

MODIFIED ASTM E814/UL 1479
FIRE RESISTANCE
FOR
FEDERAL CONSERVATION INC.
ON
AIRKRETE WALL PANEL
TESTED: February 21, 2008
VTEC #100-2862

February 22, 2008

Client: Federal Conservation Inc.
2 Bayview Lane
Amityville, NY 11701

Attn: Mr. Joseph Jacinto

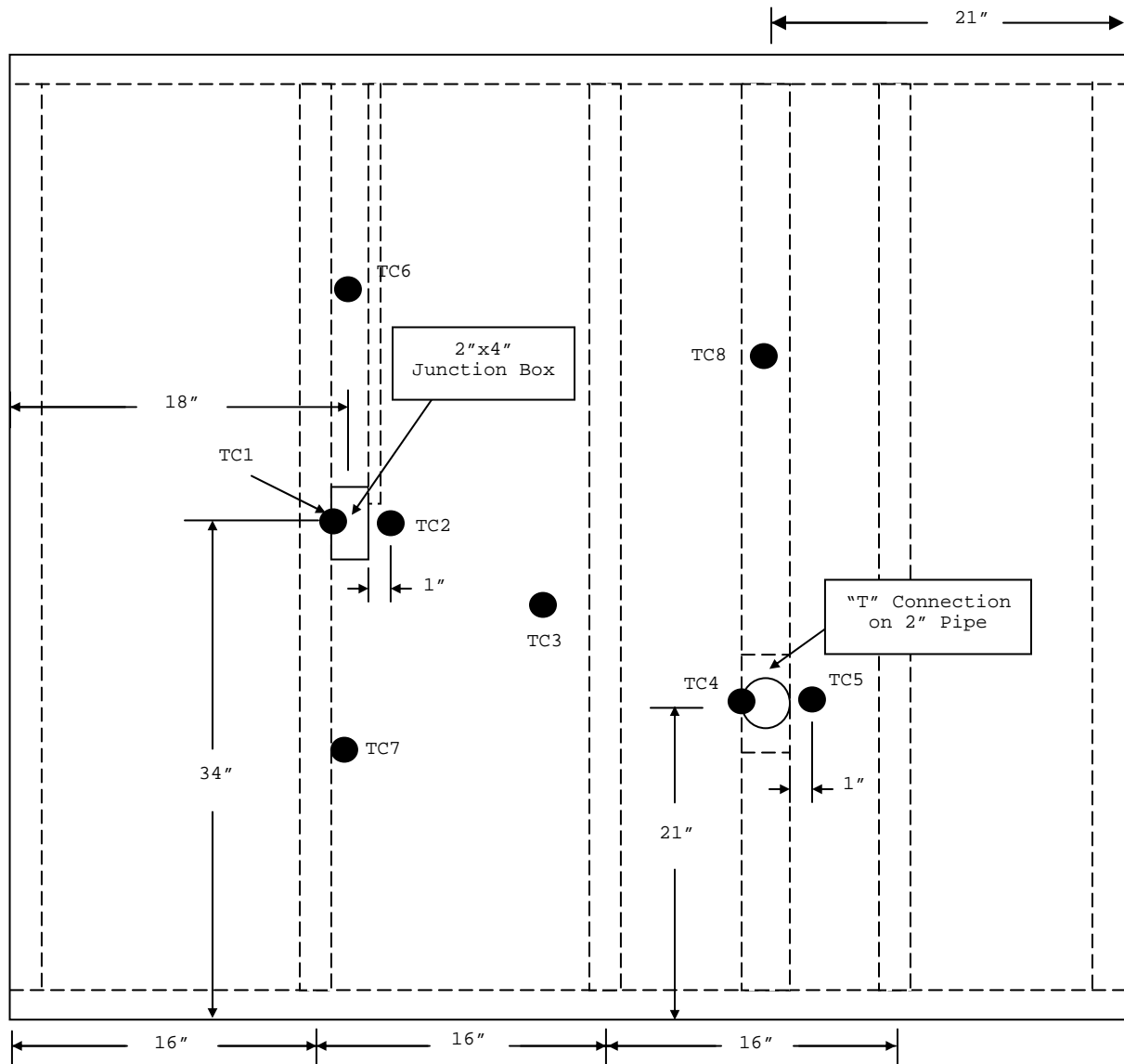
Subject: Fire Tests of Through-Penetration Fire Stops According to Modified ASTM E814/UL 1479 Specifications.

SAMPLE DESCRIPTION: Aircrete Wall Panel

The 60"x60"x3.75" thick Aircrete Wall Panel was fabricated by Federal Conservation Group and provided to VTEC Laboratories Inc. for ASTM E 814/UL 1479 fire endurance testing. The wall was made up of 7 pieces of 2x4 studs, 4 pieces forming a 60"x60" square frame and the other 3 pieces were placed inside the frame spaced 16" O.C. One layer of 60"x60"x5/8" Type X gypsum boards was attached to each side of the frame using gypsum board screws. A 2"x4" junction box was located 34" high and 19" from the side. Conduit pipe ran from the top to the junction box and from the junction box to the bottom of the panel. A hole was cut in the gypsum board exposing the opening of the junction box. The junction box was left uncovered. A 2" pipe ran vertically through the frame, 21" from the side. It had a "T" Connection 21" high. A hole was cut in the gypsum board exposing the opening of the "T" connection. The cavity between the gypsum board was filled with Aircrete. The side opposite the opening of the junction box and "T" connection was exposed to the furnace.

DISCLAIMER: This test should be used to measure and describe the properties of materials, products or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazards or fire risks of materials, products or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment, which takes into account all of the factors which are pertinent to an assessment of fire hazard of a particular end use.

Notice: VTEC Laboratories Inc. will not be liable for any loss or damage resulting from the use of the data in this report, in excess of the invoice. This report pertains to the sample tested only. Such report shall not be interpreted to be a warranty, either expressed or implied as to the suitability or fitness of said sample for such uses or applications, as the party contracting for the report may apply such sample.

SAMPLE DIAGRAM:**THERMOCOUPLE LOCATIONS:**

The temperature on the unexposed side of the sample was monitored by eight thermocouples in the following locations:

- 1 - On junction box
- 2 - 1" from Junction box on gypsum board
- 3 - Centered between the junction box and "T" Connection on gypsum board
- 4 - On "T" Connection
- 5 - 1" from "T" Connection on gypsum board
- 6 - Centered between the junction box and the sample top on gypsum board
- 7 - Centered between the junction box and the sample bottom on gypsum board
- 8 - Centered between the "T" Connection and the sample top on gypsum board

PROCEDURE:

The furnace used in this test measures 5ft x 5ft. The outside construction is steel and the furnace is lined with a ceramic refractory insulation. A single burner is centered vertically in the wall opposite the sample. This burner is rated for 1.5 million Btu/hr and is of the flat flame or non-impinging flame design. Furnace conditions are monitored by three Inconel-sheathed chromel-alumel thermocouples. These thermocouples are positioned 6" from the face of the sample.

The sample was oriented vertically in the front opening of the furnace. The unexposed surface temperature of the sample was monitored by eight, 20 gauge type K, fiberglass sheathed thermocouples. An insulating pad was placed over each of the six thermocouples on the gypsum board.

The fire test was run following the ASTM E814/UL 1479 time-temperature curve.

The hose stream test was performed using a 2-1/2 inch diameter hose and National Standard Playpipe equipped with a 1-1/8 inch discharge tip at distance of 20 ft from the sample. The hose stream test was performed after the fire test on the exposed side of the sample. The hose stream was applied to the sample for 24 seconds based on a 16 sq. ft exposed area.

RATING CRITERIA:

F Rating:

Fire Test: The Fire stops shall not permit the passage of flame through the openings or allow any flaming on the unexposed side.

Hose Stream Test: The fire stops shall not develop any openings that would permit projection of water beyond the unexposed side.

RESULTS:

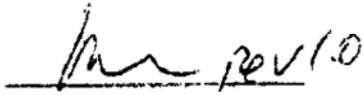
The initial ambient temperature was 57°F

Hose Stream Test: No holes formed in the unexposed side of the sample after being exposed to the hose stream for 24 seconds.

F Rating: 120 minutes

The sample met the acceptance criteria of the "F Rating" for 120 Minutes per ASTM E814/UL 1479 specifications.

The time-temperature data are contained on the following pages.



Neil Schultz
Executive Director



REVISION 1.0: Added "The furnace maintains a minimum positive pressure differential of 0.01 inches of water column" under " PROCEDURE.

<u>Time</u> <u>(mins.)</u>	<u>Sample 1</u> <u>deg F</u>	<u>Sample 2</u> <u>deg F</u>	<u>Sample 3</u> <u>deg F</u>	<u>Sample 4</u> <u>deg F</u>	<u>Sample 5</u> <u>deg F</u>	<u>Sample 6</u> <u>deg F</u>	<u>Sample 7</u> <u>deg F</u>	<u>Sample 8</u> <u>deg F</u>	<u>Furnace</u> <u>deg F</u>	<u>Furnace</u> <u>deg F</u>	<u>Furnace</u> <u>deg F</u>	<u>Furnace</u> <u>Average</u>
0	57	57	58	55	56	58	58	56	39	39	39	39
1	57	57	58	55	55	58	58	56	186	192	159	179
2	57	57	58	55	55	58	58	56	394	412	396	401
3	57	57	58	55	55	58	58	56	707	729	672	703
4	57	57	57	55	55	57	58	56	802	821	775	799
5	57	57	58	55	55	58	58	56	916	917	897	910
6	57	57	58	54	55	58	58	56	981	994	973	983
7	57	57	58	55	55	58	58	56	1060	1071	1053	1061
8	57	57	57	54	55	57	58	56	1140	1149	1103	1131
9	57	57	58	54	55	58	58	56	1211	1226	1206	1214
10	57	57	58	54	55	58	58	56	1282	1303	1291	1292
11	57	57	57	55	55	58	58	56	1311	1323	1307	1314
12	57	57	58	55	55	57	58	56	1341	1343	1316	1333
13	58	57	58	56	55	57	58	56	1352	1363	1344	1353
14	59	57	58	56	55	58	58	56	1375	1383	1382	1380
15	61	57	58	56	55	58	58	56	1384	1403	1376	1387
16	64	57	57	57	55	58	58	56	1392	1413	1408	1404
17	67	58	58	58	56	58	58	56	1406	1422	1406	1411
18	72	59	58	58	56	58	59	56	1419	1432	1406	1419
19	77	61	59	59	56	59	59	56	1417	1441	1427	1428
20	81	66	60	59	58	60	60	57	1428	1451	1412	1430
21	85	73	62	60	59	61	60	57	1460	1463	1476	1466
22	88	81	64	61	61	64	61	58	1466	1475	1479	1473
23	93	90	67	62	64	67	62	60	1468	1487	1448	1468
24	96	100	71	63	67	70	64	62	1482	1500	1472	1485
25	100	110	76	68	71	74	66	65	1505	1512	1484	1500
26	98	119	80	67	76	78	68	67	1499	1520	1500	1506
27	103	127	85	66	81	83	70	70	1515	1527	1480	1507
28	105	134	90	69	87	88	72	73	1530	1535	1514	1526
29	106	140	95	75	94	93	75	77	1540	1543	1538	1540
30	110	144	99	75	100	97	78	80	1550	1550	1549	1550
31	111	146	104	74	107	100	81	83	1550	1555	1538	1548
32	111	148	108	83	113	103	84	86	1559	1560	1568	1562
33	113	150	111	86	118	106	87	88	1552	1565	1550	1556
34	112	150	114	94	122	108	90	91	1555	1570	1543	1556
35	112	151	117	109	126	110	93	93	1556	1575	1546	1559
36	120	151	119	130	129	112	96	95	1565	1584	1539	1563
37	117	151	122	133	131	113	99	97	1570	1593	1580	1581
38	117	151	123	136	133	115	101	99	1584	1602	1578	1588
39	116	151	125	137	135	116	104	101	1603	1610	1597	1603
40	117	151	126	93	136	118	106	103	1610	1619	1625	1618
41	117	151	127	97	137	120	108	105	1613	1622	1590	1608
42	119	152	127	119	138	122	110	106	1619	1624	1582	1608
43	119	152	128	98	138	122	112	108	1608	1627	1592	1609
44	120	153	128	105	139	124	115	110	1607	1629	1626	1621

<u>Time</u> <u>(mins.)</u>	<u>Sample 1</u> <u>deg F</u>	<u>Sample 2</u> <u>deg F</u>	<u>Sample 3</u> <u>deg F</u>	<u>Sample 4</u> <u>deg F</u>	<u>Sample 5</u> <u>deg F</u>	<u>Sample 6</u> <u>deg F</u>	<u>Sample 7</u> <u>deg F</u>	<u>Sample 8</u> <u>deg F</u>	<u>Furnace</u> <u>deg F</u>	<u>Furnace</u> <u>deg F</u>	<u>Furnace</u> <u>deg F</u>	<u>Furnace</u> <u>Average</u>
45	121	153	129	105	140	125	117	111	1621	1632	1608	1620
46	120	154	130	104	140	126	119	113	1614	1638	1592	1615
47	123	154	130	105	141	128	122	114	1645	1645	1631	1640
48	114	154	131	106	141	129	124	115	1638	1651	1640	1643
49	102	155	132	107	142	130	126	117	1648	1658	1640	1649
50	102	154	132	108	142	131	128	118	1658	1665	1641	1655
51	103	154	132	108	142	132	130	119	1650	1669	1620	1647
52	103	154	133	107	142	132	132	120	1658	1673	1664	1665
53	102	154	134	107	142	133	134	122	1663	1677	1660	1667
54	105	154	135	108	143	134	136	123	1679	1682	1667	1676
55	102	155	135	109	143	135	138	124	1661	1686	1647	1665
56	103	155	136	109	143	135	139	124	1674	1690	1675	1679
57	105	155	136	110	143	136	140	125	1682	1693	1653	1676
58	106	155	137	112	144	136	141	126	1689	1697	1700	1695
59	109	155	138	111	144	137	141	127	1695	1701	1689	1695
60	111	155	138	113	143	138	142	128	1696	1705	1692	1698
61	112	155	139	112	143	138	143	129	1686	1707	1701	1698
62	113	155	139	112	143	139	143	129	1687	1709	1680	1692
63	119	155	140	113	144	139	144	130	1708	1711	1723	1714
64	117	155	141	112	144	139	145	130	1689	1713	1676	1693
65	122	155	142	114	143	140	145	130	1701	1715	1684	1700
66	122	155	142	114	143	140	146	131	1706	1717	1709	1711
67	123	155	143	114	143	140	147	131	1719	1719	1688	1709
68	123	156	143	114	142	141	147	132	1720	1721	1723	1722
69	124	157	144	117	143	142	147	131	1723	1724	1695	1714
70	124	157	145	117	143	142	148	133	1708	1726	1711	1715
71	128	158	145	120	142	143	148	133	1704	1729	1693	1709
72	129	158	146	125	142	143	149	133	1728	1731	1684	1714
73	128	157	146	123	142	143	149	133	1714	1734	1701	1716
74	129	156	147	125	142	144	150	134	1734	1737	1722	1731
75	133	157	147	126	142	145	150	134	1737	1739	1730	1736
76	135	158	148	130	142	145	151	134	1720	1741	1702	1721
77	137	157	148	132	142	145	151	134	1733	1743	1751	1742
78	138	157	149	133	143	146	151	135	1734	1745	1731	1737
79	140	157	149	133	143	146	151	134	1734	1747	1743	1741
80	142	158	150	134	143	147	152	135	1729	1749	1707	1728
81	142	157	150	133	143	147	153	135	1740	1751	1753	1748
82	145	158	151	140	144	148	153	135	1749	1752	1758	1753
83	149	159	151	147	144	148	153	136	1732	1754	1738	1741
84	152	159	152	144	144	149	154	136	1737	1755	1722	1738
85	156	160	152	142	144	150	154	136	1734	1757	1747	1746
86	158	161	153	145	144	150	155	136	1747	1761	1764	1757
87	178	161	153	149	144	151	156	137	1765	1766	1775	1769
88	230	163	155	170	146	151	157	136	1748	1770	1739	1752
89	243	166	156	184	145	151	158	137	1766	1775	1783	1775
90	250	170	157	188	145	151	158	137	1778	1779	1783	1780

<u>Time</u> <u>(mins.)</u>	<u>Sample 1</u> <u>deg F</u>	<u>Sample 2</u> <u>deg F</u>	<u>Sample 3</u> <u>deg F</u>	<u>Sample 4</u> <u>deg F</u>	<u>Sample 5</u> <u>deg F</u>	<u>Sample 6</u> <u>deg F</u>	<u>Sample 7</u> <u>deg F</u>	<u>Sample 8</u> <u>deg F</u>	<u>Furnace</u> <u>deg F</u>	<u>Furnace</u> <u>deg F</u>	<u>Furnace</u> <u>deg F</u>	<u>Furnace</u> <u>Average</u>
91	259	173	157	193	146	152	159	137	1800	1783	1785	1789
92	271	173	158	189	147	152	160	137	1803	1788	1790	1794
93	463	177	159	192	147	154	160	137	1801	1788	1785	1791
94	478	178	160	192	148	155	161	137	1803	1784	1793	1793
95	467	177	161	196	147	157	162	137	1809	1803	1807	1806
96	462	180	161	200	147	158	164	137	1814	1804	1807	1808
97	486	183	162	198	147	158	164	138	1817	1810	1809	1812
98	512	188	163	203	147	159	164	139	1816	1799	1802	1806
99	532	194	163	205	147	160	165	140	1818	1807	1814	1813
100	549	200	164	210	147	161	165	141	1822	1820	1814	1819
101	562	206	165	215	147	162	166	141	1823	1814	1807	1815
102	577	212	166	210	147	163	167	142	1520	1814	1814	1716
103	580	215	167	217	148	164	168	142	1522	1808	1806	1712
104	585	219	168	225	148	164	168	143	1818	1813	1803	1811
105	594	222	169	234	147	165	168	143	1822	1817	1812	1817
106	593	224	170	240	147	166	170	143	1818	1801	1803	1807
107	600	226	171	244	148	167	170	144	1824	1807	1799	1810
108	599	230	171	242	148	167	171	144	1816	1805	1809	1810
109	603	233	172	244	148	168	172	144	1821	1801	1813	1812
110	598	235	173	243	148	168	173	144	1831	1820	1826	1826
111	604	239	173	241	148	168	174	144	1826	1809	1814	1816
112	602	242	174	240	148	170	175	144	1832	1831	1841	1835
113	602	246	174	239	147	170	176	144	1827	1818	1817	1821
114	603	250	175	241	148	170	176	145	1832	1828	1824	1828
115	601	258	175	241	147	171	177	144	1838	1824	1827	1830
116	593	276	175	238	147	171	178	145	1839	1838	1838	1838
117	590	289	176	234	146	172	178	145	1842	1831	1833	1835
118	585	312	176	234	147	172	179	144	1844	1842	1827	1838
119	586	339	177	235	147	174	180	145	1845	1840	1824	1836
120	581	361	177	234	146	174	181	145	1847	1843	1846	1845
121	578	382	178	233	148	176	182	145	1848	1832	1842	1841
122	567	398	179	233	147	177	183	146	1850	1831	1842	1841
123	562	412	179	230	147	179	183	146	1853	1836	1842	1844
124	550	422	180	230	146	181	184	146	1852	1848	1851	1850
125	538	433	180	230	145	182	185	146	1855	1847	1842	1848