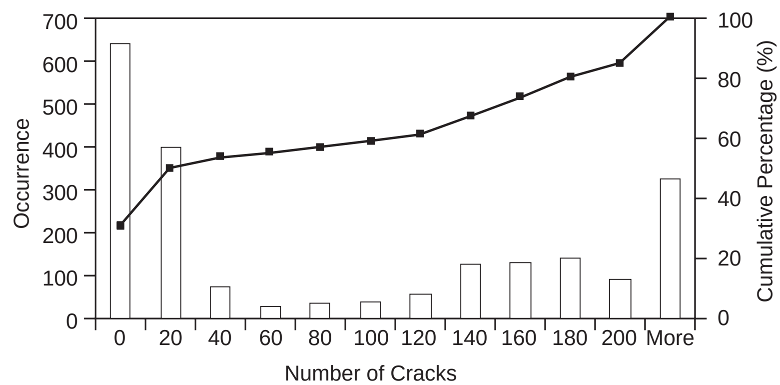


Figure 2.8 Cumulative distribution of cracks per mile for CRCP sections

2.4.2 JCP Sections

The collection of JCP data started some years after CRCP data collection began. Surveying tasks for JCPs started in 1982 when it was noticed that some distress modes particular to jointed pavements were required to be recorded for their evaluation. The next JCP data collection was scheduled in 1984. At that time, the same pavement sections were visited to document the evolution of the distresses observed during the previous data collection effort. The surveys conducted during the first two occasions focused on the evaluation of crack spalling and patching.

Because construction of JCPs became less frequent, data collection efforts were delayed for nearly a decade. It was not until 1994 that JCP sections were surveyed again, but this time the data collected were more detailed and included more distresses such as pumping, joint faulting, corner breaks, and D-Cracking. Later, the 1998 data collection included the same type of distresses, and additionally, GPS coordinates were assigned to a total of 137 sections.

The latest data collection effort for JCPs was conducted during the summer of 2002. The collection of the data was delayed primarily because more time was dedicated for CRCP data collection. During the latest data collection in 2002, various JCPs had to be removed from the RPDB because of various reasons, sometimes traffic simply did not allow fields tasks or the road was widened and the old section disappeared. In a few cases, the sections were not even found with the previous GPS information. Figure 2.2, previously shown in this chapter, summarizes the collection tasks for the JCPs in the database.

The JCP sections in the RPDB are distributed within eleven districts in Texas. The Houston and Dallas Districts contain twenty-six sections each and the Beaumont District has twenty-four sections. These three districts comprise the bulk of the JCPs in the database. The rest of the sections are distributed in Paris, Wichita Falls, Amarillo, Lubbock, Yoakum, Corpus Christi, Bryan, and Atlanta Districts, all of them containing between two and seven sections. Figure 2.9 shows the distribution of the JCPs in all of the aforementioned districts.

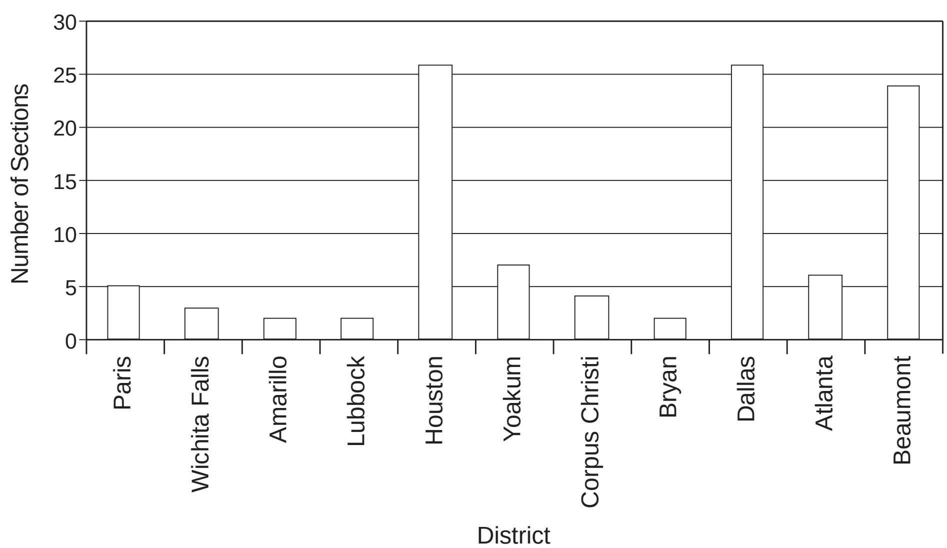


Figure 2.9 Number of JCP sections in each district

Figure 2.10 displays the distribution of JCP slab thicknesses in the RPDB. As seen, slab thicknesses vary from 6 in. to 13 in., with 10 in. being the most frequent value. Likewise, 8 in. thick and 9 in. thick slabs are very common. There are only a few "thick" sections over 10 in. thick slab. Unfortunately, because JCPs are no longer constructed frequently, more sections were not added during the latest data collection tasks. Future collections will focus on the collection of the data for the existing 107 JCPs, and if recently constructed JCPs are located, some new sections will be added to the database.

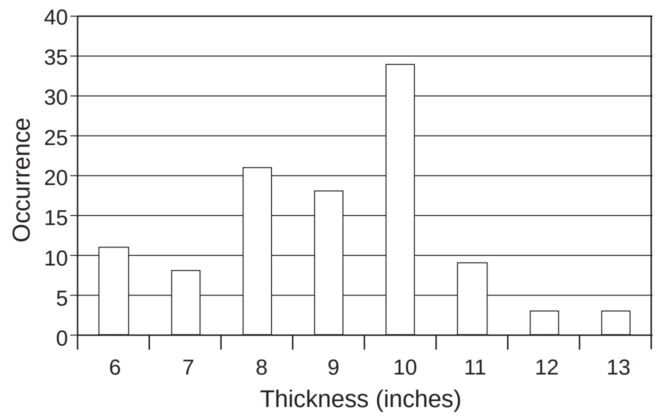


Figure 2.10 Thickness distribution of JCP sections in the RPDB

Figure 2.11 displays the distribution of asphalt overlaid and nonoverlaid JCP sections in the RPDB. As previously mentioned, the usefulness of this information relies on the need for tracking maintenance and rehabilitation tasks performed for the sections. This information provides a guideline for removal or addition of sections. The RPDB contains 107 JCP sections, with 61 percent nonoverlaid and 39 percent overlaid.

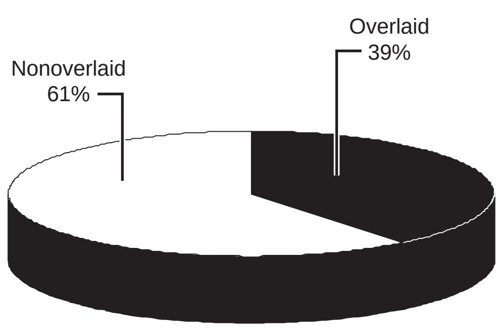


Figure 2.11 Distribution of overlaid and nonoverlaid JCP sections

Figure 2.12 shows the distribution of the JCPs according to roadbed type. Similar to CRCPs, the distribution chart of the JCPs shows that 68 percent of the sections in the RPDB are at grade, 16 percent are in transition, 10 percent are in fill, and 6 percent are in cut.

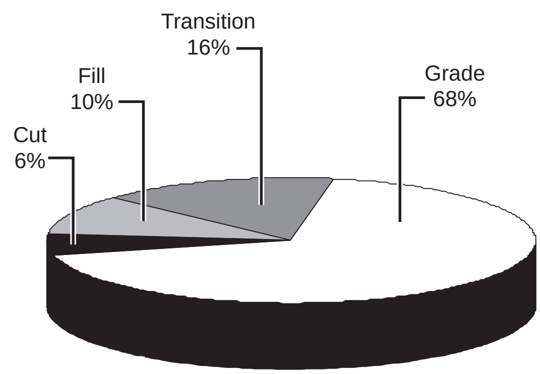


Figure 2.12 Roadbed classification distribution of JCP sections

Figure 2.13 shows the distribution of the JCPs in the highway network. As can be seen, 32 percent of the JCP sections in the RPDB are located in the IH network, 28 percent are located in the SH network, 26 percent are located in the US network, 13 percent of the sections represent the FM network, and only 1 percent of the JCPs are located in a SPUR.

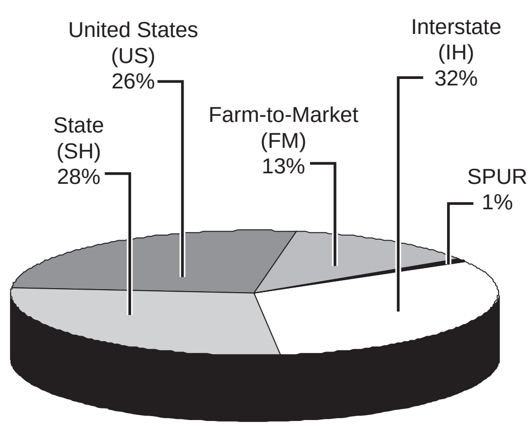


Figure 2.13 Distribution of JCP sections in the highway system

Figure 2.14 shows a cumulative distribution of the joint/crack spacing for the 107 JCP sections contained in the RPDB. This distribution shows that 36 percent of the sections have between zero and forty joints and cracks per mile. Likewise, 29 percent of the sections have around sixty joints and cracks per mile, 34 percent of the sections have as many as eighty joints and cracks. Only 1 percent of the sections have over 80 joints and cracks.

As can be observed, the number of joints/cracks per mile for JCP sections is much smaller than the number observed for CRCP sections. This trend was indeed expected because construction joints used in JCPs act as predefined cracks in the pavement, and because they are evenly spaced at a distance of 15 ft to 20 ft, the joints prevent short pavement slabs from cracking randomly in the transverse direction.

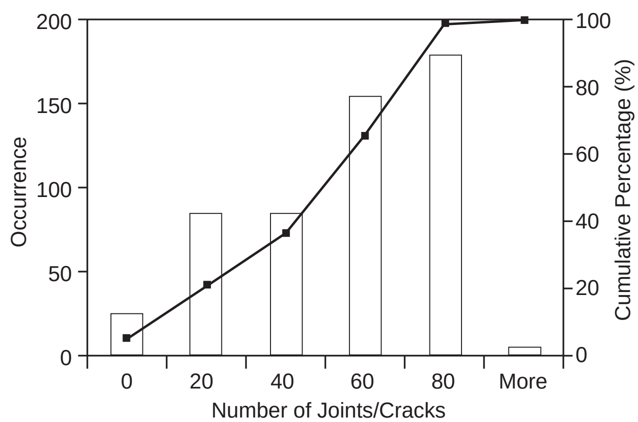


Figure 2.14 Cumulative distribution of joints/cracks per mile for JCP sections

2.5 Summary

The demographics of the sections contained in the RPDB provide good information about various characteristics of the data that are collected and that represent Texas' rigid pavement network. Likewise, the demographics of the sections provide an excellent guideline for future data collection tasks. It is recommended that these demographic representations of the data in the RPDB be continuously updated to better understand the needs of the database. A comprehensive list of all the sections in the RPDB is included in Appendix A.

3. The Satellite Project Concept

3.1 Introduction

It is well known that the information contained in the rigid pavement database (RPDB) has numerous potential research applications. Among these applications, one that has been explored using the RPDB as a source of information is the satellite project concept. A satellite project is one that is characterized by the extensive amount and quality of the data collected for its development. Because the data available from a satellite project is very valuable for pavement research, it becomes part of the database. A satellite project might originate with the RPDB from a need for deeper evaluation of a pavement that goes beyond the scope of the RPDB. On the other hand, the satellite project might be an independent research project whose worth justifies its addition to the RPDB.

3.2 Satellite Project Case Study

This section focuses on the description of the evaluation of the performance of two pavement sections built in Houston, Texas (Harris County). The pavements were constructed in 1964, at about the same time, and using the same construction and post-construction procedures (i.e., concrete placement and curing). However, the test sections under study were constructed using two different concrete coarse aggregates. The following paragraphs describe the process followed for the evaluation and comparison of the pavement sections, which are part of the RPDB.

3.2.1 Description of the Sections

The sections under study are located on IH 610. The first section is located on the north frontage road (westbound) outside lane and extends to the east from Long Drive for 1,700 ft. This section is a CRCP that was constructed using siliceous river gravel (SRG) or conventional aggregate, as referred to in this report. The second section is located on the south frontage road (eastbound) outside lane, and starts on Wayside Drive and continues east for 900 ft. This section is also CRCP constructed using a lightweight (LW) aggregate. The location of the two test sections is shown in Figure 3.1.

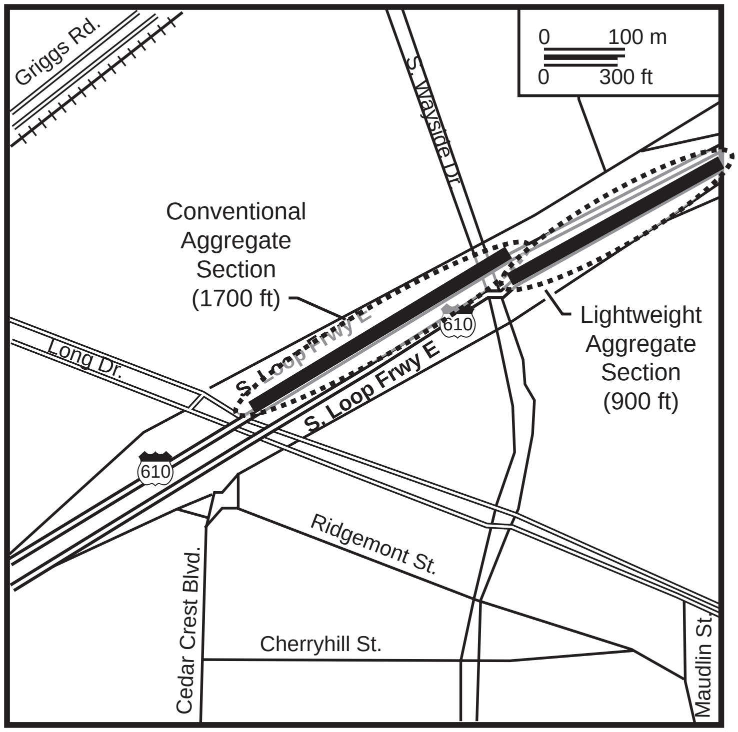


Figure 3.1 Location of the test sections

In both test sections, the top 6 inches of the sub-base material was stabilized using an oyster shell cementitious material, and the top 6 inches of the natural sand-clay soil was treated with 3 percent lime (by weight) to form a stabilized layer and provide a construction platform that minimized the effect of moisture variations in the clay strata. Table 3.1 shows the general data (inventory data) of the two sections analyzed. Likewise, Table 3.2 shows some concrete properties as it was delivered to the site when the sections were actually built (Ref 2).

Table 3.1 Inventory data of the sections

	Conventional Aggregate Section	***Lightweight Aggregate Section***
PAVEMENT TYPE	CRCP	CRCP
CFTR	12920-1	12920-2
DIR	W	E
HWY	IH610 FRTG	IH610 FRTG
RM_1	34+00.0	34-00.01
RM_2	34+00.31	34-00.21
LATITUDE (N)	29-41-42	29-41-42
LONGITUDE (W)	95-19-13	95-19-03
COUNTY	HARRIS	HARRIS
OVERLAID	NO	NO
LANES	3	2
SURVEYED LANE	X_1	A_1
ROADBED PROFILE	GRADE	GRADE
ALIGNMENT	TANGENT	TANGENT

Table 3.2 Concrete properties at construction time

Aggregate Type	**Compressive Strength (psi)**	**Tensile Strength (psi)**	**Modulus of Elasticity (psi)**	**Flexural Strength (psi)**	**Bond Strength (psi)**
Conventional	4,313	488	7.8×10^6	643	1,206
Lightweight	3,828	312	3.05×10^6	607	1,011

3.2.2 Sections Layout

Figure 3.2 displays some construction and crack spacing characteristics of the test sections. The upper portion in the figure represents the section constructed at the north frontage road (conventional aggregate or SRG), and the lower portion in the figure represents the section placed on the south frontage road (lightweight aggregate or LW). Additionally, Figure 3.2 shows that the slabs were divided in various testing areas with different reinforcing steel content varying from 0.3 percent to 0.5 percent, and those steel contents yielded different crack spacings. As background, the figure also shows the test area number, the steel content, the type of aggregate, and the preformed crack spacing. For further details about the construction procedure and materials, the reader is referred to the literature (Ref 2).

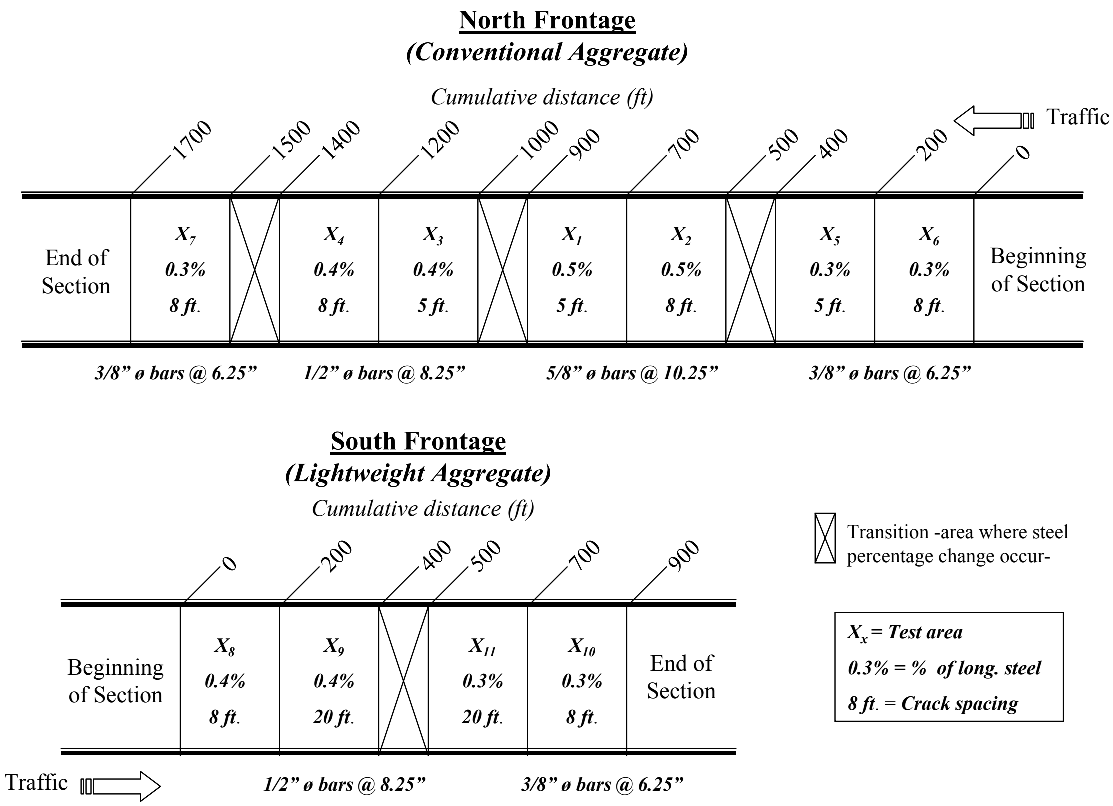


Figure 3.2 Layout of test sections, conventional and lightweight aggregate

3.2.3 Crack Spacing Distribution

According to the literature (Ref 2), the observed early crack spacing of the two slabs varied, depending mostly on the aggregate type (LW and SRG) and magnitude of the preformed crack spacings installed for research purposes. Loads of 18,000 lbf and 24,000 lbf per single axle were used in the experiment. Table 3.3 is a factorial presentation of the experiment conducted. The numbers in the cells correspond to the assigned test area numbers. There were eleven test areas, ten of which are in the regular experiment, in addition to Test Area 7, which is a replicate section.

Table 3.3 Factorial presentation of the experiment with Test Section Numbering System

Aggregate Type	Conventional				Lightweight	
Percentage Longitudinal Steel / Preformed Crack Spacing (ft)	0.3	0.4	0.5	0.6	0.3	0.4
5	5	3	1			
8	6 & 7	4	2		10	8
20					11	9

From Table 3.3 it can be seen that for the LW aggregate section the preformed crack spacings were 8 ft and 20 ft, and the longitudinal reinforcement steel contents were 0.3 percent and 0.4 percent. Similarly, for the section constructed using SRG, crack spacings were 5 ft and 8 ft; the steel reinforcement contents were 0.3 percent, 0.4 percent, and 0.5 percent for the same loading conditions. The transverse crack spacing distribution and distresses found during the last condition survey were analyzed and the results are presented in the following paragraphs.

Table 3.4 shows the crack spacing distribution for the first 200 ft spans of the two sections as measured in the field during a condition survey. As a conventional procedure for all the 1,000 ft long sections in the RPDB, crack spacing is measured in detail for the first 200 feet; for the remaining 800 feet, the surveyor only counts the number of cracks in each 200 ft span. Thus, Table 3.4 shows the measured crack spacing of the first 200 feet of the test sections.

Table 3.4 Crack spacing distribution, (ft)

SRG Aggregate Section	LW Aggregate Section
1.4	8.3
1	8
1.8	8.2
1.5	7.2
0.201	26
2.599	9.2
6.1	8.3
1.7	8.1
2.601	8.1
5	6.7
8.899	1.5
3.5	8.3
4.9	5.8
1.5	2.7
7	9.3
2.4	7.1
5.6	9
8.4	7.8
8.3	8.4
8.3	5.6
8.1	2.7
8.9	24.4
15.8	-----
8.3	-----
8.2	-----
8.4	-----
7.501	-----
8.999	-----
6.01	-----
2.09	-----
8.2	-----
15.701	-----
3.799	-----

Using the measured crack spacings shown in Table 3.4, some descriptive statistics of the cracking were computed and summarized in Table 3.5. From these statistics, it can be seen that the mean crack spacings are 5.84 ft and 8.67 ft for the SRG and the LW sections, respectively. The mode crack spacing value is also useful because it shows that the section constructed using SRG aggregate presents a close crack spacing of 1.50 ft, and the section constructed using LW aggregate presents a crack spacing of 8.30 ft. These values clearly demonstrate that the characteristics of the coarse aggregate used in the concrete have a tremendous effect on both undesired and desired cracking conditions.

Table 3.5 Descriptive statistics of the crack spacing

Parameter	**SRG Aggregate Section**	**LW Aggregate Section**
Mean (ft)	5.84	8.67
Median (ft)	6.01	8.10
Mode (ft)	1.50	8.30
Standard Deviation (ft)	3.88	5.77
Sample Variance	15.03	33.33
Range (ft)	15.60	24.50
Minimum (ft)	0.20	1.50
Maximum (ft)	15.80	26.00
Count	33	22

Figures 3.3 and 3.4 depict a better representation of the crack spacing distribution. These charts display the crack spacing distribution of the two pavement sections (SRG and LW) and their cumulative crack spacing distribution for the first 200 feet. Figure 3.3 shows the difference between the crack spacings of the sections. For instance, for the SRG section there were seven occurrences of crack spacing of 2 feet or less, while for the LW sections there was only one occurrence. When crack spacing goes up to 10 feet, both sections have about the same occurrences. Figure 3.4 shows that for the SRG section, 40 percent of the cracks are spaced at 4 feet or closer. For the LS section, only 13 percent of the cracks are spaced that closely. Also, when crack spacing is as long as 10 feet, it can be seen that for both types of aggregate approximately 90 percent of the cracks are already included in the distribution.

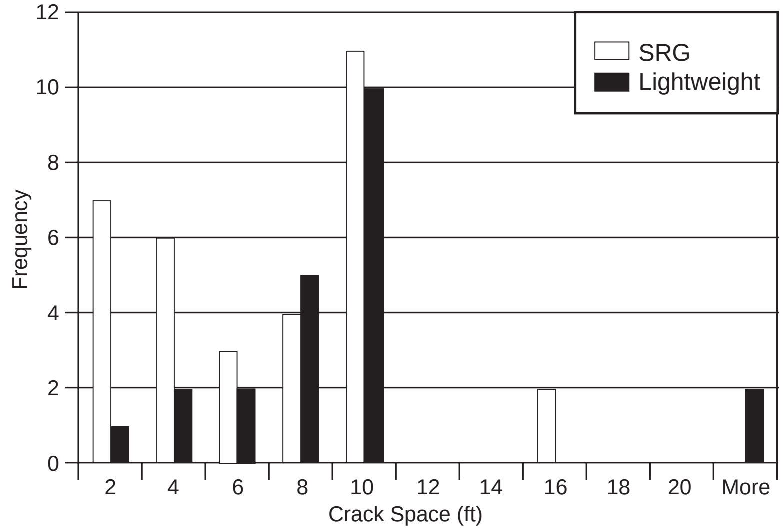


Figure 3.3 Crack spacing occurrence distribution for the sections

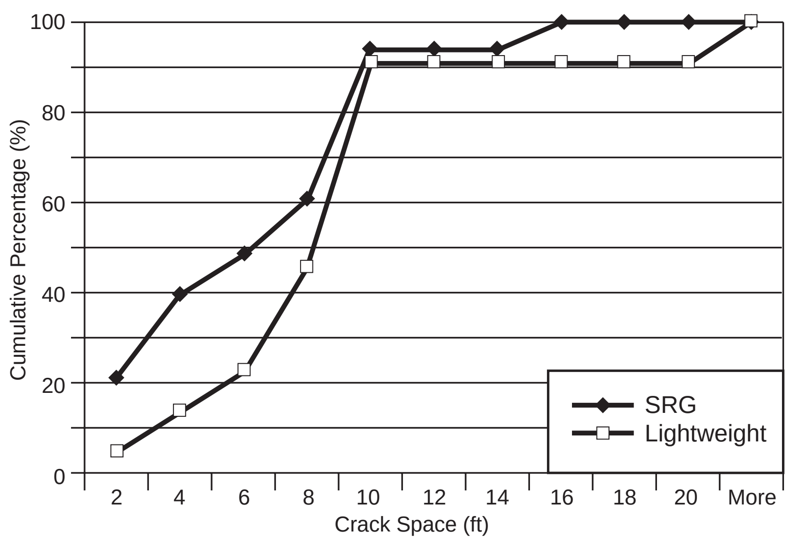


Figure 3.4 Cumulative crack spacing distribution for the sections

3.2.4 Analysis of Additional Distresses

Additional to crack spacing, condition surveys collect other pavement distresses. Examples of these other distresses are analyzed in this section. The distress types collected were previously listed in Chapter 2. Tables 3.6 and 3.7 summarize some information about the sections under analysis. The tables present the testing areas (as previously shown in Figure 3.2), percent of reinforcement steel, the number of cracks per test area, the mean crack spacing of the test area, and the number of punchouts and patches per mile of section. Therefore, the crack spacing condition and existence of punchouts and patches were considered for an overall analysis of the sections presented later in this chapter. Table 3.6 contains the information for the section constructed using SRG. Table 3.7 contains the information for the section built using LW aggregate.

Table 3.6 Summary of crack spacing and distresses (SRG aggregate)

Span	Length (ft)	Test Area	% Long. steel	Number of cracks	Mean crack spacing	Distresses per mile		
						Minor Punchouts	Severe Punchouts	Patches
0-200	200	6	0.3	33	5.8	0.00	3.11	37.3
200-400	200	5	0.3	37	5.4			
400-600	200	2	0.5	50	4.0			
600-800	200	2 &1	0.5	62	3.2			
800-1000	200	1	0.5	75	2.7			
1000-1200	200	3	0.4	76	2.6			
1200-1400	200	4	0.4	80	2.5			
1400-1600	200	7	0.3	64	3.1			
1600-1700	100	7	0.3	22	4.5			

Table 3.7 Summary of crack spacing and distresses (LW aggregate)

Span	Length (ft)	Test Area	% Long. steel	Number of cracks	Mean crack spacing	Distresses per mile		
						Minor Punchouts	Severe Punchouts	Patches
0-200	200	8	0.4	22	8.7	0.00	0.00	0.00
200-400	200	9	0.4	23	8.7			
400-600	200	11	0.3	16	12.5			
600-800	200	11 &10	0.3	19	10.5			
800-900	100	10	0.3	13	7.7			

Tables 3.8 and 3.9 summarize the mean transverse crack spacing for all the test areas presented in Figure 3.2. As previously mentioned, these pavement areas contain different contents of reinforcing steel. In both tables, it can be seen that some listed values were eliminated. Those eliminated areas correspond to transition zones where steel content changed and, therefore, were not considered for the computation of the mean crack spacing.

Table 3.8 Summary of mean crack spacing (SRG aggregate)

% Long. steel	Mean crack spacing	Overall mean
0.3	5.8	
0.3	5.4	
0.3	~~3.1~~	
0.3	4.5	**5.3**
0.4	2.6	
0.4	2.5	**2.6**
0.5	4.0	
0.5	3.2	
0.5	~~2.7~~	**3.6**

Table 3.9 Summary of mean crack spacing (LW aggregate)

% Long. steel	Mean crack spacing	Overall mean
0.3	12.5	
0.3	10.5	
0.3	~~7.7~~	**11.5**
0.4	8.7	
0.4	8.7	**8.7**

Table 3.10 displays the number of longitudinal cracks and spalls recorded for both sections. As can be seen clearly, the section built with SRG presents more distresses compared to the section built using LW aggregate. Only a few non-spalled cracks and some localized raveling were found in the latter section. Appendix B contains selected photographs that display the conditions of these test sections.

Table 3.10 Number of distresses other than cracks found in the two sections

Distress	**Conventional Aggregate (1,700 ft)**	**Lightweight Aggregate (900 ft)**
Spalled cracks	105	0
Longitudinal Cracks	13	0

3.2.5 Estimation of Distress Index

The next step in the evaluation of the two pavement sections was to mathematically determine their conditions and define whether they required major rehabilitation. The analysis presented here was developed during the late 1980s under the Texas Department of Transportation (TxDOT) Research Project 472, granted to the Center for Transportation Research. Among the tasks in that project, was the requirement to develop a distress index (DI) and a decision criteria index (DCI) for continuously reinforced concrete pavement (CRCP). These two indices were to be estimated based on available collected information from condition surveys in a period of 10 years, from 1974 to 1984. The indices would combine distress manifestations that have strong effects on pavement performance and would show the feasibility of performing major rehabilitation of a pavement. Thus, relying on that research previously conducted for Research Project 472 (Ref 3), this section presents the analysis of the data collected during condition surveys, and then the indices described above are estimated for the two conditions, the SRG section and the LW section.

Chia-Pei Chou (Ref 3) derived the DI and the rehabilitation criteria index applied herein. The detailed derivation of the indices is contained in the literature and the final equation derived and used to calculate the DI is a Zeta Score (Z"), shown in Equation 3.1:

$$Z''=1.0-0.0071\,(MPUNT)-0.3978\,(SPUNT)-0.4165\,(PATCH) \qquad (3.1)$$

Where:

Z'' = *distress index or Zeta Score*

$MPUNT = \ln(\text{minor punchouts per mile} + 1)$

$SPUNT = \ln(\text{severe punchouts per mile} + 1)$

$PATCH = \ln(\text{total patches per mile} + 1)$

According to the DI, the criterion for major rehabilitation of a given pavement section is that a DI, Z", be less than or equal to zero. Next, to calculate the DI of the two sections under study, an input variable matrix was prepared as shown in Table 3.11. This table summarizes the number of distresses per mile (punchouts and patches) that are considered in Equation 3.1. According to Chia-Pei Chou, the DI does not include other distresses, such as cracking or spalled cracks, because the calculated coefficients produce biased results.

Table 3.11 Input variable matrix for DI calculation

SECTION	MPUNT	SPUNT	PATCH
	Distresses per mile		
Conventional Aggregate	0	3.11	37.27
Lightweight Aggregate	0	0	0

Using Equation 3.1, the estimated DI for the section containing SRG aggregate is:

Z" = 1.0-0.0071[ln (0+1)]-0.3978[ln (3.11+1)]-0.4165[ln (37.27+1)]

Z" = 1.0-0-0.5623-1.5180

Z" = -1.0803

Likewise, the calculated DI for the section containing LW aggregate is:

Z"= 1.0-0.0071[ln(0+1)]-0.3978[ln(0+1)]-0.4165[ln(0+1)]

Z"= 1.0 - 0.0 - 0.0 - 0.0

Z"= 1.0000

Finally, according to the original DI concept criterion, major rehabilitation should be scheduled for pavements presenting a DI, Z", of less than or equal to zero. Therefore, following this condition, based on the observed distresses and the calculated DIs, it is recommended to schedule a major rehabilitation for the section constructed using SRG aggregate. The section constructed using LW aggregate did not require major rehabilitation.

3.3 Summary

This chapter presented the evaluation of two pavement sections constructed in Houston, Texas. These sections are part of the RPDB called a satellite project. Likewise, this chapter presented a mathematical procedure that considers the number and severity of punchouts and patches to determine if a given pavement section requires prompt, major rehabilitation. This mathematical procedure is a DI that allows defining maintenance and rehabilitation tasks and could be calculated for the sections in the RPDB.

4. Recent Developments

4.1 Introduction

During last year's collection efforts, various activities were performed for the improvement of the rigid pavement database (RPDB). Developed tasks have included the collection of data for pavement sections that have peculiar characteristics that enrich the population of the database and the type of data that are collected. For instance, continuous concrete temperature recording devices in the form of I-Buttons have been installed in some continuously reinforced concrete pavement (CRCP) sections recently constructed in the districts of Wichita Falls, Childress, and Amarillo. Likewise, a group of CRCP projects that have been overlaid with asphalt concrete (AC) pavement have been added to the RPDB as a satellite database. Finally, and in an effort to incorporate more recent pavement data to the RPDB, various thick CRCP sections (>10 in.) have been added to the population of the database. These thick sections will provide a better understanding of the relationship between pavement thickness, crack spacing, and occurrence of pavement failures for those pavements.

4.2 Temperature Measurement Using I-Buttons

Concrete temperature at early ages is very critical and has to be carefully monitored and handled (Ref 4). High temperatures promote quick hydration of the cement paste and the development of outstanding tensile stresses in the concrete, which favors the appearance of cracks. The temperature of the concrete is usually measured during the construction stage of the pavement using maturity meters or weather stations. In many cases, data collected are limited to the time at which the pavement is in operation. Once the pavement opens to traffic, usually no temperature records are collected during the life of the pavement.

As an additional effort that emerged from the RPDB and goes beyond the conventional data collection performed during condition surveys, installation of I-Buttons has been done for three CRCP projects located in north Texas. An I-Button is a computer chip enclosed in a very small stainless steel can. The I-Buttons are currently used worldwide for various applications, and in pavements these devices have the capability of recording continuous data of time versus concrete temperature for long periods. These data are particularly important to better understand the behavior of concrete pavements during seasonal cycles.

4.2.1 Installation of I-Buttons

These temperature-recording devices were installed in some pavement projects in Texas. For the RPDB, I-Buttons have been installed in selected CRCP sections located in the districts of Wichita Falls, Childress, and Amarillo. The three sets of I-Buttons were placed in the pavement in the summer of 2002. Although the buttons are usually installed when concrete is about to be placed, for the RPDB the devices had to be installed in hardened concrete. To achieve this task, an electric drill and a generator were used to drill the holes where the I-Buttons were placed. Figure 4.1 shows the equipment that was used for the drilling operations.

Figure 4.1 Generator and drill used for drilling the concrete pavement

The bit used for drilling the holes in the concrete was a heavy-duty ¾ in. diameter and 15 in. long bit. Figure 4.2 displays the bit that was used. The I-Buttons were arranged in sets of three per instrumented location and each set was 9 in. long.

Figure 4.2 Heavy-duty ¾ in. diameter bit used in drilling operations

All the I-Buttons were installed in such a way that the first button in the set was placed 1 in. below the top surface of the concrete, so that it could collect the temperature at the top of the slab. Figure 4.3 shows a set of I-Buttons that was introduced into the hole that was drilled for that purpose. The second and third I-Buttons in the set were located at 4 ½ in. and 9 in. apart from the first button, respectively. Using this arrangement allows collecting temperature data at the mid-depth and at the bottom of the slab. Ultimately, the temperature gradient of the slab along its thickness can be obtained with these three points and the temperature records can be measured for long periods of time. Once the drilled hole had the required depth to accommodate the I-Buttons, the set was fully introduced, leaving just the tip of the connecting wire that will allow data retrieval at any time using a portable computer. Figure 4.4 shows the set of I-Buttons fully in place.

Figure 4.3 Set of I-Buttons and drilled hole

Figure 4.4 Set of I-Buttons inside marked hole

Once the buttons were placed in position, as shown in Figure 4.4, the hole was filled with a liquid fiberglass that soon hardened and left the buttons in position. Figure 4.5 displays the moment when the hole is being filled with the fiberglass.

Figure 4.5   Liquid fiberglass being poured into hole containing I-Buttons

The final step in the placement process of the I-Buttons was to let the fiberglass set and then hide the tip of the connecting wire inside the top of the hole. The wire was then covered and protected with a commercial silicone that would prevent the wire from catching dust and water and would prevent it from being torn by passing traffic.

Figure 4.6 Filling silicone used to protect the connecting wire inside the hole

I-Buttons in Wichita Falls District

The set of I-Buttons installed in Wichita Falls was placed on the US 281 southbound outside lane. The location of the I-Buttons was selected to be 1.3 mi. south of milepost 194. The location belongs to Wichita County and the global positioning system (GPS) coordinates are latitude N 33° 51' 3.36"and longitude W 98° 29' 15.12". The pavement is a 12 in. thick bonded concrete overlay (BCO) that was constructed in 2001.

I-Buttons in Childress District

The I-Buttons installed in the Childress District were located on US 287 northbound outside lane. The precise location of the I-Buttons was selected to be 1.6 mi. north of milepost 232. The location belongs to Childress County and the GPS coordinates are latitude N 34° 26' 15.89" and longitude W 100° 14' 5.08". The Texas Department of Transportation (TxDOT) district office is located between 3 to 4 mi. north of the I-Button location. The pavement selected is a 12 in. thick CRCP that was constructed in 2001.

I-Buttons in Amarillo District

In Amarillo Texas, the I-Buttons were placed on a concrete pavement located near IH 40. Because the high traffic volume and geometric characteristics of IH40 in that area did not allow for installation of the buttons on the interstate highway, a safer pavement section was selected instead. The I-Buttons were placed outside the TA Travel Center, which is a large-truck cleaning facility located on the southbound frontage road of IH40. The area is located in Amarillo County and the global positioning system (GPS) coordinates are latitude N 35° 11' 27.81" and longitude W 101° 45' 36.03". The pavement selected is an 8 in. thick CRCP that was constructed in 2001.

4.2.2 Temperature Data Retrieval

As previously mentioned, the I-Buttons were placed in site during the summer of 2002. Although it was intended to retrieve some temperature data at the end of the winter of 2002, it was not possible owing to field personnel time constraints. However, it is expected that the data will be collected in June 2003. Once the data are retrieved, the buttons will be reset and new temperature cycles will be recorded for the summer and winter of 2003.

4.3 Addition of Asphalt Overlaid Sections

Among other new tasks developed for the enrichment of the RPDB, data collection has included the addition of several CRCP projects that have been overlaid with asphalt. During the summer of 2002, the Center for Transportation Research (CTR) field crew collected data for various pavement sections. Condition surveys were conducted in three districts including Yoakum, Bryan, and Atlanta, where some CRCP sections were overlaid. The primary purpose of these collection efforts was to investigate and document the performance of AC overlays placed on CRCPs and, therefore, field data collection included selected sections that have shown good and bad performance.

Because of the limitations and scope of the RPDB project, the pavement sections were surveyed and added to the database, as is customarily done for all the other sections. An alternate TxDOT research project uses the information contained in the database and focuses on some other issues. Initially, field data were collected and then the alternate project identified important factors that affect pavement performance and analyzed them.

Further stages in this project will involve testing of the sections such as evaluation of moisture problems, AC mixes, tack coat applications, deflection evaluations, etc.

4.3.1 Yoakum District Condition Survey Results

Four sections were selected on IH10, two in Fayette County and two in Colorado County, near Weimar, Texas. These sections were surveyed on June 18 and 19, 2002. Table 4.1 displays basic information about the sections such as section number (ID), highway (HWY), beginning and end reference markers (RM1 and RM2) and displacements in each case (DISPL), direction (DIR), and TxDOT's section identification numbers (CTRL and SEC).

Table 4.1 Yoakum District surveyed sections

ID	COUNTY	HWY	RM1	DISPL	RM2	DISPL	DIR	CTRL	SEC
13010-1	FAYETTE	IH10	676	0	676	-0.2	W	535	7
13010-2	FAYETTE	IH10	675	0	675	-0.2	W	535	7
13010-3	COLORADO	IH10	685	0.2	685	0	W	535	8
13010-4	COLORADO	IH10	685	0	685	-0.2	W	535	8

At survey time, Section 13010-1 was in acceptable condition, showing no distresses and only some shallow rutting, especially in the outside lane, as displayed in Figure 4.7. In contrast, just down the road, Section 13010-2 was in poor condition. The overall condition of Sections 13010-2, 13010-3, and 13010-4 classifies the asphalt overlays in those pavement spans as poor performing. In some areas the AC overlay was already milled off and a new AC overlay was being placed as scheduled by TxDOT.

The distressed asphalt overlay mainly showed rutting and flushing at both wheel paths of the outside lane. In some cases, both lanes showed signs of distress, but the outside lane was considerably more distressed than the inside lane. No cracking was found in the sections. Figures 4.7 to 4.10 display the conditions in which the pavement sections were found during the surveys.

Figure 4.7 Shallow rutting (<0.5 in.) and flushing of asphalt on Section 13010-1

Figure 4.8 Image of CRCP underneath the AC layer that was milled off

Figure 4.9 Image of rutted and flushed wheel paths of the outside lane

Figure 4.10 Ending zone of distressed asphalt layer, Section 13010-4

After the surveys were completed, the district office was contacted on August 22, 2002 to find out background information on these sections. Mr. Gerald Freytag, district pavement engineer, notified CTR that all four sections were going to be repaired; the existing AC overlays would be removed and replaced with new AC overlays.

4.3.2 Bryan District Condition Survey Results

Nine sections were surveyed in the Bryan District on August 14, 2002. Four of them are located in Walker County on IH 45, two in Brazos County on SH 6, and three on US 290 in Washington County, as shown in Table 4.2.

Table 4.2 Bryan District surveyed sections

ID	COUNTY	HWY	RM1	DISPL	RM2	DISPL	DIR	CTRL	SEC
17045-1	WALKER	IH45	118	0	118	0.2	N	675	6
17045-2	WALKER	IH45	119	0.3	119	0.5	N	675	6
17045-3	WALKER	IH45	116	0	116	-0.2	S	675	7
17045-4	WALKER	IH45	113	0.2	113	0	S	675	7
17006-1	BRAZOS	SH6	586	0.2	586	0	S	49	12
17006-2	BRAZOS	SH6	586	1.1	586	1.3	S	49	12
17290-1	WASHINGTON	US290	676	-0.2	676	0	E	114	9
17290-2	WASHINGTON	US290	676	-0.2	676	-0.4	W	114	9
17290-3	WASHINGTON	US290	674	-1.3	674	-1.5	W	114	9

Except for one section (17045-2), the sections in Walker County on IH45 had all just been overlaid when the CTR field crew surveyed the pavement. In fact, the traffic control devices were still in place, which facilitated the surveyors' work, and part of the TxDOT crew was at the site. Being a brand new overlay, the condition was excellent, as shown in Figures 4.11, 4.12, and 4.13, where the old overlay on top of the CRCP shoulder was milled off.

Figure 4.11 Beginning of Section 17045-1 on northbound IH 45

Figure 4.12 Section 17045-1 recently overlaid

Figure 4.13 Section 17045-3, still showing nonresurfaced shoulder

The two sections on SH 6 south in Brazos County did not exhibit a very good performance, as both presented several distresses. Section 17006-1 had twenty-five transverse cracks with five spalls, while section 17006-2 had two transverse cracks. Figures 4.14 and 4.15 show the conditions in which the sections were found.

Figure 4.14 Longitudinal crack in Section 17006-1 on SH 6 in Brazos County

Figure 4.15 Beginning of Section 17006-2 with a transverse crack on southbound SH 6

Three pavement sections were selected in Washington County, all of which are located on US 290. All of them appeared in good shape, showing no distresses. The AC looked relatively new and it offered a good riding quality surface, as Figures 4.16 and 4.17 illustrate.

Figure 4.16 Section 17290-1 on eastbound US 290

Figure 4.17 Section 17290-2

4.3.3 Atlanta District Condition Survey Results

Nine sections were surveyed in the Atlanta District, all of them on IH 20 in Harrison County. These sections were surveyed on July 8, 2002. The sections are shown in Table 4.3.

Table 4.3 Atlanta District surveyed sections

ID	COUNTY	HWY	RM1	DISPL	RM2	DISPL	DIR	CTRL	SEC
19020-1	HARRISON	IH20	611	0.1	611	0.3	E	495	8
19020-2	HARRISON	IH20	611	0.5	611	0.7	E	495	8
19020-3	HARRISON	IH20	612	0	612	0.2	E	495	8
19020-4	HARRISON	IH20	612	0.45	612	0.65	E	495	8
19020-5	HARRISON	IH20	613	0.1	613	0.3	E	495	8
19020-6	HARRISON	IH20	614	-0.2	614	-0.4	W	495	8
19020-7	HARRISON	IH20	613	-0.1	613	-0.3	W	495	8
19020-8	HARRISON	IH20	613	-0.8	614	0	W	495	8
19020-9	HARRISON	IH20	612	-0.7	612	-0.9	W	495	8

In general, the sections were in very good condition with no distresses, rutting, or signs of wear. The AC appeared to be fairly new, given the smooth riding surface shown in Figures 4.18 and 4.19.

Figure 4.18 Section 19020-2

Figure 4.19 AC Overlay distress in Section 19020-8

Minor distresses were found in these sections. Section 19020-4 had a few small patches and one transverse crack, while Section 19020-5 presented three cracks. None of these distresses was severe. There was a small area in Section 19020-8 where a transverse crack caused delamination of the AC overlay and was starting to erode. The failure started at the edge of the lane next to the shoulder as shown in Figure 4.19.

4.3.4 Summary of Condition Survey Results of Asphalt Overlaid Sections

Most of the sections surveyed in the three districts showed good performance. Only the sections in the Yoakum District had some severe problems that were being corrected while condition surveys were being performed. The sections that presented a poor performance were repaired and a new AC overlay was placed on top of the CRCP layer. The pavement distresses found in the Bryan and Atlanta Districts were not severe at all.

The next stage following the condition survey will require collecting background information on these sections, such as year of CRCP construction, year of AC overlay construction, and layer thicknesses. The district pavement engineers have already been contacted by CTR for this purpose. More information about these sections will be collected in the near future because they represent a useful resource for investigation about asphalt overlaid CRCPs.

4.4 Addition of Thick CRCPs

Another major task that was performed for the improvement of the RPDB was the addition of thick CRCPs. The criterion for addition of projects to the database required the pavements to be at least 10 in. thick. As shown in the demographics in Chapter 2, most of the sections in the RPDB are 8 in. thick, and that is why special efforts have been conducted during the most recent data collection tasks to introduce thick pavements into the database.

Most of the thick CRCPs recently added to the RPDB are either 10 in. thick or 12 in. thick and are located in the Yoakum or Atlanta Districts, where recent pavement projects have been constructed for the improvement of highways SH 71 and US 59. The sections in the Yoakum District are located in Fayette and Colorado Counties; the sections in the Atlanta District are located in Panola, Cass, and Bowie Counties. Most of the pavements were constructed during the summer of 2002 and did not show major distress. Only some sections that were constructed in the 1980s had a small number of small AC patches and some spalled cracks.

Future data collection will continue with the addition of thick CRCPs following the described criterion. It is believed that the RPDB is one of the best sources of information related to the performance of concrete pavements in Texas. Therefore, it is necessary to keep working on this issue, so that thick pavements are well represented in the RPDB and their performance is better understood.

4.5 Summary

This chapter summarized some of the most important tasks that have been conducted for the enhancement of the RPDB. Three different, but supplementary tasks have been diligently pursued to upgrade the database. First, I-Buttons have been installed in three pavement sections located in North Texas, where low temperatures are the most critical in the state of Texas, and consequently affect the performance of pavements. Second, a number of CRCPs that have been overlaid using thin AC layers have also been added to the RPDB and are being followed up by another research project. The goal here was to identify good and bad performing AC overlays, materials presenting specific problems in some geographical areas, and faulty construction techniques. Finally, a number of thick

CRCP sections have been added to the RPDB to better represent their currently growing application in highly trafficked highways. Although great efforts have been carried out to improve the quality of the RPDB, a continuous attempt is required for the success of the application and use of the data in the database.

5. Conclusions and Recommendations

5.1 General Conclusions

The activities conducted to update the rigid pavement database (RPDB) have been continuous and include the collection of field data for pavement sections already contained in the database and for new sections that have been incorporated. In addition to reporting conventional tasks, this report discussed new developments never conducted before for the database. All the material contained in this report complements material previously reported in other reports, all belonging to the 1778 report series.

Among the tasks reported here are the demographics of the RPDB. These demographics are presented for both continuously reinforced concrete pavement (CRCP) and jointed concrete pavement (JCP) sections and are contained in Chapter 2. Likewise, Chapter 3 highlights research activities performed for some specific projects constructed in Houston, Texas. Here, the evaluation of the performance of two pavement sections constructed in 1964 with different coarse aggregates is described and a simple mathematical algorithm allows defining whether or not the sections require major rehabilitation. Chapter 4 summarizes a series of fieldwork tasks that were conducted in a jointed effort with Texas Department of Transportation (TxDOT) Research Project 0-4398. The activities include the installation of I-Buttons that continuously record the concrete temperature data across the depth of the pavement slab. Additionally, various asphalt overlaid CRCPs that have shown both poor and good performances have been added to the database for further investigation. Many planned and even unplanned activities have been successfully completed during the last 2 years, other tasks are being conducted, and more will be proposed so that the usefulness of the RPDB increases everyday.

5.2 Achieved Improvements

Various improvements to the RPDB and activities related to the project have been achieved, including the following:

Both inventory and performance data for the sections in the database have been updated. CRCP and JCP sections have been surveyed in their totality, and in all cases the redundant method, where the sections are relocated in the field using reference markers, spray paint, and GPS coordinates, has been successfully applied. All of the data pertaining to the sections have been typed and the electronic files are available in different formats, such as Microsoft Excel and Access.

The photo database has been updated and at least two photos have been taken during the last condition survey efforts. Emphasis has been made towards identifying distresses found in all types of pavements and an electronic catalog is available in Microsoft Access format. The photos can be searched using keywords, which makes the photo database very useful.

Installation of monitoring temperature devices in the form of I-Buttons has been conducted for three pavement projects located in North Texas, where low temperatures exert a great influence on pavement performance. This information will be of outstanding research value and will improve the way in which concrete's temperature evolution is monitored and considered in the design and construction stages of concrete pavements.

A number of asphalt overlaid CRCPs have been added to the population of the RPDB. These overlaid sections have shown either poor or outstanding performance and therefore, materials used, mix designs, and construction techniques will be further evaluated to determine the optimum conditions for specific geographical areas. Activities out of the scope of the RPDB will be performed under TxDOT Research Project 0-4398, and the sections analyzed will be part of a satellite project in the RPDB.

One of the most important tasks conducted for the RPDB, is the addition of thick (>10 in. thick) CRCP sections to the database. Because most of the nonoverlaid CRCPs in the database are 8 in. thick and represent well pavement thicknesses mostly used in the past two decades, thick sections that represent the latest construction (thickness) trends have to be added to the database. To date, sections from the Yoakum and Atlanta Districts have been added and more will be included from other districts.

5.3 Future Tasks

At press time, 100 percent of the sections already in the database have been surveyed and many more have been added. More thick CRCPs that are 5 years old or younger will be located in the field and added to the RPDB so the demographics will show a change in the distribution of 8 in. thick pavements, which no longer represent current construction tendencies for highly trafficked highways.

Following the project director (PD) suggestions, a comprehensive distress analysis plan will be prepared for the sections in the database. This analysis will be presented in Research Report 1778-5, which is due at the end of the summer of 2003. Ideas about the distress analysis have been briefly discussed at project meetings with the Center for Transportation Research (CTR) researchers and TxDOT personnel, including the PD.

5.4 Recommendations

Many activities have been conducted to keep the RPDB up-to-date; however, because of the nature of this project, constant developments and innovations are required for its success. Based on discussions about the future needs of the project, the following are the most relevant:

1. A comprehensive distress analysis of the section in the RPDB can be accomplished in two ways. First, an algorithm that provides a standardized score that reflects the condition of the pavement can be adopted. The best way to achieve this is by using a pavement distress index (PDI), which in some way will correlate to other measured characteristics of the pavement (i.e., deflections, roughness, etc.) Second, individualized analyses can be performed for special studies (satellite projects) or specific pavement sections. These might include the evaluation of coarse aggregate type used in the concrete, and the occurrence of some pavement distresses and crack spacing, their correlation to slab thickness, etc.
2. In order to comply with the AASHTO 2002 design guidelines, it will be required to estimate three important parameters: load transfer across cracks, crack width, and roughness. The detail of the procedures to accomplish these tasks has not been fully discussed; however, a tentative work plan is being prepared and will be ready for implementation in future data collection efforts.
3. Finally, a better way to collect traffic data and update the current information in the RPDB has to be determined. Traffic volume and distribution are very important characteristics that are critical for the performance of pavements and, therefore, have to be documented.

5. CONCLUSIONS AND RECOMMENDATIONS

This report describes some of the most relevant activities performed for the update of the RPDB. The information contained in the report makes reference to CRCP and JCP sections. The report is the fourth of a series of five and supplements the information already provided in previous reports. For a better understanding of the development and evolution of the project, the reader is referred to the available literature.

References

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Appendix A
Condition Survey Results

OBS	DIS	CFTR	COUNTY	HWY	RM1	RM2	GPSLAT	GPSLON	ALLIG	BLOCK	RSHAL	RDEEP	AC0	AC51	AC150	PCC0	PCC51	PCC150
1	1	100101	HOPKINS	IH30	134	134	33.1475	95.45472	0%	0%	0%	0%	0	0	0	0	0	0
2	1	100102	HOPKINS	IH30	134	134	33.14694	95.46	0%	0%	0%	0%	1	0	0	0	0	0
3	1	100103	HOPKINS	IH30	133	133	33.14694	95.46194	0%	0%	0%	0%	0	0	0	0	0	0
4	1	100104	HOPKINS	IH30	132	132	33.14694	95.49306	0%	0%	0%	0%	0	0	0	0	0	0
5	1	100105	HOPKINS	IH30	131	131	33.14694	95.51306	0%	0%	0%	0%	0	0	0	0	0	0
6	1	100106	HOPKINS	IH30	130	130	33.14694	95.52	0%	0%	0%	0%	0	0	0	0	0	0
7	1	100301	HOPKINS	IH30	143	143	33.16667	95.31389	0%	0%	18%	0%	0	0	0	0	0	0
8	1	100302	HOPKINS	IH30	142	142	33.1675	95.33028	0%	0%	7%	0%	2	0	0	0	0	0
9	1	100303	HOPKINS	IH30	141	141	33.16722	95.35028	0%	0%	0%	0%	0	1	3	0	0	0
10	1	100304	HOPKINS	IH30	140	140	33.18028	95.35583	0%	0%	0%	0%	1	0	0	0	0	1
11	1	100305	HOPKINS	IH30	139	139	33.16667	95.36417	0%	0%	0%	0%	0	0	0	0	0	0
12	1	100306	HOPKINS	IH30	139	139	33.16639	95.38111	0%	0%	0%	0%	0	0	4	0	0	0
13	1	100501	FRANKLIN	IH30	153	153	33.16111	95.12889	0%	0%	0%	0%	0	0	0	0	0	0
14	1	100502	FRANKLIN	IH30	152	152	33.16111	95.12944	0%	0%	0%	0%	0	0	0	0	0	0
15	1	100503	FRANKLIN	IH30	152	152	33.16194	95.14611	0%	0%	0%	0%	0	0	0	0	0	0
16	1	100505	FRANKLIN	IH30	151	151	33.16278	95.16333	0%	0%	0%	0%	0	0	0	0	0	0
17	1	100506	FRANKLIN	IH30	149	149	33.15944	95.19722	0%	0%	0%	0%	0	0	0	0	0	0
18	1	100801	GRAYSON	US75	216	216	33.50306	96.61889	0%	0%	0%	0%	0	0	0	0	0	0
19	1	100802	GRAYSON	US75	218	218	33.46861	96.615	0%	0%	0%	0%	0	0	0	0	0	0
20	1	100803	GRAYSON	US75	218	220	33.44833	96.60389	0%	0%	0%	0%	0	0	0	0	0	0
21	1	101301	LAMAR	US271	196	196	33.74528	95.54528	0%	0%	0%	0%	3	0	0	0	0	0
22	1	101302	LAMAR	US271	194	194	33.75972	95.54139	0%	0%	0%	0%	0	1	0	0	0	0
23	1	101303	LAMAR	US271	194	194	33.76194	95.54056	0%	0%	0%	0%	1	0	0	0	0	0
24	1	101304	LAMAR	US271	194	194	33.77306	95.53694	0%	0%	0%	0%	13	0	0	0	0	0
25	1	101501	GRAYSON	US82	640	640	33.67056	96.62889	0%	0%	0%	0%	0	0	0	0	0	0
26	1	101502	GRAYSON	US82	642	642	33.67083	96.61333	0%	0%	0%	0%	0	0	0	0	0	0
27	1	101503	GRAYSON	US82	642	642	33.67056	96.60333	0%	0%	0%	0%	0	0	0	0	0	0
28	1	101504	GRAYSON	US82	642	642	33.67056	96.62889	0%	0%	0%	0%	0	0	0	0	0	0
29	1	101505	GRAYSON	US82	640	640	33.67122	96.63758	0%	0%	0%	0%	0	0	0	0	0	0
30	2	200092	JEFFERSON	IH10	838-0.8	838-1.0	29.91833	94.28528	0%	0%	0%	0%	2	0	0	0	0	0
31	2	200093	JEFFERSON	IH10	837-0.2	837-0.1	29.91306	94.29167	0%	0%	0%	0%	0	0	0	0	0	0
32	2	200094	JEFFERSON	IH10	835+0.00	835-0.2	29.89722	94.31111	8%	0%	20%	0%	10	0	0	0	0	0
33	2	200095	JEFFERSON	IH10	834-1.0	834-1.2	29.88583	94.32528	0%	0%	0%	0%	1	0	0	0	0	0
34	2	200111	JEFFERSON	US96	532+0.9	532+1.1	30.01639	94.04889	0%	0%	0%	0%	0	0	0	0	0	0
35	2	200112	JEFFERSON	US96	532+1.1	532+1.3	30.01389	94.0475	0%	0%	0%	0%	0	0	0	0	0	0
36	2	200113	JEFFERSON	US96	532+1.4	532+1.6	30.01	94.04528	0%	0%	0%	0%	0	0	0	0	0	0
37	2	200114	JEFFERSON	US97	532+2.0	532+2.1	30.00222	94.04083	0%	0%	0%	0%	0	0	0	0	0	0
38	2	200201	PARKER	IH20	414+1.1	414+1.3	32.74917	97.67833	0%	0%	0%	0%	0	0	0	0	0	0
39	2	200202	PARKER	IH20	416+0.2	416+0.4	32.74333	97.66278	0%	0%	0%	0%	0	0	0	0	0	0
40	2	200203	PARKER	IH20	416+0.35	416+0.55	32.74167	97.65806	0%	0%	0%	0%	0	0	0	0	0	0
41	2	200204	PARKER	IH20	417+0.4	417+0.6	32.73722	97.64361	0%	0%	0%	0%	0	0	0	0	0	0
42	2	200205	PARKER	IH20	417+0.75	417+0.95	32.73583	97.63778	0%	0%	0%	0%	0	0	0	0	0	0
43	2	200231	JEFFERSON	US69	530+0.7	530+0.5	30.0325	94.07472	0%	0%	0%	0%	0	0	0	0	0	0
44	2	200233	JEFFERSON	US69	530+0+00	530+0.13	30.03056	94.08611	0%	0%	0%	0%	0	0	0	0	1	0
45	2	200234	JEFFERSON	US96	530+0.73	530+0.84	30.03222	94.07361	0%	0%	0%	0%	0	0	0	1	3	2
46	2	202801	JOHNSON	IH35W	37-0.4	37-0.6	32.53972	97.31306	0%	0%	0%	0%	0	0	0	0	0	0
47	2	202801	JOHNSON	IH35W	32+0.4	32+0.6	32.48694	97.28028	0%	0%	0%	0%	0	0	0	0	0	0
48	2	202802	JOHNSON	IH35W	33+0.1	33+0.3	32.49667	97.2875	0%	0%	0%	0%	0	0	0	0	0	0
49	2	202802	JOHNSON	IH35W	33+0.2	36+0.0	32.53528	97.31167	0%	0%	0%	0%	0	0	0	0	0	0
50	2	202803	JOHNSON	IH35W	36-0.2	36-0.4	32.52944	97.31028	0%	0%	0%	0%	0	0	0	0	0	0

51	2	203101	TARRANT	IH820	17-0.1	17+0.1	32.83917	97.30722	0%	0%	0%	0%	0	0	0	0	0	0
52	2	203101	TARRANT	IH820	20+0.22	20+0.02	32.84028	97.25028	0%	0%	0%	0%	0	0	0	0	0	0
53	2	203102	TARRANT	IH820	20+0.02	20+0.22	32.84028	97.2525	0%	0%	0%	0%	0	0	0	0	0	0
54	2	203102	TARRANT	IH820	20-0.2	20-0.4	32.84	97.25806	0%	0%	0%	0%	0	0	0	0	0	0
55	2	203103	TARRANT	IH820	18-0.45	18-0.65	32.83972	97.29361	0%	0%	0%	0%	1	0	0	0	0	0
56	2	203104	TARRANT	IH820	18-0.65	18-0.85	32.83972	97.29694	0%	0%	0%	0%	0	0	0	0	0	0
57	2	203201	TARRANT	IH30	4+0.0	4+0.2	32.73083	97.50111	0%	0%	0%	0%	0	0	0	0	0	0
58	2	203201	TARRANT	IH30	0+1.6	0+1.8	32.72083	97.53861	0%	0%	0%	0%	0	0	0	0	0	0
59	2	203202	TARRANT	IH30	19+0.65	19+0.45	32.76028	97.24361	0%	0%	0%	0%	0	0	0	0	0	0
60	2	203202	TARRANT	IH30	4+0.5	4+0.7	32.73417	97.49278	0%	0%	0%	0%	0	0	0	0	0	0
61	2	203203	TARRANT	IH30	6+0.65	6+0.85	32.73806	97.45806	0%	0%	0%	0%	0	0	0	0	0	0
62	2	204901	TARRANT	US287	264+0.8	264+1.0	34.28083	99.69056	0%	0%	0%	0%	0	0	0	0	0	0
63	2	204901	TARRANT	US287	266-1.0	266-1.2	34.28083	99.68667	0%	0%	0%	0%	0	0	0	0	0	0
64	2	204902	TARRANT	US287	266+0.3	266+0.5	34.27361	99.66722	0%	0%	0%	0%	0	0	0	0	0	0
65	2	204903	TARRANT	US287	266+1.6	266+1.8	34.26806	99.64444	0%	0%	0%	0%	0	0	0	0	0	0
66	2	204904	TARRANT	US287	268-0.13	268+0.06	34.26889	99.63944	0%	0%	0%	0%	0	0	0	0	0	0
67	2	205001	TARRANT	US287	272+0.04	272+0.23	34.25472	99.56639	0%	0%	0%	0%	0	0	0	0	0	0
68	2	205001	TARRANT	US287	272+0.23	272+0.03	34.25528	99.56611	0%	0%	0%	0%	0	0	0	0	0	0
69	2	205002	TARRANT	US287	272+1.2	272+1.4	34.25167	99.54667	0%	0%	0%	0%	0	0	0	0	0	0
70	2	205101	PARKER	IH20	388+0.6	388+0.8	32.62222	98.08583	0%	0%	0%	0%	0	0	0	0	0	0
71	2	205101	PARKER	IH20	390-0.6	390-0.8	32.62972	98.07444	0%	0%	0%	0%	0	0	0	0	0	0
72	2	205102	PARKER	IH20	388+0.95	388+1.15	32.625	98.08083	0%	0%	0%	0%	0	0	0	0	0	0
73	2	205901	ERATH	IH20	364+0.5	364+0.7	32.50417	98.46333	0%	0%	0%	0%	0	0	0	0	0	0
74	2	205901	ERATH	IH20	368-0.03	368-0.23	32.50472	98.40861	0%	0%	0%	0%	0	0	0	0	0	0
75	2	205902	ERATH	IH20	365-0.1	365-0.3	32.50556	98.45694	0%	0%	0%	0%	0	0	0	0	0	0
76	2	205902	ERATH	IH20	366+0.85	367+0.05	32.50667	98.42444	0%	0%	0%	0%	0	0	0	0	0	0
77	2	206001	TARRANT	IH20	445+0.7	445+0.9	32.675	97.19278	0%	0%	0%	0%	0	0	0	0	0	0
78	2	206001	TARRANT	IH20	445-0.04	445+0.0	32.67194	97.20528	0%	0%	0%	0%	0	0	0	0	0	0
79	2	206002	TARRANT	IH20	445-0.4	445-0.6	32.67056	97.21028	0%	0%	0%	0%	0	0	0	0	0	0
80	2	207501	TARRANT	IH35W	42+0.4	42+0.6	32.62333	97.32139	0%	0%	0%	0%	0	0	0	0	0	0
81	2	207501	TARRANT	IH35W	45+0.02	45-0.22	32.64806	97.32167	0%	0%	0%	0%	0	0	0	0	0	0
82	2	207502	TARRANT	IH35W	43-0.1	43-0.3	32.63111	97.32167	0%	0%	0%	0%	0	0	0	0	0	0
83	2	207503	TARRANT	IH35W	41-0.13	41-0.33	32.60194	97.31972	0%	0%	0%	0%	0	0	0	0	0	0
84	2	207504	TARRANT	IH35W	41-0.45	41-0.65	32.59694	97.31972	0%	0%	0%	0%	0	0	0	0	0	0
85	2	209801	TARRANT	IH820	11+0.15	11+0.35	32.82111	97.39694	0%	0%	0%	0%	0	0	0	2	1	0
86	2	209801	TARRANT	IH820	13-0.5	13-0.7	32.82889	97.38111	0%	0%	0%	0%	0	0	0	1	0	0
87	2	209802	TARRANT	IH820	12+0.1	12+0.3	32.82667	97.38472	0%	0%	0%	0%	0	0	0	2	0	0
88	2	209802	TARRANT	IH820	11+0.0	11-0.2	32.81917	97.40194	0%	0%	0%	0%	0	0	0	0	0	0
89	3	300101	WICHITA	IH44	4+0.45	4+0.25	33.96389	98.53083	0%	0%	0%	0%	0	0	0	0	0	0
90	3	300101	WICHITA	IH44	4+0.2	4+0.4	33.96028	98.53	0%	0%	0%	0%	0	0	0	0	1	0
91	3	300102	WICHITA	IH44	5+0.0	5+0.2	33.975	98.53389	0%	0%	0%	0%	0	0	0	0	0	0
92	3	300102	WICHITA	IH44	5+0.0	5+0.2	33.97278	98.5325	0%	0%	0%	0%	0	0	0	0	0	2
93	3	300103	WICHITA	IH44	14-0.25	14-0.45	34.095	98.555	0%	0%	0%	0%	0	0	0	0	0	0
94	3	300401	WICHITA	IH44	12-0.35	12-0.15	34.06556	98.55722	0%	0%	0%	0%	0	0	0	0	0	0
95	3	300403	WICHITA	IH44	12+0.15	12-0.05	34.07222	98.55778	0%	0%	0%	0%	0	0	0	0	0	0
96	3	300404	WICHITA	IH44	11+0.5	11+0.35	34.06278	98.5575	0%	0%	0%	0%	0	0	0	0	0	0
97	3	300405	WICHITA	IH44	11+0.25	11+0.45	34.05972	98.55694	0%	0%	0%	0%	0	0	0	0	0	0
98	3	301001	WICHITA	US287	314+1.0	314+1.2	34.04444	98.93556	0%	0%	0%	0%	1	0	0	0	1	0
99	3	301002	WICHITA	US287	316-0.2	316+0.0	34.04361	98.91694	0%	0%	0%	0%	0	0	0	0	0	0
100	3	301003	WICHITA	US287	316+0.9	316+1.1	34.04083	98.90194	0%	0%	0%	0%	0	0	0	0	0	0

101	3	301004	WICHITA	US287	322+0.3	322+0.5	33.9925	98.82972	0%	0%	0%	0%	0	0	0	0	5	5
102	3	301005	WICHITA	US287	316+0.2	316+0.05	34.045	98.9175	0%	0%	0%	0%	0	0	0	0	0	0
103	3	301006	WICHITA	US287	317+0.2	317+0.0	34.03861	98.8825	0%	0%	0%	0%	0	0	1	0	0	0
104	3	301101	WILBARGER	US287	312-0.1	312-0.3	34.04889	98.95944	0%	0%	0%	0%	0	0	1	0	0	0
105	3	301102	WILBARGER	US287	312-0.5	312-0.7	34.05056	98.96528	0%	0%	0%	0%	0	0	1	0	0	0
106	3	301103	WILBARGER	US287	312-0.7	312-0.9	34.05611	98.96861	0%	0%	0%	0%	0	0	0	0	1	0
107	3	301104	WILBARGER	US287	312-0.1	312+0.1	34.0475	98.9575	0%	0%	0%	0%	0	0	0	0	0	0
108	3	301801	MONTAGUE	US287	390+0.4	390+0.6	33.56806	97.88694	0%	0%	0%	0%	0	0	0	0	0	0
109	3	301802	MONTAGUE	US287	392+0.1	392+0.3	33.55361	97.86528	0%	0%	0%	0%	0	0	0	0	0	0
110	3	301803	MONTAGUE	US287	394+1.4	394+1.6	33.52278	97.82278	0%	0%	0%	0%	0	0	0	0	0	0
111	3	301804	MONTAGUE	US287	394+1.6	394+1.8	33.52	97.82111	0%	0%	0%	0%	0	0	0	1	0	0
112	3	301805	MONTAGUE	US287	222+0.4	222+0.2	34.49583	100.3556	8%	67%	0%	0%	2	0	0	0	0	0
113	3	301806	MONTAGUE	US287	220-0.4	220-0.6	34.51333	100.3956	0%	0%	0%	0%	0	0	0	0	0	0
114	3	302201	WILBARGER	US287	302+0.0	302-0.8	34.11667	99.11111	0%	0%	0%	0%	1	0	0	0	0	0
115	3	302202	WILBARGER	US287	304-0.4	304-0.6	34.10556	99.08639	0%	0%	0%	0%	0	0	0	0	0	0
116	3	302203	WILBARGER	US287	304-0.15	304-0.35	34.10444	99.08417	0%	0%	0%	0%	0	0	0	0	0	0
117	3	302204	WILBARGER	US287	302+0.6	302+0.4	34.1125	99.10222	0%	0%	0%	0%	0	0	0	0	0	0
118	3	302205	WILBARGER	US287	308-0.5	308-0.7	34.07861	99.02639	0%	0%	0%	0%	0	0	0	0	0	0
119	4	400201	POTTER	IH40	72-0.3	72-0.5	35.19278	101.8139	0%	0%	0%	0%	0	0	2	0	0	0
120	4	400202	POTTER	IH40	71+0.5	71+0.3	35.19278	101.8189	0%	0%	0%	0%	0	0	2	0	0	0
121	4	400501	CARSON	IH40	92-0.2	92+0.0	35.22167	101.4644	0%	0%	0%	0%	0	0	0	0	0	0
122	4	400501	CARSON	IH40	88+0.5	88+0.7	35.22083	101.5303	0%	0%	0%	0%	0	0	0	0	0	0
123	4	400502	CARSON	IH40	91+0.0	91+0.2	35.22139	101.4856	0%	0%	0%	0%	0	0	0	0	0	0
124	4	400502	CARSON	IH40	89+0.2	89+0.0	35.22139	101.5175	0%	0%	0%	0%	0	0	0	0	0	0
125	4	400503	CARSON	IH40	86+0.2	86+0.0	GPS POSSIBLE		0%	0%	0%	0%	2	0	0	0	0	0
126	4	400901	POTTER	IH40	67-0.15	67-0.35	35.19083	101.8997	0%	0%	0%	0%	0	0	0	0	0	0
127	4	400902	POTTER	IH40	67-0.45	67-0.65	35.19056	101.9053	0%	0%	0%	0%	0	0	0	0	0	0
128	4	400903	POTTER	IH40	66-0.15	66-0.35	35.18722	101.9161	0%	0%	0%	0%	0	0	0	0	0	0
129	4	400904	POTTER	IH40	65+0.2	65+0.0	35.18583	101.9283	0%	0%	0%	0%	0	0	0	0	0	0
130	4	400905	POTTER	IH40	63-0.25	63-0.45	35.1875	101.9708	0%	0%	0%	0%	0	0	0	0	0	0
131	4	401001	POTTER	IH40	82+0.2	82+0.0	35.20667	101.6358	0%	0%	0%	0%	1	0	0	0	0	0
132	4	401002	POTTER	IH40	79+0.2	79+0.0	35.19944	101.6861	0%	0%	0%	0%	0	0	0	0	0	0
133	4	401003	POTTER	IH40	79-0.1	79-0.3	35.19639	101.7061	0%	0%	0%	0%	0	0	1	0	0	0
134	4	401101	POTTER	IH40	61+0.2	61+0.0	35.18972	101.9978	0%	0%	0%	0%	0	0	0	0	0	0
135	4	401101	POTTER	IH40	60+0.0	60+0.2	35.19028	102.0189	0%	0%	0%	0%	0	0	0	0	0	0
136	4	401102	POTTER	IH40	61-0.3	61-0.5	35.19	102.0064	0%	0%	0%	0%	0	0	0	0	0	0
137	4	401102	POTTER	IH40	60+0.5	60+0.7	35.19	102.0097	0%	0%	0%	0%	0	0	0	0	0	0
138	4	401103	POTTER	IH40	56+0.2	56+0.0	35.19167	102.0864	0%	0%	0%	0%	0	0	0	0	0	0
139	4	402201	GRAY	IH40	115+0.0	115+0.2	35.19417	101.0733	0%	0%	0%	0%	0	0	0	0	0	0
140	4	402201	GRAY	IH40	115+0.2	115+0.0	35.19389	101.07	0%	0%	0%	0%	0	0	0	0	0	0
141	4	402202	GRAY	IH40	114+0.7	114+0.5	35.19611	101.0794	0%	0%	0%	0%	0	0	0	0	0	0
142	4	402301	DONLEY	IH40	125-0.4	125-0.6	35.1825	100.9053	0%	0%	0%	0%	0	0	0	0	0	0
143	4	402302	GRAY	IH40	124+	124+	35.18306	100.9089	0%	0%	0%	0%	0	0	0	0	0	0
144	4	402303	GRAY	IH40	123+0.15	123-0.05	35.18321	100.9314	0%	0%	30%	0%	1	0	0	0	0	0
145	4	402501	DONLEY	IH40	130-0.2	130-0.4	35.185	100.8181	0%	0%	0%	0%	0	0	0	0	0	0
146	4	402502	DONLEY	IH40	130-0.5	130-0.7	35.18167	100.8244	0%	0%	0%	0%	0	0	0	0	0	0
147	4	402503	DONLEY	IH40	128+0.1	128-0.1	35.18139	100.8461	0%	0%	0%	0%	0	0	0	0	0	0
148	4	402504	GRAY	IH40	128-0.4	128-0.6	35.18333	100.8586	0%	0%	0%	0%	0	0	0	0	0	0
149	4	410001	OLDHAM	IH40	33-0.04	33-0.24	35.25528	102.4842	0%	0%	0%	0%	0	0	0	0	0	0
150	4	410002	OLDHAM	IH40	33-0.35	33-0.55	35.25611	102.4886	0%	0%	0%	0%	0	0	0	0	0	0

151	5	500501	HALE	IH27	43+0.0	43-0.2	34.23306	101.7103	0%	0%	0%	0%	0	0	0	0	0	0
152	5	500501	HALE	IH27	39+0.0	39+0.2	34.07639	101.8344	0%	0%	0%	0%	0	0	0	0	0	0
153	5	500502	HALE	IH27	42+0.47	42+0.27	34.10639	101.7806	0%	0%	0%	0%	0	0	0	0	0	0
154	5	500502	HALE	IH27	43-0.2	43+0.0	34.10667	101.7789	0%	0%	0%	0%	0	0	0	0	0	0
155	5	500701	HALE	IH27	39-0.5	39-0.7	34.07278	101.84	0%	0%	0%	0%	0	0	0	0	0	0
156	5	500702	HALE	IH27	38+0.07	38-0.13	34.06583	101.8439	0%	0%	0%	0%	0	0	0	0	0	0
157	5	500703	HALE	IH27	39+0.0	39-0.2	34.07667	101.8347	0%	0%	0%	0%	0	0	0	0	0	0
158	5	500801	HALE	IH27	57+0.0	57-0.2	34.28722	101.7211	0%	0%	0%	0%	0	0	0	0	0	0
159	5	500801	HALE	IH27	55+0.0	55-0.2	34.25694	101.7089	0%	0%	0%	0%	0	0	0	0	0	0
160	5	500802	HALE	IH27	57+0.0	57-0.2	34.28472	101.7197	0%	0%	0%	0%	0	0	0	0	0	0
161	5	500802	HALE	IH27	55+0.0	55-0.2	34.25972	101.7097	0%	0%	0%	0%	0	0	0	0	0	0
162	5	500901	HALE	IH27	60+0.1	60+0.3	34.33083	101.74	0%	0%	0%	0%	0	0	0	0	0	0
163	5	500901	SWISHER	IH27	60+0.0	60+0.2	34.32833	101.7383	0%	0%	0%	0%	0	0	0	0	0	0
164	5	500902	HALE	IH27	59+0.1	59+0.3	34.31694	101.7342	0%	0%	0%	0%	0	0	0	0	0	0
165	9	900101	McLENNAN	IH35	313+0.6	313+0.8	31.26694	97.26806	0%	0%	0%	0%	0	0	0	0	0	0
166	9	900102	FALLS	IH35	313+1.1	313+1.3	31.27	97.26694	0%	0%	0%	0%	0	0	0	0	0	0
167	9	900103	FALLS	IH35	314+0.65	314+0.85	31.28111	97.22556	10%	0%	5%	0%	0	0	0	0	0	0
168	9	900104	FALLS	IH35	315+0.1	315+0.3	31.28583	97.25556	0%	0%	0%	0%	0	0	0	0	0	0
169	9	900105	FALLS	IH35	315-0.1	315-0.3	31.28389	97.25778	0%	1%	0%	0%	0	0	0	0	0	0
170	9	900201	McLENNAN	IH35	316+0.3	316+0.5	31.30139	97.24806	0%	0%	5%	0%	2	0	0	0	0	0
171	9	900202	McLENNAN	IH35	316+.09	316+1.1	31.31028	97.24306	0%	0%	0%	0%	1	1	0	0	0	0
172	9	900203	McLENNAN	IH35	318+0.1	318+0.3	31.32444	97.23111	1%	2%	0%	0%	2	0	0	0	0	0
173	9	900204	McLENNAN	IH35	319-0.3	319-0.5	NA	NA	0%	0%	0%	0%	0	0	0	0	0	0
174	9	900205	McLENNAN	IH35	318-0.3	318-0.5	NA	NA	0%	0%	0%	0%	0	0	1	0	0	0
175	9	900206	McLENNAN	IH35	318-0.8	318-1.0	31.3125	97.24194	0%	3%	0%	0%	0	0	0	0	0	0
176	9	900401	McLENNAN	IH35	335-1.7	335-1.9	31.52611	97.13361	0%	0%	0%	0%	0	0	0	0	0	0
177	9	900402	McLENNAN	IH35	335-1.9	335-2.1	31.52333	97.13472	0%	0%	0%	0%	0	0	0	0	0	0
178	9	900403	McLENNAN	IH35	331+0.7	331+0.9	31.50389	97.14417	0%	0%	0%	0%	0	0	0	0	0	0
179	9	900404	McLENNAN	IH35	332+0.5	332+0.6	31.51583	97.13806	0%	0%	0%	0%	0	0	0	0	0	0
180	12	12513	MONTGOMERY	IH45	75	75	30.1375	95.445	0%	0%	0%	0%	0	0	0	0	0	0
181	12	12513	Removed from database, construction going on															
182	12	12526	HARRIS	IH45	66	66	30.01583	95.42806	0%	0%	0%	0%	0	0	0	0	0	0
183	12	12537	HARRIS	IH45	67	67	30.02778	95.42889	0%	0%	0%	0%	0	0	0	0	0	0
184	12	12537	Removed from database, exir ramp interfering															
185	12	1212301	HARRIS	IH10	775+0.6	775+0.4	29.77806	95.41361	0%	0%	0%	0%	0	0	0	0	0	0
186	12	1212302	HARRIS	IH10	766+0.05	765+0.85	29.7775	95.40444	0%	0%	0%	0%	0	0	0	0	0	0
187	12	1212303	HARRIS	IH10	764+0.7	764+0.5	29.77778	95.42778	0%	0%	0%	0%	0	0	0	0	0	0
188	12	1243901	HARRIS	BW8	ANTOINE	ANTOINE	29.93778	95.47972	0%	0%	0%	0%	0	0	0	0	0	0
189	12	1244001	HARRIS	BW8	ANTOINE	ANTOINE	29.93694	95.48111	0%	0%	0%	0%	0	0	0	0	0	0
190	12	1244101	HARRIS	IH45	73+0.1	73+0.3	30.115	95.43833	0%	0%	0%	0%	0	0	0	1	0	0
191	12	1244102	HARRIS	IH45	73+0.3	73+0.5	30.1175	95.44111	0%	0%	0%	0%	0	0	0	0	0	0
192	12	1244301	HARRIS	SH6	666-1.1	666-1.3	29.90917	95.62917	0%	0%	0%	0%	0	0	0	0	3	0
193	12	1244401	HARRIS	SH6	666-1.4	666-1.6	29.91056	95.62861	0%	0%	0%	0%	0	0	0	0	0	0
194	12	1244701	HARRIS	SH6	672+0.3	672+0.5	MISSED	MISSED	0%	0%	0%	0%	7	0	0	0	0	0
195	12	1244702	HARRIS	SH6	672+0.6	672+0.8	29.80528	95.64528	0%	0%	0%	0%	0	0	0	0	0	0
196	12	1290101	HARRIS	BW8	722+0.25	722+0.45	29.93861	95.37556	0%	0%	0%	0%	0	0	0	0	0	0
197	12	1290102	HARRIS	BW8	722+0.45	722+0.65	29.93861	95.3725	0%	0%	0%	0%	0	0	0	0	0	0
198	12	1290103	HARRIS	BW8	724-0.87	724-1.07	29.93917	95.36222	0%	0%	0%	0%	0	0	0	0	0	0
199	12	1290104	HARRIS	BW8	724-1.07	724-1.27	29.93917	95.36528	0%	0%	0%	0%	0	0	0	0	0	0
200	12	1290201	HARRIS	BW8	720+1.4	720+1.6	29.93861	95.55889	0%	0%	0%	0%	0	0	0	0	0	0

201	12	1290202	HARRIS	BW8	722-0.3	722-0.5	29.93889	95.3875	0%	0%	0%	0%	0	0	0	0	0	0
202	12	1290408	HARRIS	BW8	735+0.7	735+0.9	29.92528	95.55306	0%	0%	0%	0%	0	0	0	0	0	0
203	12	1290508	HARRIS	BW8	736-0.25	736-0.45	29.92278	95.55611	0%	0%	0%	0%	0	0	0	0	0	0
204	12	1290601	HARRIS	BW8	702+0.0	702+0.2	29.80056	95.56306	0%	0%	0%	0%	0	0	0	0	0	0
205	12	1290701	HARRIS	BW8	702+0.0	702-0.2	29.80056	95.56389	0%	0%	0%	0%	0	0	0	0	0	0
206	12	1290801	HARRIS	BW8	706+0.0	706-0.2	29.85833	95.56444	0%	0%	0%	0%	0	0	0	0	0	0
207	12	1290901	HARRIS	BW8	706-0.2	706+0.0	29.85778	95.56333	0%	0%	0%	0%	0	0	0	0	0	0
208	12	1292001	HARRIS	H610 FRT(	34+0.0	34+0.31	29.695	95.32028	0%	0%	0%	0%	5	0	0	1	5	1
209	12	1292002	HARRIS	H610 FRT(	34-0.01	34-0.21	29.69528	95.3175	0%	0%	0%	0%	0	0	0	0	0	0
210	12	1292501	HARRIS	IH10	766+0.7	766+0.9	29.77694	95.39417	0%	0%	0%	0%	0	0	0	0	0	0
211	12	1299601	HARRIS	SH249	460+0.0	460+0.2	29.9825	95.56917	0%	0%	0%	0%	0	0	0	0	0	0
212	12	1299602	HARRIS	SH249	460+0.2	460+0.0	29.98389	95.57667	0%	0%	0%	0%	0	0	0	0	0	0
213	12	1299701	HARRIS	IH45	65+0.0	65+0.2	29.99889	95.42528	0%	0%	0%	0%	0	0	0	0	0	0
214	12	1299702	HARRIS	IH45	65+0.4	65+0.2	29.98639	95.43833	0%	0%	0%	0%	0	0	0	0	0	0
215	12	1299801	GALVESTON	IH45	19+0.0	19+0.2	29.44722	95.075	0%	0%	0%	0%	0	0	0	0	0	0
216	12	1299802	GALVESTON	IH45	20+0.0	20+0.2	29.45889	95.08472	0%	0%	0%	0%	0	0	0	0	0	0
217	12	1299901	HARRIS	SH146	494+0.0	494+0.2	29.6575	95.02944	0%	0%	0%	0%	0	0	0	0	0	0
218	12	1299902	HARRIS	SH146	494+0.0	494-0.2	29.65778	95.03611	0%	0%	0%	0%	0	0	0	0	0	0
219	13	13071	FAYETTE	SH71	634	634	29.90944	96.90333	0%	0%	0%	0%	0	0	0	0	0	0
220	13	13071	FAYETTE	SH71	636A	636A	29.91083	96.90056	0%	0%	0%	0%	1	0	0	0	0	0
221	13	13071	FAYETTE	SH71	638A	638A	29.92333	96.56278	0%	0%	0%	0%	0	0	0	0	0	0
222	13	13071	FAYETTE	SH71	646	646	29.87667	96.75389	0%	0%	0%	0%	1	0	0	0	0	0
223	13	13071	COLORADO	SH71	652	652	29.81917	96.68917	0%	0%	0%	0%	1	0	0	0	0	0
224	13	13071	COLORADO	SH71	654	654	29.80139	96.66806	0%	0%	0%	0%	0	0	0	0	0	0
225	13	1300101	COLORADO	IH10	700-0.6	700-0.8	29.71194	96.49528	0%	0%	0%	0%	0	0	0	0	0	0
226	13	1300102	COLORADO	IH10	698-0.3	698-0.5	29.7025	96.51944	0%	0%	0%	0%	0	0	0	0	0	0
227	13	1300203	COLORADO	IH10	695-0.05	695-0.25	29.69389	96.56278	0%	0%	0%	0%	0	0	0	0	0	0
228	13	1300204	COLORADO	IH10	693-0.15	693-0.35	29.69389	96.56306	0%	0%	0%	0%	0	0	0	0	0	0
229	13	1300205	COLORADO	IH10	692-0.2	692-0.4	29.69361	96.59694	0%	0%	0%	0%	0	0	0	0	0	0
230	13	1300701	COLORADO	IH10	685-0.0	685-0.2	29.69139	96.72694	0%	0%	0%	0%	0	0	0	0	0	0
231	13	1300702	COLORADO	IH10	686+0.0	686+0.2	29.69194	96.72722	0%	0%	0%	0%	0	0	0	0	0	0
232	13	1300703	COLORADO	IH10	686+0.7	686+0.9	29.68944	96.71111	0%	0%	0%	0%	0	0	0	0	0	0
233	13	1300704	COLORADO	IH10	688+0.25	688+0.45	29.69028	96.67389	0%	0%	0%	0%	0	0	0	0	0	0
234	13	1300705	COLORADO	IH10	688+0.85	689+1.05	29.68972	96.66361	0%	0%	5%	0%	0	0	0	0	0	0
235	13	1300901	VICTORIA	US77	546-1.2	546-1.4	28.71278	97.0425	0%	0%	0%	0%	0	0	0	0	0	0
236	13	1300901	VICTORIA	US77	588-0.75	588-0.95	28.70444	97.04583	0%	0%	0%	0%	0	0	0	0	0	0
237	13	1300902	VICTORIA	US77	546+1.5	546+1.7	28.70944	97.04472	0%	0%	0%	0%	0	0	0	0	0	0
238	13	1300902	VICTORIA	US77	586+0.95	586+1.15	28.70778	97.04417	0%	0%	1%	0%	0	0	0	0	0	0
239	13	1301302	FAYETTE	IH10	668-0.8	667-0.0	29.69361	97.02056	0%	0%	0%	0%	0	0	0	0	0	0
240	13	1301303	FAYETTE	IH10	667-0.45	667-0.65	29.69611	97.03028	0%	0%	0%	0%	0	0	0	0	0	0
241	13	1301304	FAYETTE	IH10	667-0.25	667-0.45	29.69556	97.02778	0%	0%	0%	0%	0	0	0	0	0	0
242	13	1301305	FAYETTE	IH10	664-0.55	664-0.75	29.69778	97.08222	0%	0%	0%	0%	0	0	0	0	0	0
243	13	1301501	FAYETTE	IH10	661-0.0	661-0.2	29.69667	97.12333	0%	0%	0%	0%	0	0	0	0	0	0
244	13	1301502	FAYETTE	IH10	660-0.25	660-0.45	29.69667	97.14389	0%	0%	0%	0%	0	0	0	0	0	0
245	13	1301503	FAYETTE	IH10	660-0.85	659-0.05	29.69417	97.15389	0%	0%	0%	0%	0	0	0	0	0	0
246	13	1301504	FAYETTE	IH10	659+0.6	659+0.8	29.65972	97.40222	0%	0%	0%	0%	0	0	0	0	0	0
247	13	1301505	FAYETTE	IH10	662-0.75	662-0.95	29.69639	97.11917	0%	0%	0%	0%	0	0	0	0	0	0
248	13	1301901	JACKSON	US59	622-1.60	622-1.8	28.90861	96.78417	0%	0%	20%	0%	0	0	0	0	0	0
249	13	1301902	JACKSON	US59	618-0.0	618-0.2	28.93861	96.72528	0%	0%	12%	0%	0	0	0	0	0	0
250	13	1301903	JACKSON	US59	586+0.95	586+1.15	29.17389	96.30444	0%	0%	0%	0%	0	0	0	0	0	0

251	13	1301904	JACKSON	US59	622-0.8	622-1.0	28.91917	96.7625	0%	0%	0%	0%	0	0	0	0	0	0
252	13	1302001	GONZALES	IH10	645-0.2	645-0.4	29.66694	97.32833	0%	0%	0%	0%	0	0	0	0	0	0
253	13	1302002	GONZALES	IH10	645-0.75	645-0.95	29.66694	97.32833	0%	0%	0%	0%	0	0	0	0	0	0
254	13	1302003	GONZALES	IH10	643+0.84	644+0.0	29.65972	97.40222	0%	0%	0%	0%	0	0	0	0	0	0
255	13	1302101	GONZALES	IH10	652-0.0	652-0.2	29.6825	97.26972	1%	0%	0%	0%	1	0	0	0	0	0
256	13	1302102	GONZALES	IH10	663-0.55	663-0.75	29.68528	97.26306	0%	0%	0%	0%	0	0	0	0	0	0
257	13	1302103	GONZALES	IH10	650+0.3	650+0.5	29.65972	97.40222	0%	0%	0%	0%	0	0	0	0	0	0
258	13	1302104	GONZALES	IH10	651+0.1	651+0.3	29.65972	97.40222	0%	0%	0%	0%	0	0	0	0	0	0
259	13	1302105	GONZALES	IH10	648+0.3	648+0.1	29.66861	97.31833	0%	0%	0%	0%	0	0	0	0	0	0
260	13	1302301	WHARTON	US59	586-1.7	586-1.9	29.17778	96.26083	0%	0%	0%	0%	0	0	0	0	0	0
261	13	1302302	WHARTON	US59	584+0.15	583+0.95			UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE
262	13	1302303	WHARTON	US59	584-0.15	584-0.35	29.19389	96.26306	0%	0%	0%	0%	0	0	0	0	0	0
263	13	1302304	WHARTON	US59	582-0.0	582-0.2	29.19722	96.245	0%	0%	0%	0%	0	0	0	0	0	0
264	13	1302401	WHARTON	US59	580-1.1	580-1.3	29.22222	96.20667	0%	0%	0%	0%	0	0	0	0	0	0
265	13	1302402	WHARTON	US59	578-0.0	578-0.2	29.24417	96.1975	0%	0%	0%	0%	0	0	0	0	0	0
266	13	1302801	WHARTON	US59	572+0.2	572+0.0	29.28056	96.13389	0%	0%	0%	0%	0	0	3	0	0	0
267	13	1302803	WHARTON	US59	570+0.4	570+0.6	29.3225	96.12306	0%	0%	0%	0%	0	0	0	0	0	0
268	13	1302804	WHARTON	US59	571+0.8	572+0.0	29.30056	96.12806	0%	0%	0%	0%	0	0	0	0	0	0
269	13	1302901	JACKSON	US59	602+0.2	602-0.0	29.05111	96.50556	0%	0%	0%	0%	0	0	0	0	0	0
270	13	1302902	JACKSON	US59	600+0.0	600-0.2	29.06611	96.47472	0%	1%	0%	0%	0	0	0	0	0	0
271	13	1302903	JACKSON	US59	600+0.0	600+0.2	29.09917	96.42444	0%	0%	0%	0%	0	0	0	0	0	0
272	13	1303001	JACKSON	US59	602+0.55	602+0.75	29.05	96.51444	1%	0%	7%	0%	0	0	0	0	0	0
273	13	1303002	JACKSON	US59	603+0.4	603+0.6	29.04417	96.52444	0%	0%	0%	0%	0	0	0	0	0	0
274	13	1303101	JACKSON	US59	608-1.2	608-1.4	29.01667	96.56972	0%	0%	0%	0%	0	0	0	0	0	0
275	13	1303102	JACKSON	US59	606+0.2	606+0.0	29.02278	96.55861	0%	0%	19%	0%	0	0	0	0	0	0
276	13	1303201	JACKSON	US59	616-3.3	616-3.5	28.96417	96.67639	0%	0%	0%	0%	0	0	0	0	0	0
277	13	1303202	JACKSON	US59	612-1.5	612-1.7	28.99028	96.62389	0%	0%	0%	0%	0	0	0	0	0	0
278	13	1303203	JACKSON	US59	610-1.5	610-1.7	29.00639	96.59111	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE
279	13	1303204	JACKSON	US59	608+0.55	608+0.75	29.015	96.57472	0%	0%	0%	0%	0	0	0	0	0	0
280	15	1503202	BEXAR	US281	143+0.8	144+0.0	29.45083	98.48361	0%	0%	5%	0%	0	0	0	0	0	0
281	15	1503601	BEXAR	US281	144+1.1	144+1.3	29.46417	98.47444	0%	0%	0%	0%	0	0	0	0	0	0
282	15	1503602	BEXAR	US281	147+0.8	148+0.0	29.49972	98.48222	0%	0%	0%	0%	0	0	0	0	0	0
283	15	1503603	BEXAR	US281	147+0.4	147+0.6	29.49444	98.48389	0%	0%	0%	0%	0	0	0	0	0	0
284	15	1590101	BEXAR	IH35	167+0.89	168+0.04	29.53556	98.38556	0%	0%	0%	0%	0	0	0	0	0	0
285	15	1590201	BEXAR	IH35	166+0.0	166+0.16	29.51083	98.3975	0%	0%	0%	0%	0	0	1	0	0	0
286	15	1590202	BEXAR	IH35	165+0.65	165+0.85	29.50528	98.39861	0%	0%	5%	0%	0	0	0	0	0	0
287	17	1700201	WALKER	IH45	124+0.0	124+0.2	31.03667	95.93944	0%	0%	0%	0%	0	0	0	0	0	0
288	17	1700202	WALKER	IH45	132-0.1	132-0.3	30.86611	95.75556	0%	0%	0%	0%	0	0	0	0	0	0
289	17	1700203	WALKER	IH45	131-0.6	131-0.8	30.84944	95.73583	0%	0%	0%	0%	0	0	0	0	0	0
290	17	1700204	WALKER	IH45	130+0.0	130-0.2	30.84667	95.73278	0%	0%	0%	0%	0	0	0	0	0	0
291	17	1700205	WALKER	IH45	130-0.5	130-0.7	30.84139	95.725	0%	0%	5%	0%	0	0	0	0	0	0
292	17	1700206	WALKER	IH45	129-0.5	129-0.7	30.83167	95.71361	0%	0%	0%	0%	0	0	0	0	0	0
293	17	1700207	WALKER	IH45	128-0.7	128-0.9	30.83194	95.71306	0%	0%	0%	0%	0	0	0	0	0	0
294	17	1700301	LEON	IH45	152+0.8	153+0.0	30.83194	95.71306	0%	0%	10%	1%	0	0	0	0	0	0
295	17	1700302	LEON	IH45	153+0.5	153+0.7	31.09917	95.96278	0%	0%	11%	3%	0	0	0	0	0	0
296	17	1700303	LEON	IH45	153+0.9	154+0.1	31.09917	95.96306	0%	0%	13%	5%	0	0	0	0	0	0
297	17	1700304	LEON	IH45	157+0.2	157+0.4	31.16	95.98528	0%	0%	9%	0%	0	0	0	0	0	0
298	17	1700305	LEON	IH45	157+0.5	157+0.7	31.16556	95.98611	0%	0%	11%	6%	0	0	0	0	0	0
299	17	1700306	LEON	IH45	158+0.0	158+0.2	31.17111	95.98889	0%	0%	6%	3%	1	0	0	0	0	0
300	17	1700401	MADISON	IH45	152-0.2	152-0.4	31.28361	96.23194	0%	0%	0%	0%	0	0	0	0	0	0

301	17	1700402	MADISON	IH45	150+0.0	150-0.2	31.06028	95.95028	0%	0%	0%	0%	0	0	0	0	0	0
302	17	1700403	MADISON	IH45	150-0.3	150-0.5	31.05639	95.94861	0%	0%	0%	0%	0	0	0	0	0	0
303	17	1700404	MADISON	IH45	149+0.2	149+0.0	31.04833	95.94667	0%	0%	0%	0%	0	0	0	0	0	0
304	17	1700405	MADISON	IH45	149-0.1	149-0.3	31.04528	95.94472	0%	0%	0%	0%	0	0	0	0	0	0
305	17	1700406	MADISON	IH45	148-0.5	148-0.7	31.0275	95.9325	0%	0%	0%	0%	0	0	0	0	0	0
306	17	1700701	LEON	IH45	173+0.0	173-0.2	31.36722	96.01833	0%	0%	0%	0%	0	0	0	0	0	0
307	17	1700702	LEON	IH45	172+0.2	172+0.0	31.36722	96.01833	0%	0%	0%	0%	0	0	0	0	0	0
308	17	1700703	LEON	IH45	171+0.9	171+0.7	31.36722	96.01833	0%	0%	0%	0%	0	0	0	0	0	0
309	17	1700704	LEON	IH45	171+0.6	171+0.4	31.36306	96.01639	0%	0%	0%	0%	0	0	0	0	0	0
310	17	1700705	LEON	IH45	171-0.2	171-0.4	31.35139	96.01417	0%	0%	0%	0%	0	0	0	0	0	0
311	17	1700706	LEON	IH45	170+0.2	170+0.0	31.34333	96.01167	0%	0%	0%	0%	0	0	0	0	0	0
312	18	1805401	DALLAS	IH30	50-0.1	50+0.1	32.79139	96.73861	0%	0%	0%	0%	0	0	0	0	0	0
313	18	1805401	DALLAS	IH30	50+0.1	50-0.1	32.79194	96.735	0%	0%	0%	0%	0	0	0	0	0	0
314	18	1805402	DALLAS	IH30	49+0.2	49+0.0	32.79139	96.75194	0%	0%	0%	0%	0	0	0	0	0	0
315	18	1806201	DALLAS	IH30	46-0.15	46+0.05	32.77167	96.79972	0%	0%	0%	0%	0	0	0	0	0	0
316	18	1806601	DALLAS	IH35E	422+0.2	422+0.4	32.69278	96.82333	0%	0%	0%	0%	0	0	0	0	0	0
317	18	1806602	DALLAS	IH35E	423+0.3	423+0.5	32.70056	96.88	0%	0%	0%	0%	0	0	0	0	0	0
318	18	1807101	DENTON	IH35W	68-0.05	68+0.15	32.98917	97.30083	0%	0%	0%	0%	0	0	0	0	0	0
319	18	1807101	DENTON	IH35W	71-0.5	71-0.3	33.02028	97.27917	0%	0%	0%	0%	0	0	0	0	0	0
320	18	1807102	DENTON	IH35W	70-0.4	70-0.2	33.01028	97.28556	0%	0%	0%	0%	0	0	0	0	0	0
321	18	1807103	DENTON	IH35W	70+0.55	70+0.75	33.02167	97.2775	0%	0%	0%	0%	0	0	0	0	0	0
322	18	1807201	DALLAS	IH635	26-0.02	26-0.09	32.91306	96.8725	0%	0%	0%	0%	0	0	0	0	0	0
323	18	1807202	DALLAS	IH635	26-0.6	26-0.8	32.91472	96.86611	0%	0%	0%	0%	0	0	0	0	0	0
324	18	1807203	DALLAS	IH635	25+0.4	25+0.2	32.915	96.86444	0%	0%	0%	0%	0	0	0	0	0	0
325	18	1807203	DALLAS	IH635	25-0.06	25-0.26	32.91722	96.85694	0%	0%	0%	0%	0	0	0	0	0	0
326	18	1807204	DALLAS	IH635	24+0.4	24+0.2	32.92167	96.84694	0%	0%	0%	0%	0	0	0	0	0	0
327	18	1807301	DALLAS	IH635	23+0.7	23+0.5	32.92556	96.83833	0%	0%	0%	0%	0	0	0	0	0	3
328	18	1807303	DALLAS	IH635	24+0.2	24+0.4	32.92222	96.84611	0%	0%	0%	0%	0	0	0	0	0	0
329	18	1807901	DALLAS	IH635	19-0.76	19-0.96	32.91833	96.74611	0%	0%	0%	0%	0	0	0	0	0	0
330	18	1807901	DALLAS	IH635	14-0.05	14+0.15	32.87972	96.68889	0%	0%	0%	0%	0	0	0	0	0	0
331	18	1807902	DALLAS	IH635	19-1.5	19-1.7	32.91111	96.73528	0%	0%	0%	0%	0	0	0	0	0	0
332	18	1807903	DALLAS	IH635	31+0.7	31+0.9	32.91833	96.96972	0%	0%	0%	0%	0	0	0	0	0	0
333	18	1807903	DALLAS	IH635	29+2.7	29+2.9	32.91861	96.96889	0%	0%	0%	0%	0	0	0	0	0	0
334	18	1807904	DALLAS	IH635	14-0.15	14-0.35	32.87778	96.68917	0%	0%	0%	0%	0	0	0	0	0	0
335	18	1808001	DENTON	IH35W	72+0.5	72+0.65	33.045	97.25694	0%	0%	0%	0%	0	0	0	0	0	0
336	18	1808001	DENTON	IH35W	82-0.5	82-0.7	33.15917	97.18889	0%	0%	0%	0%	0	0	0	0	0	0
337	18	1808002	DENTON	IH35W	81-0.2	81-0.4	33.15222	97.19333	0%	0%	0%	0%	0	0	0	0	0	0
338	18	1808004	DENTON	IH35W	74-0.6	74-0.8	33.05611	97.24833	0%	0%	0%	0%	0	0	0	0	0	0
339	18	1808005	DENTON	IH35W	71+0.17	71+0.0	33.02944	97.27083	0%	0%	0%	0%	0	0	0	0	0	0
340	18	1808601	DENTON	IH35W	84+0.1	84+0.3	33.195	97.16778	0%	0%	0%	0%	0	0	0	0	0	0
341	18	1808602	DENTON	IH35W	85+0.1	85+0.3	33.20806	97.16417	0%	0%	0%	0%	0	0	0	0	0	0
342	18	1808602	DENTON	IH35W	85-0.75	85-0.55	33.1975	97.16694	0%	0%	0%	0%	0	0	0	0	1	0
343	18	1808801	DALLAS	IH635	5+0.3	5+0.5	32.7775	96.62361	0%	0%	0%	0%	0	2	0	0	0	0
344	18	1808801	DALLAS	IH635	5-0.85	5-1.05	32.76111	96.62	0%	0%	0%	0%	0	0	0	0	0	0
345	18	1808802	DALLAS	IH635	8-0.9	7+0.1	32.80417	96.62667	0%	0%	0%	0%	0	0	0	0	0	0
346	18	1808803	DALLAS	IH635	5-1.6	5-1.4	32.75139	96.61417	0%	0%	0%	0%	0	0	0	0	0	0
347	18	1810601	DALLAS	IH20	467-0.04	467-0.24	32.6425	96.83556	0%	0%	0%	0%	0	0	0	0	0	0
348	18	1810601	DALLAS	IH20	464+0.2	464+0.4	32.65528	96.88056	0%	0%	0%	0%	0	0	0	0	0	0
349	18	1810602	DALLAS	IH20	465+0.7	465+0.9	32.64556	96.85667	0%	0%	0%	0%	0	0	0	0	0	0
350	18	1810602	DALLAS	IH20	466+0.2	466+0.0	32.64472	96.84722	0%	0%	0%	0%	0	0	0	0	0	0

351	18	1810603	DALLAS	IH20	466-0.75	466-0.95	32.64778	96.86306	0%	0%	0%	0%	0	0	0	0	0	0
352	18	1810701	DALLAS	IH20	457+0.61	457+0.81	32.6725	96.98917	0%	0%	0%	0%	0	0	0	0	0	0
353	18	1810702	DALLAS	IH20	458-0.8	457+0.0	32.67417	96.99611	0%	0%	0%	0%	0	0	0	0	0	0
354	18	1810702	DALLAS	IH20	457+0.4	457+0.6	32.67306	96.9925	0%	0%	0%	0%	0	0	0	0	0	0
355	18	1810703	DALLAS	IH20	460-0.6	460-0.4	32.67639	97.02444	0%	0%	0%	0%	0	0	0	0	0	0
356	19	19001	HARRISON	IH20	634	634	32.47667	94.07778	0%	0%	0%	0%	0	0	0	0	0	0
357	19	19001	HARRISON	IH20	634	634	32.47889	94.08694	0%	0%	0%	0%	0	0	0	0	0	0
358	19	19001	HARRISON	IH20	631	631	32.48611	94.12472	0%	0%	0%	0%	0	0	0	0	0	0
359	19	19001	HARRISON	IH20	631	631	32.48694	94.12833	0%	0%	0%	0%	0	0	0	0	0	0
360	19	19001	HARRISON	IH20	631	631	Section canceled. Same characteristics as section 19001-5											
361	19	19006	HARRISON	IH20	621	621	N/A	N/A	0%	0%	0%	0%	0	0	0	0	0	0
362	19	19006	HARRISON	IH20	620	620	32.49333	94.31167	0%	0%	0%	0%	0	0	0	0	0	0
363	19	19006	HARRISON	IH20	619	619	32.4925	94.33222	0%	0%	0%	0%	0	0	0	0	0	0
364	19	19010	BOWIE	IH30	208	208	33.47083	94.31667	0%	0%	0%	0%	0	0	0	0	0	0
365	19	19010	BOWIE	IH30	212	212	33.4725	94.25167	0%	0%	0%	0%	0	0	0	0	0	0
366	19	19010	BOWIE	IH30	211	211	33.47583	94.26167	0%	0%	0%	0%	0	0	0	0	0	0
367	19	19010	BOWIE	IH30	209	209	33.47472	94.28944	0%	0%	0%	0%	0	0	0	0	0	0
368	19	19019	BOWIE	IH30	198	198	33.46139	94.47806	0%	0%	0%	0%	0	0	0	0	0	0
369	19	19019	BOWIE	IH30	195	195	33.44333	94.51917	0%	0%	0%	0%	0	0	0	0	0	0
370	19	19019	Section canceled. Same characteristics as section 19019-1															
371	19	19051	Section canceled. Same characteristics as section															
372	19	19059	PANOLA	US59	312	312	32.15306	94.32028	0%	0%	0%	0%	0	0	0	0	0	0
373	19	19059	PANOLA	US59	312	312	32.15083	94.32139	0%	0%	0%	0%	0	0	0	0	0	0
374	19	19059	PANOLA	US59	314	314	32.14056	94.32889	0%	0%	0%	0%	0	0	0	0	0	0
375	19	19059	CASS	US59	244	244	33.06278	94.26694	0%	0%	0%	0%	0	0	0	0	0	0
376	19	19059	CASS	US59	244	244	33.05639	94.2875	0%	0%	0%	0%	0	0	0	0	0	0
377	19	19059	CASS	US59	244	244	33.04111	94.30806	0%	0%	0%	0%	0	0	0	0	0	0
378	19	19059	CASS	US59	244	244	33.03028	94.32806	0%	0%	0%	0%	0	0	0	0	0	0
379	19	19059	BOWIE	US59	222	222	33.33167	94.15111	0%	0%	0%	0%	0	0	0	0	0	0
380	19	19059	BOWIE	US59	222	222	33.3225	94.15111	0%	0%	0%	0%	0	0	0	0	0	0
381	19	19059	BOWIE	US59	222	222	33.31	94.15111	0%	0%	0%	0%	0	0	0	0	0	0
382	24	2400301	EL PASO	IH10	20+0.2	20+0.4	31.76806	106.48	0%	0%	0%	0%	0	0	0	0	0	0
383	24	2400401	EL PASO	IH10	21+0.0	21+0.2	31.77472	106.4681	0%	0%	0%	0%	0	0	0	0	0	0
384	24	2400601	EL PASO	IH10	18+0.6	18+0.4	31.76028	106.5036	0%	0%	0%	0%	0	0	0	0	0	0
385	24	2400602	EL PASO	IH10	19+0.1	18+0.9	31.75944	106.4983	0%	0%	0%	0%	0	0	0	0	0	0
386	24	2400701	EL PASO	IH10	17+0.7	17+0.5	31.77028	106.5106	0%	0%	0%	0%	0	0	0	0	0	0
387	24	2400702	EL PASO	IH10	16+0.6	16+0.4	31.785	106.5183	0%	0%	0%	0%	0	0	0	0	0	0
388	24	2400703	EL PASO	IH10	18+0.85	15+0.65	31.79861	106.5197	0%	0%	0%	0%	0	0	0	0	0	0
389	24	2400704	EL PASO	IH10	14+0.8	14+0.6	31.80889	106.5272	0%	0%	0%	0%	0	0	0	0	0	0
390	24	2400901	CULBERSON	IH10	177+0.25	177+0.45	31.065	104.2111	0%	0%	0%	0%	0	0	0	0	0	0
391	24	2400902	CULBERSON	IH10	178+0.5	178+0.7	31.06333	104.1856	0%	0%	0%	0%	0	0	0	0	0	0
392	24	2400903	CULBERSON	IH10	178-0.01	178-0.21	31.065	104.1967	0%	0%	0%	0%	0	0	0	0	0	0
393	24	2401001	CULBERSON	IH10	185+0.0	185-0.2	31.08333	104.0861	0%	0%	0%	0%	0	0	0	0	0	0
394	24	2401002	CULBERSON	IH10	183+0.7	183+0.5	31.08194	104.1081	0%	0%	0%	0%	0	0	0	0	0	0
395	24	2401003	CULBERSON	IH10	182+0.6	182+0.4	31.07444	104.1231	0%	0%	0%	0%	0	0	0	0	0	0
396	24	2401004	CULBERSON	IH10	181+0.0	180+0.8	31.06444	104.1478	0%	0%	0%	0%	0	0	0	0	0	0
397	24	2401005	CULBERSON	IH10	186+0.2	186+0.4	31.08389	104.065	0%	0%	0%	0%	0	0	0	0	0	0
398	24	2401006	CULBERSON	IH10	180+0.8	180+0.6	31.06278	104.1514	0%	0%	0%	0%	0	0	0	0	0	0
399	24	2401101	CULBERSON	IH10	175+0.0	175+0.2	31.06556	104.2469	0%	0%	0%	0%	0	0	0	0	0	0
400	24	2401202	CULBERSON	IH10	166+0.2	166+0.4	31.07222	104.3947	0%	0%	0%	0%	0	0	0	0	0	0

401	24	2401401	CULBERSON	IH10	154+0.05	154+0.25	31.05444	104.5978	0%	0%	0%	0%	0	0	0	0	0	0
402	24	2401402	CULBERSON	IH10	155+0.8	156+0.0	31.05611	104.5681	0%	0%	0%	0%	0	0	0	0	0	0
403	24	2401403	CULBERSON	IH10	164-0.04	164+0.24	31.05972	104.5244	0%	0%	0%	0%	0	0	0	0	0	0
404	24	2401404	CULBERSON	IH10	165+0.0	165+0.2	31.07361	104.4142	0%	0%	0%	0%	0	0	0	0	0	0
405	24	2401501	CULBERSON	IH10	153+0.1	153+0.3	31.05306	104.6136	0%	0%	0%	0%	0	0	0	0	0	0
406	24	2402001	CULBERSON	IH10	142+0.0	142+0.2	31.04278	104.7997	0%	0%	0%	0%	0	0	0	0	0	0
407	24	2402201	CULBERSON	IH10	138+0.25	138+0.45	31.03556	104.8619	0%	0%	0%	0%	0	0	0	0	0	0
408	24	2402202	CULBERSON	IH10	139+0.7	139+0.5	31.03639	104.8372	0%	0%	0%	0%	0	0	0	0	0	0
409	24	2402203	CULBERSON	IH10	138+0.0	137+0.8	31.03722	104.8656	0%	0%	0%	0%	0	0	0	0	0	0
410	24	2402301	CULBERSON	IH10	140+0.2	140+0.4	31.03778	104.8297	0%	0%	0%	0%	0	0	0	0	0	0
411	24	2402801	EL PASO	IH10	4+0.0	4+0.2	31.93972	106.5831	0%	0%	0%	0%	0	0	0	0	0	0
412	24	2402802	EL PASO	IH10	5+0.5	5+0.7	31.92083	106.5831	0%	0%	0%	0%	0	0	0	0	0	0
413	24	2402803	EL PASO	IH10	6+0.0	6+0.15	31.91306	106.5831	0%	0%	0%	0%	0	0	0	0	0	0
414	24	2409101	EL PASO	IH10	97+0.7	97+0.5	31.20972	105.5022	0%	0%	0%	0%	0	0	0	0	0	0
415	24	2409102	EL PASO	IH10	93-0.04	93-0.24	31.20944	105.5022	0%	0%	0%	0%	0	0	0	4	0	0
416	24	2410001	EL PASO	IH10	36+0.0	36+0.2	31.67861	106.2603	0%	0%	0%	0%	0	0	0	0	0	0
417	24	2410002	EL PASO	IH10	37+0.0	37+0.2	31.66861	106.2481	0%	0%	0%	0%	0	0	0	0	0	0
418	24	2410003	EL PASO	IH10	31+0.8	31+0.6	31.72361	106.3081	0%	0%	0%	0%	0	0	0	0	0	0
419	24	2420001	EL PASO	IH10	39+0.83	40+0.03	31.63528	106.2211	0%	0%	0%	0%	0	0	0	0	0	0
420	24	2420003	EL PASO	IH10	41+0.5	41+0.3	31.61028	106.2011	0%	0%	0%	0%	0	0	0	0	0	0
421	24	2430001	EL PASO	IH10	45+0.0	45+0.2	31.57361	106.1733	0%	0%	0%	0%	0	0	0	0	0	0
422	24	2430002	EL PASO	IH10	46+0.0	46+0.2	31.56222	106.1644	0%	0%	0%	0%	0	0	0	0	0	0
423	24	2430003	EL PASO	IH10	46+0.0	46-0.2	31.56194	106.1644	0%	0%	0%	0%	0	0	0	0	0	0
424	24	24QCQA02	EL PASO	IH10	38+0.25	38+0.45	31.66694	106.2467	0%	0%	0%	0%	0	0	0	0	0	0

OBS	DIS	CFTR	MPUNCH	SPUNCH	DCRACK	CORBREA	SPALL	FJOINT	SLABS	CRACK	DIR	LEN	LANES	LANE #	RBD	CURVE	OVER	D
1	1	100101	0	0	0	0	0	0	0	0	W	1000	2	L1	G	N	Y	8
2	1	100102	0	0	0	0	0	0	0	2	W	1000	2	L1	F	N	Y	8
3	1	100103	0	0	0	0	0	0	0	5	W	1000	2	L1	G	N	Y	8
4	1	100104	0	0	0	0	0	0	0	7	W	1000	2	L1	C	N	Y	8
5	1	100105	0	0	0	0	0	0	0	9	W	1000	2	L1	F	N	Y	8
6	1	100106	0	0	0	0	0	0	0	4	W	1000	2	L1	T	N	Y	8
7	1	100301	0	0	0	0	0	0	0	7	W	1000	2	L1	G	N	Y	8
8	1	100302	0	0	0	0	0	0	0	0	W	1000	2	L1	G	N	Y	8
9	1	100303	0	0	0	0	0	0	0	8	W	1000	2	L1	G	N	Y	8
10	1	100304	0	0	0	0	0	0	0	2	W	1000	2	L1	F	N	Y	8
11	1	100305	0	0	0	0	0	0	0	3	W	1000	2	L1	F	N	Y	8
12	1	100306	0	0	0	0	0	0	0	2	W	1000	2	L1	G	N	Y	8
13	1	100501	0	0	0	0	0	0	0	0	W	1000	2	L1	C	N	Y	8
14	1	100502	0	0	0	0	0	0	0	0	W	1000	2	L1	G	N	Y	8
15	1	100503	0	0	0	0	0	0	0	0	W	1000	2	L1	F	N	Y	8
16	1	100505	0	0	0	0	0	0	0	0	W	1000	2	L1	G	N	Y	8
17	1	100506	0	0	0	0	0	0	0	0	E	1000	2	R1	G	N	Y	8
18	1	100801	0	0	0	0	0	0	0	0	S	1000	2	R1	G	N	Y	8
19	1	100802	0	0	0	0	0	0	0	3	S	1000	2	R1	T	N	Y	8
20	1	100803	0	0	0	0	0	0	0	1	S	1000	2	R1	G	N	Y	8
21	1	101301	0	0	0	0	19	0	0	435	N	1000	2	L1	G	N	N	8
22	1	101302	0	0	0	0	13	0	0	461	N	1000	2	L1	G	N	N	8
23	1	101303	0	0	0	0	3	0	0	292	N	1000	2	L1	G	N	N	8
24	1	101304	0	0	0	0	25	0	0	401	N	1000	2	L1	G	N	N	8
25	1	101501	0	0	0	0	0	0	0	252	E	1000	2	R1	T	N	N	8
26	1	101502	0	0	0	0	1	0	0	201	E	1000	2	R1	G	Y	N	8
27	1	101503	0	0	0	0	0	0	0	220	W	1000	2	L1	G	N	N	8
28	1	101504	0	0	0	0	1	0	0	217	W	1000	2	L1	G	N	N	8
29	1	101505	0	0	0	0	0	0	0	238	W	1000	2	L1	T	N	N	8
30	2	200092	0	0	0	0	0	0	0	0	W	1000	2	L1	G	T	Y	8
31	2	200093	0	0	0	0	0	0	0	0	W	500	2	L1	T	T	Y	8
32	2	200094	0	0	0	0	0	0	0	0	W	1000	2	L1	G	T	Y	8
33	2	200095	0	0	0	0	0	0	0	1	W	1000	2	L1	G	T	Y	8
34	2	200111	0	0	0	0	4	0	0	253	S	1000	2	R1	G	R	N	8
35	2	200112	0	0	0	0	1	0	0	277	S	1000	2	R1	G	T	N	8
36	2	200113	0	0	0	0	4	0	0	293	S	1000	2	R1	G	T	N	8
37	2	200114	0	0	0	0	0	0	0	1	S	500	2	R1	G	T	Y	8
38	2	200201	0	0	0	0	0	0	0	182	E	1000	3	R1	G	T	N	8
39	2	200202	0	0	0	0	0	0	0	176	E	1000	3	R1	G	T	N	8
40	2	200203	0	0	0	0	0	0	0	189	E	1000	3	R1	G	T	N	8
41	2	200204	0	0	0	0	1	0	0	192	E	1000	3	R1	C	T	N	8
42	2	200205	0	0	0	0	0	0	0	208	E	1000	3	R1	F	T	N	8
43	2	200231	0	0	0	0	6	0	0	387	N	1000	2	L1	G	L	N	8
44	2	200233	0	0	0	0	11	0	0	270	S	700	2	R1	G	L	N	8
45	2	200234	0	0	0	0	0	0	0	208	S	600	3	R1	G	T	N	8
46	2	202801	0	0	0	0	0	0	0	3	S	1000	2	L1	G	R	Y	8
47	2	202801	0	0	0	0	0	0	0	0	N	1000	2	R1	C	T	Y	8
48	2	202802	0	0	0	0	0	0	0	0	N	1000	2	R1	G	T	Y	8
49	2	202802	0	0	0	0	0	0	0	0	S	1000	2	L1	G	T	Y	8
50	2	202803	0	0	0	0	0	0	0	0	S	1000	2	L1	G	T	Y	8

51	2	203101	0	0	0	0	0	0	0	0	E	1000	2	R1	G	R	Y	8
52	2	203101	0	0	0	0	0	0	0	0	W	1000	2	L1	C	L	Y	8
53	2	203102	0	0	0	0	0	0	0	0	E	1000	2	R1	C	T	Y	8
54	2	203102	0	0	0	0	0	0	0	0	W	1000	2	L1	F	T	Y	8
55	2	203103	0	0	0	0	0	0	0	0	W	1000	2	L1	F	T	Y	8
56	2	203104	0	0	0	0	0	0	0	0	W	1000	2	L1	G	T	Y	8
57	2	203201	0	0	0	0	0	0	0	0	W	1000	2	L1	G	T	Y	8
58	2	203201	0	0	0	0	0	0	0	192	E	1000	3	R1	G	T	N	8
59	2	203202	0	0	0	0	0	0	0	4	W	1000	3	L1	C	T	Y	8
60	2	203202	0	0	0	0	0	0	0	0	E	1000	2	R1	G	T	Y	8
61	2	203203	0	0	0	0	0	0	0	0	E	1000	3	R1	F	T	Y	8
62	2	204901	0	0	0	0	0	0	0	0	S	1000	2	R2	G	T	Y	8
63	2	204901	0	0	0	0	0	0	16	62	N	1000	2	L1	G	T	Y	8
64	2	204902	0	0	0	0	0	0	0	0	S	1000	2	R1	G	T	Y	8
65	2	204903	0	0	0	0	0	0	0	0	S	1000	2	R2	G	T	Y	8
66	2	204904	0	0	0	0	0	0	0	0	S	1000	2	R1	G	T	Y	8
67	2	205001	0	0	0	0	0	0	0	0	S	1000	2	R1	G	T	Y	8
68	2	205001	0	0	0	0	0	0	0	23	N	1000	2	L1	G	T	Y	8
69	2	205002	0	0	0	0	0	0	0	0	S	1000	2	R1	G	T	Y	8
70	2	205101	0	0	0	0	0	0	0	0	E	1000	2	R1	G	T	Y	8
71	2	205101	0	0	0	0	0	0	0	0	W	1000	2	L1	F	R	Y	8
72	2	205102	0	0	0	0	0	0	0	0	E	1000	2	R1	G	T	Y	8
73	2	205901	0	0	0	0	0	0	0	0	E	1000	2	R1	G	T	Y	8
74	2	205901	0	0	0	0	0	0	0	0	W	1000	2	L1	G	T	Y	8
75	2	205902	0	0	0	0	0	0	0	0	W	1000	2	L1	C	T	Y	8
76	2	205902	0	0	0	0	0	0	0	0	E	1000	2	R1	C	T	Y	8
77	2	206001	0	0	0	0	0	0	0	262	E	1000	4	R1	F	R	N	8
78	2	206001	0	0	0	0	0	0	0	139	W	1000	4	L1	F	T	N	8
79	2	206002	0	0	0	0	0	0	0	148	W	1000	4	L1	G	T	N	8
80	2	207501	0	0	0	0	0	0	0	136	N	1000	3	R1	F	T	Y	8
81	2	207501	0	0	0	0	0	0	0	148	S	1000	3	L1	G	T	N	8
82	2	207502	0	0	0	0	0	0	0	141	S	1000	3	L1	G	T	N	8
83	2	207503	0	0	0	0	1	0	0	142	S	1000	3	L1	C	R	N	8
84	2	207504	0	0	0	0	0	0	0	132	S	1000	3	L1	C	T	N	8
85	2	209801	0	0	0	0	0	0	0	178	N	1000	3	R1	G	T	N	8
86	2	209801	0	0	0	0	1	0	0	216	S	1000	3	L1	G	L	N	8
87	2	209802	0	0	0	0	3	0	0	175	E	1000	3	R1	G	T	N	8
88	2	209802	0	0	0	0	2	0	0	156	S	1000	3	L1	F	T	N	8
89	3	300101	0	0	0	0	0	0	0	0	W	1000	2	L1	G	L	Y	8
90	3	300101	0	0	0	0	0	0	0	215	E	1000	2	R1	G	R	N	8
91	3	300102	0	0	0	0	0	0	0	0	W	600	2	L1	G	R	Y	8
92	3	300102	0	0	0	0	0	0	0	195	E	1000	2	R1	G	L	N	8
93	3	300103	0	0	0	0	0	0	0	211	W	1000	2	L1	F	L	N	8
94	3	300401	0	0	0	0	0	0	0	220	E	1000	2	R1	G	T	Y	8
95	3	300403	0	0	0	0	7	0	0	220	W	1000	2	L1	G	T	N	8
96	3	300404	0	0	0	0	0	0	0	8	W	800	2	L1	G	T	Y	8
97	3	300405	0	0	0	0	0	0	0	0	E	1000	2	R1	G	T	Y	8
98	3	301001	0	0	0	0	0	0	0	180	S	1000	2	R1	G	T	N	8
99	3	301002	0	0	0	0	0	0	0	182	S	1000	2	R1	F	T	N	8
100	3	301003	0	0	0	0	0	0	0	160	S	1000	2	R1	G	T	N	8

101	3	301004	0	0	0	0	0	0	0	187	S	1000	2	R1	G	L	N	8
102	3	301005	0	0	0	0	0	0	0	150	N	760	2	L1	F	T	N	8
103	3	301006	0	0	0	0	0	0	0	169	N	1000	2	L1	C	T	N	8
104	3	301101	0	0	0	0	0	0	0	160	N	1000	2	L1	G	T	N	8
105	3	301102	0	0	0	0	0	0	0	120	N	1000	2	L1	T	R	N	8
106	3	301103	0	0	0	0	0	0	0	9	N	1000	2	L1	T	T	Y	8
107	3	301104	0	0	0	0	0	0	0	73	S	1000	2	R1	G	T	Y	8
108	3	301801	0	0	0	0	0	0	0	0	S	1000	2	R1	F	T	Y	8
109	3	301802	0	0	0	0	0	0	0	0	S	1000	2	R1	C	T	Y	8
110	3	301803	0	0	0	0	0	0	0	165	S	1000	2	R1	T	T	N	8
111	3	301804	0	0	0	0	0	0	0	177	S	1000	2	R1	G	T	N	8
112	3	301805	0	0	0	0	0	0	11	127	N	1000	2	L1	G	T	Y	8
113	3	301806	0	0	0	0	0	0	0	30	N	1000	2	L1	G	R	Y	8
114	3	302201	0	0	0	0	0	0	0	164	N	1000	2	L2	G	T	N	8
115	3	302202	0	0	0	0	0	0	0	180	N	1000	2	L1	G	T	N	8
116	3	302203	0	0	0	0	0	0	0	175	N	1000	2	L1	G	T	N	8
117	3	302204	0	0	0	0	0	0	0	205	N	1000	2	L1	G	T	N	8
118	3	302205	0	0	0	0	0	0	0	171	N	1000	2	L1	F	T	N	8
119	4	400201	0	0	0	0	0	0	0	28	W	982	3	L1	T	T	Y	8
120	4	400202	0	0	0	0	0	0	0	35	W	1000	3	L1	G	R	Y	8
121	4	400501	0	0	0	0	0	0	0	0	W	1000	2	L1	G	T	Y	8
122	4	400501	0	0	0	0	0	0	0	0	E	1000	2	R1	G	T	Y	8
123	4	400502	0	0	0	0	0	0	0	2	E	1000	2	R1	G	T	Y	8
124	4	400502	0	0	0	0	0	0	0	8	W	1000	2	L1	G	T	Y	8
125	4	400503	0	0	0	0	0	0	0	12	W	1000	2	L1	G	T	Y	8
126	4	400901	0	0	0	0	0	0	4	14	W	1000	3	L1	G	T	Y	8
127	4	400902	0	0	0	0	0	0	1	5	W	1000	3	L1	G	L	Y	8
128	4	400903	0	0	0	0	0	0	4	17	W	1000	3	L1	T	R	Y	8
129	4	400904	0	0	0	0	0	0	5	9	W	1000	3	L1	G	T	Y	8
130	4	400905	0	0	0	0	0	0	1	11	W	1000	2	L1	G	R	Y	8
131	4	401001	0	0	0	0	0	0	1	75	W	1000	2	L1	G	T	Y	8
132	4	401002	0	0	0	0	0	0	0	1	W	1000	2	L1	G	T	Y	8
133	4	401003	0	0	0	0	0	0	0	16	W	1000	2	L1	F	R	Y	8
134	4	401101	0	0	0	0	0	0	0	13	W	1000	2	L1	G	T	Y	8
135	4	401101	0	0	0	0	0	0	0	39	E	1000	2	R1	G	T	Y	8
136	4	401102	2	0	0	0	0	0	2	56	W	1000	2	L1	T	T	Y	8
137	4	401102	0	0	0	0	0	0	0	14	E	1000	2	R1	T	T	Y	8
138	4	401103	0	0	0	0	0	0	3	36	W	1000	2	L1	G	T	Y	8
139	4	402201	0	0	0	0	1	0	0	389	E	1000	2	R1	G	T	N	9
140	4	402201	0	0	0	0	2	0	0	379	W	1000	2	L1	G	T	N	9
141	4	402202	0	0	0	0	0	0	0	376	W	1000	2	L1	G	R	N	9
142	4	402301	0	0	0	0	0	0	2	1	W	1000	2	L1	C	L	Y	8
143	4	402302	0	0	0	0	0	0	0	10	W	1000	2	L1	C	L	Y	8
144	4	402303	0	0	0	0	0	0	0	2	W	1000	2	L1	G	T	Y	8
145	4	402501	0	0	0	0	0	0	0	0	W	1000	2	L1	C	T	Y	8
146	4	402502	0	0	0	0	0	0	0	0	W	1000	2	L1	C	R	Y	8
147	4	402503	0	0	0	0	0	0	0	0	W	1000	2	L1	F	T	Y	8
148	4	402504	0	0	0	0	0	0	0	0	W	1000	2	L1	T	T	Y	8
149	4	410001	0	0	0	0	0	0	0	148	W	1000	2	L1	G	T	N	8
150	4	410002	0	0	0	0	0	0	0	33	W	1000	2	L1	G	T	N	8

151	5	500501	0	0	0	0	0	0	0	365	S	1000	2	L1	G	T	N	9
152	5	500501	0	0	0	0	1	0	0	195	N	900	2	R1	G	R	N	9
153	5	500502	0	0	0	0	0	0	0	347	S	1000	2	L1	G	T	N	9
154	5	500502	0	0	0	0	0	0	0	352	N	1000	2	R1	G	T	N	9
155	5	500701	0	0	0	0	3	0	0	155	S	1000	2	L1	T	L	N	9
156	5	500702	0	0	0	0	3	0	0	146	S	1000	2	L1	C	T	N	9
157	5	500703	0	0	0	0	0	0	0	184	S	1000	2	L1	G	L	N	9
158	5	500801	0	0	0	0	0	0	0	317	S	1000	2	L1	G	T	N	9
159	5	500801	0	0	0	0	1	0	0	408	N	1000	2	R1	G	L	N	9
160	5	500802	0	0	0	0	1	0	0	395	N	1000	2	R1	G	T	N	9
161	5	500802	0	0	0	0	0	0	0	257	S	1000	2	L1	G	R	N	9
162	5	500901	0	0	0	0	0	0	0	343	S	1000	2	L1	G	T	N	9
163	5	500901	0	0	0	0	3	0	0	334	N	1000	2	R1	G	T	N	9
164	5	500902	0	0	0	0	0	0	0	298	S	1000	2	L1	G	T	N	9
165	9	900101	0	0	0	0	0	0	0	0	N	1000	2	R1	G	T	Y	8
166	9	900102	0	0	0	0	0	0	10	5	N	1000	2	R1	G	R	Y	8
167	9	900103	0	0	0	0	0	0	2	5	N	1000	2	R1	G	T	Y	8
168	9	900104	0	0	0	0	0	0	7	8	N	1000	2	R1	G	L	Y	8
169	9	900105	2	0	0	0	0	0	3	2	S	1000	2	L1	G	R	Y	8
170	9	900201	0	0	0	0	0	0	0	4	N	1000	2	R1	G	T	Y	8
171	9	900202	0	0	0	0	0	0	0	0	N	1000	2	R1	G	T	Y	8
172	9	900203	0	0	0	0	0	0	4	7	N	1000	2	R1	G	L	Y	8
173	9	900204	0	0	0	0	0	0	1	17	S	1000	3	L1	G	T	Y	8
174	9	900205	0	0	0	0	0	0	2	3	S	1000	2	L1	F	L	Y	8
175	9	900206	1	4	0	0	0	0	0	15	S	1000	2	L1	G	T	Y	8
176	9	900401	0	0	0	0	0	0	0	167	S	1000	3	L1	G	T	N	8
177	9	900402	0	0	0	0	0	0	0	123	S	1000	3	L1	C	T	N	8
178	9	900403	0	0	0	0	0	0	0	150	N	1000	3	R1	G	T	N	8
179	9	900404	0	0	0	0	0	0	0	87	N	500	3	R1	G	T	N	8
180	12	12513	0	0	0	0	0	0	0	139	N	1000	5	R1	G	T	N	13
181	12	12513																13
182	12	12526	0	0	0	0	0	0	0	179	N	1000	5	R1	G	T	N	13
183	12	12537	0	0	0	0	0	0	0	170	N	1000	4	R1	G	T	N	13
184	12	12537																13
185	12	1212301	0	0	0	0	0	0	0	128	W	1000	5	L1	C	T	N	10
186	12	1212302	0	0	0	0	0	0	0	125	W	1000	5	L1	C	L	N	10
187	12	1212303	0	0	0	0	0	0	0	181	W	1000	5	L1	C	T	N	10
188	12	1243901	0	0	0	0	0	0	0	92	E	1000	3	A3	G	T	N	10
189	12	1244001	0	0	0	0	4	0	0	119	E	1000	3	A3	G	T	N	10
190	12	1244101	0	0	0	0	0	0	0	144	N	1000	4	R4	F	T	N	10
191	12	1244102	0	0	0	0	0	0	0	121	N	1000	4	K4	G	R	N	10
192	12	1244301	0	0	0	0	0	0	0	261	N	1000	3	K1	G	R	N	10
193	12	1244401	0	0	0	0	0	0	0	160	N	1000	3	K1	G	R	N	10
194	12	1244701	0	0	0	0	75	0	0	133	S	1000	3	K1	F	T	N	10
195	12	1244702	0	0	0	0	0	0	0	111	S	1000	3	K1	F	T	N	10
196	12	1290101	0	0	0	0	0	0	0	35	E	1000	3	R1	G	T	Y	13
197	12	1290102	0	0	0	0	0	0	0	38	E	1000	3	R1	G	T	Y	13
198	12	1290103	0	0	0	0	0	0	0	101	W	1000	3	R1	G	T	Y	13
199	12	1290104	0	0	0	0	0	0	0	104	W	1000	3	R1	G	T	Y	13
200	12	1290201	0	0	0	0	0	0	0	85	E	1000	3	R1	G	T	Y	13

201	12	1290202	0	0	0	0	0	0	0	27	W	600	3	R1	G	T	Y	13
202	12	1290408	0	0	0	0	0	0	0	114	N	1000	3	A1	G	R	N	10
203	12	1290508	0	0	0	0	0	0	0	78	S	1000	3	X1	G	L	N	10
204	12	1290601	0	0	0	0	0	0	0	168	N	1000	3	A1	G	T	N	10
205	12	1290701	0	0	0	0	0	0	0	138	S	1000	3	X1	G	T	N	10
206	12	1290801	0	0	0	0	0	0	0	125	S	1000	3	X1	G	L	N	10
207	12	1290901	0	0	0	0	0	0	0	128	N	1000	3	A1	G	T	N	10
208	12	1292001	0	1	0	0	105	0	13	500	W	1700	3	X1	G	T	N	10
209	12	1292002	0	0	0	0	0	0	0	94	E	1000	2	A1	G	T	N	10
210	12	1292501	0	0	0	0	0	0	0	52	E	1000	5	R1			N	10
211	12	1299601	0	0	0	0	0	0	0	145	S	1000	2	R1	G	T	N	13
212	12	1299602	0	0	0	0	0	0	0	157	N	1000	2	L1	G	T	N	13
213	12	1299701	0	0	0	0	0	0	0	61	N	1000	4	R3	F	T	N	13
214	12	1299702	0	0	0	0	0	0	0	62	S	1000	4	L1	F	T	N	13
215	12	1299801	0	0	0	0	13	0	0	189	N	600	3	R1	G	T	N	13
216	12	1299802	0	0	0	0	27	0	0	247	N	1000	3	R1	G	T	N	13
217	12	1299901	0	0	0	0	9	0	0	48	N	1000	2	R1	G	T	N	10
218	12	1299902	0	0	0	0	11	0	0	40	S	1000	2	L1	G	T	N	10
219	13	13071	0	0	0	0	2	0	3	309	E	1000	2	R1	F	R	N	10
220	13	13071	0	0	0	0	0	0	0	315	E	1000	2	R1	F	T	N	10
221	13	13071	0	0	0	0	19	0	0	180	E	1000	2	R1	C	T	N	10
222	13	13071	0	0	0	0	21	0	7	252	E	1000	2	R1	T	R	N	10
223	13	13071	0	0	0	0	30	0	7	177	E	1000	2	R1	G	T	N	10
224	13	13071	0	0	0	0	0	0	0	0	E	1000	2	R1	C	T	N	10
225	13	1300101	0	0	0	0	0	0	0	0	W	1000	2	L1	C	T	Y	8
226	13	1300102	0	0	0	0	0	0	0	0	W	1000	2	L1	F	L	Y	8
227	13	1300203	0	0	0	0	0	0	0	0	W	1000	2	L1	G	T	Y	8
228	13	1300204	0	0	0	0	0	0	0	2	W	1000	2	L1	G	T	Y	8
229	13	1300205	0	0	0	0	0	0	2	2	W	1000	2	L1	G	T	Y	8
230	13	1300701	1	0	0	0	0	0	0	0	E	1000	2	R1	C	T	Y	8
231	13	1300702	1	0	0	0	0	0	0	0	E	1000	2	R1	C	T	Y	8
232	13	1300703	0	0	0	0	0	0	0	0	E	1000	2	R1	G	T	Y	8
233	13	1300704	0	0	0	0	0	0	0	0	E	1000	2	R1	F	T	Y	8
234	13	1300705	0	0	0	0	0	0	0	0	E	1000	2	R1	F	T	Y	8
235	13	1300901	0	0	0	0	0	0	0	16	N	1000	2	R1	G	L	Y	8
236	13	1300901	0	0	0	0	0	0	0	2	N	1000	2	L1	F	R	Y	8
237	13	1300902	0	0	0	0	0	0	0	0	S	1000	2	L1	G	L	Y	8
238	13	1300902	0	0	0	0	0	0	4	3	S	1000	2	R1	T	L	Y	8
239	13	1301302	0	0	0	0	0	0	0	0	W	1000	2	L1	C	T	Y	8
240	13	1301303	0	0	0	0	0	0	0	0	W	1000	2	L1	F	T	Y	8
241	13	1301304	0	0	0	0	0	0	0	3	W	1000	2	L1	T	T	Y	8
242	13	1301305	0	0	0	0	0	0	0	4	W	1000	2	L1	F	T	Y	8
243	13	1301501	0	0	0	0	0	0	0	0	W	1000	2	L1	C	R	Y	8
244	13	1301502	0	0	0	0	0	0	0	1	W	1000	2	L1	F	L	Y	8
245	13	1301503	0	0	0	0	0	0	0	0	W	1000	2	L1	C	T	Y	8
246	13	1301504	0	0	0	0	0	0	0	1	E	1000	2	R1	G	T	Y	8
247	13	1301505	0	0	0	0	0	0	0	1	W	1000	2	L1	T	T	Y	8
248	13	1301901	0	0	0	0	0	0	0	3	N	1000	2	L1	G	R	Y	8
249	13	1301902	0	0	0	0	0	0	0	52	N	1000	2	L1	G	L	Y	8
250	13	1301903	0	0	0	0	0	0	0	0	S	1000	2	R1	F	L	Y	8

251	13	1301904	4	1	0	0	0	0	20	34	N	1000	2	L1	G	T	Y	8
252	13	1302001	0	0	0	0	0	0		3	W	1000	2	L1	F	L	Y	8
253	13	1302002	0	0	0	0	2	0	2	14	W	1000	2	L1	C	T	Y	8
254	13	1302003	0	0	0	0	0	0	0	0	E	1000	2	R1	T	T	Y	8
255	13	1302101	0	0	0	0	0	0	0	16	W	1000	2	L1	F	T	Y	8
256	13	1302102	0	0	0	0	0	0	0	1	W	1000	2	L1	T	L	Y	8
257	13	1302103	0	0	0	0	0	0	0	0	E	1000	2	R1	F	L	Y	8
258	13	1302104	0	0	0	0	0	0	0	0	E	1000	2	R1	G	T	Y	8
259	13	1302105	0	0	0	0	0	0	0	1	W	1000	2	L1	C	T	Y	8
260	13	1302301	0	0	0	0	0	0	0	0	N	1000	2	L1	F	L	Y	8
261	13	1302302	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	N	1000	2	L1			Y	8
262	13	1302303	0	0	0	0	0	0	0	0	N	1000	2	L1	F	T	Y	8
263	13	1302304	0	0	0	0	0	0	0	0	N	1000	2	L1	G	T	Y	8
264	13	1302401	0	0	0	0	0	0	0	0	N	1000	2	L1	G	L	Y	8
265	13	1302402	0	0	0	0	0	0	0	0	N	1000	2	L1	G	R	Y	8
266	13	1302801	0	0	0	0	0	0	0	0	N	1000	2	L1	G	T	Y	8
267	13	1302803	0	0	0	0	0	0	0	0	S	1000	2	R1	F	T	Y	8
268	13	1302804	0	0	0	0	0	0	0	0	S	1000	2	R1	G	T	Y	8
269	13	1302901	0	0	0	0	0	0	0	5	N	1000	2	L1	F	L	Y	8
270	13	1302902	0	7	3	0	0	0	19	49	N	1000	2	L1	G	T	Y	8
271	13	1302903	0	0	0	0	2	0	0	23	S	1000	2	R1	G	T	Y	8
272	13	1303001	0	0	0	0	0	0	1	14	S	1000	2	R1	F	T	Y	8
273	13	1303002	0	0	1	0	0	0	38	54	S	1000	2	R1	G	T	Y	8
274	13	1303101	0	0	0	0	0	0	0	0	N	1000	2	L1	G	T	Y	8
275	13	1303102	0	0	0	0	0	0	0	0	N	1000	2	L1	F	T	Y	8
276	13	1303201	0	0	0	0	0	0	0	0	N	1000	2	L1	F	T	Y	8
277	13	1303202	0	0	0	0	0	0	0	1	N	1000	2	L1	F	L	Y	8
278	13	1303203	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	UNSAFE	N	1000	2	L1	G	L	Y	8
279	13	1303204	0	0	0	0	0	0	0	3	S	1000	2	R1	F	T	Y	8
280	15	1503202	0	0	0	0	0	0	10	22	N	1000	3	R1	G	R	Y	8
281	15	1503601	5	0	0	0	0	0	30	75	N	1000	3	R1	C	L	Y	8
282	15	1503602	0	0	0	0	0	0	1	4	N	1000	3	R1	F	T	Y	8
283	15	1503603	0	0	0	0	0	0	3	5	N	1000	3	R1	F	R	Y	8
284	15	1590101	0	0	0	0	0	0	0	89	N	800	4	R1	G	T	N	13
285	15	1590201	0	0	0	0	0	0	0	27	N	800	3	R1	T	T	Y	13
286	15	1590202	0	0	0	0	0	0	0	0	N	1000	3	R1	G	T	Y	13
287	17	1700201	0	0	0	0	0	0	0	0	N	1000	2	R1	G	T	Y	8
288	17	1700202	0	0	0	0	0	0	0	0	S	1000	2	L1	G	T	Y	8
289	17	1700203	0	0	0	0	0	0	0	0	S	1000	2	L1	G	T	Y	8
290	17	1700204	0	0	0	0	0	0	0	0	S	1000	2	L1	G	T	Y	8
291	17	1700205	0	0	0	0	0	0	0	0	S	1000	2	L1	G	T	Y	8
292	17	1700206	0	0	0	0	0	0	0	0	S	1000	2	L1	G	T	Y	8
293	17	1700207	0	0	0	0	0	0	0	0	S	1000	2	L1	G	T	Y	8
294	17	1700301	0	0	0	0	0	0	0	0	N	1000	2	R1	G	T	Y	8
295	17	1700302	0	0	0	0	0	0	0	4	N	1000	2	R1	G	T	Y	8
296	17	1700303	1	0	0	0	0	0	0	0	N	1000	2	R1	G	T	Y	8
297	17	1700304	0	0	0	0	0	0	0	0	N	1000	2	R1	G	T	Y	8
298	17	1700305	0	0	0	0	0	0	0	0	N	1000	2	R1	G	T	Y	8
299	17	1700306	0	0	0	0	0	0	2	0	N	1000	2	R1	G	T	Y	8
300	17	1700401	0	0	0	0	0	0	0	2	S	1000	2	L1	G	T	Y	8

301	17	1700402	0	0	0	0	0	0	0	0	S	1000	2	L1	G	T	Y	8
302	17	1700403	0	0	0	0	0	0	0	0	S	1000	2	L1	G	T	Y	8
303	17	1700404	0	0	0	0	0	0	0	0	S	1000	2	L1	G	T	Y	8
304	17	1700405	0	0	0	0	0	0	0	1	S	1000	2	L1	G	T	Y	8
305	17	1700406	0	0	0	0	0	0	0	0	S	1000	2	L1	G	T	Y	8
306	17	1700701	1	0	0	0	29	0	0	309	S	1000	2	L1	G	T	N	8
307	17	1700702	0	0	0	0	41	0	0	307	S	1000	2	L1	G	T	N	8
308	17	1700703	0	0	0	0	38	0	0	328	S	1000	2	L1	G	T	N	8
309	17	1700704	0	0	0	0	28	0	0	317	S	1000	2	L1	G	T	N	8
310	17	1700705	1	0	0	0	39	0	0	408	S	1000	2	L1	G	T	N	8
311	17	1700706	0	0	0	0	34	0	0	396	S	1000	2	L1	G	T	N	8
312	18	1805401	0	0	0	0	0	0	0	0	E	1000	4	R1	C	T	Y	8
313	18	1805401	0	0	0	0	0	0	0	0	W	1000	4	R1	C	T	Y	8
314	18	1805402	0	0	0	0	0	0	0	0	W	1000	3	R1	T	T	Y	8
315	18	1806201	0	0	0	0	0	0	0	149	E	1000	3	R1	C	R	N	8
316	18	1806601	0	0	0	0	0	0	0	183	N	1000	3	R1	F	T	N	8
317	18	1806602	2	0	0	0	0	0	0	175	S	1000	3	L1	C	R	N	8
318	18	1807101	1	0	0	0	25	0	0	146	N	1000	2	R1	G	T	N	8
319	18	1807101	0	0	0	0	0	0	12	134	S	1000	2	L1	C	T	N	8
320	18	1807102	0	1	0	0	0	0	12	130	S	1000	2	L1	C	T	N	8
321	18	1807103	0	0	0	0	58	0	0	257	N	1000	2	R1	G	T	N	8
322	18	1807201	0	0	0	0	4	0	0	136	E	600	4	L1	T	L	N	8
323	18	1807202	0	0	0	0	4	0	0	296	E	1000	6	L1	G	T	N	8
324	18	1807203	0	0	0	0	0	0	0	228	E	1000	5	L1	G	T	N	8
325	18	1807203	0	0	0	0	0	0	0	193	W	1000	5	L1	C	T	N	8
326	18	1807204	0	0	0	0	5	0	0	170	E	1000	5	L1	T	T	N	8
327	18	1807301	0	0	0	0	12	0	0	152	E	1000	5	L1	F	R	N	8
328	18	1807303	0	0	0	0	32	0	0	218	W	1000	6	R1	C	T	N	8
329	18	1807901	0	0	0	0	4	0	0	221	E	1000	5	L1	C	R	N	8
330	18	1807901	0	0	0	0	19	0	0	209	W	1000	4	R1	T	T	N	8
331	18	1807902	0	0	0	0	63	0	0	177	E	1000	5	L1	C	T	N	8
332	18	1807903	0	0	0	0	0	0	0	92	W	1000	3	R1	G	T	N	8
333	18	1807903	0	0	0	0	16	0	3	101	W	1000	3	R1	T	T	Y	8
334	18	1807904	0	0	0	0	14	0	0	248	E	1000	4	L1	F	R	N	8
335	18	1808001	0	0	0	0	55	0	0	203	N	800	2	R1	F	T	N	8
336	18	1808001	0	0	0	0	7	0	1	233	S	1000	2	L1	G	T	N	8
337	18	1808002	1	0	0	0	11	0	0	226	S	1000	2	L1	G	T	N	8
338	18	1808004	0	0	0	0	11	0	0	259	S	1000	2	L1	G	T	N	8
339	18	1808005	0	0	0	0	3	0	7	229	S	896	2	L1	T	T	N	8
340	18	1808601	0	0	0	0	110	0	0	246	N	1000	2	R1	G	T	N	8
341	18	1808602	0	0	0	0	49	0	0	187	N	1000	2	R1	C	L	N	8
342	18	1808602	0	0	0	0	7	0	1	232	S	1000	2	L1	G	T	N	8
343	18	1808801	0	0	0	0	0	0	0	116	N	1000	4	R1	T	T	Y	8
344	18	1808801	0	0	0	0	0	0	0	19	S	1000	4	L1	T	T	Y	8
345	18	1808802	0	0	0	0	0	0	0	14	S	1000	4	L1	T	T	Y	8
346	18	1808803	0	0	0	0	0	0	0	3	S	1000	4	L1	C	T	Y	8
347	18	1810601	0	0	0	0	0	0	0	150	W	1000	4	L1	G	R	N	8
348	18	1810601	0	0	0	0	0	0	0	192	E	1000	4	R1	C	T	N	8
349	18	1810602	0	0	0	0	0	0	0	162	E	1000	4	R1	F	T	N	8
350	18	1810602	0	0	0	0	0	0	0	155	W	1000	4	L1	G	T	N	8

351	18	1810603	0	0	0	0	0	0	0	133	W	1000	4	L1	F	T	N	8
352	18	1810701	0	0	0	0	0	0	0	130	E	1000	4	R1	G	T	Y	8
353	18	1810702	0	0	0	0	0	0	0	0	W	1000	4	L1	G	T	Y	8
354	18	1810702	0	0	0	0	0	0	0	3	E	1000	4	R1	G	T	Y	8
355	18	1810703	0	0	0	0	0	0	0	126	W	1000	4	L1	G	T	N	8
356	19	19001	0	0	0	0	0	0	3	1	W	1000	2	L1	G	L	Y	8
357	19	19001	0	0	0	0	0	0	0	7	W	1000	2	L1	G	T	Y	8
358	19	19001	0	0	0	0	0	0	0	0	W	1000	2	L1	G	T	Y	8
359	19	19001	0	0	0	0	0	0	0	17	W	1000	2	L1	G	T	Y	8
360	19	19001																8
361	19	19006	0	0	0	0	0	0	0	5	W	1000	2	L1	F	T	Y	8
362	19	19006	0	0	0	0	0	0	0	1	W	1000	2	L1	F	T	Y	8
363	19	19006	0	0	0	0	0	0	0	2	W	1000	2	L1	G	T	Y	8
364	19	19010	0	0	0	0	0	0	0	0	W	1000	2	L1	G	T	Y	8
365	19	19010	0	0	0	0	0	0	0	0	W	1000	2	L1	G	T	Y	8
366	19	19010	0	0	0	0	0	0	0	0	W	1000	2	L1	G	L	Y	8
367	19	19010	0	0	0	0	0	0	0	0	W	500	2	L1	F	T	Y	8
368	19	19019	0	0	0	0	0	0	0	0	W	1000	2	L1	G	T	Y	8
369	19	19019	0	0	0	0	0	0	0	0	W	1000	2	L1	G	L	Y	8
370	19	19019																8
371	19	19051																8
372	19	19059	0	0	0	0	4	0	0	122	S	1000	2	R1	G	R	N	12
373	19	19059	0	0	0	0	6	0	0	127	S	1000	2	R1	G	R	N	12
374	19	19059	0	0	0	0	14	0	0	129	S	1000	2	R1	G	T	N	12
375	19	19059	0	0	0	0	0	0	0	131	S	1000	2	R1	G	L	N	12
376	19	19059	0	0	0	0	0	0	0	135	S	1000	2	R1	F	T	N	12
377	19	19059	0	0	0	0	0	0	0	167	S	1000	2	R1	G	T	N	12
378	19	19059	0	0	0	0	0	0	0	163	S	1000	2	R1	F	T	N	12
379	19	19059	0	0	0	0	9	0	0	164	S	1000	2	R1	F	T	N	12
380	19	19059	0	0	0	0	8	0	0	156	S	1000	2	R1	F	T	N	12
381	19	19059	0	0	0	0	1	0	0	196	S	1000	2	R1	F	R	Y	12
382	24	2400301	0	0	0	0	0	0	0	197	E	1000	5	R5	G	T	N	8
383	24	2400401	0	0	0	0	0	0	0	193	E	1000	5	R5	G	T	N	8
384	24	2400601	1	0	0	0	0	0	0	152	W	1000	4	L4	G	R	N	8
385	24	2400602	0	0	0	0	0	0	0	121	W	1000	4	L4	G	R	N	8
386	24	2400701	0	0	0	0	0	0	0	254	W	1000	4	L4	T	L	N	8
387	24	2400702	0	0	0	0	0	0	0	225	W	1000	4	L4	C	T	N	8
388	24	2400703	0	0	0	0	0	0	0	222	W	1000	4	L4	F	R	N	8
389	24	2400704	0	0	0	0	0	0	0	178	W	1000	3	L3	T	L	N	8
390	24	2400901	0	0	0	0	0	0	0	0	E	1000	2	R2	G	T	Y	8
391	24	2400902	0	0	0	0	0	0	0	0	E	1000	2	R2	C	T	Y	8
392	24	2400903	0	0	0	0	0	0	0	0	W	1000	2	L2	T	T	Y	8
393	24	2401001	0	0	0	0	0	0	0	0	W	1000	2	L2	C	T	Y	8
394	24	2401002	0	0	0	0	0	0	0	0	W	1000	2	L2	T	T	Y	8
395	24	2401003	0	0	0	0	0	0	0	0	W	1000	2	L2	G	R	Y	8
396	24	2401004	0	0	0	0	0	0	0	0	W	1000	2	L2	T	T	Y	8
397	24	2401005	0	0	0	0	0	0	0	0	E	1000	2	R2	F	T	Y	8
398	24	2401006	0	0	0	0	0	0	0	0	W	1000	2	L2	F	R	Y	8
399	24	2401101	0	0	0	0	0	0	0	0	E	1000	2	R2	G	T	Y	8
400	24	2401202	0	0	0	0	0	0	0	0	E	1000	2	R2	G	T	Y	8

401	24	2401401	0	0	0	0	0	0	0	0	E	1000	2	R2	G	T	Y	8
402	24	2401402	0	0	0	0	0	0	0	0	E	1000	2	R2	G	T	Y	8
403	24	2401403	0	0	0	0	0	0	0	0	E	980	2	R2	G	T	Y	8
404	24	2401404	0	0	0	0	0	0	0	0	E	1000	2	R2	T	R	Y	8
405	24	2401501	0	0	0	0	0	0	0	0	E	1000	2	R2	G	T	Y	8
406	24	2402001	0	0	0	0	0	0	0	0	E	1000	2	R2	G	T	Y	8
407	24	2402201	0	0	0	0	0	0	0	0	E	1000	2	R2	C	L	Y	8
408	24	2402202	0	0	0	0	0	0	0	0	W	1000	2	L2	G	T	Y	8
409	24	2402203	0	0	0	0	0	0	0	0	W	1000	2	L2	G	L	Y	8
410	24	2402301	0	0	0	0	0	0	0	0	E	1000	2	R2	F	T	Y	8
411	24	2402801	0	0	0	0	0	0	0	5	E	1000	2	R1	F	T	Y	8
412	24	2402802	0	0	0	0	0	0	0	5	E	1000	2	R1	F	T	Y	8
413	24	2402803	0	0	0	0	0	0	0	6	E	800	2	R1	F	T	Y	8
414	24	2409101	0	0	0	0	0	0	0	180	W	1000	2	L2	F	T	N	8
415	24	2409102	0	0	0	0	0	0	0	169	W	1000	2	L2	G	T	N	8
416	24	2410001	0	0	0	0	0	0	0	156	E	1000	2	R2	G	T	N	13
417	24	2410002	0	0	0	0	0	0	0	168	E	1000	2	R2	G	R	N	13
418	24	2410003	0	0	0	0	0	0	0	148	W	1000	3	L3	T	T	N	13
419	24	2420001	0	0	0	0	0	0	0	118	E	1000	2	R2	G	T	N	13
420	24	2420003	0	0	0	0	0	0	0	99	W	1000	2	L2	G	T	N	13
421	24	2430001	0	0	0	0	0	0	0	103	E	1000	2	R2	G	T	N	13
422	24	2430002	0	0	0	0	0	0	0	100	E	1000	2	R2	G	T	N	13
423	24	2430003	0	0	0	0	0	0	0	142	W	1000	2	L2	G	T	N	13
424	24	24QCQA02	0	0	0	0	0	0	0	113	E	800	2	R2	G	T	N	13

Appendix B
Selected Photographs of CRCP Sections in Houston, Texas (SRG and LW)

Illustration 1   Transverse cracking and spalls found in the SRG section

Illustration 2   Longitudinal crack found in the SRG section

Illustration 3   Transverse cracking pattern for the SRG section

Illustration 4   Portland cement patch (PCC) found in SRG section

Illustration 5   Severe spall found in the SRG section

Illustration 6   Spalled transverse crack found across the lane, SRG section

Illustration 7   Common transverse crack found in the LW section

Illustration 8   Localized raveling of the concrete of the LW section

Illustration 9   Zoomed image of the raveled concrete in the LW section