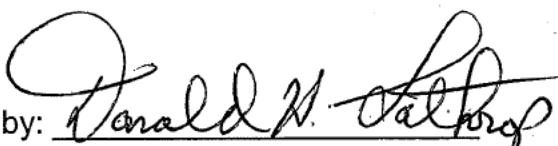
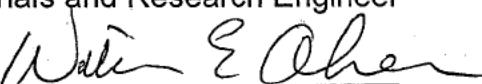


An Investigation into
the Physical Condition of the
I-89 Concrete Median Barrier Rail
In the Towns of Bolton
& Waterbury

Vermont Agency of Transportation
Materials and Research Section

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Executive summary:

The Agency is evaluating potential responses to FHWA concerns about the concrete median barrier section on I-89 in the towns of Waterbury and Bolton.

The barrier sections were evaluated for physical/chemical condition and found to be structurally competent with few exceptions. The barrier sections exhibit significant Alkali–Silica Reactivity and some expansion related spalling. The option to remediate the ASR is feasible and the potential use of slipforming a larger barrier section over the existing barrier should be evaluated for cost effectiveness.

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Background

The Vermont Agency of Transportation is developing plans for improvements to Interstate 89, a part of the Eisenhower Interstate System. In 1983, the Agency emplaced 472 twenty-foot-long concrete median barrier sections as part of a systematic improvement. Maintenance associated with a double-sided steel beam rail was deemed undesirable because of the close proximity of traffic. As a result, the use of a rail system that could withstand moderate impacts without sustaining damage was selected. The concrete median barrier sections were constructed in Williston, Vermont by the S. T. Griswold Company. Aggregates incorporated into the barrier sections came from several sources. Coarse aggregates came from Colchester Vt., while the fine aggregate portion was sand manufactured at the Williston concrete plant from various sources. The fine aggregate was manufactured to a gradation specification primarily. At the time of the placement, there was research conducted on concrete sealers, water repellents and super plasticizers. During the manufacture of the barrier sections, special care was taken to document the constructed condition.

Subsequent to the placement of the barrier, there has been deterioration of the concrete over time. Several mechanisms of deterioration are observable. There is surface spalling, map cracking and periodic compression failure of the sections. The compression failure is exhibited at locations where the barrier section passes over a drainage structure inlet. This location has the least cross sectional area within the barrier section. In addition to the least cross sectional area in this location, the concrete is subject to increased moisture content and extended periods of above-freezing temperatures as a function. The conveyance of air by density currents through the drainage piping results in warming and increased moisture availability in the concrete.

Recent awareness of the possibility of Alkali-Silica Reactivity (ASR) coupled with the characteristic map cracking pattern led the Agency to be concerned about the possibility of structural damage to the barrier sections. Research conducted by the Agency into the reactivity of coarse aggregates indicated that the Colchester pit has moderate ASR reactivity. As such, some evaluation of the material quality was warranted.

Investigative Purposes

In the preliminary engineering phase of a Pavement Management project adjacent to the concrete median barrier section, FHWA raised concerns about the barrier. Concerns have centered on compliance more than effectiveness. In response to an inquiry about the barrier condition, the Materials and Research Section developed an investigative assessment of the concrete median barrier section placed on Interstate 89 between the NB and SB lanes in Bolton, VT.

There were three distinct components to the work; research plan development, data collection and report development including data analysis.

The research design involved the completion of physical, chemical and petrographic analytic methods for evaluation of the barrier sections.

Assessments of the physical strength, conventional concrete deterioration mechanisms, ASR potential and in-place physical condition were completed. The physical assessment phase inventoried the condition of each section with a summary of the condition recorded during the field work. Chemical testing for carbonation, ASR reactivity and Swiss hammer impact testing were conducted in the field. Cores were taken for compression testing and petrographic analyses. Results of the chemical testing were related to the petrographic analyses for comparison purposes. The field strength testing was evaluated against laboratory compression testing. Visual examination of the cores and field observations of surface condition were assessed for compatibility of inference.

Field Investigation

In order to accomplish the work in a safe and effective manner, each test location consisted of ten adjacent barrier sections. Four test locations were selected at random. In each test location, there were ten carbonate tests, ten ASR field tests, ten Swiss Hammer impact hardness tests, and two cores taken. An advance procedure to address field conflicts was developed that limited the potential addition of bias during data collection. If the randomly selected section was over a drainage structure or unavailable for sampling due to other factors, then the next upstation (increased count) would be substituted with notation of the field change on the data sheet. The protocol for data collection is attached as Appendix A. Traffic control during the operation consisted of a traffic sign warning package and a lane closure. Each team of data collectors had a person with an assigned role to maintain observation of traffic in support of the team safety. There were three teams and two individual surveyors performing the field data collection. An employee assigned ascending numbers to each barrier section as an initial project task. After completion of the numerical identification, this person began an assessment of the visual condition of each section in a reverse sequence from the up-station end. A second visual assessor surveyed condition beginning with the first concrete median barrier section. The visual assessment of physical condition was completed when the two employees met at section number 325. A team of three people grouped to perform carbonate, ASR and Swiss hammer testing within each of the four test locations. Two teams of two employees performed coring activities. Cores were taken from pre-designated barrier sections within each of the four test locations distributed through the length of median barrier. In order to allow assessment of the reproducibility of the data, two cores were taken from each of the four core-test sections. Direct testing of concrete hardness on a large number of sections was completed by an impact hammer. The impact hammer was a Swiss Hammer manufactured by E.O. Schmidt that had been calibrated within the preceding 30 days. Phenolphthalein solution was prepared for use within five days of testing by the Transportation Chemist.

Data Compilation

Results from each of the sampling and test methods are presented in full in Appendices B through F. Chloride intrusion and concrete permeability results are consistent with a conventional class B concrete with significant exposure to road salt. Permeability values are elevated when compared with a new conventional concrete. The permeability values reflect a substantially more permeable concrete than the high performance concrete in use today. Additional data may be found in Appendix B. The test data from the compression testing of the cores indicated an average strength of 5840 psi, with a range from 5250 psi to 6200 psi. The impact hammer testing for strength indicated an estimated strength of 8290 psi with a range of 7600 psi to 8500+ psi. The discrepancy between the two strength testing methods is consistent with a concrete that is experiencing some surface embrittlement. A portion of the discrepancy should be expected as a function of the two test methods themselves. The impact hammer test method should be assumed to have an associated error of at least ten per cent. This error rate would account for nearly half the discrepancy. In addition the compression testing of the cores that were sawn and capped for testing purposes was performed on a nonstandard specimen height. Correction factors were applied to the actual test result lowering the stated strength values. Correction factors are developed as a function of the specimen height, diameter and aggregate size. The correction factors may have contributed the remaining error. As such the data is presumed to be representative of the overall strength condition.

Carbonation of the concrete was tested using an application of a phenolphthalein solution to a freshly scraped concrete surface. The surface will react with the phenolphthalein indicator if there is available alkali. The indicator turns a rose to purple color as a function of the availability of alkaline conditions. If there is limited or delayed color change carbonation would be indicated. In all carbonation tests, there was an immediate conversion of the indicator to the rose color. As such there was no carbonation detected.

ASR field testing consisted of the application of a solution of uranyl acetate to a freshly scraped surface, followed by viewing the surface under the exposure to black light. ASR gel fluoresces under this condition. A rating of the ASR activity is possible by examining the amount of ASR present in the viewed area versus the approximate area of the cement paste in the viewed area. The section by section conclusions are included in Appendix D. 40 locations were examined for evidence of alkali-silica reactivity, using the AASHTO T299 field test. Of the 40, 15(37.5%) showed no evidence of ASR, 8(20%) showed slight ASR, 14(35%) moderate and 3(7.5%) heavy. Many of the barriers showing moderate and heavy ASR on the field test also showed gross physical evidence of ASR, including expansive cracking, curvature of originally planar surfaces and crushing of adjacent surfaces due to expansion. There were many shallow cracks that did

not appear to be due to ASR; possible causes include drying cracks, rebar corrosion and freeze-thaw cracking.

Visual inspection methods indicated that 45% of the sections had surface spalling on one or both sides. Six sections showed some evidence of impact cracking. In addition, there was a pattern of shear induced cracking from longitudinal compressive forces. Additional data is available in Appendix E. These longitudinal expansion forces are consistent with the expression of linear expansion from ASR activity in the confined axis of the barriers. This expansion would have caused the compression failure of the barrier sections located over the drainage structures. The section of the barrier is reduced by approximately 25%, resulting in a stress amplification of 1.333 in these specific barrier sections. Petrographic analyses conducted on thin sections derived from the core specimens confirmed the presence of ASR gel and aggregate cracking as a result of the ASR. Mineral evaluation has suggested that the ASR is likely derived from the fine aggregate portion of the concrete rather than the large aggregate. Additional petrographic information is available in Appendix F.

Data Analysis and Interpretation

The strength testing confirmed without exception that the concrete remains in a structurally competent condition. The design strength of the concrete was 3500 psi at 28 days, which resulted in a projected ultimate strength in the vicinity of 4100 psi. All test results exceed that value by at least 40%, which can be confirmed by examination of Appendix C.

The absence of carbonation indicates that the residual cement paste quality should be reliable for an extended period of time. The presence of active ASR will continue to cause expansion with resultant cracking of sections, spalling of the surface and increasing rates of ASR activity. Large aggregate that was examined in thin section did not exhibit the characteristic conditions that indicate it as a source of activity. The routinely described ASR rim staining (or darkening) was not present within the large aggregate. Some cracking of the large aggregate occurred, but it is believed to be in response to expansion of the cement paste adjacent to the large aggregate. Treatment of the ASR in the cement paste is achievable with high reliability. The absence of activity in the large aggregate increases the treatability.

The visual observation of the interlock mechanism between the sections found no significant corrosion or associated concrete cracking. The placement of pavement adjacent to the toe of the section has provided very significant lateral restraint to the median barrier section. As a result of these conditions there is little concern that the barrier would function in an independent manner with only a mass based restraint force to be developed by the section.,

The physical condition of the concrete is good with significant ASR activity occurring. Chloride penetration and permeability data strongly suggest that the ASR activity level in the concrete would be substantially reduced if the permeability were decreased. In addition it is possible to reverse ASR condition

by the application of a lithium solution to the surface of the concrete. Lithium has been successfully used in many states that have concrete pavements experiencing ASR. The common characteristic that is a key to the success of the lithium treatment is the continuous length for expansion. The I-89 barrier section has sufficient continuous length to experience high compressive forces along its length. Mitigation of the ASR and a permeability reduction strategy should resolve the primary structural deterioration of the barrier.

Recommendations

The existing barrier sections remain in sound physical condition with the need to arrest the ASR present. Concerns about the barrier section/cross section interface and compliance with standards may be addressed by the installation of a larger median barrier section. Consideration to slipforming a concrete barrier section over the existing barrier after ASR treatment should be pursued. Differential height requirements for the respective barrels of the interstate may be addressable through establishing a top of barrier section controlled by the higher alignment requirement. In addition, reclamation of the existing barrier could reduce costs and duration of the median repair if deemed to be a necessary component of the project.

Lastly, the staff participants in this process performed extraordinarily well as a team and deserve recognition. The team members were:

Kat Patterson	Research Technician
Richard Knowlton	Research Technician
James Wild E.I.	Structural Concrete Engineer
Jerry McMahan	Transportation Chemist
John Domey	Structural Concrete Technician
Darren Connolly	Independent Assurance Technician
Nathan Covey	Independent Assurance Technician
TJ Davison	Concrete Technician
Phil Miles	Concrete Technician
Jason Cloutier	Bituminous Technician
Shawn Corbett	Bituminous Technician
Martin Desch	Engineering Technician
Craig Graham	Supervisor, Research & Development
Tom Eliassen	State Transportation Geologist
William Ahearn P.E.	Manager, Research & Testing Unit

Appendix A

I-89 JERSEY BARRIER SAMPLING and ANALYSIS PROTOCOL – 10-7-03

1) Definition of Terms:

- a) Sample/ Test Location – Location a sample is taken or test is performed, identified by group and barrier number.

2) Equipment for data collection:

- | | |
|-----------------------------|----------------------------------|
| a) Core Rig | p) Digital Camera |
| b) 4" Core Bits | q) 50' Measuring device |
| c) Hilti Drill | r) Thermometer |
| d) 1/2 " Drill Bits | s) Water Jugs or Water Tanker |
| e) 3/4" Drill Bits | t) Hose |
| f) Depth Guide | u) Screw Driver/prying device |
| g) Data Collection Form | v) Sample bags and ties |
| h) Clip Board | w) ID Cards |
| i) Paint | x) Sample Tins |
| j) Air compressor | y) Generator |
| k) Rebar Finder | z) Scoopula |
| l) Extension Cord(s) | aa) Carbonation Field Test Tools |
| m) Hilti Core Rig and Mount | bb) ASR Field Test Tools |
| n) Swiss Hammer | cc) Umbrella |
| o) Mirror on a pole | |

3) Sample/Test Locations- All samples will be centered and tests performed within the 6" vertical distance shown in Figure 1 and the 18' section shown in Figure 2 (Note- Not to scale).

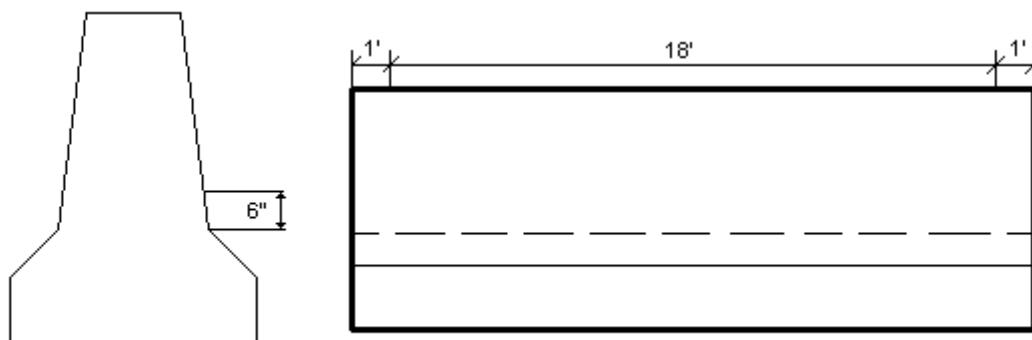


Figure 1- Cross section of Jersey Barrier Figure 2- Horizontal View of Barrier

- a) No samples/ tests will be developed on visibly deteriorated concrete.
- b) 4 sample locations (40 barriers) will be selected for examination.
 - i) 4 groups of ten barriers (200 feet) will be chosen at random from the contiguous length.
- 4) Barrier Survey-** An overall assessment of each barrier's condition will be recorded using attached sheets and digital photography.
 - a) Both sides of the barrier will be observed for cracking and spalling.

- b) A photo of the barrier with its ID painted on, denoted as Group and Number, will be taken.

5) Sample Collection-

- a) Five types of samples/tests will be developed during the field work.
 - i) Chloride Penetration Samples
 - (1) Using a rotary hammer drill (Hilti), Drill to $\frac{1}{2}$ " and blow drill and hole clean using umbrella to keep area dry.
 - (2) Drill to $1\frac{1}{2}$ " and collect dust in appropriately marked tin using scoopula.
 - (3) Drill to $2\frac{1}{2}$ " and collect dust in appropriately marked tin using scoopula.
 - ii) 4" Cored Concrete Samples from two barriers in each sample location
 - (1) Two of the first five barriers in a group will be chosen at random for coring.
 - (2) Using the gas powered or electric core rig, core to a depth of 8".
 - (a) If Hilti, mount on barrier using rigging.
 - (b) If gas powered, use guide to initiate core.
 - (3) Break off sample.
 - (4) Place sample in bag and label sample bag.
 - iii) ASR Test
 - (1) The ASR Field test will be performed on all barriers within a sample location.
 - (2) Remove top $\frac{1}{8}$ " of 6x6 inches of concrete with rock hammer.
 - (3) Apply test.
 - (4) Record results and location.
 - iv) Swiss Hammer Test
 - (1) The Swiss Hammer Test will be performed on all sample barriers.
 - (2) Record results and location.
 - v) Carbonation Test
 - (1) The Carbonation Test will be performed on all sample barriers at the same location as the Swiss Hammer Test using the impact area as a test location.
- b) The field tests will be performed at the approximate core and chloride locations before those samples are taken.

Appendix B

Chloride Concentrations and Rapid Chloride Permeability

Barrier #	Chloride, 0.5-1.5 in. ppm	Chloride, 1.5-2.5 in. ppm	Rapid Chloride Permeability, Coulombs
51	1134	617	5434
52			
53			
54	872	700	7658
55			
56			
57			
58			
59			
60			
91			
92	1019	135	6524
93	1331	570	6340
94			
95			
96			
97			
98			
99			
100			
201	1220	576	4961
202	662	226	5622
203			
204			
205			
206			
207			
208			
209			
210			
251	1672	914	5172
252	640	273	5475
253			
254			
255			
256			
257			
258			
259			
260			

Appendix C

Compressive Strength by Impact Hammer or Compression Testing

Barrier #	Average Rebound Hammer #	Indicated PSI from Chart (estimated)	PSI* from 4"x4" core	*note: a correction factor of 0.87 was applied due to the short length as per AASHTO T22
51	50.5	8000	5985	
52	52.3	8500		Cores were not taken in same area as rebound hammer sampling.
53	54.3	8500+		
54	50.6	8000	5271	
55	52.5	8500+		
56	49.2	7700		
57	53	8500+		
58	50.2	8000		
59	50.8	8000		
60	50.8	8000		
91	51.5	8300		
92	54.5	8500+	5409	
93	48.5	7600	5638	
94	52.2	8500+		
95	51.3	8300		
96	48.9	7700		
97	51.3	8300		
98	53.4	8500+		
99	50.9	8300		
100	48.8	7700		
201	54	8500+	6151	
202	51.1	8300	6005	
203	56.3	8500+		
204	55.8	8500+		
205	51.3	8300		
206	54	8500+		
207	51.7	8400		
208	52.8	8500+		
209	53.6	8500+		
210	54	8500+		
251	53.9	8500+	6082	
252	54.1	8500+	6213	
253	48.9	7700		
254	51.6	8400		
255	51.2	8300		
256	53	8500+		
257	54	8500+		
258	51.9	8500		
259	52.5	8500		
260	51.4	8300		

Appendix D

Field

Carbonation and ASR Results

Barrier #	Carbonation	General Extent of ASR	Reaction Rims	Gel-Filled Cracks
51	None	None	None	None
52	None	None	None	None
53	None	None	None	None
54	None	None	None	None
55	None	None	None	None
56	None	Slight	One or two	None
57	None	None	None	None
58	None	Slight	Several	None
59	None	None	None	None
60	None	None	None	None
91	None	Slight	One or two	None
92	None	Moderate	Several	Few, small
93	None	None	None	None
94	None	None	None	None
95	None	None	None	None
96	None	Moderate	Many	One or two
97	None	Moderate	Several	Few
98	None	Moderate	Several	Few
99	None	Moderate	Many	Many, well defined
100	None	Moderate	Many	Few
201	None	Slight	Several	None
202	None	Moderate	Many	Few
203	None	Moderate	Many	Few
204	None	Moderate	Many	Few
205	None	Moderate	Many	Few
206	None	Slight	Few	None
207	None	Slight	None	None
208	None	Slight	None	None
209	None	None	None	None
210	None	None	None	None
251	None	Moderate	Many	Few
252	None	Heavy	Most	Few
253	None	Heavy	Many	Several
254	None	Moderate	Many	Few
255	None	Heavy	Most	Many
256	None	Moderate	Many	None
257	None	Moderate	Many	None
258	None	None	None	None
259	None	Slight	Few	None
260	None	None	None	None

Appendix E

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
1	NB	Yes	No	0	None	0	
2	SB	Yes	No	0	Top left Corner South	5	
3	NB	Yes	No	0	Top left / Bottom Right South	5	
4	SB	Yes	No	0	None	0	
5	NB	Yes	No	0	Top left and Right	5	
6	SB	Yes	No	0	Top	15	Long Crack across top South
7	NB	Yes	No	0	Top Right South	5	
8	SB	Yes	No	0	None	0	
9	NB	Yes	No	20	None	0	
10	SB	Yes	No	0	None	0	
11	NB	Yes	No	0	Top Left South	5	
12	SB	Yes	No	5	None	0	
13	NB	Yes	No	5	None	0	
14	SB	Yes	No	0	Middle South	1	
15	NB	Yes	No	10	None	0	
16	SB	Yes	No	5	None	0	
17	NB	Yes	No	5	None	0	
18	SB	Yes	No	0	Top Left Top	1	
19	NB	Yes	No	0	None	0	
20	SB	Yes	No	5	Top Left Top	10	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
21(1)	NB	Yes	No	10	None	0	
21	SB	Yes	No	30	None	0	
22	NB	Yes	No	5	Bottom Left and Right Corner	4	
23	SB	Yes	No	5	Top Right South	1	
24	NB	Yes	No	0	None	0	
25	SB	Yes	No	30	Top Left Top	30	
26	NB	Yes	No	10	None	0	
27	SB	Yes	No	10	None	0	
28	NB	Yes	No	20	None	0	
29	SB	Yes	No	5	None	0	
30	NB	Yes	No	1	Bottom Right South	5	Top Right South Corner is about to break off.
31	SB	Yes	No	2	None	0	
32	NB	Yes	No	1	None	0	
33	SB	Yes	No	5	None	0	
34	NB	Yes	No	1	None	0	
35	SB	Yes	No	10	None	0	
36	NB	Yes	No	5	None	0	
37	SB	Yes	No	0	None	0	
38	NB	Yes	No	0	Bottom Right South	2	
39	SB	Yes	No	5	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
40	NB	Yes	No	0	None	0	
41	SB	Yes	No	5	None	0	
42	NB	Yes	No	1	None	0	
43	SB	Yes	No	1	Top Right South	1	
44	NB	Yes	No	0	Top Right Top	1	
45	SB	Yes	No	0	None	0	
46	NB	Yes	No	10	None	0	
47	SB	Yes	No	5	Bottom Left North	1	
48	NB	Yes	No	0	None	0	
49	SB	Yes	No	5	None	0	
50	NB	Yes	No	20	Top Right Top	5	
51	SB	Yes	No	5	Bottom Left North	1	
52	NB	Yes	No	0	Middle Bottom and Top Right North	5	
53	SB	Yes	No	10	None	0	
54	NB	Yes	No	5	None	0	
55	SB	Yes	No	5	None	0	
56	NB	Yes	No	30	Top Right Top	5	
57	SB	Yes	No	0	None	0	
58	NB	Yes	No	5	Middle Bottom North and Bottom Right South	5	
59	SB	Yes	No	40	Top Right Top	5	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
60	NB	Yes	No	5	Top Right Top and Bottom Right South	0	
61	SB	Yes	No	0	None	0	
62	NB	Yes	No	40	Top	15	The top is cracked down the middle
63	SB	Yes	No	40	None	0	
64	NB	Yes	No	35	Top Left Top	15	
65	SB	Yes	No	30	Right Top and Bottom	20	The hole over the drain is showing rebar.
66	NB	Yes	No	20	None	0	
67	SB	Yes	No	35	None	0	
68	NB	Yes	No	0	None	0	
69	SB	Yes	No	10	None	0	
70	NB	Yes	No	5	None	0	
71(1)	SB	Yes	No	5	None	0	
71	NB	Yes	No	0	None	0	
72	SB	Yes	No	0	None	0	
73	NB	Yes	No	0	Bottom Left North	1	
74	SB	Yes	No	5	None	0	
75	NB	Yes	No	0	None	0	
76	SB	Yes	No	5	None	0	
77	NB	Yes	No	1	None	0	
78	SB	Yes	No	0	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
79	NB	Yes	No	5	Top Left Top	5	
80	SB	Yes	No	5	None	0	
81	NB	Yes	No	20	None	0	
82	SB	Yes	No	30	None	0	
83	NB	Yes	No	5	Right Edge see Rebar and Connector	15	
84	SB	Yes	No	0	None	0	New
85	NB	Yes	No	0	None	0	New over Drain
86	SB	Yes	No	0	None	0	New
87	NB	Yes	No	40	Middle Bottom South, Middle Middle North / Bottom	35	
88	SB	Yes	No	20	Middle Left North	5	
89	NB	Yes	No	0	Middle Left North	5	
90	SB	Yes	No	0	None	0	
91	NB	Yes	No	10	None	0	
92	SB	Yes	No	40	Bottom Left, Bottom Right North Bottom Left South	35	Severe cracking over South Bound Lane Bottom
93	NB	Yes	No	5	None	0	
94	SB	Yes	No	0	Bottom Left, Top Right South	5	
95	NB	Yes	No	5	None	0	
96	SB	Yes	No	10	Bottom Left North	2	
97	NB	Yes	No	40	Bottom North, Bottom Left South	35	Severe cracking over South Bound Lane Bottom
98	SB	Yes	No	40	Bottom North, Bottom Left South	35	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
99	NB	Yes	No	30	None	0	
100	SB	Yes	No	30	Bottom Right North, Bottom Right South	15	
101	NB	Yes	No	30	Bottom North	30	
102	SB	Yes	No	30	Bottom North	20	
103	NB	Yes	No	15	Bottom North and South	40	
104	SB	Yes	No	10	None	0	
105	NB	Yes	No	10	None	0	
106	SB	Yes	No	10	None	0	
107	NB	Yes	No	5	None	0	
108	SB	Yes	No	5	None	0	
109	NB	Yes	No	5	None	0	
110	SB	Yes	No	10	Bottom North and South, Top left and Right	45	See the rebar on top Right bad shape.
111	NB	Yes	No	40	Bottom Right North, Bottom Right South	15	severe crack in the middle.
112	SB	Yes	No	20	None	0	
113	NB	Yes	No	10	None	0	
114	SB	Yes	No	15	Top Right South	15	See Rebar
115	NB	Yes	No	5	Top Right South	1	
116	SB	Yes	No	5	None	0	
117	NB	Yes	No	5	None	0	
118	SB	Yes	No	0	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
119	NB	Yes	No	0	None	0	
120	SB	Yes	No	10	None	0	
121	NB	Yes	No	20	None	0	
122	SB	Yes	No	5	None	0	
123	NB	Yes	No	10	Bottom Right North	5	
124	SB	Yes	No	5	None	0	
125	NB	Yes	No	0	None	0	
126	SB	Yes	No	0	Top Right Top	2	
127	NB	Yes	No	0	None	0	
128	SB	Yes	No	60	Top Middle North, Bottom Right and Left South	20	The top right top can see rebar.
129	NB	Yes	No	0	None	0	
130	SB	Yes	No	5	None	0	
131	NB	Yes	No	70	Bottom Middle South	20	
132	SB	Yes	No	0	Top Left North	5	
133	NB	Yes	No	70	Top left Top, Bottom Left and Right South	20	
134	SB	Yes	No	10	Top Left North	5	
135	NB	Yes	No	20	None	0	
136	SB	Yes	No	5	None	0	
137	NB	Yes	No	5	Top Left Top	5	
138	SB	Yes	No	30	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
139	NB	Yes	No	30	None	0	
140	SB	Yes	No	25	None	0	
141	NB	Yes	No	20	None	0	
142	SB	Yes	No	5	None	0	
143	NB	Yes	No	15	None	0	
144	SB	Yes	No	20	None	0	
145	NB	Yes	No	15	None	0	
146	SB	Yes	No	40	None	0	
147	NB	Yes	No	40	Top Right Top	0	See Rebar
148	SB	Yes	No	0	None	0	New
149	NB	Yes	No	70	None	0	New Over Drain Crack from Top to 3/4 of the way down.
150	SB	Yes	No	30	None	0	
151	NB	Yes	No	30	None	0	
152	SB	Yes	No	20	None	0	
153	NB	Yes	No	30	None	0	
154	SB	Yes	No	20	None	0	
155	NB	Yes	No	30	None	0	
156	SB	Yes	No	30	None	0	
157	NB	Yes	No	10	None	0	
158	SB	Yes	No	30	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
159	NB	Yes	No	40	None	0	
160	SB	Yes	No	35	None	0	
161	NB	Yes	No	35	None	0	
162	SB	Yes	No	30	None	0	
163	NB	Yes	No	30	None	0	
164	SB	Yes	No	30	None	0	
165	NB	Yes	No	35	None	0	
166	SB	Yes	No	40	None	0	South Side Very Poor
167	NB	Yes	No	30	None	0	
168	SB	Yes	No	30	Top Left North	5	
169	NB	Yes	No	20	None	0	
170	SB	Yes	No	20	Over the Drain	10	Over Drain
171	NB	Yes	No	30	Top Left Top	5	
172	SB	Yes	No	10	Top Left Top	10	
173	NB	Yes	No	15	None	0	
174	SB	Yes	No	25	None	0	
175	NB	Yes	No	35	None	0	
176	SB	Yes	No	35	None	0	
177	NB	Yes	No	30	None	0	
178	SB	Yes	No	20	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
179	NB	Yes	No	0	None	0	
179	SB	Yes	No	20	None	0	
181	NB	Yes	No	10	Top Left Top	0	
181	SB	Yes	No	20	None	0	
182	NB	Yes	No	30	None	0	
182	SB	Yes	No	80	None	0	
183	NB	Yes	No	40	None	0	
183	SB	Yes	No	80	None	0	
184	NB	Yes	No	30	None	0	
184	SB	Yes	No	70	None	0	
185	NB	Yes	No	60	None	0	
185	SB	Yes	No	80	Bottom	0	
186	NB	Yes	No	30	None	0	
186	SB	Yes	No	60	None	0	
187	NB	Yes	No	30	None	0	
187	SB	Yes	No	70	None	0	
188	NB	Yes	No	30	None	0	
188	SB	Yes	No	70	None	0	
189	NB	Yes	No	30	None	0	
189	SB	Yes	No	60	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
190	NB	Yes	No	10	None	0	
190	SB	Yes	No	40	None	0	
191	NB	Yes	No	10	None	0	
191	SB	Yes	No	40	None	0	
192	NB	Yes	No	30	None	0	
192	SB	Yes	No	70	None	0	
193	NB	Yes	No	25	None	0	
193	SB	Yes	No	35	None	0	
194	NB	Yes	No	30	None	0	
194	SB	Yes	No	40	None	0	
195	NB	Yes	No	15	None	0	
195	SB	Yes	No	60	None	0	
196	NB	Yes	No	25	None	0	
196	SB	Yes	No	50	None	0	
197	NB	Yes	No	0	None	0	
197	SB	Yes	No	35	None	0	
198	NB	Yes	No	10	None	0	
198	SB	Yes	No	40	None	0	
199	NB	Yes	No	5	None	0	
199	SB	Yes	No	30	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
200	NB	Yes	No	0	None	0	
200	SB	Yes	No	30	None	0	
201	NB	Yes	No	0	Bottom Left	1	
201	SB	Yes	No	40	None	0	
202	NB	Yes	No	5	None	0	
202	SB	Yes	No	40	None	0	
203	NB	Yes	No	10	None	0	
203	SB	Yes	No	60	None	0	
204	NB	Yes	No	10	None	0	
204	SB	Yes	No	60	None	0	
205	NB	Yes	No	15	None	0	
205	SB	Yes	No	40	None	0	
206	NB	Yes	No	40	None	0	
206	SB	Yes	No	60	None	0	
207	NB	Yes	No	15	None	0	
207	SB	Yes	No	40	None	0	
208	NB	Yes	No	40	None	0	
208	SB	Yes	No	60	None	0	
209	NB	Yes	No	10	None	0	
209	SB	Yes	No	40	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
210	NB	Yes	No	15	None	0	
210	SB	Yes	No	30	Top Right	5	
211	NB	Yes	No	15	None	0	
211	SB	Yes	No	60	None	0	
212	NB	Yes	No	15	None	0	
212	SB	Yes	No	35	Bottom Right	5	
213	NB	Yes	No	10	None	0	
213	SB	Yes	No	25	None	0	
214	NB	Yes	No	15	None	0	
214	SB	Yes	No	15	None	0	
215	NB	Yes	No	15	None	0	
215	SB	Yes	No	30	None	0	
216	NB	Yes	No	25	None	0	
216	SB	Yes	No	10	None	0	
217	NB	Yes	No	25	None	0	
217	SB	Yes	No	10	None	0	
218	NB	Yes	No	10	Bottom Left	1	
218	SB	Yes	No	15	None	0	
219	NB	Yes	No	0	None	0	
219	SB	Yes	No	10	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
220	NB	Yes	No	15	None	0	
220	SB	Yes	No	30	None	0	
221	NB	Yes	No	15	None	0	
221	SB	Yes	No	25	None	0	
222	NB	Yes	No	15	None	0	
222	SB	Yes	No	30	None	0	
223	NB	Yes	No	5	None	0	
223	SB	Yes	No	20	None	0	
224	NB	Yes	No	15	None	0	
224	SB	Yes	No	25	None	0	
225	NB	Yes	No	5	None	0	
225	SB	Yes	No	10	None	0	
226	NB	Yes	Bottom Left	5	None	0	
226	SB	Yes	No	15	None	0	
227	NB	Yes	No	25	None	0	
227	SB	Yes	No	40	None	0	
228	NB	Yes	No	5	None	0	
228	SB	Yes	No	5	Top	0	
229	NB	Yes	No	15	None	1	
229	SB	Yes	No	40	None	1	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
230	NB	Yes	No	5	None	0	
230	SB	Yes	No	10	None	0	
231	NB	Yes	No	20	None	0	
231	SB	Yes	No	35	None	0	
232	NB	Yes	No	35	None	0	
232	SB	Yes	No	35	None	0	
233	NB	Yes	Top Left	25	None	0	
233	SB	Yes	No	50	None	0	
234	NB	Yes	Top Left	5	None	0	
234	SB	Yes	No	20	None	0	
235	NB	Yes	No	40	None	0	
235	SB	Yes	No	60	None	0	
236	NB	Yes	Top Left	45	None	0	
236	SB	Yes	No	65	None	0	
237	NB	Yes	No	60	None	0	
237	SB	Yes	No	60	None	0	
238	NB	Yes	No	0	None	0	New
238	SB	Yes	No	5	None	0	New over the Drain cracked down the Middle
239	NB	Yes	No	35	Top Right, Top Middle	5	
239	SB	Yes	No	40	Top Right	4	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
240	NB	Yes	No	30	Top Left, Top Middle	5	
240	SB	Yes	No	35	Top Left	4	
241	NB	Yes	No	5	None	0	
241	SB	Yes	No	30	None	0	
242	NB	Yes	No	10	None	0	
242	SB	Yes	No	10	None	0	
243	NB	Yes	No	20	None	0	
243	SB	Yes	No	30	Top Left	5	
244	NB	Yes	No	20	None	0	
244	SB	Yes	No	35	None	0	
245	NB	Yes	No	20	None	0	
245	SB	Yes	No	25	None	0	
246	NB	Yes	No	20	None	0	
246	SB	Yes	No	40	None	0	
247	NB	Yes	No	5	None	0	
247	SB	Yes	No	20	None	0	
248	NB	Yes	No	5	None	0	
248	SB	Yes	No	30	None	0	
249	NB	Yes	Bottom	20	None	0	
249	SB	Yes	No	60	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
250	NB	Yes	No	5	None	0	
250	SB	Yes	No	5	None	0	
251	NB	Yes	No	20	None	0	
251	SB	Yes	No	0	None	0	
252	NB	Yes	No	0	None	0	
252	SB	Yes	No	5	Top Right Top	0	
253	NB	Yes	No	5	None	0	
253	SB	Yes	No	0	None	0	
254	NB	Yes	No	0	None	0	
254	SB	Yes	No	0	None	0	
255	NB	Yes	No	30	None	0	
255	SB	Yes	No	30	None	0	
256	NB	Yes	No	20	None	0	
256	SB	Yes	No	20	None	0	
257	NB	Yes	No	10	None	0	
257	SB	Yes	No	10	None	0	
258	NB	Yes	No	20	None	0	
258	SB	Yes	No	20	None	0	
259	NB	Yes	No	20	None	0	
259	SB	Yes	No	25	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
260	NB	Yes	No	30	None	0	
260	SB	Yes	No	30	None	0	
261	NB	Yes	No	0	None	0	
261	SB	Yes	No	0	None	0	
262	NB	Yes	No	5	Middle Bottom	10	Drain
262	SB	Yes	No	5	Bottom Left	10	Drain
263	NB	Yes	No	20	Top Left	20	
263	SB	Yes	No	20	Top Left	10	
264	NB	Yes	No	20	None	0	
264	SB	Yes	No	35	None	0	
265	NB	Yes	No	0	None	0	
265	SB	Yes	No	0	None	0	
266	NB	Yes	No	0	None	0	
266	SB	Yes	No	30	None	0	
267	NB	Yes	No	20	None	0	
267	SB	Yes	No	40	None	0	
268	NB	Yes	No	5	None	0	
268	SB	Yes	No	30	None	0	
269	NB	Yes	No	10	None	0	
269	SB	Yes	No	30	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
270	NB	Yes	Top Left	15	None	0	
270	SB	Yes	No	30	None	0	
271	NB	Yes	No	40	None	0	
271	SB	Yes	No	40	Top Right	5	
272	NB	Yes	No	20	Top Left	5	
272	SB	Yes	No	30	Top Left	0	
273	NB	Yes	No	40	None	5	
273	SB	Yes	No	40	Top Right	0	
274	NB	Yes	No	30	None	0	
274	SB	Yes	No	30	None	0	
275	NB	Yes	No	25	None	0	
275	SB	Yes	No	40	None	0	
276	NB	Yes	No	20	None	0	
276	SB	Yes	No	40	None	0	
277	NB	Yes	No	60	None	0	
277	SB	Yes	No	60	None	0	
278	NB	Yes	No	30	None	0	
278	SB	Yes	No	40	None	0	
279	NB	Yes	No	10	None	0	
279	SB	Yes	No	30	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
280	NB	Yes	No	0	Middle Middle	0	
280	SB	Yes	No	30	None	1	
281	NB	Yes	No	0	None	0	
281	SB	Yes	No	20	None	0	
282	NB	Yes	No	30	None	0	
282	SB	Yes	No	30	None	0	
283	NB	Yes	No	30	None	0	
283	SB	Yes	No	30	Top Right	5	
284	NB	Yes	No	30	None	0	
284	SB	Yes	No	40	None	0	Bottom Right Corner very Bad Shape
285	NB	Yes	No	20	None	0	
285	SB	Yes	No	50	None	0	
286	NB	Yes	No	10	None	0	
286	SB	Yes	No	30	Middle	5	
287	NB	Yes	No	20	None	0	Top can see Chair that Rebar sits on
287	SB	Yes	No	40	None	0	
288	NB	Yes	No	40	None	0	
288	SB	Yes	No	70	None	0	
289	NB	Yes	No	20	None	0	
289	SB	Yes	No	40	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
290	NB	Yes	No	40	Top Middle over the Pipe Hole	5	
290	SB	Yes	No	60	None	0	
291	NB	Yes	No	50	None	0	
291	SB	Yes	No	50	Bottom Left Corner	5	
292	NB	Yes	No	40	Top Left	1	
292	SB	Yes	No	30	None	0	
293	NB	Yes	No	10	None	0	
293	SB	Yes	No	50	None	0	
294	NB	Yes	No	40	None	0	
294	SB	Yes	No	60	None	0	
295	NB	Yes	No	40	None	0	
295	SB	Yes	No	60	Top Left	5	See Chair
296	NB	Yes	No	50	None	0	
296	SB	Yes	No	60	None	0	
297	NB	Yes	No	70	None	0	
297	SB	Yes	No	60	None	0	
298	NB	Yes	No	30	Top Left	5	
298	SB	Yes	No	60	None	0	
299	NB	Yes	No	30	None	0	
299	SB	Yes	No	30	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
300	NB	Yes	No	0	None	0	
300	SB	Yes	No	0	None	0	
301	NB	Yes	No	30	None	0	
301	SB	Yes	No	30	None	0	Drain Cracked down 3/4 way down to Drain
302	NB	Yes	No	30	Top Left	5	
302	SB	Yes	No	30	Top Left	5	
303	NB	Yes	No	40	None	0	
303	SB	Yes	No	40	None	0	
304	NB	Yes	No	40	None	0	
304	SB	Yes	No	40	None	0	
305	NB	Yes	No	30	None	0	
305	SB	Yes	No	70	None	0	
306	NB	Yes	No	30	None	0	
306	SB	Yes	No	60	None	0	
307	NB	Yes	No	50	None	0	
307	SB	Yes	No	50	None	0	
308	NB	Yes	No	10	None	0	
308	SB	Yes	No	40	None	0	
309	NB	Yes	No	60	Top Left	5	
309	SB	Yes	No	60	Top Left	5	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
310	NB	Yes	No	70	None	0	
310	SB	Yes	No	60	Bottom Left, Bottom Right	7	
311	NB	Yes	No	10	Middle Left	1	
311	SB	Yes	No	30	None	0	
312	NB	Yes	No	0	Middle Middle	<1	
312	SB	Yes	No	30	None	0	
313	NB	Yes	No	30	None	0	
313	SB	Yes	No	50	None	0	
314	NB	Yes	No	10	None	0	
314	SB	Yes	No	20	None	0	
315	NB	Yes	No	10	None	0	
315	SB	Yes	No	40	None	0	
316	NB	Yes	No	30	None	0	
316	SB	Yes	No	40	None	0	
317	NB	Yes	No	10	None	0	
317	SB	Yes	No	10	None	0	
318	NB	Yes	No	0	None	0	
318	SB	Yes	No	10	None	0	
319	NB	Yes	No	60	Bottom Left	<1	
319	SB	Yes	No	60	Bottom Left, Bottom Middle, Top Right, Bottom Right	5	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
320	NB	Yes	No	10	Top Left	10	
320	SB	Yes	No	10	Top Left	10	Top 3" to 4" about 4' ready to fall off. Major crack 3' long around the chair ready to break.
321	NB	Yes	No	30	None	0	
321	SB	Yes	No	40	Top Left	5	
322	NB	Yes	No	10	None	0	
322	SB	Yes	No	40	None	0	
323	NB	Yes	No	0	Top Right	0	
323	SB	Yes	No	10	None	<1	
324	NB	Yes	No	0	None	0	
324	SB	Yes	No	10	None	0	
325	NB	Yes	No	20	None	0	
325	SB	Yes	No	20	None	0	
326	NB	Yes	No	100	None	0	
326	SB	Yes	No	100	None	0	
327	NB	Yes	No	100	Top	0	
327	SB	Yes	No	100	None	1	
328	NB	Yes	No	100	None	0	
328	SB	Yes	No	100	None	0	
329	NB	Yes	No	100	Bottom	1	
329	SB	Yes	No	100	Bottom	1	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
330	NB	Yes	No	100	None	0	
330	SB	Yes	No	100	None	0	
331	NB	Yes	No	100	None	0	
331	SB	Yes	No	100	None	0	
332	NB	Yes	No	100	None	0	
332	SB	Yes	No	100	None	0	
333	NB	Yes	No	100	Bottom	1	
333	SB	Yes	No	100	None	0	
334	NB	Yes	No	100	Bottom	1	
334	SB	Yes	No	100	Bottom	0	
335	NB	Yes	No	100	None	0	
335	SB	Yes	No	100	Bottom	3	
336	NB	Yes	No	100	Bottom	1	
336	SB	Yes	No	100	Bottom	3	
337	NB	Yes	No	100	Bottom	0	
337	SB	Yes	No	100	None	0	
338	NB	Yes	No	100	None	2	
338	SB	Yes	No	100	Bottom	0	
339	NB	Yes	No	100	None	0	
339	SB	Yes	No	100	Bottom	0	Wide Crack

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
340	NB	Yes	No	100	None	0	
340	SB	Yes	No	100	None	0	
341	NB	Yes	No	100	Bottom	1	
341	SB	Yes	No	100	None	0	
342	SB	Yes	No	100	None	0	
342	NB	Yes	No	100	Bottom	1	
343	SB	Yes	No	100	Bottom	0	Bottom Wide Crack Over Drain
343	NB	Yes	No	100	Top	1	Bottom Wide Crack Over Drain
344	SB	Yes	No	100	Bottom	1	
344	NB	Yes	No	100	None	0	
345	SB	Yes	No	100	None	0	
345	NB	Yes	No	100	Bottom	0	Wide Crack
346	SB	Yes	No	100	Bottom	2	
346	NB	Yes	No	100	Bottom	1	
347	SB	Yes	No	75	None	0	
347	NB	Yes	No	75	None	0	
348	SB	Yes	No	100	None	0	
348	NB	Yes	No	100	None	0	
349	SB	Yes	No	100	None	0	
349	NB	Yes	No	100	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
350	SB	Yes	No	80	None	0	
350	NB	Yes	No	75	None	0	
351	SB	Yes	No	100	None	0	
351	NB	Yes	No	100	None	0	
352	SB	Yes	No	100	None	0	
352	NB	Yes	No	100	Bottom	1	
353	SB	Yes	No	100	Bottom	20	
353	NB	Yes	No	100	Bottom	3	
354	SB	Yes	No	100	Bottom	30	
354	NB	Yes	No	100	Bottom	5	
355	SB	Yes	No	100	None	0	
355	NB	Yes	No	100	Bottom	3	
356	SB	Yes	No	100	None	0	
356	NB	Yes	No	100	Bottom	10	
357	SB	Yes	No	100	Bottom	1	
357	NB	Yes	No	100	Bottom	2	
358	SB	Yes	No	100	Bottom	10	
358	NB	Yes	No	100	Bottom	10	
359	SB	Yes	No	100	None	0	
359	NB	Yes	No	100	Bottom	1	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
360	SB	Yes	No	100	Bottom	40	
360	NB	Yes	No	100	Bottom	35	
361	SB	Yes	No	90	None	0	
361	NB	Yes	No	90	Bottom Over Drain	1	
362	SB	Yes	No	100	None	0	
362	NB	Yes	No	100	Bottom	1	
363	SB	Yes	No	100	Bottom	30	
363	NB	Yes	No	100	Bottom	5	
364	SB	Yes	No	100	Bottom	3	
364	NB	Yes	No	100	None	0	
365	SB	Yes	No	100	Bottom	40	
365	NB	Yes	No	100	Bottom	40	
366	SB	Yes	No	100	Bottom	15	
366	NB	Yes	No	100	Bottom	3	
367	SB	Yes	No	100	None	0	
367	NB	Yes	No	100	Bottom	2	
368	SB	Yes	No	100	None	0	
368	NB	Yes	No	100	Bottom	2	
369	SB	Yes	No	100	None	0	
369	NB	Yes	No	100	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
370	SB	Yes	No	100	None	0	
370	NB	Yes	No	100	None	0	
371	SB	Yes	No	100	Bottom	2	
371	NB	Yes	No	100	Top	1	
372	SB	Yes	No	100	None	0	
372	NB	Yes	No	100	None	0	
373	SB	Yes	No	100	None	0	
373	NB	Yes	No	100	Top	1	
374	SB	Yes	No	100	Bottom	1	
374	NB	Yes	No	100	None	0	
375	SB	Yes	No	100	None	0	
375	NB	Yes	No	100	None	0	
376	SB	Yes	No	100	Bottom	1	
376	NB	Yes	No	100	None	0	
377	SB	Yes	No	100	Bottom	7	
377	NB	Yes	No	100	None	0	
378	SB	Yes	No	100	Bottom	1	
378	NB	Yes	No	100	None	0	
379	SB	Yes	No	100	Bottom Over Drain	2	Top Crack over Drain Both Sides
379	NB	Yes	No	100	Top	2	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
380	SB	Yes	No	100	Top	1	
380	NB	Yes	No	100	None	0	
381	SB	Yes	No	100	Bottom	2	Wide Crack
381	NB	Yes	No	100	Bottom	0	
382	SB	Yes	No	100	None	0	
382	NB	Yes	No	100	None	0	
383	SB	Yes	No	100	None	0	
383	NB	Yes	No	100	None	0	
384	SB	Yes	No	100	Bottom	2	
384	NB	Yes	No	100	Bottom	0	Wide Crack
385	SB	Yes	No	100	Bottom	5	Top Crack 75%
385	NB	Yes	No	100	Middle	1	
386	SB	Yes	No	100	Bottom	10	Wide Crack
386	NB	Yes	No	100	Bottom	1	
387	SB	Yes	No	100	None	0	
387	NB	Yes	No	100	None	0	
388	SB	Yes	No	100	None	0	
388	NB	Yes	No	100	None	0	
389	SB	Yes	No	100	Bottom	1	
389	NB	Yes	No	100	Bottom	0	Wide Crack

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
390	SB	Yes	No	100	Bottom	3	Wide Crack
390	NB	Yes	No	100	None	0	
391	SB	Yes	No	100	None	0	
391	NB	Yes	No	100	Top	1	
392	SB	Yes	No	100	Bottom	0	
392	NB	Yes	No	100	Middle	25	
393	SB	Yes	No	100	Bottom	0	
393	NB	Yes	No	100	Bottom	33	
394	SB	Yes	No	100	Bottom	0	
394	NB	Yes	No	100	None	10	
395	SB	Yes	No	100	Bottom	1	Wide Crack
395	NB	Yes	No	100	Bottom	2	
396	SB	Yes	No	100	Bottom	0	
396	NB	Yes	No	100	Bottom	1	
397	SB	Yes	No	100	Bottom	1	
397	NB	Yes	No	100	None	3	
398	SB	Yes	No	100	Bottom	5	
398	NB	Yes	No	100	Bottom	10	
399	SB	Yes	No	100	Bottom	0	
399	NB	Yes	No	100	None	8	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
400	SB	Yes	No	100	Bottom	3	
400	NB	Yes	No	100	None	20	
401	SB	Yes	No	100	Bottom	1	
401	NB	Yes	No	100	None	8	
402	SB	Yes	No	100	None	0	
402	NB	Yes	No	100	None	0	
403	SB	Yes	No	100	Bottom	5	
403	NB	Yes	No	100	None	0	
404	SB	Yes	No	100	Bottom	15	
404	NB	Yes	No	100	None	0	
405	SB	Yes	No	100	None	0	
405	NB	Yes	No	100	Top	1	
406	SB	Yes	No	95	None	0	
406	NB	Yes	No	100	None	0	
407	SB	Yes	No	85	None	0	
407	NB	Yes	No	100	None	0	
408	SB	Yes	No	100	None	0	
408	NB	Yes	No	100	None	0	
409	SB	Yes	No	100	None	0	
409	NB	Yes	No	100	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
410	SB	Yes	No	100	None	0	
410	NB	Yes	No	100	None	0	
411	SB	Yes	No	100	Middle	0	Steel Sticking out
411	NB	Yes	No	100	Middle	1	
412	SB	Yes	No	100	Bottom	0	Wide Crack
412	NB	Yes	No	100	None	0	
413	SB	Yes	No	100	None	0	
413	NB	Yes	No	100	None	0	
414	SB	Yes	No	100	Bottom	25	
414	NB	Yes	No	100	Bottom	5	
415	SB	Yes	No	100	Bottom	33	Top 1%
415	NB	Yes	No	100	Bottom	5	
416	SB	Yes	No	4	Aggregate Showing	25	Might be Replacement
416	NB	Yes	No	5	None	0	
417	SB	Yes	No	60	Bottom above Drain	1	
417	NB	Yes	No	75	Bottom above Drain	5	Top 1%
418	SB	Yes	No	100	Top	6	Top Rebar 3"
418	NB	Yes	No	100	None	0	
419	SB	Yes	No	100	Bottom and Top	20	Top Rebar 5"
419	NB	Yes	No	100	Bottom	5	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
420	SB	Yes	No	100	Bottom	20	
420	NB	Yes	No	100	Bottom	10	Top 2%
421	SB	Yes	No	100	Bottom	10	Top 1%
421	NB	Yes	No	100	Bottom	1	
422	SB	Yes	No	100	Bottom	10	
422	NB	Yes	No	100	Bottom	1	
423	SB	Yes	No	100	Bottom	30	
423	NB	Yes	No	100	Top and Bottom	3	
424	SB	Yes	No	100	None	0	
424	NB	Yes	No	100	None	0	
425	SB	Yes	No	100	Bottom	3	Opposite End
425	NB	Yes	No	100	Bottom	2	
426	SB	Yes	No	100	None	0	
426	NB	Yes	No	100	None	0	
427	SB	Yes	No	100	Bottom	2	
427	NB	Yes	No	100	Top and Bottom	1	
428	SB	Yes	No	100	Top Aggregate Showing	0	
428	NB	Yes	No	100	None	0	
429	SB	Yes	No	100	Bottom	10	Wide Crack Bottom
429	NB	Yes	No	100	Top Aggregate Showing	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
430	SB	Yes	No	100	Bottom	10	
430	NB	Yes	No	100	Top and Bottom	34	
431	SB	Yes	No	100	None	0	
431	NB	Yes	No	100	None	0	
432	SB	Yes	No	100	Bottom	0	Wide Crack
432	NB	Yes	No	100	Bottom	1	Top Aggregate Showing
433	SB	Yes	No	75	None	0	
433	NB	Yes	No	80	Top	2	
434	SB	Yes	No	100	Bottom	0	Wide Crack
434	NB	Yes	No	100	None	0	
435	SB	Yes	No	100	Bottom	20	
435	NB	Yes	No	100	None	0	
436	SB	Yes	No	100	Bottom	20	
436	NB	Yes	No	100	Bottom	3	
437	SB	Yes	No	100	Bottom	20	
437	NB	Yes	No	100	Top Aggregate Showing	100	
438	SB	Yes	No	60	Bottom Over Drain	10	Gone 2%
438	NB	Yes	No	50	Bottom Over Drain	30	Missing 6%
439	SB	Yes	No	60	Bottom	2	
439	NB	Yes	No	40	Top Aggregate Showing	60	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
440	SB	Yes	No	10	None	0	
440	NB	Yes	No	15	Top	3	
441	SB	Yes	No	40	None	0	
441	NB	Yes	No	40	Aggregate Showing Middle Top	40	
442	SB	Yes	No	70	None	0	
442	NB	Yes	No	75	Top Aggregate Showing	40	Wide Crack
443	SB	Yes	No	100	Bottom	10	
443	NB	Yes	No	100	None	0	Replacement
444	SB	Yes	No	10	None	0	Replacement
444	NB	Yes	No	10	Bottom	1	Replacement
445	SB	Yes	No	15	Small Crack	0	Replacement
445	NB	Yes	No	20	Bottom	1	Top End
446	SB	Yes	No	100	Top	2	
446	NB	Yes	No	100	None	0	
447	SB	Yes	No	100	Bottom	10	
447	NB	Yes	No	100	None	0	
448	SB	Yes	No	100	None	0	
448	NB	Yes	No	100	Bottom	1	
449	SB	Yes	No	100	Bottom	0	Wide Crack
449	NB	Yes	No	100	Bottom	0	Wide Crack

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
450	SB	Yes	No	100	Btoom	0	Wide Crack
450	NB	Yes	No	100	None	0	
451	SB	Yes	No	100	Bottom	0	Wide Crack
451	NB	Yes	No	95	Top End	1	
452	SB	Yes	No	100	Bottom	0	
452	NB	Yes	No	100	Bottom	0	Wide Crack
453	SB	Yes	No	100	Bottom	0	Wide Crack
453	NB	Yes	No	100	Bottom and Middle	0	Wide Crack
454	SB	Yes	No	20	Bottom	0	Aggregate Showing
454	NB	Yes	No	15	Bottom	0	Aggregate Showing
455	SB	Yes	No	10	None	5	
455	NB	Yes	No	15	Middle	2	
456	SB	Yes	No	100	Top	0	Bottom Wide Crack
456	NB	Yes	No	100	Bottom	1	Wide Crack
457	SB	Yes	No	60	Top	1	
457	NB	Yes	No	85	None	1	
458	SB	Yes	No	95	Bottom	1	Wide Crack
458	NB	Yes	No	10	Bottom	0	Wide Crack
459	SB	Yes	No	75	Bottom	5	Wide Crack 100%
459	NB	Yes	No	80	Bottom	5	Wide Crack 75% overlay

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
460	SB	Yes	No	100	Bottom	0	Wide Crack
460	NB	Yes	No	100	Bottom	2	Wide Crack
461	SB	Yes	No	20	None	2	
461	NB	Yes	No	40	None	3	
462	SB	Yes	No	100	None	0	
462	NB	Yes	No	100	Bottom	8	
463	SB	Yes	No	100	Bottom	0	Wide Crack
463	NB	Yes	No	100	Bottom	33	
464	SB	Yes	No	100	Bottom	0	Wide Crack
464	NB	Yes	No	100	Bottom	5	
465	SB	Yes	No	100	Bottom	1	Wide Crack
465	NB	Yes	No	100	Bottom	0	Wide Crack
466	SB	Yes	No	100	None	0	
466	NB	Yes	No	100	Bottom	4	Wide Crack
467	SB	Yes	No	100	Bottom	0	Wide Crack
467	NB	Yes	No	100	Bottom	2	Wide Crack
468	SB	Yes	No	100	Bottom worse the Top	0	Cracks only
468	NB	Yes	No	100	Bottom	5	Wide Crack
469	SB	Yes	No	100	Bottom	0	Cracks only
469	NB	Yes	No	100	Bottom	20	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
470	SB	Yes	No	100	Bottom	02-Jan	Wide Cracks
470	NB	Yes	No	100	Bottom	40	Top 2 Places Spalling
471	SB	Yes	No	100	Bottom and Top	2	
471	NB	Yes	No	100	Bottom and Top	33	Top 2% Spalled
472	SB	Yes	No	100	Bottom	2	
472	NB	Yes	No	100	Bottom	33	
Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
1	NB	Yes	No	0	None	0	
2	SB	Yes	No	0	Top left Corner South	5	
3	NB	Yes	No	0	Top left / Bottom Right South	5	
4	SB	Yes	No	0	None	0	
5	NB	Yes	No	0	Top left and Right	5	
6	SB	Yes	No	0	Top	15	Long Crack across top South
7	NB	Yes	No	0	Top Right South	5	
8	SB	Yes	No	0	None	0	
9	NB	Yes	No	20	None	0	
10	SB	Yes	No	0	None	0	
11	NB	Yes	No	0	Top Left South	5	
12	SB	Yes	No	5	None	0	
13	NB	Yes	No	5	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
14	SB	Yes	No	0	Middle South	1	
15	NB	Yes	No	10	None	0	
16	SB	Yes	No	5	None	0	
17	NB	Yes	No	5	None	0	
18	SB	Yes	No	0	Top Left Top	1	
19	NB	Yes	No	0	None	0	
20	SB	Yes	No	5	Top Left Top	10	
21(1)	NB	Yes	No	10	None	0	
21	SB	Yes	No	30	None	0	
22	NB	Yes	No	5	Bottom Left and Right Corner	4	
23	SB	Yes	No	5	Top Right South	1	
24	NB	Yes	No	0	None	0	
25	SB	Yes	No	30	Top Left Top	30	
26	NB	Yes	No	10	None	0	
27	SB	Yes	No	10	None	0	
28	NB	Yes	No	20	None	0	
29	SB	Yes	No	5	None	0	
30	NB	Yes	No	1	Bottom Right South	5	Top Right South Corner is about to break off.
31	SB	Yes	No	2	None	0	
32	NB	Yes	No	1	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
33	SB	Yes	No	5	None	0	
34	NB	Yes	No	1	None	0	
35	SB	Yes	No	10	None	0	
36	NB	Yes	No	5	None	0	
37	SB	Yes	No	0	None	0	
38	NB	Yes	No	0	Bottom Right South	2	
39	SB	Yes	No	5	None	0	
40	NB	Yes	No	0	None	0	
41	SB	Yes	No	5	None	0	
42	NB	Yes	No	1	None	0	
43	SB	Yes	No	1	Top Right South	1	
44	NB	Yes	No	0	Top Right Top	1	
45	SB	Yes	No	0	None	0	
46	NB	Yes	No	10	None	0	
47	SB	Yes	No	5	Bottom Left North	1	
48	NB	Yes	No	0	None	0	
49	SB	Yes	No	5	None	0	
50	NB	Yes	No	20	Top Right Top	5	
51	SB	Yes	No	5	Bottom Left North	1	
52	NB	Yes	No	0	Middle Bottom and Top Right North	5	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
53	SB	Yes	No	10	None	0	
54	NB	Yes	No	5	None	0	
55	SB	Yes	No	5	None	0	
56	NB	Yes	No	30	Top Right Top	5	
57	SB	Yes	No	0	None	0	
58	NB	Yes	No	5	Middle Bottom North and Bottom Right South	5	
59	SB	Yes	No	40	Top Right Top	5	
60	NB	Yes	No	5	Top Right Top and Bottom Right South	0	
61	SB	Yes	No	0	None	0	
62	NB	Yes	No	40	Top	15	The top is cracked down the middle
63	SB	Yes	No	40	None	0	
64	NB	Yes	No	35	Top Left Top	15	
65	SB	Yes	No	30	Right Top and Bottom	20	The hole over the drain is showing rebar.
66	NB	Yes	No	20	None	0	
67	SB	Yes	No	35	None	0	
68	NB	Yes	No	0	None	0	
69	SB	Yes	No	10	None	0	
70	NB	Yes	No	5	None	0	
71(1)	SB	Yes	No	5	None	0	
71	NB	Yes	No	0	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
72	SB	Yes	No	0	None	0	
73	NB	Yes	No	0	Bottom Left North	1	
74	SB	Yes	No	5	None	0	
75	NB	Yes	No	0	None	0	
76	SB	Yes	No	5	None	0	
77	NB	Yes	No	1	None	0	
78	SB	Yes	No	0	None	0	
79	NB	Yes	No	5	Top Left Top	5	
80	SB	Yes	No	5	None	0	
81	NB	Yes	No	20	None	0	
82	SB	Yes	No	30	None	0	
83	NB	Yes	No	5	Right Edge see Rebar and Connector	15	
84	SB	Yes	No	0	None	0	New
85	NB	Yes	No	0	None	0	New over Drain
86	SB	Yes	No	0	None	0	New
87	NB	Yes	No	40	Middle Bottom South, Middle Middle North / Bottom	35	
88	SB	Yes	No	20	Middle Left North	5	
89	NB	Yes	No	0	Middle Left North	5	
90	SB	Yes	No	0	None	0	
91	NB	Yes	No	10	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
92	SB	Yes	No	40	Bottom Left, Bottom Right North Bottom Left South	35	Severe cracking over South Bound Lane Bottom
93	NB	Yes	No	5	None	0	
94	SB	Yes	No	0	Bottom Left, Top Right South	5	
95	NB	Yes	No	5	None	0	
96	SB	Yes	No	10	Bottom Left North	2	
97	NB	Yes	No	40	Bottom North, Bottom Left South	35	Severe cracking over South Bound Lane Bottom
98	SB	Yes	No	40	Bottom North, Bottom Left South	35	
99	NB	Yes	No	30	None	0	
100	SB	Yes	No	30	Bottom Right North, Bottom Right South	15	
101	NB	Yes	No	30	Bottom North	30	
102	SB	Yes	No	30	Bottom North	20	
103	NB	Yes	No	15	Bottom North and South	40	
104	SB	Yes	No	10	None	0	
105	NB	Yes	No	10	None	0	
106	SB	Yes	No	10	None	0	
107	NB	Yes	No	5	None	0	
108	SB	Yes	No	5	None	0	
109	NB	Yes	No	5	None	0	
110	SB	Yes	No	10	Bottom North and South, Top left and Right	45	See the rebar on top Right bad shape.
111	NB	Yes	No	40	Bottom Right North, Bottom Right South	15	severe crack in the middle.

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
112	SB	Yes	No	20	None	0	
113	NB	Yes	No	10	None	0	
114	SB	Yes	No	15	Top Right South	15	See Rebar
115	NB	Yes	No	5	Top Right South	1	
116	SB	Yes	No	5	None	0	
117	NB	Yes	No	5	None	0	
118	SB	Yes	No	0	None	0	
119	NB	Yes	No	0	None	0	
120	SB	Yes	No	10	None	0	
121	NB	Yes	No	20	None	0	
122	SB	Yes	No	5	None	0	
123	NB	Yes	No	10	Bottom Right North	5	
124	SB	Yes	No	5	None	0	
125	NB	Yes	No	0	None	0	
126	SB	Yes	No	0	Top Right Top	2	
127	NB	Yes	No	0	None	0	
128	SB	Yes	No	60	Top Middle North, Bottom Right and Left South	20	The top right top can see rebar.
129	NB	Yes	No	0	None	0	
130	SB	Yes	No	5	None	0	
131	NB	Yes	No	70	Bottom Middle South	20	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
132	SB	Yes	No	0	Top Left North	5	
133	NB	Yes	No	70	Top left Top, Bottom Left and Right South	20	
134	SB	Yes	No	10	Top Left North	5	
135	NB	Yes	No	20	None	0	
136	SB	Yes	No	5	None	0	
137	NB	Yes	No	5	Top Left Top	5	
138	SB	Yes	No	30	None	0	
139	NB	Yes	No	30	None	0	
140	SB	Yes	No	25	None	0	
141	NB	Yes	No	20	None	0	
142	SB	Yes	No	5	None	0	
143	NB	Yes	No	15	None	0	
144	SB	Yes	No	20	None	0	
145	NB	Yes	No	15	None	0	
146	SB	Yes	No	40	None	0	
147	NB	Yes	No	40	Top Right Top	0	See Rebar
148	SB	Yes	No	0	None	0	New
149	NB	Yes	No	70	None	0	New Over Drain Crack from Top to 3/4 of the way down.
150	SB	Yes	No	30	None	0	
151	NB	Yes	No	30	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
152	SB	Yes	No	20	None	0	
153	NB	Yes	No	30	None	0	
154	SB	Yes	No	20	None	0	
155	NB	Yes	No	30	None	0	
156	SB	Yes	No	30	None	0	
157	NB	Yes	No	10	None	0	
158	SB	Yes	No	30	None	0	
159	NB	Yes	No	40	None	0	
160	SB	Yes	No	35	None	0	
161	NB	Yes	No	35	None	0	
162	SB	Yes	No	30	None	0	
163	NB	Yes	No	30	None	0	
164	SB	Yes	No	30	None	0	
165	NB	Yes	No	35	None	0	
166	SB	Yes	No	40	None	0	South Side Very Poor
167	NB	Yes	No	30	None	0	
168	SB	Yes	No	30	Top Left North	5	
169	NB	Yes	No	20	None	0	
170	SB	Yes	No	20	Over the Drain	10	Over Drain
171	NB	Yes	No	30	Top Left Top	5	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
172	SB	Yes	No	10	Top Left Top	10	
173	NB	Yes	No	15	None	0	
174	SB	Yes	No	25	None	0	
175	NB	Yes	No	35	None	0	
176	SB	Yes	No	35	None	0	
177	NB	Yes	No	30	None	0	
178	SB	Yes	No	20	None	0	
179	NB	Yes	No	0	None	0	
179	SB	Yes	No	20	None	0	
181	NB	Yes	No	10	Top Left Top	0	
181	SB	Yes	No	20	None	0	
182	NB	Yes	No	30	None	0	
182	SB	Yes	No	80	None	0	
183	NB	Yes	No	40	None	0	
183	SB	Yes	No	80	None	0	
184	NB	Yes	No	30	None	0	
184	SB	Yes	No	70	None	0	
185	NB	Yes	No	60	None	0	
185	SB	Yes	No	80	Bottom	0	
186	NB	Yes	No	30	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
186	SB	Yes	No	60	None	0	
187	NB	Yes	No	30	None	0	
187	SB	Yes	No	70	None	0	
188	NB	Yes	No	30	None	0	
188	SB	Yes	No	70	None	0	
189	NB	Yes	No	30	None	0	
189	SB	Yes	No	60	None	0	
190	NB	Yes	No	10	None	0	
190	SB	Yes	No	40	None	0	
191	NB	Yes	No	10	None	0	
191	SB	Yes	No	40	None	0	
192	NB	Yes	No	30	None	0	
192	SB	Yes	No	70	None	0	
193	NB	Yes	No	25	None	0	
193	SB	Yes	No	35	None	0	
194	NB	Yes	No	30	None	0	
194	SB	Yes	No	40	None	0	
195	NB	Yes	No	15	None	0	
195	SB	Yes	No	60	None	0	
196	NB	Yes	No	25	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
196	SB	Yes	No	50	None	0	
197	NB	Yes	No	0	None	0	
197	SB	Yes	No	35	None	0	
198	NB	Yes	No	10	None	0	
198	SB	Yes	No	40	None	0	
199	NB	Yes	No	5	None	0	
199	SB	Yes	No	30	None	0	
200	NB	Yes	No	0	None	0	
200	SB	Yes	No	30	None	0	
201	NB	Yes	No	0	Bottom Left	1	
201	SB	Yes	No	40	None	0	
202	NB	Yes	No	5	None	0	
202	SB	Yes	No	40	None	0	
203	NB	Yes	No	10	None	0	
203	SB	Yes	No	60	None	0	
204	NB	Yes	No	10	None	0	
204	SB	Yes	No	60	None	0	
205	NB	Yes	No	15	None	0	
205	SB	Yes	No	40	None	0	
206	NB	Yes	No	40	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
206	SB	Yes	No	60	None	0	
207	NB	Yes	No	15	None	0	
207	SB	Yes	No	40	None	0	
208	NB	Yes	No	40	None	0	
208	SB	Yes	No	60	None	0	
209	NB	Yes	No	10	None	0	
209	SB	Yes	No	40	None	0	
210	NB	Yes	No	15	None	0	
210	SB	Yes	No	30	Top Right	5	
211	NB	Yes	No	15	None	0	
211	SB	Yes	No	60	None	0	
212	NB	Yes	No	15	None	0	
212	SB	Yes	No	35	Bottom Right	5	
213	NB	Yes	No	10	None	0	
213	SB	Yes	No	25	None	0	
214	NB	Yes	No	15	None	0	
214	SB	Yes	No	15	None	0	
215	NB	Yes	No	15	None	0	
215	SB	Yes	No	30	None	0	
216	NB	Yes	No	25	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
216	SB	Yes	No	10	None	0	
217	NB	Yes	No	25	None	0	
217	SB	Yes	No	10	None	0	
218	NB	Yes	No	10	Bottom Left	1	
218	SB	Yes	No	15	None	0	
219	NB	Yes	No	0	None	0	
219	SB	Yes	No	10	None	0	
220	NB	Yes	No	15	None	0	
220	SB	Yes	No	30	None	0	
221	NB	Yes	No	15	None	0	
221	SB	Yes	No	25	None	0	
222	NB	Yes	No	15	None	0	
222	SB	Yes	No	30	None	0	
223	NB	Yes	No	5	None	0	
223	SB	Yes	No	20	None	0	
224	NB	Yes	No	15	None	0	
224	SB	Yes	No	25	None	0	
225	NB	Yes	No	5	None	0	
225	SB	Yes	No	10	None	0	
226	NB	Yes	Bottom Left	5	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
226	SB	Yes	No	15	None	0	
227	NB	Yes	No	25	None	0	
227	SB	Yes	No	40	None	0	
228	NB	Yes	No	5	None	0	
228	SB	Yes	No	5	Top	0	
229	NB	Yes	No	15	None	1	
229	SB	Yes	No	40	None	1	
230	NB	Yes	No	5	None	0	
230	SB	Yes	No	10	None	0	
231	NB	Yes	No	20	None	0	
231	SB	Yes	No	35	None	0	
232	NB	Yes	No	35	None	0	
232	SB	Yes	No	35	None	0	
233	NB	Yes	Top Left	25	None	0	
233	SB	Yes	No	50	None	0	
234	NB	Yes	Top Left	5	None	0	
234	SB	Yes	No	20	None	0	
235	NB	Yes	No	40	None	0	
235	SB	Yes	No	60	None	0	
236	NB	Yes	Top Left	45	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
236	SB	Yes	No	65	None	0	
237	NB	Yes	No	60	None	0	
237	SB	Yes	No	60	None	0	
238	NB	Yes	No	0	None	0	New
238	SB	Yes	No	5	None	0	New over the Drain cracked down the Middle
239	NB	Yes	No	35	Top Right, Top Middle	5	
239	SB	Yes	No	40	Top Right	4	
240	NB	Yes	No	30	Top Left, Top Middle	5	
240	SB	Yes	No	35	Top Left	4	
241	NB	Yes	No	5	None	0	
241	SB	Yes	No	30	None	0	
242	NB	Yes	No	10	None	0	
242	SB	Yes	No	10	None	0	
243	NB	Yes	No	20	None	0	
243	SB	Yes	No	30	Top Left	5	
244	NB	Yes	No	20	None	0	
244	SB	Yes	No	35	None	0	
245	NB	Yes	No	20	None	0	
245	SB	Yes	No	25	None	0	
246	NB	Yes	No	20	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
246	SB	Yes	No	40	None	0	
247	NB	Yes	No	5	None	0	
247	SB	Yes	No	20	None	0	
248	NB	Yes	No	5	None	0	
248	SB	Yes	No	30	None	0	
249	NB	Yes	Bottom	20	None	0	
249	SB	Yes	No	60	None	0	
250	NB	Yes	No	5	None	0	
250	SB	Yes	No	5	None	0	
251	NB	Yes	No	20	None	0	
251	SB	Yes	No	0	None	0	
252	NB	Yes	No	0	None	0	
252	SB	Yes	No	5	Top Right Top	0	
253	NB	Yes	No	5	None	0	
253	SB	Yes	No	0	None	0	
254	NB	Yes	No	0	None	0	
254	SB	Yes	No	0	None	0	
255	NB	Yes	No	30	None	0	
255	SB	Yes	No	30	None	0	
256	NB	Yes	No	20	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
256	SB	Yes	No	20	None	0	
257	NB	Yes	No	10	None	0	
257	SB	Yes	No	10	None	0	
258	NB	Yes	No	20	None	0	
258	SB	Yes	No	20	None	0	
259	NB	Yes	No	20	None	0	
259	SB	Yes	No	25	None	0	
260	NB	Yes	No	30	None	0	
260	SB	Yes	No	30	None	0	
261	NB	Yes	No	0	None	0	
261	SB	Yes	No	0	None	0	
262	NB	Yes	No	5	Middle Bottom	10	Drain
262	SB	Yes	No	5	Bottom Left	10	Drain
263	NB	Yes	No	20	Top Left	20	
263	SB	Yes	No	20	Top Left	10	
264	NB	Yes	No	20	None	0	
264	SB	Yes	No	35	None	0	
265	NB	Yes	No	0	None	0	
265	SB	Yes	No	0	None	0	
266	NB	Yes	No	0	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
266	SB	Yes	No	30	None	0	
267	NB	Yes	No	20	None	0	
267	SB	Yes	No	40	None	0	
268	NB	Yes	No	5	None	0	
268	SB	Yes	No	30	None	0	
269	NB	Yes	No	10	None	0	
269	SB	Yes	No	30	None	0	
270	NB	Yes	Top Left	15	None	0	
270	SB	Yes	No	30	None	0	
271	NB	Yes	No	40	None	0	
271	SB	Yes	No	40	Top Right	5	
272	NB	Yes	No	20	Top Left	5	
272	SB	Yes	No	30	Top Left	0	
273	NB	Yes	No	40	None	5	
273	SB	Yes	No	40	Top Right	0	
274	NB	Yes	No	30	None	0	
274	SB	Yes	No	30	None	0	
275	NB	Yes	No	25	None	0	
275	SB	Yes	No	40	None	0	
276	NB	Yes	No	20	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
276	SB	Yes	No	40	None	0	
277	NB	Yes	No	60	None	0	
277	SB	Yes	No	60	None	0	
278	NB	Yes	No	30	None	0	
278	SB	Yes	No	40	None	0	
279	NB	Yes	No	10	None	0	
279	SB	Yes	No	30	None	0	
280	NB	Yes	No	0	Middle Middle	0	
280	SB	Yes	No	30	None	1	
281	NB	Yes	No	0	None	0	
281	SB	Yes	No	20	None	0	
282	NB	Yes	No	30	None	0	
282	SB	Yes	No	30	None	0	
283	NB	Yes	No	30	None	0	
283	SB	Yes	No	30	Top Right	5	
284	NB	Yes	No	30	None	0	
284	SB	Yes	No	40	None	0	Bottom Right Corner very Bad Shape
285	NB	Yes	No	20	None	0	
285	SB	Yes	No	50	None	0	
286	NB	Yes	No	10	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
286	SB	Yes	No	30	Middle	5	
287	NB	Yes	No	20	None	0	Top can see Chair that Rebar sits on
287	SB	Yes	No	40	None	0	
288	NB	Yes	No	40	None	0	
288	SB	Yes	No	70	None	0	
289	NB	Yes	No	20	None	0	
289	SB	Yes	No	40	None	0	
290	NB	Yes	No	40	Top Middle over the Pipe Hole	5	
290	SB	Yes	No	60	None	0	
291	NB	Yes	No	50	None	0	
291	SB	Yes	No	50	Bottom Left Corner	5	
292	NB	Yes	No	40	Top Left	1	
292	SB	Yes	No	30	None	0	
293	NB	Yes	No	10	None	0	
293	SB	Yes	No	50	None	0	
294	NB	Yes	No	40	None	0	
294	SB	Yes	No	60	None	0	
295	NB	Yes	No	40	None	0	
295	SB	Yes	No	60	Top Left	5	See Chair
296	NB	Yes	No	50	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
296	SB	Yes	No	60	None	0	
297	NB	Yes	No	70	None	0	
297	SB	Yes	No	60	None	0	
298	NB	Yes	No	30	Top Left	5	
298	SB	Yes	No	60	None	0	
299	NB	Yes	No	30	None	0	
299	SB	Yes	No	30	None	0	
300	NB	Yes	No	0	None	0	
300	SB	Yes	No	0	None	0	
301	NB	Yes	No	30	None	0	
301	SB	Yes	No	30	None	0	Drain Cracked down 3/4 way down to Drain
302	NB	Yes	No	30	Top Left	5	
302	SB	Yes	No	30	Top Left	5	
303	NB	Yes	No	40	None	0	
303	SB	Yes	No	40	None	0	
304	NB	Yes	No	40	None	0	
304	SB	Yes	No	40	None	0	
305	NB	Yes	No	30	None	0	
305	SB	Yes	No	70	None	0	
306	NB	Yes	No	30	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
306	SB	Yes	No	60	None	0	
307	NB	Yes	No	50	None	0	
307	SB	Yes	No	50	None	0	
308	NB	Yes	No	10	None	0	
308	SB	Yes	No	40	None	0	
309	NB	Yes	No	60	Top Left	5	
309	SB	Yes	No	60	Top Left	5	
310	NB	Yes	No	70	None	0	
310	SB	Yes	No	60	Bottom Left, Bottom Right	7	
311	NB	Yes	No	10	Middle Left	1	
311	SB	Yes	No	30	None	0	
312	NB	Yes	No	0	Middle Middle	<1	
312	SB	Yes	No	30	None	0	
313	NB	Yes	No	30	None	0	
313	SB	Yes	No	50	None	0	
314	NB	Yes	No	10	None	0	
314	SB	Yes	No	20	None	0	
315	NB	Yes	No	10	None	0	
315	SB	Yes	No	40	None	0	
316	NB	Yes	No	30	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
316	SB	Yes	No	40	None	0	
317	NB	Yes	No	10	None	0	
317	SB	Yes	No	10	None	0	
318	NB	Yes	No	0	None	0	
318	SB	Yes	No	10	None	0	
319	NB	Yes	No	60	Bottom Left	<1	
319	SB	Yes	No	60	Bottom Left, Bottom Middle, Top Right, Bottom Right	5	
320	NB	Yes	No	10	Top Left	10	
320	SB	Yes	No	10	Top Left	10	Top 3" to 4" about 4' ready to fall off. Major crack 3' long around the chair ready to break.
321	NB	Yes	No	30	None	0	
321	SB	Yes	No	40	Top Left	5	
322	NB	Yes	No	10	None	0	
322	SB	Yes	No	40	None	0	
323	NB	Yes	No	0	Top Right	0	
323	SB	Yes	No	10	None	<1	
324	NB	Yes	No	0	None	0	
324	SB	Yes	No	10	None	0	
325	NB	Yes	No	20	None	0	
325	SB	Yes	No	20	None	0	
326	NB	Yes	No	100	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
326	SB	Yes	No	100	None	0	
327	NB	Yes	No	100	Top	0	
327	SB	Yes	No	100	None	1	
328	NB	Yes	No	100	None	0	
328	SB	Yes	No	100	None	0	
329	NB	Yes	No	100	Bottom	1	
329	SB	Yes	No	100	Bottom	1	
330	NB	Yes	No	100	None	0	
330	SB	Yes	No	100	None	0	
331	NB	Yes	No	100	None	0	
331	SB	Yes	No	100	None	0	
332	NB	Yes	No	100	None	0	
332	SB	Yes	No	100	None	0	
333	NB	Yes	No	100	Bottom	1	
333	SB	Yes	No	100	None	0	
334	NB	Yes	No	100	Bottom	1	
334	SB	Yes	No	100	Bottom	0	
335	NB	Yes	No	100	None	0	
335	SB	Yes	No	100	Bottom	3	
336	NB	Yes	No	100	Bottom	1	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
336	SB	Yes	No	100	Bottom	3	
337	NB	Yes	No	100	Bottom	0	
337	SB	Yes	No	100	None	0	
338	NB	Yes	No	100	None	2	
338	SB	Yes	No	100	Bottom	0	
339	NB	Yes	No	100	None	0	
339	SB	Yes	No	100	Bottom	0	Wide Crack
340	NB	Yes	No	100	None	0	
340	SB	Yes	No	100	None	0	
341	NB	Yes	No	100	Bottom	1	
341	SB	Yes	No	100	None	0	
342	SB	Yes	No	100	None	0	
342	NB	Yes	No	100	Bottom	1	
343	SB	Yes	No	100	Bottom	0	Bottom Wide Crack Over Drain
343	NB	Yes	No	100	Top	1	Bottom Wide Crack Over Drain
344	SB	Yes	No	100	Bottom	1	
344	NB	Yes	No	100	None	0	
345	SB	Yes	No	100	None	0	
345	NB	Yes	No	100	Bottom	0	Wide Crack
346	SB	Yes	No	100	Bottom	2	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
346	NB	Yes	No	100	Bottom	1	
347	SB	Yes	No	75	None	0	
347	NB	Yes	No	75	None	0	
348	SB	Yes	No	100	None	0	
348	NB	Yes	No	100	None	0	
349	SB	Yes	No	100	None	0	
349	NB	Yes	No	100	None	0	
350	SB	Yes	No	80	None	0	
350	NB	Yes	No	75	None	0	
351	SB	Yes	No	100	None	0	
351	NB	Yes	No	100	None	0	
352	SB	Yes	No	100	None	0	
352	NB	Yes	No	100	Bottom	1	
353	SB	Yes	No	100	Bottom	20	
353	NB	Yes	No	100	Bottom	3	
354	SB	Yes	No	100	Bottom	30	
354	NB	Yes	No	100	Bottom	5	
355	SB	Yes	No	100	None	0	
355	NB	Yes	No	100	Bottom	3	
356	SB	Yes	No	100	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
356	NB	Yes	No	100	Bottom	10	
357	SB	Yes	No	100	Bottom	1	
357	NB	Yes	No	100	Bottom	2	
358	SB	Yes	No	100	Bottom	10	
358	NB	Yes	No	100	Bottom	10	
359	SB	Yes	No	100	None	0	
359	NB	Yes	No	100	Bottom	1	
360	SB	Yes	No	100	Bottom	40	
360	NB	Yes	No	100	Bottom	35	
361	SB	Yes	No	90	None	0	
361	NB	Yes	No	90	Bottom Over Drain	1	
362	SB	Yes	No	100	None	0	
362	NB	Yes	No	100	Bottom	1	
363	SB	Yes	No	100	Bottom	30	
363	NB	Yes	No	100	Bottom	5	
364	SB	Yes	No	100	Bottom	3	
364	NB	Yes	No	100	None	0	
365	SB	Yes	No	100	Bottom	40	
365	NB	Yes	No	100	Bottom	40	
366	SB	Yes	No	100	Bottom	15	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
366	NB	Yes	No	100	Bottom	3	
367	SB	Yes	No	100	None	0	
367	NB	Yes	No	100	Bottom	2	
368	SB	Yes	No	100	None	0	
368	NB	Yes	No	100	Bottom	2	
369	SB	Yes	No	100	None	0	
369	NB	Yes	No	100	None	0	
370	SB	Yes	No	100	None	0	
370	NB	Yes	No	100	None	0	
371	SB	Yes	No	100	Bottom	2	
371	NB	Yes	No	100	Top	1	
372	SB	Yes	No	100	None	0	
372	NB	Yes	No	100	None	0	
373	SB	Yes	No	100	None	0	
373	NB	Yes	No	100	Top	1	
374	SB	Yes	No	100	Bottom	1	
374	NB	Yes	No	100	None	0	
375	SB	Yes	No	100	None	0	
375	NB	Yes	No	100	None	0	
376	SB	Yes	No	100	Bottom	1	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
376	NB	Yes	No	100	None	0	
377	SB	Yes	No	100	Bottom	7	
377	NB	Yes	No	100	None	0	
378	SB	Yes	No	100	Bottom	1	
378	NB	Yes	No	100	None	0	
379	SB	Yes	No	100	Bottom Over Drain	2	Top Crack over Drain Both Sides
379	NB	Yes	No	100	Top	2	
380	SB	Yes	No	100	Top	1	
380	NB	Yes	No	100	None	0	
381	SB	Yes	No	100	Bottom	2	Wide Crack
381	NB	Yes	No	100	Bottom	0	
382	SB	Yes	No	100	None	0	
382	NB	Yes	No	100	None	0	
383	SB	Yes	No	100	None	0	
383	NB	Yes	No	100	None	0	
384	SB	Yes	No	100	Bottom	2	
384	NB	Yes	No	100	Bottom	0	Wide Crack
385	SB	Yes	No	100	Bottom	5	Top Crack 75%
385	NB	Yes	No	100	Middle	1	
386	SB	Yes	No	100	Bottom	10	Wide Crack

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
386	NB	Yes	No	100	Bottom	1	
387	SB	Yes	No	100	None	0	
387	NB	Yes	No	100	None	0	
388	SB	Yes	No	100	None	0	
388	NB	Yes	No	100	None	0	
389	SB	Yes	No	100	Bottom	1	
389	NB	Yes	No	100	Bottom	0	Wide Crack
390	SB	Yes	No	100	Bottom	3	Wide Crack
390	NB	Yes	No	100	None	0	
391	SB	Yes	No	100	None	0	
391	NB	Yes	No	100	Top	1	
392	SB	Yes	No	100	Bottom	0	
392	NB	Yes	No	100	Middle	25	
393	SB	Yes	No	100	Bottom	0	
393	NB	Yes	No	100	Bottom	33	
394	SB	Yes	No	100	Bottom	0	
394	NB	Yes	No	100	None	10	
395	SB	Yes	No	100	Bottom	1	Wide Crack
395	NB	Yes	No	100	Bottom	2	
396	SB	Yes	No	100	Bottom	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
396	NB	Yes	No	100	Bottom	1	
397	SB	Yes	No	100	Bottom	1	
397	NB	Yes	No	100	None	3	
398	SB	Yes	No	100	Bottom	5	
398	NB	Yes	No	100	Bottom	10	
399	SB	Yes	No	100	Bottom	0	
399	NB	Yes	No	100	None	8	
400	SB	Yes	No	100	Bottom	3	
400	NB	Yes	No	100	None	20	
401	SB	Yes	No	100	Bottom	1	
401	NB	Yes	No	100	None	8	
402	SB	Yes	No	100	None	0	
402	NB	Yes	No	100	None	0	
403	SB	Yes	No	100	Bottom	5	
403	NB	Yes	No	100	None	0	
404	SB	Yes	No	100	Bottom	15	
404	NB	Yes	No	100	None	0	
405	SB	Yes	No	100	None	0	
405	NB	Yes	No	100	Top	1	
406	SB	Yes	No	95	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
406	NB	Yes	No	100	None	0	
407	SB	Yes	No	85	None	0	
407	NB	Yes	No	100	None	0	
408	SB	Yes	No	100	None	0	
408	NB	Yes	No	100	None	0	
409	SB	Yes	No	100	None	0	
409	NB	Yes	No	100	None	0	
410	SB	Yes	No	100	None	0	
410	NB	Yes	No	100	None	0	
411	SB	Yes	No	100	Middle	0	Steel Sticking out
411	NB	Yes	No	100	Middle	1	
412	SB	Yes	No	100	Bottom	0	Wide Crack
412	NB	Yes	No	100	None	0	
413	SB	Yes	No	100	None	0	
413	NB	Yes	No	100	None	0	
414	SB	Yes	No	100	Bottom	25	
414	NB	Yes	No	100	Bottom	5	
415	SB	Yes	No	100	Bottom	33	Top 1%
415	NB	Yes	No	100	Bottom	5	
416	SB	Yes	No	4	Aggregate Showing	25	Might be Replacement

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
416	NB	Yes	No	5	None	0	
417	SB	Yes	No	60	Bottom above Drain	1	
417	NB	Yes	No	75	Bottom above Drain	5	Top 1%
418	SB	Yes	No	100	Top	6	Top Rebar 3"
418	NB	Yes	No	100	None	0	
419	SB	Yes	No	100	Bottom and Top	20	Top Rebar 5"
419	NB	Yes	No	100	Bottom	5	
420	SB	Yes	No	100	Bottom	20	
420	NB	Yes	No	100	Bottom	10	Top 2%
421	SB	Yes	No	100	Bottom	10	Top 1%
421	NB	Yes	No	100	Bottom	1	
422	SB	Yes	No	100	Bottom	10	
422	NB	Yes	No	100	Bottom	1	
423	SB	Yes	No	100	Bottom	30	
423	NB	Yes	No	100	Top and Bottom	3	
424	SB	Yes	No	100	None	0	
424	NB	Yes	No	100	None	0	
425	SB	Yes	No	100	Bottom	3	Opposite End
425	NB	Yes	No	100	Bottom	2	
426	SB	Yes	No	100	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
426	NB	Yes	No	100	None	0	
427	SB	Yes	No	100	Bottom	2	
427	NB	Yes	No	100	Top and Bottom	1	
428	SB	Yes	No	100	Top Aggregate Showing	0	
428	NB	Yes	No	100	None	0	
429	SB	Yes	No	100	Bottom	10	Wide Crack Bottom
429	NB	Yes	No	100	Top Aggregate Showing	0	
430	SB	Yes	No	100	Bottom	10	
430	NB	Yes	No	100	Top and Bottom	34	
431	SB	Yes	No	100	None	0	
431	NB	Yes	No	100	None	0	
432	SB	Yes	No	100	Bottom	0	Wide Crack
432	NB	Yes	No	100	Bottom	1	Top Aggregate Showing
433	SB	Yes	No	75	None	0	
433	NB	Yes	No	80	Top	2	
434	SB	Yes	No	100	Bottom	0	Wide Crack
434	NB	Yes	No	100	None	0	
435	SB	Yes	No	100	Bottom	20	
435	NB	Yes	No	100	None	0	
436	SB	Yes	No	100	Bottom	20	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
436	NB	Yes	No	100	Bottom	3	
437	SB	Yes	No	100	Bottom	20	
437	NB	Yes	No	100	Top Aggregate Showing	100	
438	SB	Yes	No	60	Bottom Over Drain	10	Gone 2%
438	NB	Yes	No	50	Bottom Over Drain	30	Missing 6%
439	SB	Yes	No	60	Bottom	2	
439	NB	Yes	No	40	Top Aggregate Showing	60	
440	SB	Yes	No	10	None	0	
440	NB	Yes	No	15	Top	3	
441	SB	Yes	No	40	None	0	
441	NB	Yes	No	40	Aggregate Showing Middle Top	40	
442	SB	Yes	No	70	None	0	
442	NB	Yes	No	75	Top Aggregate Showing	40	Wide Crack
443	SB	Yes	No	100	Bottom	10	
443	NB	Yes	No	100	None	0	Replacement
444	SB	Yes	No	10	None	0	Replacement
444	NB	Yes	No	10	Bottom	1	Replacement
445	SB	Yes	No	15	Small Crack	0	Replacement
445	NB	Yes	No	20	Botttom	1	Top End
446	SB	Yes	No	100	Top	2	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
446	NB	Yes	No	100	None	0	
447	SB	Yes	No	100	Bottom	10	
447	NB	Yes	No	100	None	0	
448	SB	Yes	No	100	None	0	
448	NB	Yes	No	100	Bottom	1	
449	SB	Yes	No	100	Bottom	0	Wide Crack
449	NB	Yes	No	100	Bottom	0	Wide Crack
450	SB	Yes	No	100	Btoom	0	Wide Crack
450	NB	Yes	No	100	None	0	
451	SB	Yes	No	100	Bottom	0	Wide Crack
451	NB	Yes	No	95	Top End	1	
452	SB	Yes	No	100	Bottom	0	
452	NB	Yes	No	100	Bottom	0	Wide Crack
453	SB	Yes	No	100	Bottom	0	Wide Crack
453	NB	Yes	No	100	Bottom and Middle	0	Wide Crack
454	SB	Yes	No	20	Bottom	0	Aggregate Showing
454	NB	Yes	No	15	Bottom	0	Aggregate Showing
455	SB	Yes	No	10	None	5	
455	NB	Yes	No	15	Middle	2	
456	SB	Yes	No	100	Top	0	Bottom Wide Crack

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
456	NB	Yes	No	100	Bottom	1	Wide Crack
457	SB	Yes	No	60	Top	1	
457	NB	Yes	No	85	None	1	
458	SB	Yes	No	95	Bottom	1	Wide Crack
458	NB	Yes	No	10	Bottom	0	Wide Crack
459	SB	Yes	No	75	Bottom	5	Wide Crack 100%
459	NB	Yes	No	80	Bottom	5	Wide Crack 75% overlay
460	SB	Yes	No	100	Bottom	0	Wide Crack
460	NB	Yes	No	100	Bottom	2	Wide Crack
461	SB	Yes	No	20	None	2	
461	NB	Yes	No	40	None	3	
462	SB	Yes	No	100	None	0	
462	NB	Yes	No	100	Bottom	8	
463	SB	Yes	No	100	Bottom	0	Wide Crack
463	NB	Yes	No	100	Bottom	33	
464	SB	Yes	No	100	Bottom	0	Wide Crack
464	NB	Yes	No	100	Bottom	5	
465	SB	Yes	No	100	Bottom	1	Wide Crack
465	NB	Yes	No	100	Bottom	0	Wide Crack
466	SB	Yes	No	100	None	0	

Number	Side	Map Cracking?	Impact Cracking?	% Cracked	Location(s) of Spalling	% Spalled	Comments
466	NB	Yes	No	100	Bottom	4	Wide Crack
467	SB	Yes	No	100	Bottom	0	Wide Crack
467	NB	Yes	No	100	Bottom	2	Wide Crack
468	SB	Yes	No	100	Bottom worse the Top	0	Cracks only
468	NB	Yes	No	100	Bottom	5	Wide Crack
469	SB	Yes	No	100	Bottom	0	Cracks only
469	NB	Yes	No	100	Bottom	20	
470	SB	Yes	No	100	Bottom	02-Jan	Wide Cracks
470	NB	Yes	No	100	Bottom	40	Top 2 Places Spalling
471	SB	Yes	No	100	Bottom and Top	2	
471	NB	Yes	No	100	Bottom and Top	33	Top 2% Spalled
472	SB	Yes	No	100	Bottom	2	
472	NB	Yes	No	100	Bottom	33	

Appendix F



Vermont Agency of Transportation
Program Management Division
Materials and Research Section

To: Bill Ahearn, P.E., Research Engineer
From: Thomas D. Eliassen, P.G., Transportation Geologist via Christopher C. Benda, P.E., Soils and Foundations Engineer
Date: November 24, 2003
Subject: Petrographic Analysis, Waterbury-Bolton I-89 Jersey Barriers

**Waterbury-Bolton Jersey Barrier Evaluation
Petrographic Evaluation.**

I have performed thin-section petrographic analysis of eight concrete samples collected from jersey barriers from Interstate 89 between Waterbury and Bolton on October 30, 2003. Sample identification is indicated below:

JERSEY BARRIER NUMBER	SAMPLE NUMBER
51	C030560
54	C030559
92	C030558
93	C030556
201	C030557
202	C030561
251	C030562
252	C030563

It is reported that the jersey barriers were constructed in the early 1980's at the S.T. Griswold Concrete plant in Williston utilizing aggregate from the F.W. Whitcomb quarry in Winooski/Colchester.

Petrographic Analysis

Eight samples representing eight jersey barriers were evaluated petrographically utilizing the polarized-light microscope. A polarized-light microscope is a compound transmitted-light microscope to which components have been added to enable the determination of

the optical properties of translucent substances. Polarizing filters and special analyzers allow for the identification of mineral species and other physical properties of rock specimens.

Individual samples were prepared utilizing petrographic thin sectioning techniques. The eight samples analyzed were taken from portions of 3-inch cores.

The petrographic examinations were conducted to identify possible Alkali-Silica-Reactivity (ASR) gel and the micro-structural distress caused by ASR. Samples were viewed under 40X, 100X and 200X power.

Standards utilized as a guide in the petrographic examinations included ASTM C295-98, Standard Guide for Petrographic Examination of Aggregates for Concrete; ASTM C856-95, Standard Practice for Petrographic Examination of Hardened Concrete and ASTM C294-98, Standard Descriptive Nomenclature for Constituents of Concrete Aggregates.

Photomicrographs of samples were taken utilizing a Kodak MDS-290 Microscopy Documentation System consisting of a Kodak DC-290 digital camera, specialized phototube and Kodak MDS-290 software plug-in for Adobe Photoshop version 7.0. Photomicrographs are attached.

Results

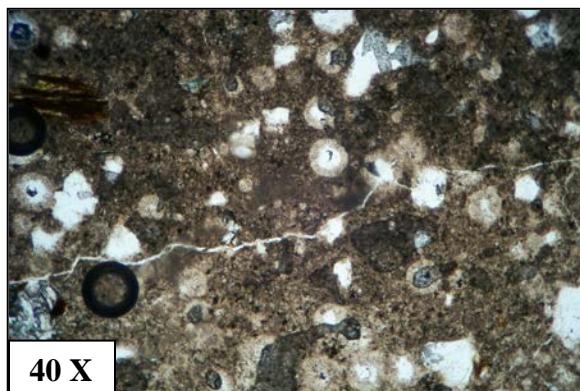
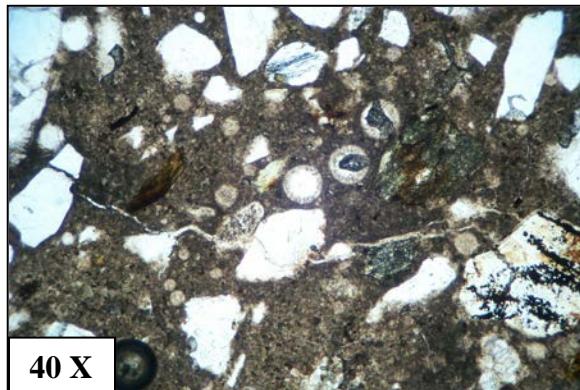
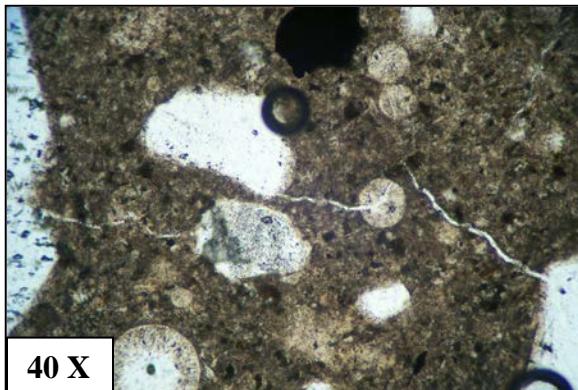
All of the samples analyzed consisted predominantly of quartzite with some dolomite, dolomitic quartzite and quartz rich dolomite. Minor amounts of schist and amphibolitic rock were also present. Quartz grains were present as individual grains/crystals and as both fine grained and well crystallized masses. Individual grains ranged in size from 1 to 50 microns while masses of grains/crystals were on the order of about 10 millimeters.

The presence of amphibolitic rock fragments and other rock types not usually found in the area of the Whitcomb quarry indicate that some mixing of aggregate has taken place. It is thought that the fine aggregate is the source of the exotic mineralogy.

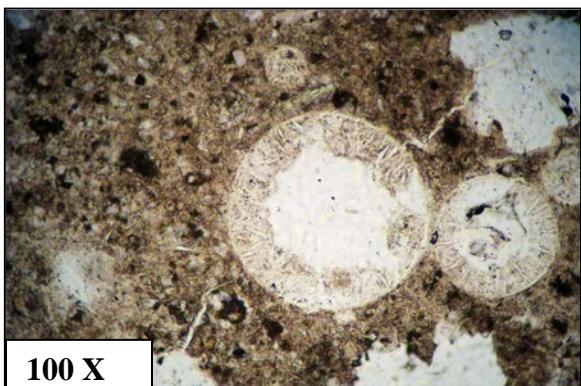
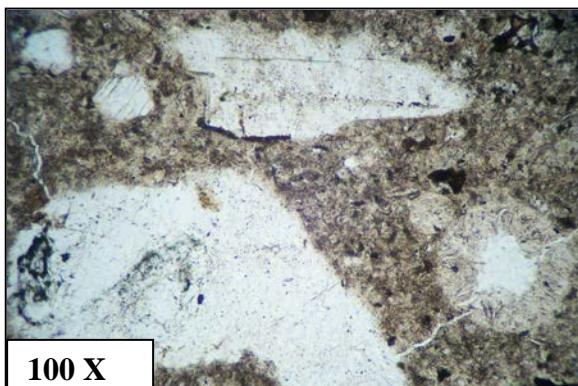
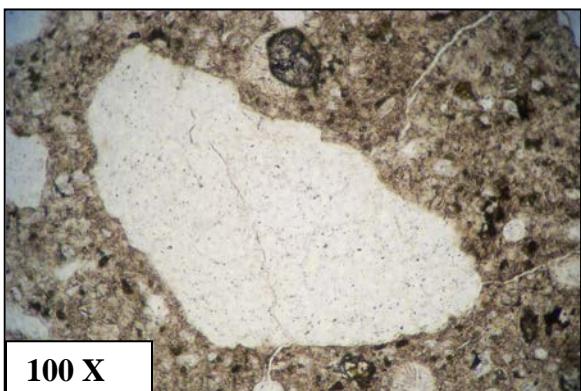
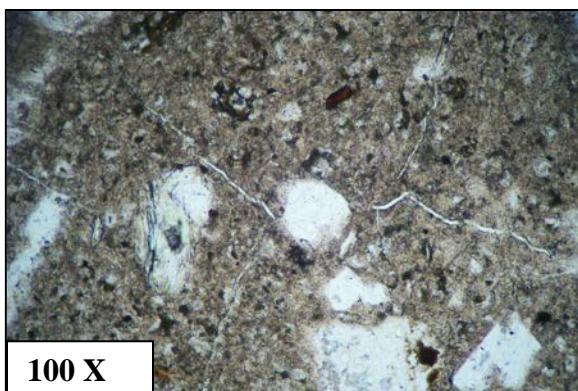
Numerous areas of each petrographic slide showed the development of ASR gel, micro-cracks associated with the expansion of the cement paste due to ASR expansion and ettringite filled voids. Microcracking is quite extensive and can be seen emanating from individual quartz grains and gel filled voids. It appears that ASR development is associated with fine aggregate particles in the mix. It is not known if the ettringite formed early (during the curing/drying process when constructed) or if it formed later as the result of repeated freeze-thaw cycles and exposure to moisture.

I have saved portions of the concrete samples should further analysis be needed. I hope that the petrographic analysis helps in your evaluation. Feel free to contact me if you need to discuss the results in further detail.

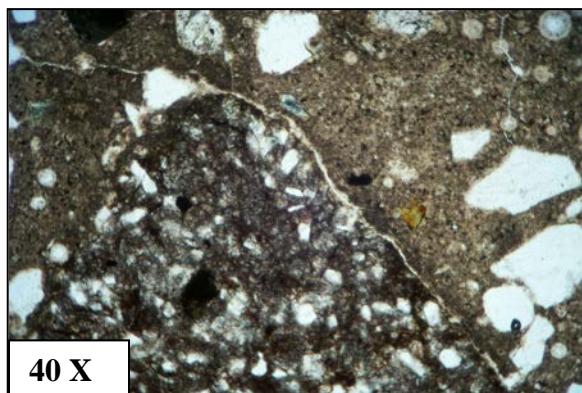
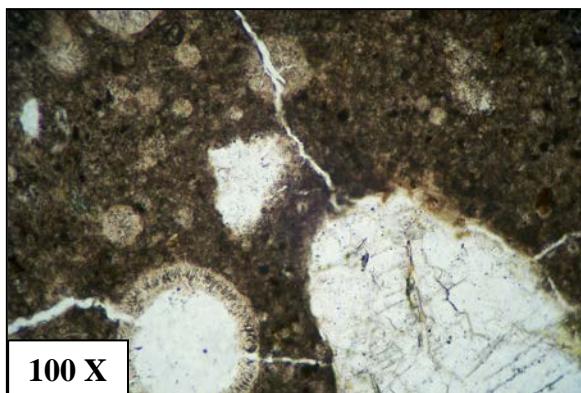
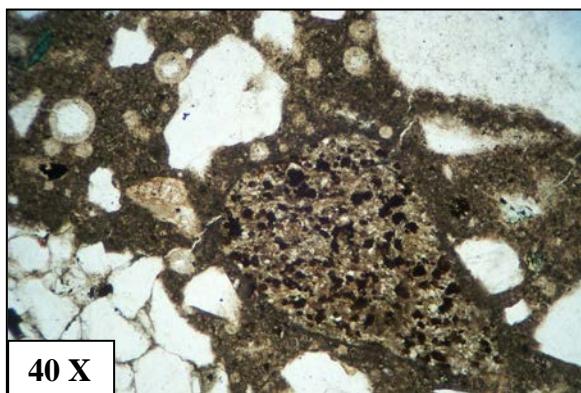
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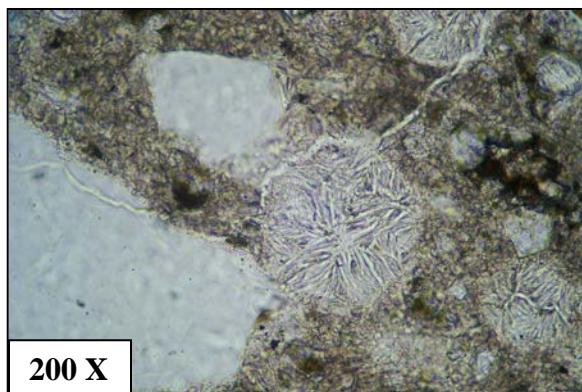
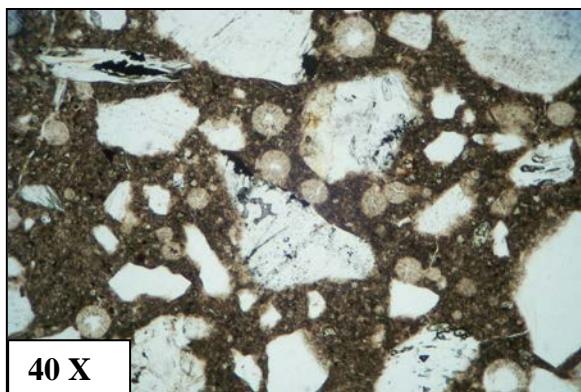
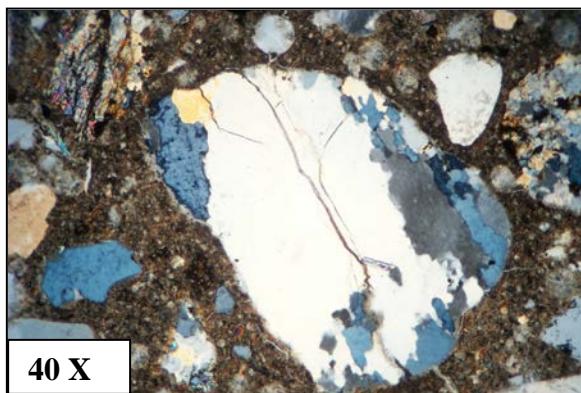
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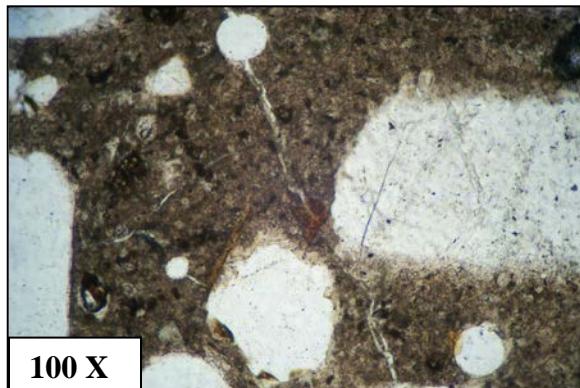
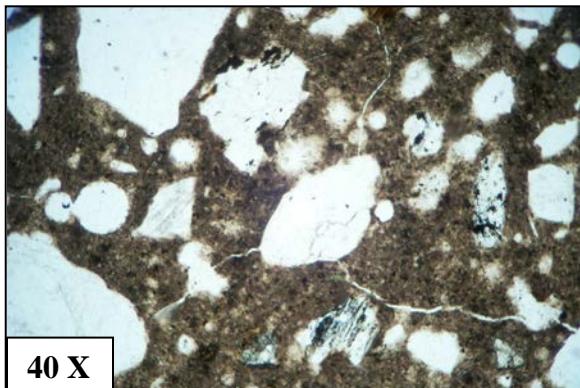
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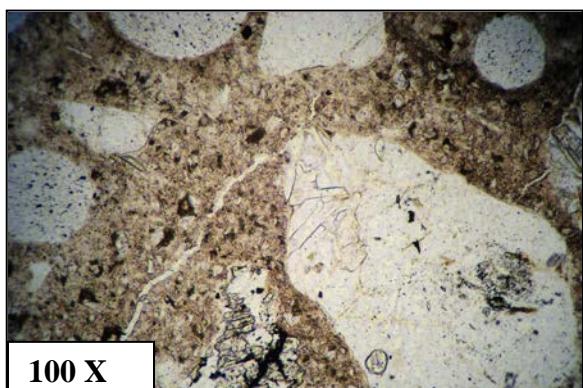
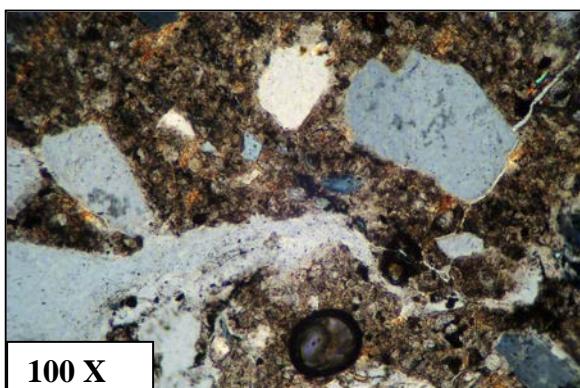
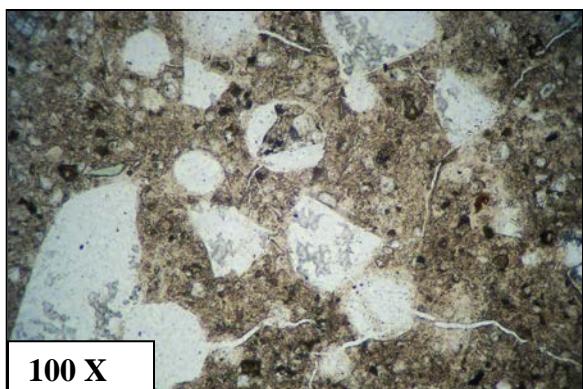
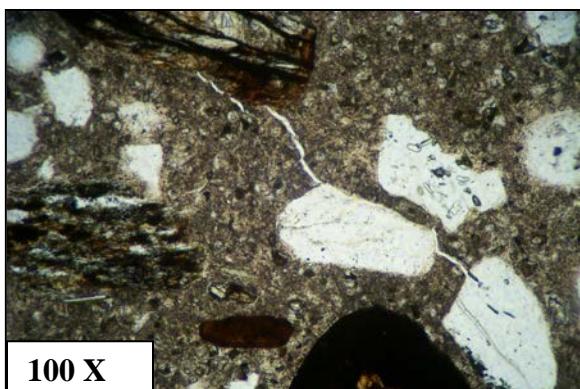
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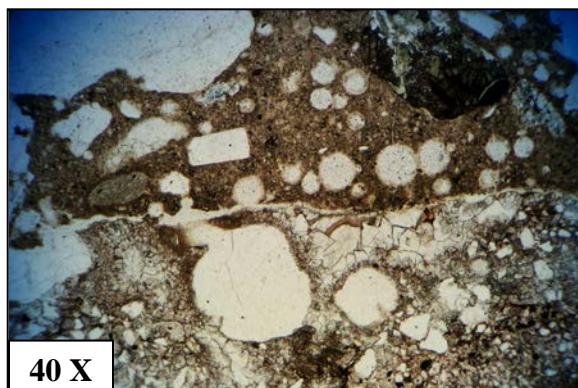
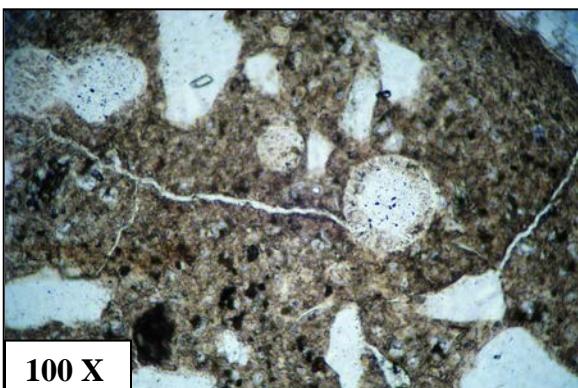
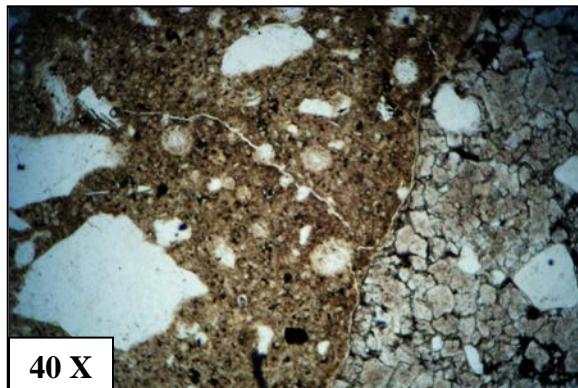
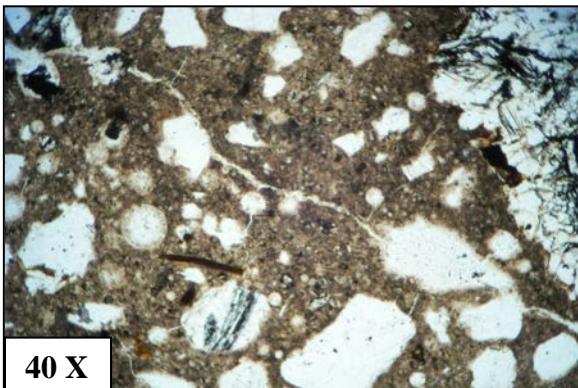
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SAMPLE C030561



SAMPLE C030562



SAMPLE C030563

