assistants actively participated in this work in the field

District Engineer Cortelyou, District Construction Engineer A N George, District Materials Engineer Rex Allan, Resident Engineer E. L Seitz

From headquarters at Sacramento, Assistant State Highway Engineer F J. Grumm, Construction Engineer R M Gillis and their assistants, E W Withycombe, A. M Nash and N. C McCorkle

The Materials and Research Department was represented by Senior Physical Testing Engineers, O. J Porter and F N Hveem and their assistants J. E. Barton and J L. Beatty.

The immediate direction of the investigational features of this project was the responsibility of the Materials and Research Engineer.

Messrs Barton and Beatty were primarily responsible for securing all field data relating to the concrete pavement and compiling and analyzing the data at Sacramento.

All work was done under the general direction of Director of Public Works C H Purcell and State Highway Engineer G. T McCoy and in cooperation with the representatives of the Public Roads Administration

INVESTIGATIONAL CONCRETE PAVEMENT IN KENTUCKY

By Thomas R Thomas, *Materials Engineer, Kentucky Department of Highways*

A description of the project including the construction data has been published in the 1940 Proceedings of the Highway Research Board.[1] This report covers the period from September 1940 through July 1944 and summarizes the observations and measurements made during that time.

Details of the seven different experimental sections are given in Table 1.

Expansion joints were constructed to accommodate a 1-in. width of premoulded bituminous fiber filler, and contraction joints are of the weakened plane type with a premoulded bituminous fiber filler

Dowel bars for load transfer were secured in proper spacing and alignment by welded dowel spacers which remained in place.

In sections where wire mesh reinforcing was installed the initial pour of concrete was struck off 2 in below grade for placing of the mesh.

[1] F. P Anderson, 2nd, "Investigational Concrete Pavement in Kentucky," *Proceedings*, Highway Research Board, Vol. 20, p 337 (1940)

PHYSICAL PROPERTIES OF THE CONCRETE

Daily job control specimens were made and broken at 28 days. The average cylinder

TABLE 1
DESIGN OF EXPERIMENTAL SECTIONS

Section No	Length	Design Section	Wire Mesh Reinf	Expansion Joints		Contraction Joints	
				Spacing	Load Transfer	Spacing	Load Transfer
	ft	*in*		*ft*		*ft.*	
7	1,250	7-7-7	None	120	None	20	None
6	1,500	9-7-9	70 lb	60-alt	Dowels	60-alt	Dowels
5	1,500	9-7-9	None	120	Dowels	20	Dowels
4	1,500	9-7-9	None	120	Dowels	20	None
3	2,500	9-7-9	None	400	Dowels	20	None
2	3,000	9-7-9	None	800	Dowels	20	None
1	5,000	9-7-9	None	None	None	20	None
Std [a]	7,000	9-7-9	44 lb	120	Dowels	30	Dowels
2-R	2,500	9-7-9	None	800	Dowels	20	None
3-R	2,500	9-7-9	None	400	Dowels	20	None
4-R	1,500	9-7-9	None	120	Dowels	20	None
5-R	1,500	9-7-9	None	120	Dowels	20	Dowels
6-R	1,500	9-7-9	70 lb	60-alt	Dowels	60-alt	Dowels
7-R	1,200	7-7-7	None	120	None	20	None

R = Repeat Sections Section No 1 was not repeated
[a] See Summary

strength was 4908 psi, and the average modulus of rupture of the beams was 1002 psi. Cores drilled from the pavement averaged 4856 psi, at 60 days age. One control beam made from each section was shipped to the P.R.A. Laboratory as instructed.

No other specimens were made or retained for further study of the physical characteristics of the concrete and no thermocouples or moisture cells were installed in the pavement. Standard temperature wells were constructed as scheduled and pavement temperatures shown in accompanying tables were thus obtained.

TABLE 2
AVERAGE DAILY TRAFFIC

Year	1940[a]	1941	1942	1943
Total Traffic	675	840	649	648
Light Trucks (under 1½ tons)	150	237	413	300
Medium Trucks (1½ to 5 tons)	0	0	4	64
Tractor Truck Semi-Trailers (over 5 tons)	6	8	8	11
Busses	8	11	17	9

[a] Road under Construction Date of count Oct 24, 1940

TABLE 3
TEMPERATURE AND PRECIPITATION DATA, JULY 1940 TO JULY 1944[a]

Month	Temperature					Precipitation	
	Average	Average of the maxima	Absolute maximum	Average of the minima	Absolute minimum	Average	Snowfall Average Amount
	deg F	deg F	deg F	deg F	deg F	in	in
December	39	45	71	28	5	2 7	2 4
January	36	43	76	26	−15	2 1	2 8
February	38	45	74	28	0	1 9	1 1
Winter	38	44	76	27	−15	6 7	6 3
March	45	57	79	37	3	5 9	1 4
April	58	66	88	45	27	3 3	0
May	68	76	94	55	37	3 2	0
Spring	57	66	94	46	3	12 4	1 4
June	77	84	107	63	46	3 0	0
July	78	89	103	67	53	2 7	0
August	77	87	103	66	49	2 5	0
Summer	77	87	107	65	46	8 2	0
September	68	81	98	60	34	2 9	0
October	60	70	91	47	21	2 7	0 1
November	46	57	84	37	15	3 6	0 3
Fall	58	69	98	48	15	9 2	0 4
Annual	58	67	107	47	−15	37 0	8 1

[a] From Special observer Station, U S Weather Bureau, ½ mi west of Owensboro, Daviess County, Kentucky

TABLE 4
NUMBERS OF JOINTS MEASURED

Section No	For Averages in Table 5		For Averages in Table 6	
	Exp Joints	Contr Joints	Exp Joints	Contr Joints
Section 7	2	5	2	5
Section 6	3	2	2	1
Section 5	2	5	2	5
Section 4	No joint measurements scheduled in this section			
Section 3	2	5	0	7
Section 2	2	8	1	15
Section 1	0	8	0	7
Standard Section	3	6	3	6

TABLE 5
DAILY JOINT WIDTH MEASUREMENTS

Section No	May 28, 1941	August 29, 1941	August 28, 1942
Section No 7			
Max Pavt Temp, deg F	104	102	101
Min Pavt Temp, deg F	81	79	76
Change—deg F	+23	+23	+25
Change—Exp Joint Width, in	− 074	− 043	−.048
Change—Contr Joint Width, in	− 048	− 044	−.052
Section No 6			
Max Pavt Temp, deg F	106	104	101
Min Pavt Temp, deg F	81	79	76
Change—deg F	+25	+25	+25
Change—Exp Joint Width, in	− 152	− 142	− 160
Change—Contr Joint Width, in	− 076	− 091	− 086
Section No 5			
Max Pavt Temp, deg F	106	104	102
Min Pavt Temp, deg F	80	79	75
Change—deg F	+26	+25	+27
Change—Exp Joint Width, in.	− 071	− 054	−.025
Change—Contr Joint Width. in	− 041	− 041	− 055
Section No 3			
Max Pavt Temp, deg F	106	102	102
Min Pavt Temp, deg F	80	79	75
Change—deg F	+26	+23	+27
Change—Exp Joint Width, in	− 048	−.012	−.018
Change—Contr Joint Width, in	− 041	−.046	−.053
Section No 2			
Max Pavt Temp, deg F	106	104	102
Min Pavt Temp, deg F	79	78	75
Change—deg F	+27	+26	+27
Change—Exp Joint Width, in	− 050	− 032	− 026
Change—Contr Joint Width, in	− 036	− 036	− 039
Section No 1			
Max Pavt Temp, deg F	106	104	103
Min Pavt Temp, deg F	79	78	75
Change—deg F	+27	+26	+28
Change—Exp Joint Width, in	No expansion joints in this section		
Change—Contr Joint Width, in	− 037	− 037	− 041
Section Standard			
Max. Pavt Temp, deg F	104	102	104
Min Pavt Temp, deg F	78	79	76
Change—deg F	+26	+23	+28
Change—Exp Joint Width, in	− 098	− 068	− 050
Change—Contr Joint Width, in	− 049	− 051	−.060

TRAFFIC DATA

Distribution of traffic over the project is shown in Table 2.

It should be pointed out that the six miles

of road immediately north of this project contain several old and narrow iron bridges which are restricted as to maximum load. As a consequence, all heavy or overload through traffic is routed over a nearby parallel highway.

CLIMATOLOGICAL DATA

Condensed temperature and precipitation values are shown in Table 3. Day temperatures of 100 F. and over have been registered in a number of the years covered by the records, but heat so intense rarely occurs on more than two or three days in succession. Temperatures of 10 to 20 F. below zero have occurred in December, January and February, but such low temperatures are comparatively rare The records show that there is wide variation in the amount of rainfall for the individual months, seasons and years.

JOINT WIDTH MEASUREMENTS

It should be noted that Table 4 gives the numbers of joints represented in the averages of Tables 5 and 6

Table 5 shows daily cycles of joint width changes for the largest temperature changes observed The values are the averages of individual joint measurements for each section. These observations were discontinued in August 1942.

TABLE 6
PERMANENT JOINT WIDTH MEASUREMENTS

Section No	July 29, 1941	June 30, 1942	August 11, 1943	July 25, 1944	Net Change, 1941–1944
Section No 7					
Temp Conc , deg F	110	108	108	108	
Temp Air , deg F	96	96	92	95	
Expansion Joints, in	5 472	5 477	5 452	5 398	−0 074
Contraction Joints, in	5 107	5 106	5 114	5 113	+0 006
Section No 6					
Temp Conc , deg F	111	109	108	108	
Temp Air, deg F	96	96	92	96	
Expansion Joints, in	4 832	4 767	4 868	4 800	−0 032
Contraction Joints, in	5 124	5 160	5 568	5 560	+0 436
Section No 5					
Temp Conc , deg F	112	109	110	112	
Temp Air , deg F	97	95	96	100	
Expansion Joints, in	5 113	5 033	4 991	4 963	−0 150
Contraction Joints, in	5 060	5 097	5 139	5 130	+0 070
Section No 4	No Permanent Joint Width Measurements Scheduled				
Section No 3					
Temp Conc , deg F	110	110	108	110	
Temp Air, deg F	96	94	97	102	
Expansion Joints, in	No expansion joints included in scheduled measurements				
Contraction Joints, in	5 008	5 009	5 008	4 995	−0 013
Section No 2					
Temp Conc , deg F	112	111	109	110	
Temp Air, deg F	97	88	96	100	
Expansion Joints, in	4 606	4 604	4 592	4 573	−0 033
Contraction Joints, in	5 024	5 034	5 040	5 028	+0 004
Section No 1					
Temp Conc , deg F	116	112	109	110	
Temp Air, deg F	97	92	95	100	
Expansion Joints, in	No expansion joints included in scheduled measurements				
Contraction Joints, in	5 003	5 009	5 006	4 987	−0 016
Section Standard					
Temp Conc , deg F	112	111	110	112	
Temp Air, deg F	97	90	98	101	
Expansion Joints, in	4 918	4 779	4 723	4 664	−0 254
Contraction Joints, in	4 097	5 139	5 154	5 138	+0 041

Residual or permanent changes in joint width are shown in Table 6. These values are also the average of individual joint measurements for each section and these observations are being continued It is believed that they also represent the best comparison for annual cycles of joint width changes

The locations and number of joints measured conform to the P R.A schedule of

suggested observation, but it is now felt that additional measurements should have been made in Section 6 to enable proper conclusions to be drawn relative to joint movements in this section

TABLE 7
DIFFERENCE IN ELEVATION FROM ORIGINAL ELEVATIONS

Section No	Maximum Diff	Average Diff	Change in Joint Elevations: No of Joints & Diff in Inches		
			Diff of 0 06	Diff of 0 12[a]	Total No of Joints
	in	in			
Section No 7					
2nd Set Elevations	0 36	0 17	15	1	31
3rd Set Elevations	0 36	0 17	14	4	31
Section No 6					
2nd Set Elevations	0 40	0 23	4	0	11
3rd Set Elevations	0 48	0 25	7	0	11
Section No 5					
2nd Set Elevations	0 48	0 27	12	0	31
3rd Set Elevations	0 42	0 22	13	2	31
Section No 4					
2nd Set Elevations	0 54	0 30	13	1	31
3rd Set Elevations	0 84	0 23	9	2	31
Section No 3					
2nd Set Elevations	0 66	0 40	18	5	41
3rd Set Elevations	0 48	0 25	19	2	41
Section No 2					
2nd Set Elevations	0 84	0 38	17	2	41
3rd Set Elevations	0 72	0 25	24	4	41
Section No 1					
2nd Set Elevations	0 90	0 53	12	2	31
3rd Set Elevations	0 60	0 40	12	3	31
Section Standard					
2nd Set Elevations	0 60	0 30	15	4	41
3rd Set Elevations	0 60	0 24	16	0	41
Totals					
2nd Set Elevations	0 90	0 32	106	15	258
3rd Set Elevations	0 84	0 25	114	17	258

[a] 0 12-in Maximum Difference Observed
Original Elevations taken Sept 10th and 11th, 1940
2nd Set Elevations taken March 4th and 5th, 1942
3rd Set Elevations taken July 25th and 26th, 1944

PAVEMENT CONDITION

The condition of the pavement as a whole and a study of the accompanying tables and condition surveys fails to show any marked difference between the plain and reinforced sections or between the thickened edge and uniform thickness slab designs to date.

Likewise a study of Table 7 fails to show any appreciable change in pavement smoothness since the original elevations were taken There are no abrupt changes in elevation, no evidence of tilting of the short slabs, and no apparent difference between the doweled and undoweled joints This is apparent from the fact that only 17 joints in a total of 258 show as much as 0 12 in difference in elevation as of July 25, 1944

The maximum differences by sections shown in Table 7 are all plus values, as both the 2nd and 3rd set of elevations were predominantly higher than the original elevations, although there were occasional minus values. In computing the average difference by sections, the plus and minus values of the elevations were disregarded so that the average difference as shown is the relative difference in elevation, regardless of plus or minus values As mentioned in the preceding paragraph, an analysis of the individual elevation values reveals no abrupt or isolated differences from the original elevations, although the maximum individual difference is as much as 0 9 in

CRACK AND CONDITION SURVEYS

Following is a record of detailed crack survey of the experimental sections as of May 16, 1944. The dates shown after each crack denote the date on which they were first observed

Section 7 Sta 397 + 49 4 to Sta 410 + 21
397 + 90 Crack across entire slab 4 ft from edge of the west slab the crack splits and forms a "Y" to the centerline, the prongs of the "Y" being 14 in apart at the centerline October 27, 1942
406 + 81 Crack starts at centerline, 6 in south of contraction joint this station, and extends 5 ft into west slab, where it runs into contraction joint June 9, 1943

Section 6 Sta 410 + 21 to Sta 425 + 21
418 + 98 Crack starts edge east slab and extends 4 ft into pavement June 9, 1943
420 + 03 Crack starts edge east slab and extends to centerline October 5, 1943
421 + 39 Crack starts edge east slab and extends to centerline October 5, 1943
423 + 51 Crack across entire width of pavement June 9, 1943

Section 5 Sta 425 + 21 to Sta 440 + 01
431 + 71 Crack across entire width of pavement over box culvert (2 5 ft by 2 5 in) October 5, 1943

Section 4 Sta 440 + 01 to Sta 455 + 02
442 + 95 Crack across entire width of pavement October 5, 1943

Section 3 Sta. 455 + 02 to Sta 480 + 00.
473 + 31 5 Crack across entire width of pavement June 9, 1943
473 + 40 5. Crack starts 4 in from joint at edge east slab and extends 2 ft where it runs into joint June 9, 1943
Section 2. Sta 480 + 00 to Sta 510 + 00
No Natural Cracks in this Section May 16, 1944
Section 1 Sta 510 + 00 to Sta 560 + 00.
510 + 12 Crack starts edge west slab and extends to centerline. August 28, 1942
517 + 98 Crack starts edge west slab and extends 5 ft into slab. October 5, 1943
539 + 94 Crack starts edge west slab and extends across west slab and 4 ft into east slab October 5, 1943
547 + 15 Crack across entire width of pavement June 9, 1943
Standard section Sta 560 + 00 to Sta 630 + 00
567 + 48 Crack starts edge west slab, extends to centerline October 5, 1943
567 + 80 Crack starts edge west slab, extends to centerline October 5, 1943
577 + 39 Crack across entire width of pavement (Over pipe culvert) August 28, 1942
579 + 42 Crack across entire width of pavement Straight crack —believed that construction joint was made, then broken down and paving operations continued August 28, 1942
583 + 12 Surface crack starts 2 ft. from edge east slab and extends 4 ft into slab Autogenous healing begun, October 5, 1943
590 + 45 Crack starts edge east slab and extends to centerline October 27, 1942
611 + 72 Crack starts edge west slab and extends to centerline October 5, 1943
611 + 97 Crack starts edge east slab and extends to centerline October 27, 1942
618 + 46 Crack starts edge west slab and extends to centerline May 16, 1944
619 + 06 Crack starts edge west slab and extends to centerline October 5, 1943

An analysis of the detailed crack survey reveals the following figures for the different sections

Section No	Pavement Cracks	
	Part Width	Full Width
Section No 7	1	1
Section No 6	3	1
Section No. 5	0	0
Section No 4	0	1
Section No 3	1	1
Section No 2	0	0
Section No 1	3	1
Section Standard	8	0

All of the cracks are transverse cracks, there being no longitudinal cracks or corner breaks in these sections. Two full width cracks over drainage structures and crack at Sta. 579+42 have been excluded from the above summary.

A report on general pavement surface condition and condition of joints up to May 16, 1944, is as follows.

Section 7 Sta 397 + 49 4 to Sta 410 + 21.
406 + 81 Slight spalling of contraction joint
407 + 20 Expansion joint constructed ½ in. high on south side Extends 5 ft both sides centerline
Section 6 Sta 410 + 21 to 425 + 21
One joint slight raveling
One joint slight spalling
Section 5 Sta 425 + 21 to Sta 440 + 01
Two joints slight raveling
Section 4 Sta 440 + 01 to Sta 455 + 02. Sta 447 + 90 5 North side construction joint constructed ½ in high
No surface defects noted
Section 3 Sta 455 + 02 to Sta 480 + 00
458 + 21 Slight spalling of center joint
462 + 81 Slight spalling at centerline of contraction joint
464 + 21 Slight spalling at centerline of contraction joint
468 + 80 Slight spalling at centerline of contraction joint
469 + 60 Slight spalling at centerline of contraction joint
472 + 20 Slight spalling at centerline of contraction joint
478 + 01 Crack in curb 1 5 ft long east and west sides
Section 2 Sta 480 + 00 to Sta 510 + 00
No surface defects noted
Section 1 Sta 510 + 00 to Sta 560 + 00
511 + 25 20 sq in scaling 2 ft. east of centerline
517 + 84 Slight spalling east side of contraction joint
518 + 04 Slight spalling east side of contraction joint
523 + 84 Slight spalling west curb
525 + 03 14 sq in scaling at contraction joint—6 in from east curb
525 + 40 Slight spalling both sides at contraction joint
525 + 60 Slight spalling both sides at contraction joint
534 + 22 2 ft surface crack in curb west slab
534 + 42 4 in corner crack in curb east slab at contraction joint
558 + 40 Slight spalling at contraction joint—2 ft each side of centerline

558 + 60 Slight spalling at contraction joint—2 ft each side of centerline
558 + 80 Slight spalling at contraction joint—2 ft each side of centerline
559 + 00. Slight spalling at contraction joint—2 ft. each side of centerline.
560 + 00 Slight spalling at contraction joint—2 ft each side of centerline

Standard Section Sta 560 + 00 to Sta 630 + 00

No surface defects noted

Sections 3 and 1 apparently show an excessive amount of spalling at the joints in comparison with the other sections. It should be noted that all of the spalling shown is very slight in extent and it is believed that most of it is due to lack of maintenance in keeping the joints well sealed with crack and joint filler The joints have been sealed since the spalling was observed, and most of the spalling is now covered by the filler to the extent of not being observable by visual inspection It is shown in this report however, as a reference for future observations. The premoulded bituminous filler in the joints is still in fairly good condition and has not extruded appreciably This material will be closely checked in future observations, particularly in the winter months, for decay and resilience There is no evidence of pumping on any of the experimental sections

SUMMARY

The "Standard Section" of pavement was not constructed as one of the experimental sections outlined by the P R A but was built through the central mile of the project, much of which is low swampy ground considered unsuitable for experimental pavement. However, a 2000-ft section from Sta 560 + 00 to 580 + 00, was found to conform to the requirements for the experimental sections and control points were installed between Sta. 567 + 60 and 579 + 60 Therefore, measurements and observations at these points have been included in Tables 4, 5 and 6 for purposes of comparison

The amount and character of traffic to date has been somewhat lighter than was anticipated at the time of construction, but is expected to become progressively greater.

The project has been subjected to extreme variations of temperature, both maximum and minimum, for this climatic region. The average annual precipitation of 37.0 in. is slightly less than the long term average of 43 4. in.

It is felt that the joint width measurements to date do not furnish sufficient data to warrant differentiating between the various designs of the experimental sections.

The pavement shows no appreciable change in elevation or surface smoothness. There is no evidence of tilting of the short slabs, and no apparent difference between the doweled and undoweled joints.

From a study of the pavement elevations and the crack and condition surveys it becomes apparent that under present traffic conditions, it may be some time before this project will yield sufficient information to establish conclusive evidence as to the merits of the various designs incorporated in its construction.

A complete layout map has been prepared, showing design data, grade and profile, location of all joints and control points, upon which all crack and condition surveys are periodically plotted.

APPENDIX 1

Repeat Sections

There were no joint width or elevation measurement scheduled for the repeat sections but the crack and condition surveys for these sections are appended to this report for their reference value. The alignment and grade of these sections is very similar to the original sections with the exception that the fills are slightly higher, however, in no instance do they exceed 15 ft Section No. 1 was not scheduled to be repeated

Crack Survey

Section 2 Sta 630 + 00 to Sta 655 + 00

638 + 08 Crack starts edge east slab and extends to centerline October 27, 1942
640 + 00 Longitudinal crack across contraction joint, 4 ft from edge east slab, extends 3 ft north, 4 ft south Autogenous healing started June 9, 1943
640 + 20 Longitudinal crack across contraction joint, 3 ft from edge east slab, extends 2 ft 6 in each way October 27, 1942
652 + 80 Longitudinal cracks at contraction joint October 27, 1942
No 1 2½ ft from edge west slab, extends 2 ft south
No 2 2 ft from edge west slab, extends 3 ft. north

Section 3 Sta. 655 + 00 to Sta. 680 + 00

661 + 60 Longitudinal crack across contraction joint, 3 ft from edge east slab, extends 2 ft each direction June 9, 1943

666 + 12 Crack across entire width of pavement over box culvert (4 ft. by 3 ft). May 16, 1944

677 + 00 Longitudinal crack across contraction joint, 6 ft from edge east slab, extends 1 ft each direction June 9, 1943.

Section 4 Sta 680 + 00 to Sta 695 + 00.

690 + 20 Expansion joint cracked and spalled at centerline October 27, 1942

693 + 19 Crack across entire width of pavement June 30, 1942

Section 5 Sta 695 + 00 to Sta 710 + 00

709 + 50 Crack across east slab to centerline October 27, 1942

709 + 92 Crack starts edge east slab, extends 4 ft into slab October 5, 1943

Section 6 Sta 710 + 00 to Sta 725 + 00

720 + 65 Crack starts edge west slab, extends 8 ft into slab October 27, 1942

721 + 15 Crack starts edge east slab, extends 4 ft into slab October 27, 1942

721 + 75 Crack starts edge east slab, extends to centerline October 27, 1942

Section 7 Sta 725 + 00 to Sta 737 + 00—End Project

No natural cracks found in this section October 5, 1943

732 + 30 Crack across entire width of pavement May 16, 1944 Over box culvert

Note Lip curb box inlets at Sta 619 + 80, 668 + 00, 683 + 00, all placed within 2 ft of joints, have developed cracks from outer corner, over to joints

Lip curb box inlets at Sta 692 + 27 and 717 + 03, have developed cracks parallel to one edge and extending into the pavement to form transverse cracks

The short longitudinal cracks between Sta 640 + 00 and Sta 677 + 00 have been the subject of some discussion and investigation It will be noted that they occur at undoweled contraction joints in Repeat Sections No 2 and 3, and with one exception are all found in the east half of the slab It was at first thought they might have been caused by excessive wheel loads, but a careful investigation of traffic records and overload permits makes this seem very doubtful (See Traffic Data) The last inspection of these cracks, made on September 6, 1944, shows them to be shallow in depth, slightly shorter in length, and self-healing It is believed possible that they may have been the result of excessive manipulation or delayed finishing operations during joint installation These cracks will be closely checked when the regular semi-annual crack surveys are made

Condition Survey

Repeat Section 2 Sta 630 + 00 to Sta 655 + 00

638 + 00 to Sta. 640 + 00 Very slight pumping in shale cut Believed primarily due to obstructed drainage ditch

641 + 00. Slight spalling of construction joint

653 + 40 Slight spalling of contraction joint at centerline

653 + 80 Slight spalling of contraction joint at centerline

Repeat Section 3 Sta 655 + 00 to Sta 680 + 00

No surface defects noted

Repeat Section 4 Sta 680 + 00 to Sta 695 + 00

685 + 00 4 ft slight spalling along centerline

689 + 80 Slight spalling on east curb

690 + 00 Slight spalling on east curb

690 + 20 Cracked and spalled expansion joint 2 ft each side centerline on south side of joint

692 + 20 Slight spalling on east curb

692 + 80 Slight spalling at contraction joint west slab

693 + 00 Slight spalling on east curb

Repeat Section 5 Sta 695 + 00 to Sta 710 + 00

696 + 06 2 ft of west curb off down to pavement elevation

No surface defects noted

Repeat Section 6 Sta 710 + 00 to Sta 725 + 00

No surface defects noted

Repeat Section 7 Sta 725 + 00 to Sta 737 + 00—End Project

729 + 00 6 in by 2 in piece of east curb out.

729 + 20 1 ft by 3 in spalled at joint on centerline

734 + 00 1 ft internal corner break at contraction joint

The statements made relative to the condition survey of the original sections apply equally to the Repeat Sections