DATE: April 28, 1976

TO: L. T. Oehler
Engineer of Research

FROM: W. K. Kruger

SUBJECT: Investigation of Straw Fire Damage to CRCP, I 96 Near Novi
(I 63191-03586A).

On July 26, 1975, a semi-trailer loaded with straw for covering seeded
right-of-way on I 96 caught fire and burned. The local fire department had
difficulty reaching the burning straw and by the time of their arrival the
trailer had burned through, dropping burning straw on the pavement. They
had also apparently tipped the trailer over, spilling the burning straw on
the second lane. At the request of Construction Division personnel, re-
presentatives from the Research Laboratory visited the site on August 21,
to assist in determining the extent of the fire damage to the pavement.

The damage was located on the two eastbound outer lanes of I 96, approxi-
mately 1–1/2 miles south of the junction of I 96 and I 696 near Novi. The
pavement showed no spalling, but distinct craze cracking was apparent in
the outside lane where the trailer had been parked; isolated areas of craze
cracking were also present in the second lane. Surface condition features
are shown in Figures 1 and 2.

A scale drawing of the fire area is shown in Figure 3. Ten spots were se-
lected for Swiss Hammer readings; six were in the fire area, and four were
in an undamaged area. Seven individual readings were taken at each spot
and averaged, as shown in Table 1. Three spots, having an intermediate
value average, were selected for coring in the fire area, and two in the
control area.

The Swiss Hammer readings taken in the fire area generally produced high-
er values than the readings taken in the control area; this fact resulted be-
cause the fire dried and hardened the concrete surfaces. In addition, the
rapid loss of moisture in the surface concrete produced shrinkage and caus-
ed the craze cracking in the fire area.

The five cores appeared in excellent shape with no pronounced cracks. They
were tested in the Laboratory through 300 freeze-thaw cycles, in accord-
ance with ASTM C 666-73 (Procedure B). After completing this test the
cores showed no sign of the sort of disintegration that typically accompan-
ies severe fire damage.
Since examination of the fire site revealed no spalling, Swiss Hammer tests indicated no strength loss, and the cores showed no disintegration in freeze-thaw, it is believed that the fire damage was slight; thus, no repair procedures are recommended.

TESTING AND RESEARCH DIVISION

[Signature]
Transportation Research Technician
Concrete and Surface Treatments

WKK:bf
Figure 1. General area view looking south along eastbound I 96 where straw-laden semi-trailer burned.

Figure 2. Close-up of Swiss Hammer test areas Nos. 1 and 6 and core C. Burned tire marks of trailer.
Figure 3. Location of fire damage, Swiss Hammer readings and coring sites on eastbound I-96.
<table>
<thead>
<tr>
<th>Core Designation</th>
<th>Position</th>
<th>Swiss Hammer Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Laboratory Number</td>
<td>1 2 3 4 5 6 7 Avg.</td>
<td></td>
</tr>
<tr>
<td>Fire Damaged Area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A 75 CC 477</td>
<td>1</td>
<td>28 34 41 39 35 32 30 34</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>33 36 32 41 32 42 38 39</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>44 39 44 39 42 43 33 41</td>
</tr>
<tr>
<td>B 75 CC 478</td>
<td>4</td>
<td>35 37 33 36 38 42 38 37</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>36 38 36 44 35 35 40 38</td>
</tr>
<tr>
<td>C 75 CC 479</td>
<td>6</td>
<td>29 43 37 43 32 41 46 39</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Average of 6 areas = 38</strong></td>
</tr>
</tbody>
</table>

| Control Area |          |                      |
| D 75 CC 481 | 7 | 35 36 32 31 39 33 33 34 |
|               | 8 | 42 36 36 32 33 32 35 35 |
| E 75 CC 480 | 9 | 38 35 33 36 34 37 34 36 |
|               | 10 | 28 34 29 28 27 35 42 32 |
|               |          | **Average of 4 areas = 34** |