

STACBOND FIRE TEST REPORT

SCOPE OF WORK

NFPA 285 TESTING ON EXTERIOR NON-LOAD-BEARING WALL ASSEMBLY CONTAINING MILLER CLAPPERTON 1500 RAIN SCREEN SYSTEM WITH 4MM FR CORE STACBOND ALUMINUM COMPOSITE MATERIAL (ACM) PANELS

REPORT NUMBER

H2419.01-121-24-R0

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01/19/18

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02/14/18

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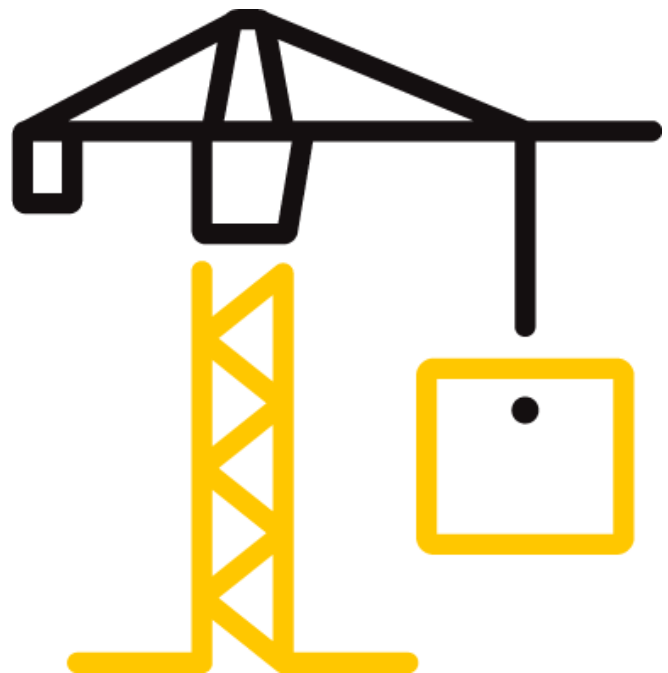
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TEST REPORT FOR STACBOND

Report No.: H2419.01-121-24-R0

Date: 02/14/18

REPORT ISSUED TO

STACBOND

15900 A Matanza

A Coruña, Spain

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by STACBOND, 15900 A Matanza A Coruña, Spain to evaluate the flame propagation characteristics of an exterior, non-load-bearing wall assembly containing product. Testing was conducted at the Intertek B&C test facility in York, PA. Results obtained are tested values and were secured by using the designated test method(s). A summary of test results and the complete graphical test data is reported herein.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2

SUMMARY OF TEST RESULTS

Wall System: Exterior Non-load-bearing Wall Assembly

Combustible Components: Miller Clapperton 1500 Rain Screen System utilizing 4mm FR Core STACBOND Aluminum Composite Material (ACM) Panels

NFPA 285 Test Results

The assembly described and tested in this report **did** meet the Conditions of Acceptance of NFPA 285. Construction of the full assembly is summarized in Section 7 of this test report.

For INTERTEK B&C:

COMPLETED BY:	Scott Gingrich	REVIEWED BY:	Ethan Grove
TITLE:	Technician Team Lead – Fire Testing	TITLE:	Manager – Fire Testing
SIGNATURE:		SIGNATURE:	
DATE:	02/14/18	DATE:	02/14/18

SDG:ddr

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SECTION 3

TEST METHOD

The assembly was evaluated in accordance with the following:

NFPA 285-12, *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components*

SECTION 4

MATERIAL SOURCE/INSTALLATION

The components of the test assembly were provided by the client except for the core wall components that were acquired and assembled by Intertek B&C personnel.

SECTION 5

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Marcos Garcia	STACBOND
Jose M. Rivas	STACBOND
Scott Gingrich	Intertek B&C
Tim Feltman	Intertek B&C
Nate Brillhart	Intertek B&C

SECTION 6

TEST PROCEDURE

The wall assembly was instrumented with thermocouples (TCs) in accordance with figures 6.1(a) and 6.1(b) of NFPA 285 test method. 18-gauge Type "K" TCs were used in the burn room and 20-gauge Type "K" was used on exterior façade and cavity air space. The window burner was positioned in the center of the opening and 3 in. off the exterior face of the wall assembly. Testing was performed on 01/19/2018 in accordance with NFPA 285 test method. Ambient conditions were 61°F and 20% relative humidity. An anemometer was used to verify airflow across test assembly was less than 4 ft./sec as specified in the test method. Video recording, digital photographs, visual observations, and data collection were performed prior, during, and after testing was completed. Temperature data was recorded every 15 seconds. The test was performed at 09:51 AM with the burners on for 30 minutes. All observations are recorded in the table located in Section 8.

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SECTION 6 (Continued)

TEST PROCEDURE

The apparatus is considered to be under calibrated conditions when the time average temperatures and the time average heat flux readings obtained for a calibration wall match the requirements of Table 8.1.6 of NFPA 285. Calibration was performed on February 15, 2017 with natural gas as the fuel source and the window burner placed 3 inches from the exterior surface of the assembly. Table 6.1 of this section shows the average burner flow and heat flux. Table 6.2 shows the time average temperatures obtained during the calibration test.

Table 6.1 Average Burner Output Information

TIME INTERVAL (MIN:SEC)	ROOM BURNER (SCFM)	WINDOW BURNER (SCFM)	2 FT FLUX (W/cm ²)	3 FT FLUX (W/cm ²)	4 FT FLUX (W/cm ²)
0:00-5:00	35.4	0	1.1	0.9	0.8
5:00-10:00	35.5	4	2	1.8	1.7
10:00-15:00	43.8	5.6	2.7	2.6	2.3
15:00-20:00	43.6	8	2.9	2.8	2.8
20:00-25:00	43.6	11	3.1	3	2.8
25:00-30:00	47.3	15.6	3.6	3.5	3.5

Table 6.2 Average Time Temperature Values for Calibration

TIME INTERVAL (MIN:SEC)	THERMOCOUPLE LOCATIONS							
	BURN ROOM (°F)	INT. WALL (°F)	1FT (°F)	2FT (°F)	3FT (°F)	4FT (°F)	5FT (°F)	6FT (°F)
0:00-5:00	1100	1033	633	756	679	610	560	484
5:00-10:00	1301	1260	829	1002	972	933	877	780
10:00-15:00	1466	1431	981	1129	1130	1070	1008	905
15:00-20:00	1512	1485	1009	1169	1181	1145	1107	1012
20:00-25:00	1536	1511	1043	1178	1202	1202	1162	1071
25:00-30:00	1605	1578	1090	1252	1302	1305	1236	1152

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SECTION 7**TEST ASSEMBLY DESCRIPTION****Interior Cladding**

The full interior surface of the wall assembly was clad with 5/8 in. thick National Gypsum Gold Bond® Fire-Shield® gypsum board meeting the requirements of ASTM C1396. The gypsum board was fastened to the wall framing with #6 x 1-1/4 in. long, bugle head, self-drilling screws with a nominal spacing of 8 in. around the board perimeter and 12 in. in the field. Drywall orientation on the burn floor consisted of four pieces of gypsum board fastened to the core wall, with the run edge running parallel with the framing and the cut edge perpendicular to the framing. Drywall orientation on the second floor consisted of vertically oriented boards with the run edge running parallel with the framing and the cut edge perpendicular to the framing. Drywall orientation for the areas above the top support angle and below the bottom support angle consisted of boards that were oriented with the run edge perpendicular with the framing. All joints were taped with USG Sheetrock® Brand paper joint tape and spackled with USG Sheetrock® Brand joint compound. All fastener heads were spackled with USG Sheetrock® Brand joint compound.

Framing

The core wall was consisted of 18 ft. long, 3-5/8 in. deep, 20 gauge galvanized steel studs fastened to 14 ft. length, 3-5/8 in. deep, 20 gauge galvanized steel track every 24 inches on center. The studs were connected to the track with one #6 x 1/2 in. long self-drilling, pan head fastener per stud flange. Two additional 18 ft. long, 3-5/8 in. deep, 20 gauge studs were used as king studs for the window opening jambs. Johns Manville MinWool® Safing pieces with a nominal density of 4.0 lb./cu. ft. were installed per the manufacturer's installation instructions to fit into each stud cavity placed at the second story floor line. The safing length dimensions were no less than the apparatus floor slab thickness of 8 in.

Exterior Sheathing

5/8 in. thick National Gypsum Gold Bond® eXP® exterior gypsum sheathing, meeting the requirements of ASTM C1177, was placed horizontally across the full exterior surface of the assembly. A vertical joint offset of 16 in. was utilized during installation. The gypsum sheathing was fastened to the wall framing with #6 x 1-1/4 in. long, bugle head, self-drilling screws with a nominal spacing of 8 in. around the board perimeter and 12 in. in the field.

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SECTION 7 (Continued)**TEST ASSEMBLY DESCRIPTION****Water-resistive Barrier**

VaproShield® WrapSheild® SA was used as the Air, Water membrane. This Membrane was self-adhering with that used an integrated tape to seal each layer. The membrane was installed with each row installed horizontally. Each layer had a 6 in. overlap to the previous layer. The membrane was cut to wrap into the window opening. The window was then taped using 4 in. Black UV VaproShield® VaproTape™ was used to cover the entire perimeter of the window opening.

Window Opening

A 78 in. wide x 30 in. tall window opening was made from 20 gauge galvanized steel track. The opening was centered on the vertical centerline of the wall assembly with the finished sill located 30 in. above the first story floor line. The steel track sections were mechanically fastened with #6 x 1/2 in. long self-drilling, pan head fasteners at each corner. Upon the completion of the exterior sheathing, the air and water membrane was applied to the window opening using the VaproShield® VaproTape™ to secure the membrane to the assembly.

Exterior Cladding

The assembly utilized a Miller Clapperton 1500 rain screen cladding assembly. The assembly started with aluminium starter extrusions at the assembly sill and at the window header. This extrusion was secured to the test assembly using #12-14 hex washer head with #3 drill-point. One of these fasteners was used at each stud location. After the started extrusions were mounted the panels were then placed. The 4mm FR Core STACBOND Aluminum Composite Material (ACM) panels had shop mounted continuous aluminium extrusions that were used to secure the panels to the assembly. #12-14 hex washer head with #3 drill-point were also used to secure the panels to the assembly. The remaining panels were placed on the assembly in the same manor until the entire assembly was covered. 4mm FR Core STACBOND Aluminum Composite Material (ACM) splines were installed into the vertical and horizontal panel joints. The splines were accepted into the panel extrusions. The vertical and horizontal panel gaps were measured to be 1/2 inch wide. 0.040 aluminium flashing was added to the window header and assembly sill. The window header used 1/2 open cell backer rod in the space of the flashing and panel. Dow Corning® 795 silicone finished this by covering the backer rod.

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SECTION 8

TEST OBSERVATIONS

TIME (Min:Sec)	OBSERVATIONS
00:00	Ignition of room burner.
01:03	Window header flashing begins to warp and bend.
01:45	Ignition of the interior gypsum.
02:15	Ignition on the window opening jambs.
04:40	Ignition on the window opening sill.
05:00	Ignition of window opening burner.
06:07	Panels above the window opening header begins to swell.
16:02	The paint on the panels begin to char.
17:45	Ignition at the window header.
30:00	Burners Extinguished. Post-test 10-minute observation period begins.
30:01	Flames continue to emit from the exterior surface.
31:34	Flame stop emitting from the exterior surface.
40:00	Post-test 10-minute observation period ends; test concluded.

SECTION 9

TEST RESULTS

TEST REQUIREMENTS	TEST RESULTS	PASS/FAIL
Flames did not reach 10 ft. above the window opening header.	Flames did not reach 10 ft. above the window opening header.	PASS
Flames did not reach a lateral distance of 5 ft. from the vertical centerline.	Flames did not reach a lateral distance of 5 ft. from the vertical centerline.	PASS
Flames did not propagate beyond the limits of the first story test room.	Flames did not propagate beyond the limits of the first story test room.	PASS
No visible flaming in the second story test room	No visible flaming in the second story test room.	PASS
TC's 11 and 14-17 (1000°F limit)	TC's 11 and 14-17 did not exceed their 1000°F limit.	PASS
TC's 18-19, 28, and 31-40 (1000°F limit)	TC's 18-19, 28, and 31-40 did not exceed their 1000°F limit.	PASS
TC's 49-54 (500°F above ambient)	TC's 49-54 did not exceed 500°F above their ambient temperatures.	PASS

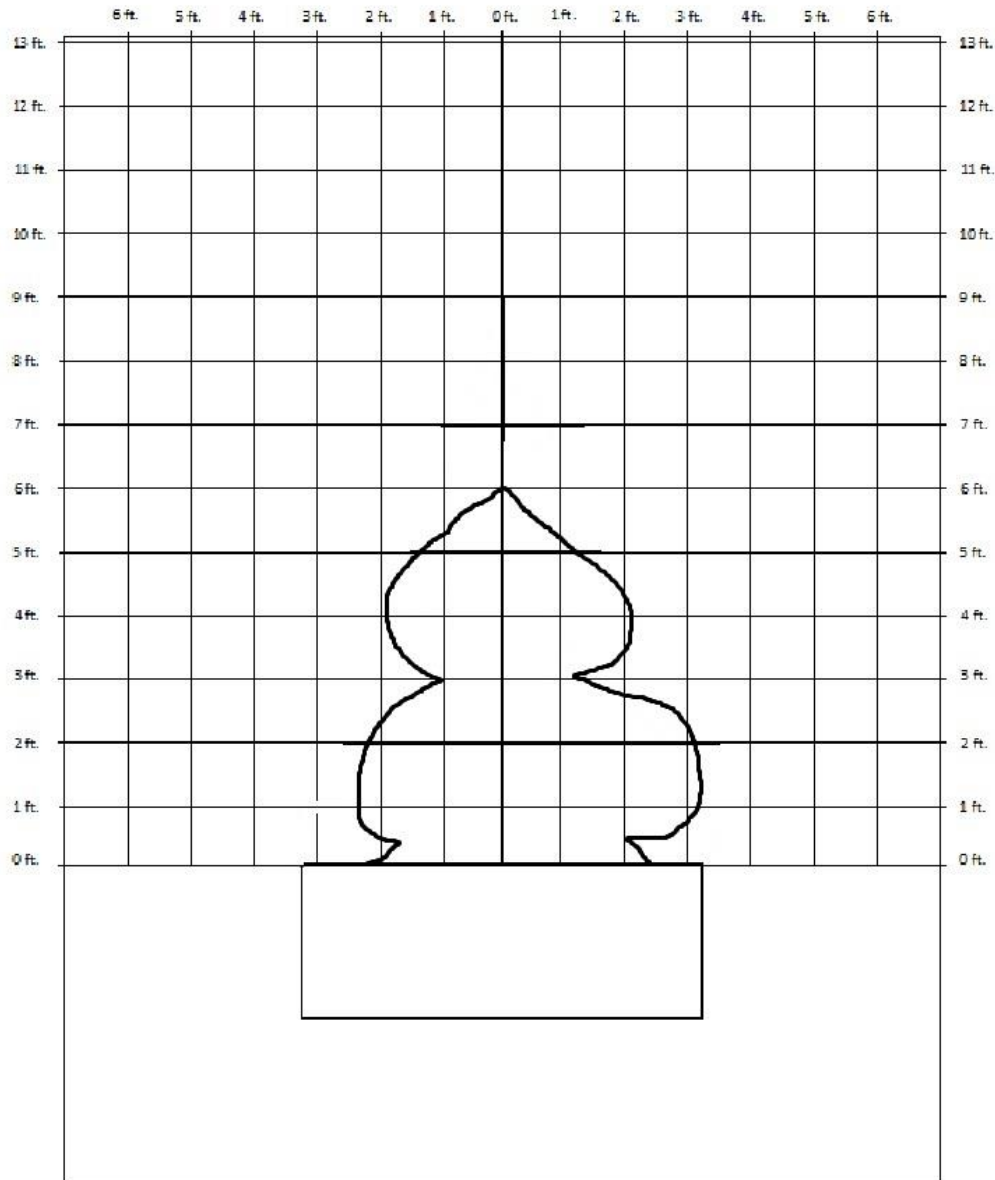
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SECTION 10

SKETCH OF EXTERIOR CLADDING BURN PATTERN



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SECTION 11

PHOTOGRAPHS

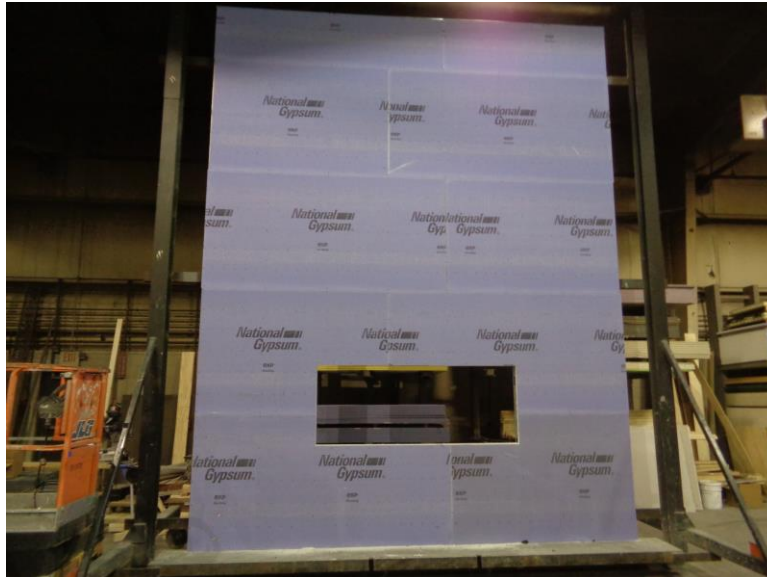


Photo No. 1
Core Wall and Sheathing Installed



Photo No. 2
Air Vapor Barrier and Window Tape Installed

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Photo No. 3
Panel Labeling

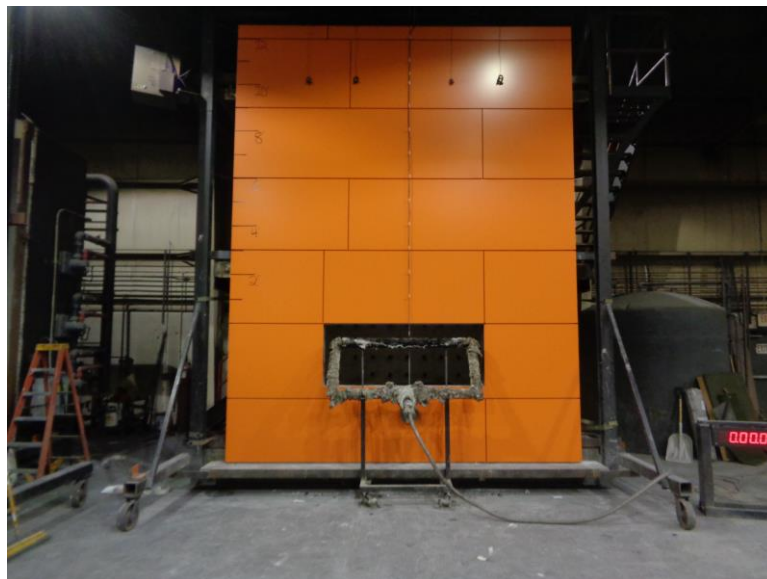


Photo No. 4
Completed Assembly

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Photo No. 5
Interior Wall Surface First Floor



Photo No. 6
Interior Wall Surface Second Floor

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Photo No. 7
Room Burner Ignition



Photo No. 8
Window Burner Ignition

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Photo No. 9
During Test



Photo No. 10
Burners Off

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Photo No. 11
First and Second Floor Interior Wall Surface



Photo No. 12
Panels Removed

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Photo No. 13
Back of Panels

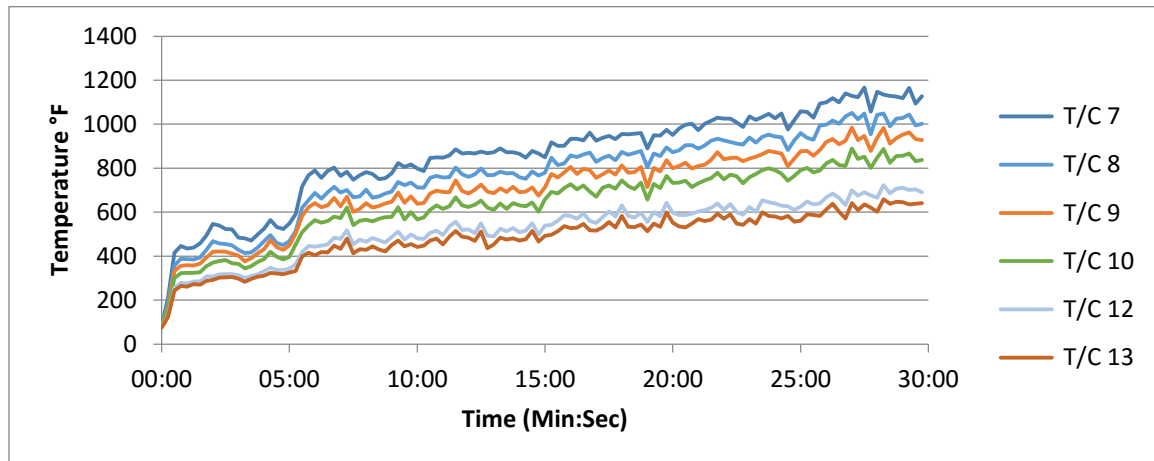
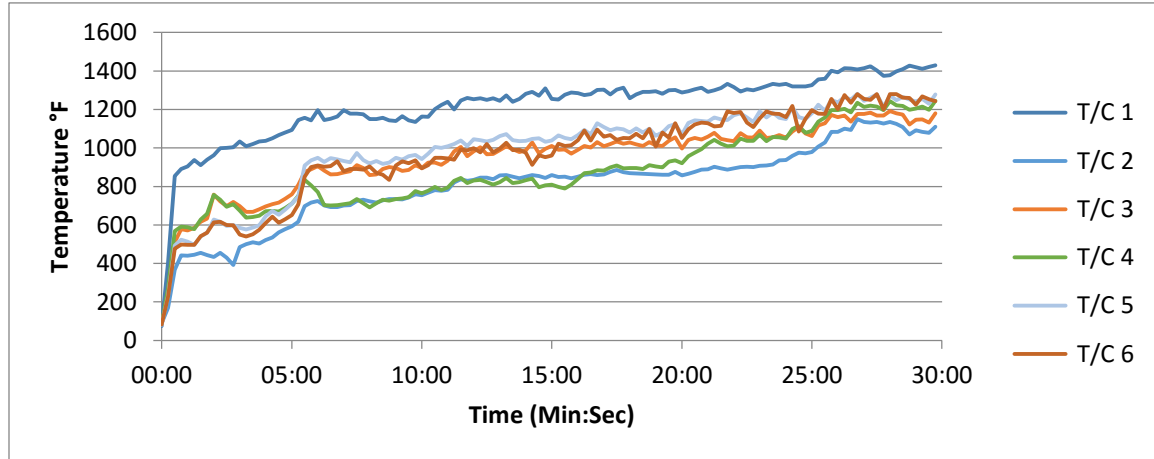
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SECTION 12

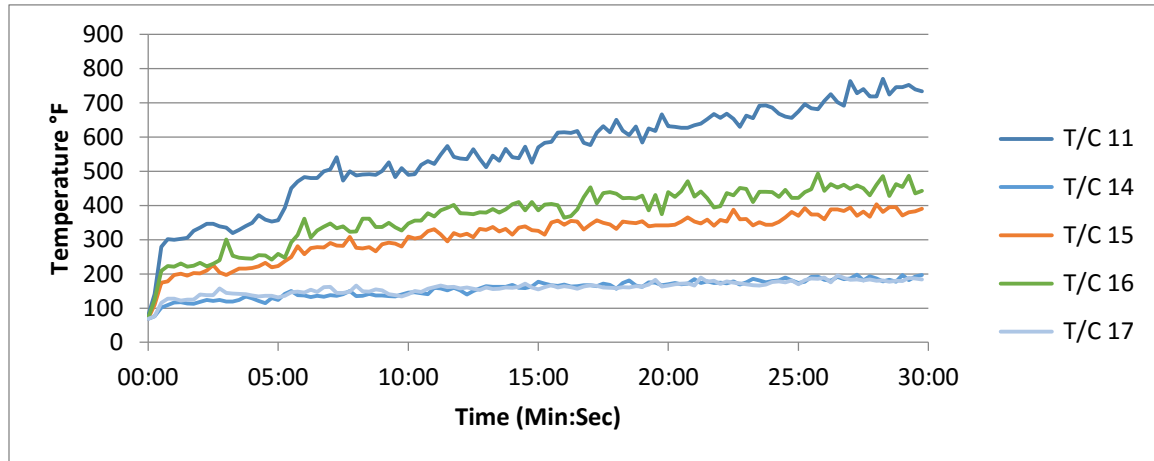
GRAPHS



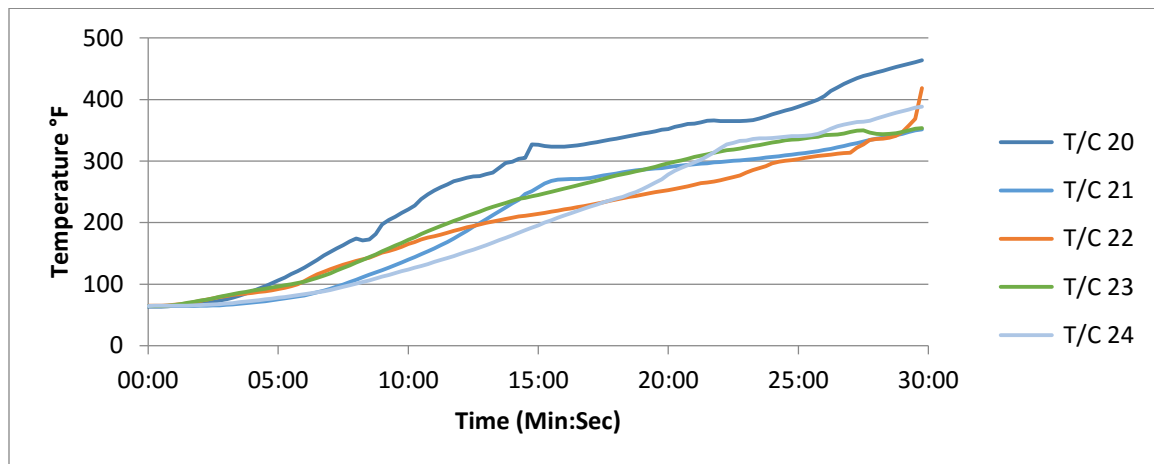
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Graph No. 3
10 ft. above the Window Opening Header (Assembly Exterior)

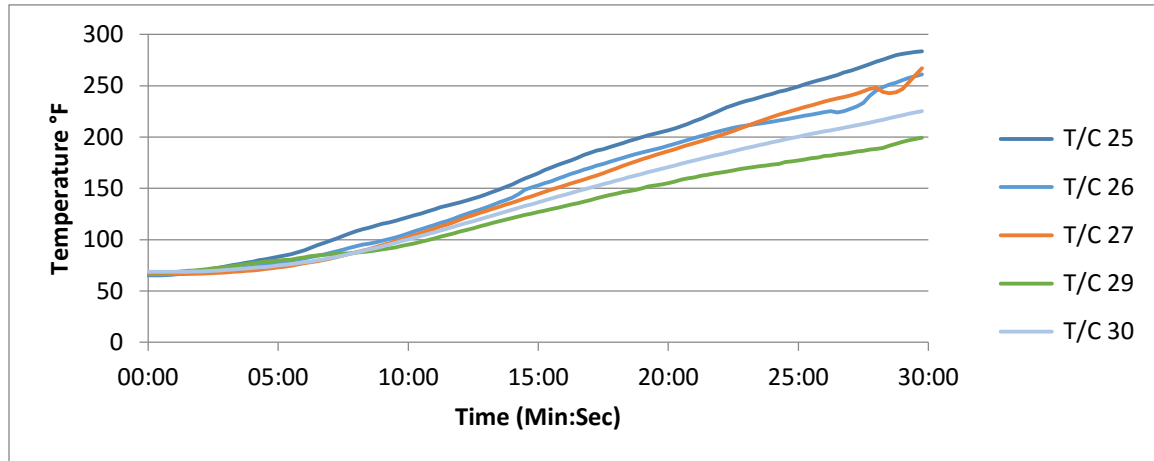


Graph No. 4
Assembly Centerline (Air Cavity Space)

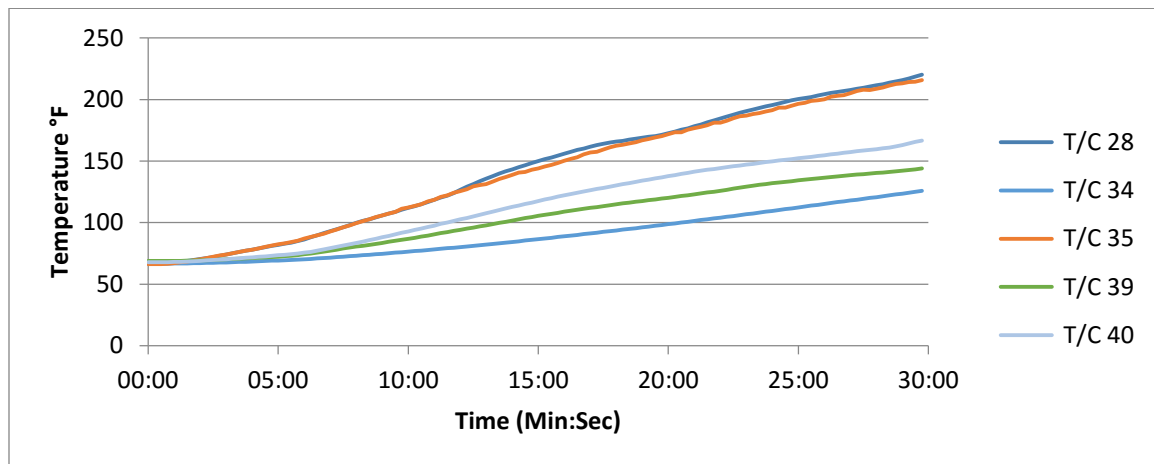
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Graph No. 5
Assembly Centerline (Air Cavity Space)

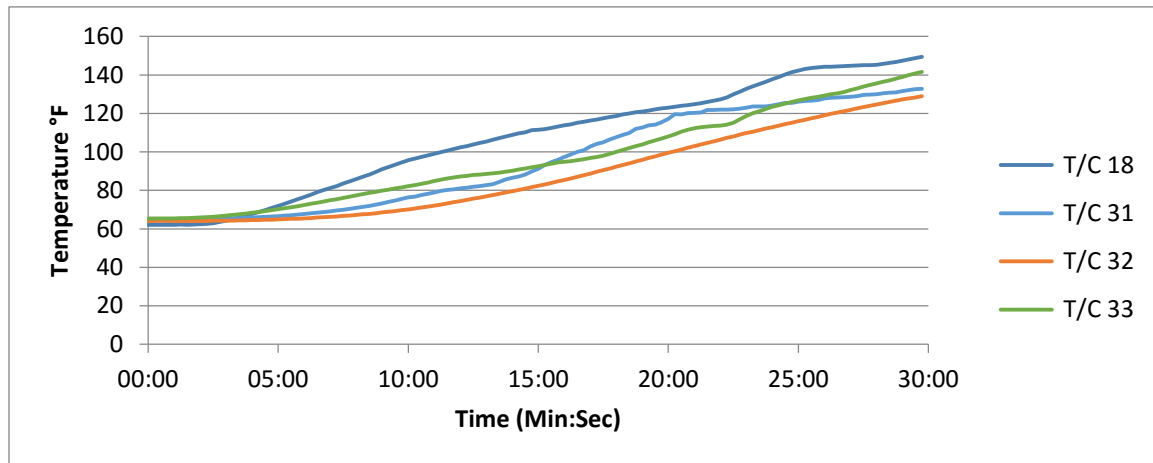


Graph No. 6
10 ft. above the Window Opening Header (Air Cavity Space)

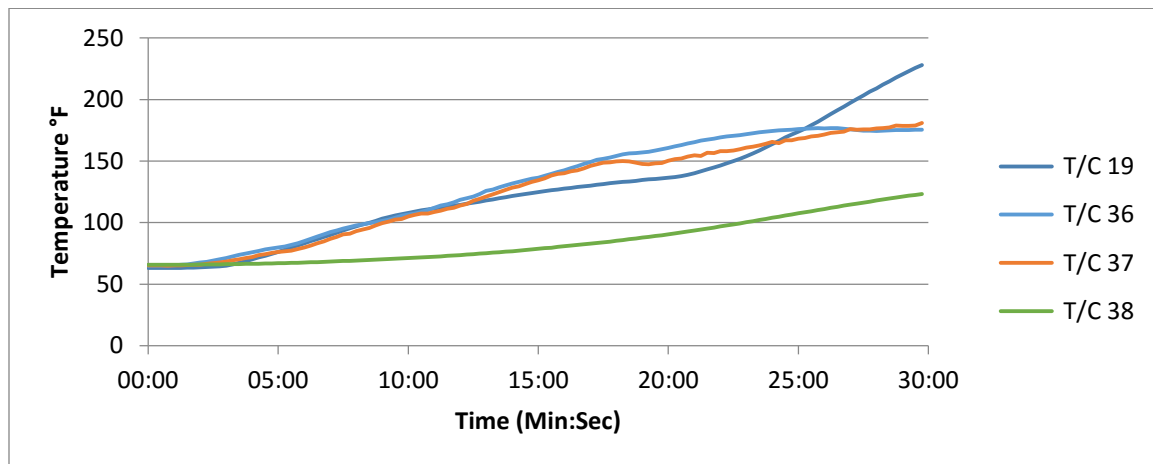
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Graph No. 7
Left of Assembly Centerline (Air Cavity Space)

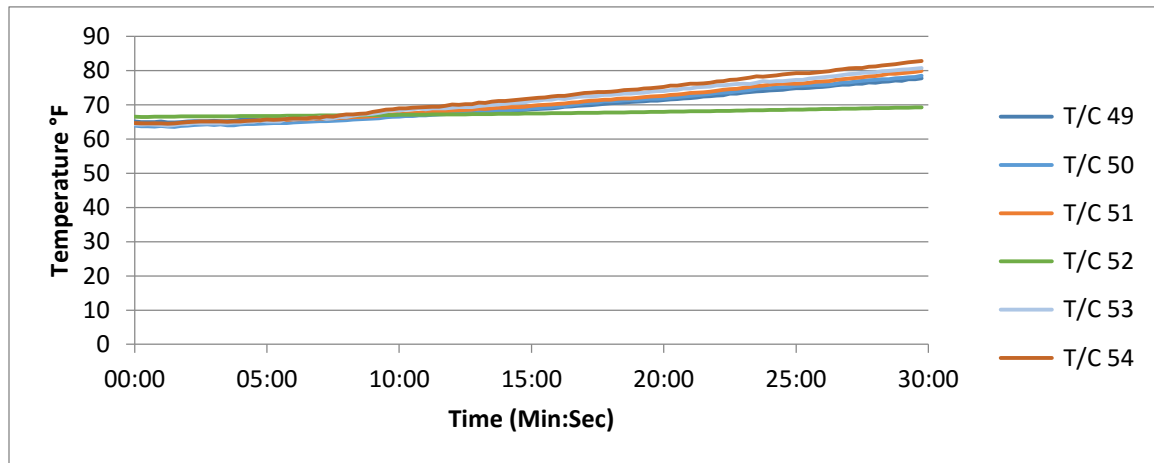


Graph No. 8
Right of Assembly Centerline (Air Cavity Space)

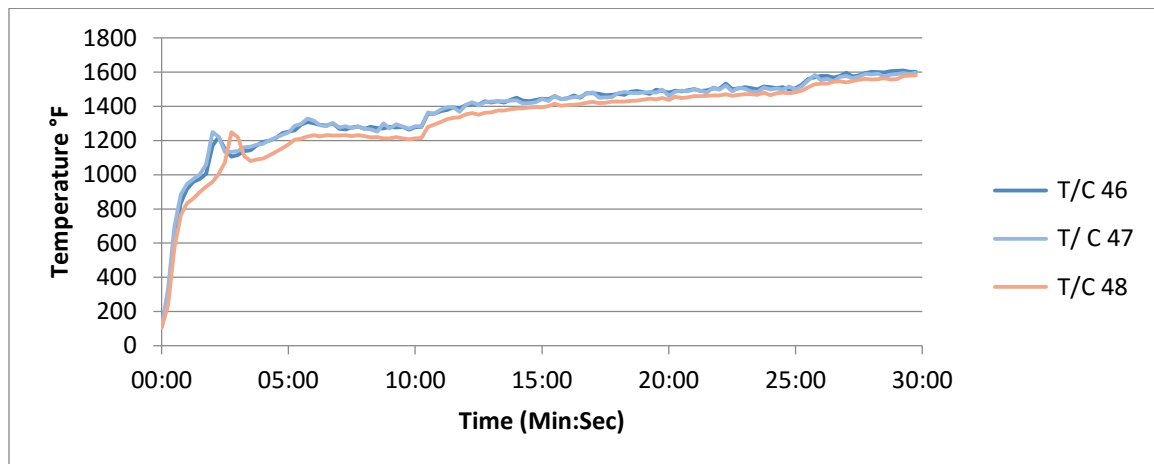
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Graph No. 9
First-story Test Room Ceiling

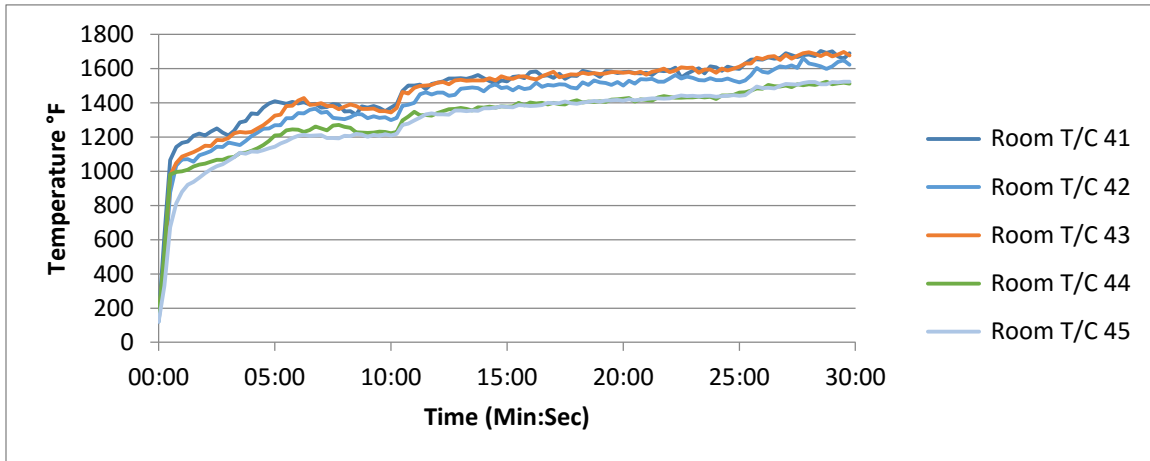


Graph No. 10
First-story Interior Wall Surface

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Graph No. 11
Second-story Interior Wall Surface

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SECTION 13

NUMERICAL DATA

TIME (Min:Sec)	ROOM GAS FLOW	WINDOW GAS FLOW	T/C 1	T/C 2	T/C 3	T/C 4	T/C 5	T/C 6	T/C 7	T/C 8	T/C 9
00:00	0.1	0.0	74	90	87	86	81	83	83	81	80
00:15	19.0	0.0	404	169	245	269	231	227	210	185	169
00:30	35.7	0.0	854	366	509	568	493	477	415	358	333
00:45	36.4	0.0	890	442	578	591	523	498	446	388	355
01:00	36.5	0.0	904	439	571	588	513	496	435	386	359
01:15	36.5	0.0	937	446	584	578	497	497	438	386	358
01:30	36.5	0.0	911	455	616	628	540	541	458	394	367
01:45	36.5	0.0	938	443	634	658	560	559	494	429	393
02:00	36.5	0.0	961	433	758	756	629	614	546	468	420
02:15	36.4	0.0	999	455	722	732	617	616	539	457	421
02:30	36.4	0.0	1000	429	698	694	594	599	523	455	420
02:45	36.5	0.0	1004	392	719	707	599	598	521	449	411
03:00	36.5	0.0	1033	485	697	674	585	550	485	429	403
03:15	36.5	0.0	1009	500	669	638	576	540	481	415	377
03:30	36.5	0.0	1020	509	668	641	586	551	471	418	391
03:45	36.5	0.0	1033	504	681	648	597	574	498	439	412
04:00	36.5	0.0	1036	522	696	671	644	609	525	468	432
04:15	36.5	0.0	1051	535	708	673	672	643	564	496	472
04:30	36.5	0.0	1067	561	715	669	652	612	532	460	440
04:45	36.5	0.0	1081	578	736	688	680	629	523	450	429
05:00	36.5	0.0	1093	593	759	711	711	651	548	469	449
05:15	36.5	0.2	1145	617	808	751	747	706	592	515	503
05:30	36.5	2.3	1156	697	875	834	910	850	717	621	583
05:45	36.5	4.8	1143	716	889	806	936	900	767	655	622
06:00	36.5	4.1	1196	725	906	771	950	910	790	687	641
06:15	36.4	4.3	1145	701	883	703	927	903	756	662	622
06:30	36.5	4.3	1152	693	863	702	947	906	788	691	631
06:45	36.5	4.4	1164	693	864	703	940	930	804	716	664
07:00	36.5	4.5	1197	701	873	708	932	879	765	689	627
07:15	36.5	4.5	1178	703	879	713	926	891	784	701	670
07:30	36.5	4.3	1178	724	910	734	974	890	748	667	602
07:45	36.4	4.3	1175	731	895	714	937	887	768	671	615
08:00	36.5	4.3	1150	722	859	691	920	904	783	702	641
08:15	36.5	4.4	1149	716	863	712	933	870	774	666	621
08:30	36.5	4.3	1157	728	891	730	917	861	750	672	628
08:45	36.5	4.4	1143	734	901	725	924	833	755	685	640
09:00	36.4	4.4	1141	735	896	734	948	908	777	694	647
09:15	36.4	4.4	1166	732	881	738	939	931	823	738	689
09:30	36.5	4.4	1144	743	886	744	956	920	806	722	643
09:45	36.5	4.4	1136	759	911	776	964	935	817	734	672
10:00	36.5	4.3	1164	754	895	765	943	893	799	713	638
10:15	37.5	4.6	1161	767	923	777	970	911	787	712	642
10:30	43.2	5.4	1202	781	924	797	1006	948	847	756	685
10:45	45.0	5.7	1224	778	912	781	1000	949	850	765	698

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TIME (Min:Sec)	ROOM GAS FLOW	WINDOW GAS FLOW	T/C 1	T/C 2	T/C 3	T/C 4	T/C 5	T/C 6	T/C 7	T/C 8	T/C 9
11:00	44.9	5.7	1240	782	934	794	1009	945	848	758	692
11:15	44.9	5.7	1201	821	983	830	1020	939	858	759	691
11:30	44.9	5.7	1246	838	1006	845	1039	992	885	803	745
11:45	44.8	5.7	1260	829	957	817	1011	987	867	773	697
12:00	44.9	5.7	1254	834	981	832	1045	999	870	761	685
12:15	45.0	5.7	1258	846	1003	834	1040	976	867	773	703
12:30	44.9	5.7	1250	846	968	823	1033	1020	876	798	726
12:45	45.0	5.7	1258	838	969	810	1041	977	868	768	693
13:00	44.9	5.7	1245	858	989	822	1062	997	873	769	686
13:15	45.0	5.7	1273	859	1009	843	1072	1027	890	783	709
13:30	45.0	5.7	1239	851	993	818	1041	988	872	776	692
13:45	44.9	5.7	1255	842	979	822	1035	991	872	778	715
14:00	44.8	5.7	1281	851	988	832	1037	975	865	759	691
14:15	44.9	5.7	1292	859	1028	841	1047	913	849	752	693
14:30	45.0	5.7	1271	854	971	796	1050	963	878	785	713
14:45	44.9	5.7	1310	844	995	807	1032	953	867	767	675
15:00	44.8	5.7	1254	860	1010	810	1039	961	849	780	714
15:15	44.8	6.2	1252	850	991	797	1065	1022	917	848	774
15:30	44.9	7.9	1276	850	993	789	1053	1010	902	815	757
15:45	44.8	8.2	1288	843	970	809	1045	1014	902	822	781
16:00	44.7	8.2	1284	850	990	838	1067	1041	934	858	806
16:15	44.8	8.3	1275	861	1010	869	1093	1090	933	851	774
16:30	44.8	8.2	1280	863	1002	872	1070	1039	927	863	797
16:45	44.8	8.2	1301	860	1030	884	1129	1095	961	871	791
17:00	44.8	8.3	1304	862	1009	882	1108	1059	926	829	756
17:15	44.8	8.2	1278	876	1020	899	1091	1067	938	846	772
17:30	44.6	8.3	1303	885	1033	908	1102	1041	947	856	789
17:45	44.8	8.2	1313	875	1023	893	1097	1052	933	837	770
18:00	44.8	8.2	1258	870	1029	896	1080	1050	956	874	812
18:15	44.7	8.3	1279	867	1019	895	1102	1073	954	862	780
18:30	44.7	8.3	1291	867	1010	891	1080	1050	957	870	783
18:45	44.7	8.3	1292	864	1030	910	1099	1099	960	879	806
19:00	44.7	8.3	1294	862	1015	904	1063	1006	890	804	714
19:15	44.7	8.2	1282	861	1011	898	1081	1080	950	866	802
19:30	44.8	8.2	1300	861	1037	929	1113	1053	949	856	786
19:45	44.8	8.2	1302	875	1055	935	1123	1129	975	894	836
20:00	44.8	8.3	1289	858	998	920	1071	1052	951	872	800
20:15	44.8	9.0	1296	866	1042	957	1130	1097	980	881	810
20:30	44.7	10.9	1305	875	1053	976	1143	1122	998	905	825
20:45	44.8	11.2	1314	887	1044	994	1141	1131	1002	905	799
21:00	44.7	11.2	1291	890	1059	1022	1137	1128	973	888	811
21:15	44.8	11.2	1300	902	1079	1042	1158	1112	1002	903	816
21:30	44.7	11.2	1311	894	1047	1023	1149	1115	1015	925	838
21:45	44.7	11.2	1334	887	1040	1009	1145	1189	1030	933	873
22:00	44.8	11.2	1316	894	1035	1012	1170	1181	1025	926	841
22:15	44.7	11.2	1293	900	1077	1048	1180	1186	1026	920	847
22:30	44.8	11.2	1305	902	1055	1038	1159	1132	1007	911	848

TEST REPORT FOR STACBOND

Report No.: H2419.01-121-24-R0

Date: 02/14/18

TIME (Min:Sec)	ROOM GAS FLOW	WINDOW GAS FLOW	T/C 1	T/C 2	T/C 3	T/C 4	T/C 5	T/C 6	T/C 7	T/C 8	T/C 9
22:45	44.7	11.2	1300	900	1053	1036	1134	1109	987	908	832
23:00	44.7	11.2	1310	908	1091	1068	1191	1154	1036	940	843
23:15	44.7	11.2	1321	909	1052	1036	1159	1189	1019	916	853
23:30	44.7	11.2	1332	914	1056	1057	1183	1178	1033	942	864
23:45	44.8	11.2	1329	936	1068	1055	1157	1177	1047	953	878
24:00	44.8	11.2	1332	937	1054	1049	1151	1160	1027	944	873
24:15	44.7	11.2	1320	958	1085	1099	1212	1219	1049	941	866
24:30	44.7	11.2	1320	975	1108	1114	1160	1086	976	883	809
24:45	44.8	11.1	1320	971	1075	1078	1150	1152	1018	926	843
25:00	44.7	11.1	1326	979	1061	1089	1181	1197	1059	959	877
25:15	45.7	12.5	1357	1007	1116	1137	1224	1179	1056	938	879
25:30	48.1	15.6	1360	1029	1128	1158	1193	1177	1029	929	856
25:45	48.6	15.9	1401	1084	1172	1196	1250	1254	1093	996	883
26:00	48.6	15.9	1394	1083	1160	1197	1237	1201	1100	997	919
26:15	48.6	15.9	1415	1100	1168	1203	1265	1276	1118	1017	932
26:30	48.6	15.9	1413	1094	1137	1186	1251	1235	1100	1002	909
26:45	48.6	15.9	1408	1151	1177	1234	1281	1279	1141	1035	925
27:00	48.6	15.9	1415	1134	1176	1214	1245	1254	1129	1051	985
27:15	48.6	15.9	1425	1132	1183	1221	1261	1250	1123	1023	928
27:30	48.6	15.9	1404	1135	1169	1215	1279	1281	1167	1048	947
27:45	48.6	15.9	1375	1126	1169	1197	1214	1200	1058	954	878
28:00	48.6	15.9	1378	1135	1191	1243	1273	1279	1148	1043	939
28:15	48.6	15.9	1399	1125	1180	1221	1248	1279	1134	1049	984
28:30	48.7	15.8	1410	1108	1174	1219	1264	1262	1129	991	912
28:45	48.5	15.9	1428	1070	1122	1198	1251	1260	1126	1025	937
29:00	48.7	15.9	1420	1093	1147	1204	1242	1225	1118	1028	953
29:15	48.7	16.0	1411	1083	1148	1215	1255	1269	1165	1044	962
29:30	48.7	15.9	1421	1079	1133	1198	1230	1253	1094	995	933
29:45	48.6	15.9	1429	1110	1179	1244	1278	1244	1128	1003	928
30:00	48.6	15.6	1394	1046	1122	1182	1226	1229	1106	993	921

TEST REPORT FOR STACBOND

Report No.: H2419.01-121-24-R0

Date: 02/14/18

TIME (Min:Sec)	T/C 10	T/C 11	T/C 12	T/C 13	T/C 14	T/C 15	T/C 16	T/C 17	T/C 18	T/C 19
00:00	79	78	76	75	69	69	71	69	62	63
00:15	159	140	127	123	76	110	124	76	62	63
00:30	301	279	255	243	101	175	209	115	62	63
00:45	323	302	280	264	109	178	223	128	62	63
01:00	324	300	275	261	117	197	221	128	62	63
01:15	324	303	284	273	117	200	231	122	62	63
01:30	328	306	285	270	114	195	221	125	62	63
01:45	355	326	308	288	113	202	224	125	62	64
02:00	370	335	308	292	119	201	232	140	62	64
02:15	378	346	317	303	124	210	222	138	63	64
02:30	382	346	318	304	121	226	230	138	63	64
02:45	368	339	319	305	124	204	240	157	64	65
03:00	365	336	313	297	119	196	301	144	64	65
03:15	344	320	301	284	119	207	253	142	65	66
03:30	354	329	310	297	124	216	247	142	66	67
03:45	374	340	318	306	134	215	246	141	67	69
04:00	386	349	332	311	129	217	245	137	68	70
04:15	420	372	347	324	121	222	255	134	69	72
04:30	397	359	337	321	114	232	254	136	70	73
04:45	386	353	336	318	129	219	242	136	71	75
05:00	397	357	342	325	124	224	259	132	72	76
05:15	454	394	364	333	142	237	248	136	73	78
05:30	508	450	419	399	150	249	293	146	74	80
05:45	539	470	446	416	138	281	314	149	75	81
06:00	564	484	443	404	137	258	361	146	77	83
06:15	552	480	447	419	132	276	306	154	78	85
06:30	559	481	453	417	136	278	327	147	79	87
06:45	580	500	484	448	133	277	338	161	80	88
07:00	574	506	479	433	138	290	347	162	81	90
07:15	620	541	518	480	136	283	333	144	82	92
07:30	541	473	453	413	141	282	339	144	84	93
07:45	561	500	475	432	150	309	323	148	85	95
08:00	566	488	465	429	135	276	324	166	86	97
08:15	558	491	482	444	136	274	362	149	87	98
08:30	570	492	472	431	142	278	361	148	88	100
08:45	577	490	462	421	137	266	337	154	90	102
09:00	578	501	487	450	137	286	337	152	91	103
09:15	622	526	512	471	135	292	349	141	92	105
09:30	567	484	476	445	134	288	336	138	93	106
09:45	600	509	499	454	140	280	327	135	95	107
10:00	566	490	482	442	145	309	348	140	96	108
10:15	575	492	478	448	146	303	356	150	97	109
10:30	611	519	506	470	143	308	356	147	97	110
10:45	631	530	516	480	141	325	377	157	98	111
11:00	615	521	496	454	160	330	368	161	99	112
11:15	627	549	535	489	158	315	386	166	100	112
11:30	667	573	558	515	152	295	393	161	101	113
11:45	632	542	518	489	159	319	402	162	102	114

TEST REPORT FOR STACBOND

Report No.: H2419.01-121-24-R0

Date: 02/14/18

TIME (Min:Sec)	T/C 10	T/C 11	T/C 12	T/C 13	T/C 14	T/C 15	T/C 16	T/C 17	T/C 18	T/C 19
12:00	623	538	523	484	152	312	377	158	102	115
12:15	634	536	505	469	140	317	376	160	103	115
12:30	653	564	549	511	150	308	375	157	104	116
12:45	620	536	492	436	158	331	381	153	105	117
13:00	611	512	490	454	164	329	379	160	105	118
13:15	640	546	525	484	162	337	390	155	106	119
13:30	615	531	513	476	163	324	379	156	107	120
13:45	641	566	528	482	162	332	389	160	108	121
14:00	632	541	508	471	168	315	404	159	109	122
14:15	626	538	516	476	160	336	410	163	110	122
14:30	644	572	550	514	159	339	386	172	110	123
14:45	602	525	499	467	163	328	410	161	111	124
15:00	659	571	540	493	177	326	386	155	112	125
15:15	692	584	542	497	171	315	403	161	112	126
15:30	684	586	561	513	167	350	404	167	112	126
15:45	709	613	586	537	165	356	401	160	113	127
16:00	727	614	583	528	169	344	364	165	114	128
16:15	704	612	570	530	163	355	369	162	114	128
16:30	721	618	595	547	164	353	389	157	115	129
16:45	694	584	560	517	167	330	424	163	116	129
17:00	671	576	552	515	167	345	454	167	116	130
17:15	711	613	578	531	164	356	406	165	117	131
17:30	721	632	603	555	172	349	436	161	117	131
17:45	707	614	580	531	168	344	439	159	118	132
18:00	744	651	631	583	157	332	434	158	119	133
18:15	718	619	583	533	174	353	422	161	119	133
18:30	706	606	576	533	181	350	422	161	120	133
18:45	735	631	598	544	166	348	421	164	121	134
19:00	657	585	555	513	162	354	429	163	121	135
19:15	729	625	600	549	176	339	386	169	122	135
19:30	710	618	582	534	175	341	431	182	122	136
19:45	765	666	642	600	167	342	375	163	123	136
20:00	733	632	598	553	169	342	439	166	123	136
20:15	735	630	587	535	173	344	426	169	123	137
20:30	744	627	587	531	170	353	442	172	124	138
20:45	714	628	593	548	172	366	471	173	124	139
21:00	732	635	603	569	185	353	426	166	125	140
21:15	744	640	609	560	173	347	441	190	125	142
21:30	755	652	619	566	178	358	421	177	126	143
21:45	779	667	640	593	174	341	394	180	127	145
22:00	748	656	611	569	174	358	398	171	127	146
22:15	771	668	637	590	172	353	436	178	128	148
22:30	763	654	600	548	178	388	429	174	130	150
22:45	731	630	588	542	169	360	451	172	131	152
23:00	760	663	624	568	175	361	448	170	133	154
23:15	774	655	601	547	186	342	410	167	134	156
23:30	791	692	655	598	181	351	441	166	135	159
23:45	800	693	646	583	175	344	440	169	137	161

TEST REPORT FOR STACBOND

Report No.: H2419.01-121-24-R0

Date: 02/14/18

TIME (Min:Sec)	T/C 10	T/C 11	T/C 12	T/C 13	T/C 14	T/C 15	T/C 16	T/C 17	T/C 18	T/C 19
24:00	791	687	640	580	179	343	440	176	138	164
24:15	774	668	630	572	181	352	425	178	139	166
24:30	743	660	627	583	189	365	445	175	140	169
24:45	765	656	610	557	181	382	422	181	141	172
25:00	791	675	626	561	174	370	422	170	142	174
25:15	801	697	648	591	177	392	439	182	143	176
25:30	781	684	635	587	191	374	448	186	144	179
25:45	790	682	639	583	193	373	493	186	144	182
26:00	821	705	668	612	182	359	443	190	144	185
26:15	837	725	686	638	180	389	463	175	144	188
26:30	815	702	665	602	191	389	452	196	145	191
26:45	810	692	633	571	184	384	460	188	145	194
27:00	891	763	700	641	187	394	449	182	145	197
27:15	842	728	675	609	198	370	459	184	145	200
27:30	853	741	690	635	181	382	450	181	145	203
27:45	801	719	676	620	193	368	430	184	145	206
28:00	848	719	666	602	186	404	461	180	145	209
28:15	887	770	722	659	178	381	486	181	146	212
28:30	824	725	686	638	183	395	428	177	146	215
28:45	855	746	707	647	177	396	463	180	147	218
29:00	856	746	711	646	197	371	454	180	147	220
29:15	867	752	701	636	182	380	487	188	148	223
29:30	832	739	704	638	192	383	435	187	149	226
29:45	838	734	691	641	196	391	443	184	149	228
30:00	858	753	718	655	187	395	484	186	150	230

TEST REPORT FOR STACBOND

Report No.: H2419.01-121-24-R0

Date: 02/14/18

TIME (Min:Sec)	T/C 20	T/C 21	T/C 22	T/C 23	T/C 24	T/C 25	T/C 26	T/C 27	T/C 28	T/C 29
00:00	63	64	65	64	65	65	66	67	67	68
00:15	64	64	65	64	65	65	66	67	67	68
00:30	64	64	65	64	65	65	66	67	67	68
00:45	64	64	66	65	65	66	66	67	67	68
01:00	65	64	66	66	65	66	66	67	68	69
01:15	66	64	68	68	65	67	66	67	68	69
01:30	67	65	69	70	65	68	67	67	69	70
01:45	68	65	71	71	66	69	67	67	70	70
02:00	69	65	73	73	66	70	68	67	70	71
02:15	70	65	75	75	66	71	68	67	71	71
02:30	71	65	77	77	67	72	69	67	72	72
02:45	73	66	79	79	68	73	70	68	73	73
03:00	75	66	81	81	68	74	70	68	74	74
03:15	78	67	83	84	69	75	71	69	75	74
03:30	81	68	84	86	71	76	72	69	76	75
03:45	85	69	85	88	72	77	73	70	77	76
04:00	88	70	86	89	73	78	74	70	78	77
04:15	92	71	87	91	74	80	75	71	79	78
04:30	97	73	89	93	75	81	76	71	80	79
04:45	102	74	90	95	76	82	76	72	81	79
05:00	106	76	92	96	78	83	78	73	82	80
05:15	111	77	94	98	79	85	79	74	83	80
05:30	117	78	97	100	81	86	80	75	84	81
05:45	121	80	100	102	82	88	81	76	85	82
06:00	127	82	105	104	84	90	82	77	86	83
06:15	133	84	111	107	85	92	83	78	88	84
06:30	139	87	116	110	87	95	84	79	90	85
06:45	147	90	120	114	89	97	86	80	91	85
07:00	152	93	124	117	91	99	87	82	93	86
07:15	158	96	128	122	93	101	89	83	95	86
07:30	163	100	132	126	96	104	90	85	96	86
07:45	169	103	135	131	98	106	92	86	98	87
08:00	174	107	138	135	101	108	94	88	100	88
08:15	171	111	140	139	104	110	95	89	101	88
08:30	173	116	143	144	106	112	96	91	103	89
08:45	182	119	147	148	109	114	98	93	104	90
09:00	197	123	151	153	112	116	99	95	106	90
09:15	204	127	154	158	115	117	101	97	107	91
09:30	210	131	157	163	118	118	102	98	109	93
09:45	216	135	161	167	121	120	104	100	110	94
10:00	221	140	165	172	124	122	106	102	112	95
10:15	228	144	169	176	127	124	108	105	113	97
10:30	238	149	172	181	130	126	110	107	115	98
10:45	246	153	176	186	133	128	112	109	117	100
11:00	252	158	178	191	136	130	114	111	119	101
11:15	257	163	181	195	139	132	116	113	120	103
11:30	262	169	184	199	142	133	118	115	122	104
11:45	267	174	186	203	146	135	121	117	124	106

TEST REPORT FOR STACBOND

Report No.: H2419.01-121-24-R0

Date: 02/14/18

TIME (Min:Sec)	T/C 20	T/C 21	T/C 22	T/C 23	T/C 24	T/C 25	T/C 26	T/C 27	T/C 28	T/C 29
12:00	270	180	189	206	149	136	123	120	127	108
12:15	273	187	192	210	153	138	125	122	129	110
12:30	275	193	195	214	156	140	127	124	131	111
12:45	276	199	197	218	160	142	129	126	134	113
13:00	279	206	200	222	163	144	132	128	136	115
13:15	281	212	202	226	167	147	134	130	138	116
13:30	289	218	204	229	171	149	136	132	140	118
13:45	297	225	206	232	175	151	139	134	142	120
14:00	299	232	208	235	179	154	141	136	143	121
14:15	303	237	210	238	183	157	144	138	145	123
14:30	305	246	211	240	188	160	149	140	147	124
14:45	327	251	213	243	192	162	151	142	148	126
15:00	327	257	214	245	196	165	153	145	150	127
15:15	325	264	216	247	200	168	155	147	151	128
15:30	323	268	218	250	204	170	157	149	153	130
15:45	323	270	219	253	208	173	159	151	155	131
16:00	323	271	221	255	212	175	162	153	156	133
16:15	324	271	223	258	215	177	164	155	158	134
16:30	326	271	225	261	219	180	166	157	159	136
16:45	327	272	227	263	222	183	168	159	160	137
17:00	329	273	229	266	226	185	170	161	162	139
17:15	331	274	231	268	230	187	172	163	163	140
17:30	333	276	233	271	233	188	174	165	164	142
17:45	335	278	235	274	236	190	176	167	165	143
18:00	337	280	238	276	239	192	178	170	166	145
18:15	338	282	240	279	242	194	180	172	166	146
18:30	341	283	242	281	246	196	182	174	167	147
18:45	342	285	244	283	250	198	183	176	168	149
19:00	345	286	245	286	254	200	185	178	169	150
19:15	346	287	247	288	259	202	187	180	170	152
19:30	348	288	249	291	265	203	188	182	170	153
19:45	351	289	251	294	270	205	190	184	171	154
20:00	352	290	253	296	278	207	192	186	173	155
20:15	356	292	255	299	285	208	194	188	174	157
20:30	358	293	257	301	289	211	195	190	175	158
20:45	361	294	259	304	293	213	197	192	177	160
21:00	361	295	262	307	298	216	199	194	178	161
21:15	363	296	264	309	302	218	201	196	180	162
21:30	365	297	265	311	308	221	203	198	181	163
21:45	366	298	267	314	314	224	204	200	183	164
22:00	365	299	269	315	321	226	206	202	185	165
22:15	365	299	272	317	327	229	208	204	186	166
22:30	365	300	274	319	330	231	209	206	188	168
22:45	365	301	277	320	333	233	210	208	189	169
23:00	366	302	281	322	333	235	211	211	191	170
23:15	367	303	285	325	336	237	212	213	192	171
23:30	369	304	289	326	337	239	213	215	193	172
23:45	372	306	292	328	337	241	214	217	194	172

TEST REPORT FOR STACBOND

Report No.: H2419.01-121-24-R0

Date: 02/14/18

TIME (Min:Sec)	T/C 20	T/C 21	T/C 22	T/C 23	T/C 24	T/C 25	T/C 26	T/C 27	T/C 28	T/C 29
24:00	376	307	296	330	337	242	215	220	196	173
24:15	379	308	299	331	338	244	216	222	197	174
24:30	382	309	300	334	339	246	217	224	198	176
24:45	385	310	302	335	340	247	219	226	199	176
25:00	389	312	303	335	341	249	220	228	200	177
25:15	392	313	305	337	341	252	221	229	201	178
25:30	396	314	307	338	342	253	222	231	202	179
25:45	400	316	308	340	344	255	223	233	203	180
26:00	406	318	309	342	348	257	224	235	204	182
26:15	414	320	311	343	353	259	225	236	205	182
26:30	420	322	312	343	357	261	224	238	206	183
26:45	425	324	313	344	359	263	225	239	207	184
27:00	430	327	314	347	361	265	227	241	208	185
27:15	434	329	322	349	363	267	230	242	209	186
27:30	438	332	327	350	364	269	233	245	210	187
27:45	441	334	334	346	365	271	240	247	211	188
28:00	444	336	336	344	369	273	246	248	212	188
28:15	447	338	336	344	372	275	249	244	212	190
28:30	450	340	338	344	375	278	251	243	214	192
28:45	453	342	341	345	378	280	253	244	215	194
29:00	455	344	347	347	381	281	255	247	216	195
29:15	458	347	358	350	384	282	258	253	217	197
29:30	461	350	368	353	387	283	259	260	219	198
29:45	464	351	419	353	389	284	261	267	220	200
30:00	467	353	467	354	391	285	263	273	222	201

TEST REPORT FOR STACBOND

Report No.: H2419.01-121-24-R0

Date: 02/14/18

TIME (Min:Sec)	T/C 30	T/C 31	T/C 32	T/C 33	T/C 34	T/C 35	T/C 36	T/C 37	T/C 38	T/C 39
00:00	69	64	64	65	67	66	65	65	66	69
00:15	69	64	64	66	67	66	65	65	66	69
00:30	69	64	64	65	67	66	65	65	66	69
00:45	69	64	64	65	67	67	65	65	66	69
01:00	69	64	64	65	67	67	65	65	66	69
01:15	69	64	64	66	67	68	66	65	66	69
01:30	69	65	64	66	67	68	66	66	66	69
01:45	69	65	64	66	67	69	67	66	66	69
02:00	69	65	64	66	67	70	68	66	66	69
02:15	69	65	64	66	67	71	68	66	66	69
02:30	70	65	64	66	67	72	69	67	66	70
02:45	70	65	64	67	68	73	70	68	66	70
03:00	70	65	64	67	68	74	71	68	66	70
03:15	71	65	64	67	68	75	73	70	66	70
03:30	71	66	64	68	68	76	74	70	66	71
03:45	72	66	64	68	68	77	75	71	66	71
04:00	72	66	65	68	68	78	76	72	67	71
04:15	73	66	65	69	69	79	77	74	67	72
04:30	74	66	65	69	69	80	78	74	67	72
04:45	74	66	65	70	69	81	79	75	67	72
05:00	75	67	65	70	69	82	80	76	67	72
05:15	76	67	65	71	69	83	81	77	67	73
05:30	76	67	65	71	70	84	82	77	67	73
05:45	77	67	65	72	70	85	83	79	67	74
06:00	78	68	66	72	70	87	85	80	68	74
06:15	79	68	66	73	71	89	87	81	68	75
06:30	80	68	66	74	71	90	89	83	68	76
06:45	81	69	66	74	71	91	90	85	68	77
07:00	82	69	66	75	72	93	92	87	68	77
07:15	83	70	66	75	72	94	94	88	69	78
07:30	85	70	67	76	72	96	95	90	69	79
07:45	86	70	67	77	73	98	96	91	69	80
08:00	88	71	67	77	73	99	98	93	69	80
08:15	89	72	68	78	74	101	99	94	69	81
08:30	90	72	68	79	74	103	100	96	70	82
08:45	92	73	68	79	74	104	100	98	70	83
09:00	94	73	69	80	75	106	101	99	70	84
09:15	95	74	69	80	75	107	103	101	70	84
09:30	97	75	69	81	76	109	104	102	71	85
09:45	99	76	70	82	76	111	106	103	71	86
10:00	100	76	70	82	76	112	107	105	71	87
10:15	102	77	71	83	77	114	107	106	71	88
10:30	104	78	71	83	77	115	109	107	72	89
10:45	105	78	72	84	78	117	110	107	72	90
11:00	107	79	72	85	78	119	112	109	72	91
11:15	109	80	73	86	79	121	114	110	73	91
11:30	111	80	73	86	79	122	115	111	73	92
11:45	113	81	74	87	80	124	117	112	73	93

TEST REPORT FOR STACBOND

Report No.: H2419.01-121-24-R0

Date: 02/14/18

TIME (Min:Sec)	T/C 30	T/C 31	T/C 32	T/C 33	T/C 34	T/C 35	T/C 36	T/C 37	T/C 38	T/C 39
12:00	114	81	74	87	80	126	118	114	74	94
12:15	116	81	75	88	81	127	120	115	74	95
12:30	118	82	76	88	81	129	121	118	74	96
12:45	120	82	76	88	82	131	123	119	75	97
13:00	122	83	77	89	82	131	126	121	75	98
13:15	124	83	78	89	83	133	127	123	76	99
13:30	126	84	78	89	83	136	129	125	76	100
13:45	127	86	79	90	84	137	130	126	76	101
14:00	129	87	80	90	84	139	132	128	77	102
14:15	131	87	80	91	85	141	133	129	77	103
14:30	133	88	81	91	85	141	134	131	78	104
14:45	135	90	82	92	86	143	136	133	78	105
15:00	137	91	82	93	87	144	137	134	79	105
15:15	138	93	83	93	87	146	138	136	79	106
15:30	140	95	84	94	88	147	140	138	80	107
15:45	142	96	85	94	88	148	141	140	80	108
16:00	144	97	85	95	89	150	143	140	81	109
16:15	146	99	86	95	89	152	144	142	81	110
16:30	147	100	87	96	90	153	146	142	82	111
16:45	149	101	88	96	91	155	148	144	82	111
17:00	151	103	89	97	91	157	149	146	83	112
17:15	152	104	90	97	92	158	151	147	83	113
17:30	154	105	91	98	92	159	152	149	84	113
17:45	156	107	91	99	93	161	153	149	85	114
18:00	158	108	92	100	94	163	154	150	85	115
18:15	159	109	93	101	94	163	155	150	86	116
18:30	161	110	94	102	95	164	156	150	86	116
18:45	163	112	95	103	96	165	157	149	87	117
19:00	164	113	96	104	96	167	157	148	88	118
19:15	166	114	97	105	97	168	158	148	88	118
19:30	168	114	98	106	97	169	159	148	89	119
19:45	169	115	99	107	98	170	160	148	90	119
20:00	171	117	100	108	99	172	161	150	91	120
20:15	172	120	100	109	99	173	162	151	91	121
20:30	174	120	101	111	100	173	163	152	92	122
20:45	176	120	102	112	101	175	164	154	93	122
21:00	177	120	103	112	101	177	165	155	94	123
21:15	179	120	104	113	102	178	167	154	94	124
21:30	180	122	105	113	103	179	167	157	95	124
21:45	182	122	106	113	103	181	168	156	96	125
22:00	183	122	106	114	104	181	169	158	97	126
22:15	185	122	107	114	105	183	170	158	98	127
22:30	186	122	108	115	105	185	171	159	99	128
22:45	188	122	109	117	106	186	171	160	99	128
23:00	189	123	110	119	107	187	172	161	100	129
23:15	191	124	111	120	107	188	172	162	101	130
23:30	192	124	111	121	108	189	173	163	102	131
23:45	194	124	112	122	109	190	174	164	103	131

TEST REPORT FOR STACBOND

Report No.: H2419.01-121-24-R0

Date: 02/14/18

TIME (Min:Sec)	T/C 30	T/C 31	T/C 32	T/C 33	T/C 34	T/C 35	T/C 36	T/C 37	T/C 38	T/C 39
24:00	195	124	113	123	110	191	174	166	104	132
24:15	196	125	114	124	110	194	175	165	105	133
24:30	198	125	114	125	111	193	175	167	106	133
24:45	199	126	115	126	112	195	175	167	107	134
25:00	200	126	116	127	112	197	176	168	108	134
25:15	202	127	117	128	113	197	176	169	108	135
25:30	203	127	118	128	114	199	177	170	109	135
25:45	204	127	118	129	114	199	177	171	110	136
26:00	206	128	119	129	115	200	177	171	111	137
26:15	207	128	120	130	116	202	177	173	112	137
26:30	208	128	121	131	117	203	177	173	113	138
26:45	209	129	121	131	117	204	176	174	114	138
27:00	210	129	122	132	118	205	176	176	115	139
27:15	212	129	123	133	119	207	175	176	115	139
27:30	213	130	123	134	119	208	175	176	116	139
27:45	214	130	124	135	120	208	175	176	117	140
28:00	216	130	125	136	121	209	175	177	118	140
28:15	217	130	125	136	121	210	175	177	119	141
28:30	218	131	126	137	122	211	175	177	120	141
28:45	220	131	127	138	123	213	175	179	120	142
29:00	221	132	127	139	124	213	175	179	121	142
29:15	223	132	128	140	124	214	175	179	122	143
29:30	224	133	128	141	125	214	175	179	123	143
29:45	225	133	129	142	126	216	175	181	123	144
30:00	227	133	130	142	127	217	176	183	124	144

TEST REPORT FOR STACBOND

Report No.: H2419.01-121-24-R0

Date: 02/14/18

TIME (Min:Sec)	T/C 40	T/C 41	T/C 42	T/C 43	T/C 44	T/C 45	T/C 46	T/C 47	T/C 48	T/C 49
00:00	68	137	120	143	151	121	112	111	104	65
00:15	68	622	453	491	525	330	267	331	237	65
00:30	68	1065	876	976	981	672	651	698	575	65
00:45	68	1143	1033	1049	997	813	835	885	765	65
01:00	68	1167	1069	1086	999	881	916	945	832	65
01:15	68	1174	1071	1098	1009	921	958	975	861	65
01:30	68	1207	1056	1112	1028	938	976	1002	898	65
01:45	69	1221	1093	1129	1039	963	1005	1059	931	65
02:00	69	1209	1104	1149	1045	988	1169	1251	959	65
02:15	69	1232	1118	1147	1055	1012	1220	1223	1004	65
02:30	70	1250	1144	1184	1067	1030	1149	1132	1074	65
02:45	70	1226	1142	1181	1067	1041	1106	1135	1248	65
03:00	70	1209	1169	1195	1081	1061	1115	1138	1219	65
03:15	71	1238	1161	1223	1085	1082	1138	1160	1110	65
03:30	71	1287	1153	1230	1107	1108	1144	1164	1079	65
03:45	71	1294	1177	1226	1109	1103	1172	1175	1090	65
04:00	72	1339	1207	1231	1120	1116	1192	1181	1094	66
04:15	72	1336	1226	1251	1135	1114	1199	1201	1113	66
04:30	73	1372	1250	1269	1153	1124	1216	1217	1135	66
04:45	73	1397	1251	1296	1178	1134	1243	1234	1154	66
05:00	73	1409	1269	1326	1209	1145	1253	1246	1177	66
05:15	74	1403	1270	1332	1211	1163	1259	1285	1205	66
05:30	74	1395	1311	1381	1240	1175	1293	1296	1210	66
05:45	75	1406	1311	1384	1245	1194	1308	1328	1224	66
06:00	76	1397	1340	1414	1243	1208	1301	1316	1232	66
06:15	76	1404	1339	1428	1229	1214	1291	1289	1225	66
06:30	77	1391	1359	1389	1242	1208	1287	1283	1231	66
06:45	78	1394	1367	1390	1262	1209	1301	1303	1229	66
07:00	79	1372	1342	1398	1250	1211	1269	1276	1230	66
07:15	80	1375	1347	1382	1240	1195	1265	1284	1232	66
07:30	81	1392	1313	1381	1268	1195	1276	1273	1225	66
07:45	82	1389	1309	1363	1272	1194	1282	1283	1232	66
08:00	84	1350	1305	1377	1260	1208	1269	1269	1226	66
08:15	85	1351	1317	1391	1254	1206	1280	1265	1219	66
08:30	86	1331	1334	1382	1229	1220	1272	1251	1220	66
08:45	87	1379	1333	1365	1226	1215	1271	1301	1213	66
09:00	88	1372	1311	1364	1224	1202	1281	1271	1213	66
09:15	89	1382	1323	1367	1226	1213	1277	1296	1221	67
09:30	90	1370	1312	1352	1232	1209	1279	1281	1214	67
09:45	92	1351	1316	1352	1230	1216	1263	1269	1208	67
10:00	93	1372	1299	1343	1223	1209	1278	1285	1212	67
10:15	94	1394	1313	1371	1230	1219	1281	1282	1215	67
10:30	95	1469	1383	1463	1298	1272	1357	1364	1281	67
10:45	96	1502	1390	1455	1320	1278	1357	1357	1293	67
11:00	98	1502	1400	1489	1348	1297	1373	1381	1309	67
11:15	99	1507	1451	1500	1327	1315	1380	1394	1326	67
11:30	100	1480	1463	1502	1330	1332	1394	1396	1333	67
11:45	101	1511	1449	1504	1326	1339	1388	1367	1336	67

TEST REPORT FOR STACBOND

Report No.: H2419.01-121-24-R0

Date: 02/14/18

TIME (Min:Sec)	T/C 40	T/C 41	T/C 42	T/C 43	T/C 44	T/C 45	T/C 46	T/C 47	T/C 48	T/C 49
12:00	103	1519	1460	1518	1341	1334	1407	1409	1352	67
12:15	104	1526	1461	1522	1351	1334	1415	1423	1360	68
12:30	105	1543	1442	1508	1363	1331	1408	1405	1352	68
12:45	106	1543	1447	1531	1365	1356	1430	1424	1363	68
13:00	108	1544	1482	1534	1370	1355	1421	1428	1365	68
13:15	109	1541	1486	1530	1365	1352	1430	1429	1376	68
13:30	110	1550	1491	1532	1356	1356	1422	1431	1376	68
13:45	111	1563	1487	1531	1375	1353	1437	1434	1383	68
14:00	113	1544	1467	1531	1372	1368	1450	1435	1386	68
14:15	114	1527	1495	1544	1379	1369	1434	1417	1388	68
14:30	115	1513	1508	1532	1372	1372	1429	1419	1392	68
14:45	116	1531	1487	1556	1379	1380	1437	1424	1396	68
15:00	118	1526	1493	1544	1378	1376	1444	1442	1394	69
15:15	119	1552	1474	1540	1381	1374	1442	1431	1401	69
15:30	120	1555	1494	1554	1400	1386	1460	1462	1416	69
15:45	121	1544	1481	1556	1385	1386	1443	1442	1404	69
16:00	122	1581	1487	1544	1402	1382	1447	1446	1408	69
16:15	123	1583	1518	1537	1396	1383	1463	1453	1410	69
16:30	124	1558	1494	1555	1401	1388	1450	1455	1413	70
16:45	125	1562	1504	1569	1390	1401	1476	1473	1421	70
17:00	126	1547	1501	1581	1400	1399	1476	1482	1426	70
17:15	127	1571	1510	1550	1392	1399	1473	1450	1419	70
17:30	128	1541	1507	1558	1392	1408	1465	1452	1421	70
17:45	129	1560	1491	1567	1407	1399	1468	1454	1429	70
18:00	130	1557	1485	1564	1416	1395	1473	1476	1428	71
18:15	131	1588	1520	1575	1403	1403	1468	1483	1428	71
18:30	132	1579	1506	1570	1409	1406	1486	1479	1431	71
18:45	133	1572	1531	1575	1406	1412	1490	1477	1434	71
19:00	134	1553	1520	1569	1411	1408	1481	1481	1439	71
19:15	135	1585	1516	1573	1406	1414	1473	1484	1445	71
19:30	136	1584	1504	1580	1419	1416	1498	1481	1441	71
19:45	137	1575	1522	1579	1421	1416	1489	1498	1448	71
20:00	138	1579	1501	1577	1425	1413	1481	1460	1437	71
20:15	139	1582	1530	1580	1429	1422	1492	1485	1455	72
20:30	140	1575	1512	1572	1408	1416	1488	1492	1448	72
20:45	140	1573	1538	1583	1420	1419	1494	1488	1452	72
21:00	141	1576	1538	1566	1418	1423	1501	1498	1460	72
21:15	142	1563	1541	1581	1413	1427	1489	1492	1459	72
21:30	143	1590	1524	1590	1433	1426	1493	1481	1462	72
21:45	144	1585	1523	1600	1439	1425	1505	1510	1464	73
22:00	144	1588	1543	1579	1435	1426	1502	1497	1464	73
22:15	145	1607	1563	1589	1431	1436	1533	1521	1472	73
22:30	146	1549	1542	1608	1430	1443	1501	1488	1461	73
22:45	146	1571	1553	1604	1433	1440	1505	1508	1466	73
23:00	147	1587	1547	1607	1433	1442	1511	1502	1471	74
23:15	148	1602	1533	1576	1436	1438	1507	1488	1471	74
23:30	148	1572	1531	1595	1432	1442	1499	1484	1467	74
23:45	149	1614	1545	1595	1436	1441	1516	1511	1480	74

TEST REPORT FOR STACBOND

Report No.: H2419.01-121-24-R0

Date: 02/14/18

TIME (Min:Sec)	T/C 40	T/C 41	T/C 42	T/C 43	T/C 44	T/C 45	T/C 46	T/C 47	T/C 48	T/C 49
24:00	150	1609	1534	1577	1424	1436	1512	1500	1466	74
24:15	150	1587	1534	1600	1443	1440	1507	1505	1477	74
24:30	151	1612	1543	1589	1443	1442	1512	1500	1481	74
24:45	152	1602	1529	1601	1447	1446	1498	1515	1477	75
25:00	152	1598	1520	1613	1461	1442	1507	1498	1482	75
25:15	153	1630	1531	1630	1462	1446	1527	1519	1492	75
25:30	153	1652	1562	1631	1472	1470	1561	1553	1512	75
25:45	154	1656	1605	1664	1484	1497	1569	1582	1529	75
26:00	155	1653	1583	1657	1483	1486	1577	1554	1532	75
26:15	155	1667	1576	1670	1505	1488	1577	1562	1533	75
26:30	156	1658	1597	1673	1497	1485	1568	1546	1543	76
26:45	157	1662	1614	1650	1495	1500	1578	1571	1546	76
27:00	157	1691	1608	1682	1501	1510	1596	1578	1540	76
27:15	158	1680	1619	1658	1491	1509	1574	1564	1549	76
27:30	159	1667	1603	1676	1509	1507	1582	1573	1556	76
27:45	159	1679	1662	1691	1503	1517	1594	1589	1561	77
28:00	160	1683	1630	1695	1508	1523	1602	1587	1556	77
28:15	160	1673	1623	1687	1505	1522	1600	1591	1559	77
28:30	161	1704	1614	1674	1512	1509	1599	1574	1564	77
28:45	162	1693	1598	1691	1524	1509	1605	1585	1557	77
29:00	163	1702	1613	1672	1510	1523	1607	1589	1559	77
29:15	164	1672	1640	1683	1515	1520	1610	1594	1578	78
29:30	166	1659	1648	1698	1518	1524	1601	1588	1579	78
29:45	167	1691	1624	1677	1512	1523	1602	1595	1581	78
30:00	168	1686	1636	1696	1527	1527	1609	1582	1576	78

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TIME (Min:Sec)	T/C 50	T/C 51	T/C 52	T/C 53	T/C 54
00:00	64	65	67	64	65
00:15	64	65	67	64	65
00:30	64	64	67	64	65
00:45	64	64	67	64	65
01:00	64	64	67	64	65
01:15	64	64	67	64	65
01:30	64	64	67	64	65
01:45	64	65	67	64	65
02:00	64	65	67	64	65
02:15	64	65	67	65	65
02:30	64	65	67	65	65
02:45	64	65	67	65	65
03:00	64	65	67	65	65
03:15	64	65	67	65	65
03:30	64	65	67	65	65
03:45	64	65	67	65	65
04:00	64	65	67	65	65
04:15	64	65	67	65	65
04:30	64	65	67	65	65
04:45	64	65	67	65	66
05:00	65	66	67	65	66
05:15	65	66	67	65	66
05:30	65	66	67	65	66
05:45	65	66	67	66	66
06:00	65	66	67	66	66
06:15	65	66	67	66	66
06:30	65	66	67	66	66
06:45	65	66	67	66	66
07:00	65	66	67	66	66
07:15	65	66	67	66	67
07:30	65	66	67	66	67
07:45	65	66	67	66	67
08:00	66	66	67	66	67
08:15	66	66	67	67	67
08:30	66	66	67	67	67
08:45	66	67	67	67	68
09:00	66	67	67	67	68
09:15	66	67	67	68	68
09:30	66	67	67	68	69
09:45	67	67	67	68	69
10:00	67	67	67	68	69
10:15	67	67	67	69	69
10:30	67	68	67	69	69
10:45	67	68	67	69	69
11:00	67	68	67	69	69
11:15	67	68	67	69	69
11:30	67	68	67	69	69
11:45	67	68	67	69	70

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Date: 02/14/18

TIME (Min:Sec)	T/C 50	T/C 51	T/C 52	T/C 53	T/C 54
12:00	67	68	67	69	70
12:15	68	68	67	69	70
12:30	68	69	67	69	70
12:45	68	69	67	69	70
13:00	68	69	67	70	71
13:15	68	69	67	70	71
13:30	68	69	67	70	71
13:45	68	69	67	70	71
14:00	68	69	67	70	71
14:15	68	69	67	71	71
14:30	69	69	67	71	72
14:45	69	69	67	71	72
15:00	69	70	67	71	72
15:15	69	70	68	71	72
15:30	69	70	68	72	72
15:45	69	70	68	71	72
16:00	70	70	68	72	73
16:15	70	70	68	72	73
16:30	70	71	68	72	73
16:45	70	71	68	72	73
17:00	70	71	68	72	73
17:15	71	71	68	72	74
17:30	71	71	68	73	74
17:45	71	71	68	73	74
18:00	71	72	68	73	74
18:15	71	72	68	73	74
18:30	71	72	68	73	74
18:45	71	72	68	73	74
19:00	71	72	68	74	74
19:15	72	72	68	74	75
19:30	72	72	68	74	75
19:45	72	73	68	74	75
20:00	72	73	68	74	75
20:15	72	73	68	74	76
20:30	72	73	68	74	76
20:45	72	73	68	75	76
21:00	73	73	68	75	76
21:15	73	74	68	75	76
21:30	73	74	68	75	76
21:45	73	74	68	75	76
22:00	73	74	68	76	77
22:15	74	74	68	76	77
22:30	74	75	68	76	77
22:45	74	75	68	76	77
23:00	74	75	68	76	78
23:15	74	75	68	76	78
23:30	75	76	68	77	78
23:45	75	76	68	77	78

TEST REPORT FOR STACBOND

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TIME (Min:Sec)	T/C 50	T/C 51	T/C 52	T/C 53	T/C 54
24:00	75	76	68	77	78
24:15	75	76	69	77	79
24:30	75	76	69	77	79
24:45	75	76	69	77	79
25:00	76	76	69	77	79
25:15	76	76	69	77	79
25:30	76	76	69	78	79
25:45	76	77	69	78	79
26:00	76	77	69	78	80
26:15	76	77	69	78	80
26:30	76	77	69	78	80
26:45	77	78	69	79	80
27:00	77	78	69	79	81
27:15	77	78	69	79	81
27:30	77	78	69	79	81
27:45	77	78	69	79	81
28:00	77	78	69	80	81
28:15	78	79	69	80	82
28:30	78	79	69	80	82
28:45	78	79	69	80	82
29:00	78	79	69	80	82
29:15	78	80	69	80	82
29:30	78	80	69	81	83
29:45	79	80	69	81	83
30:00	79	80	69	81	83



Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

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SECTION 14

DRAWINGS

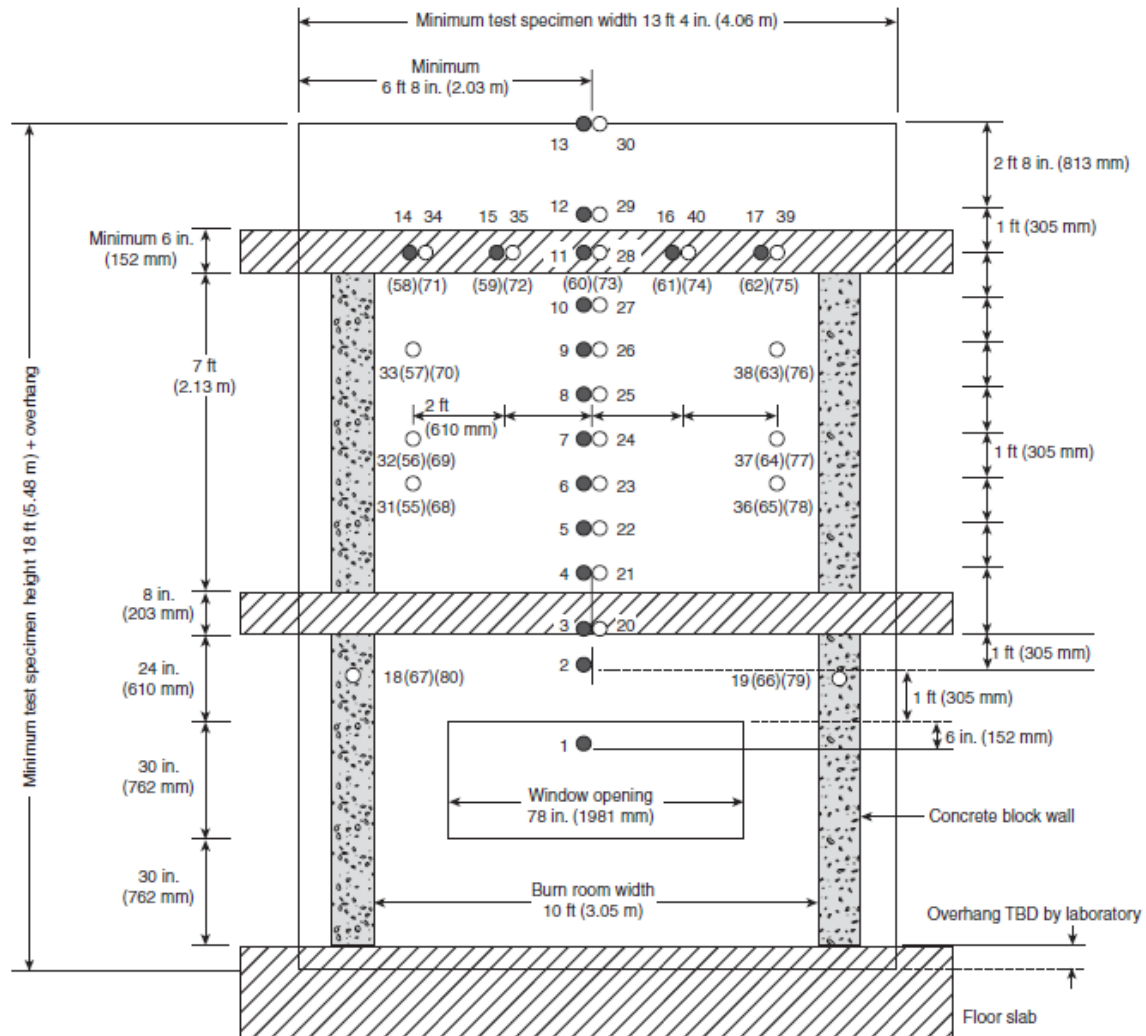
The test specimen drawings which follow have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.

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Standard TC Locations



● Thermocouples — 1 in. (25 mm) from exterior wall surface

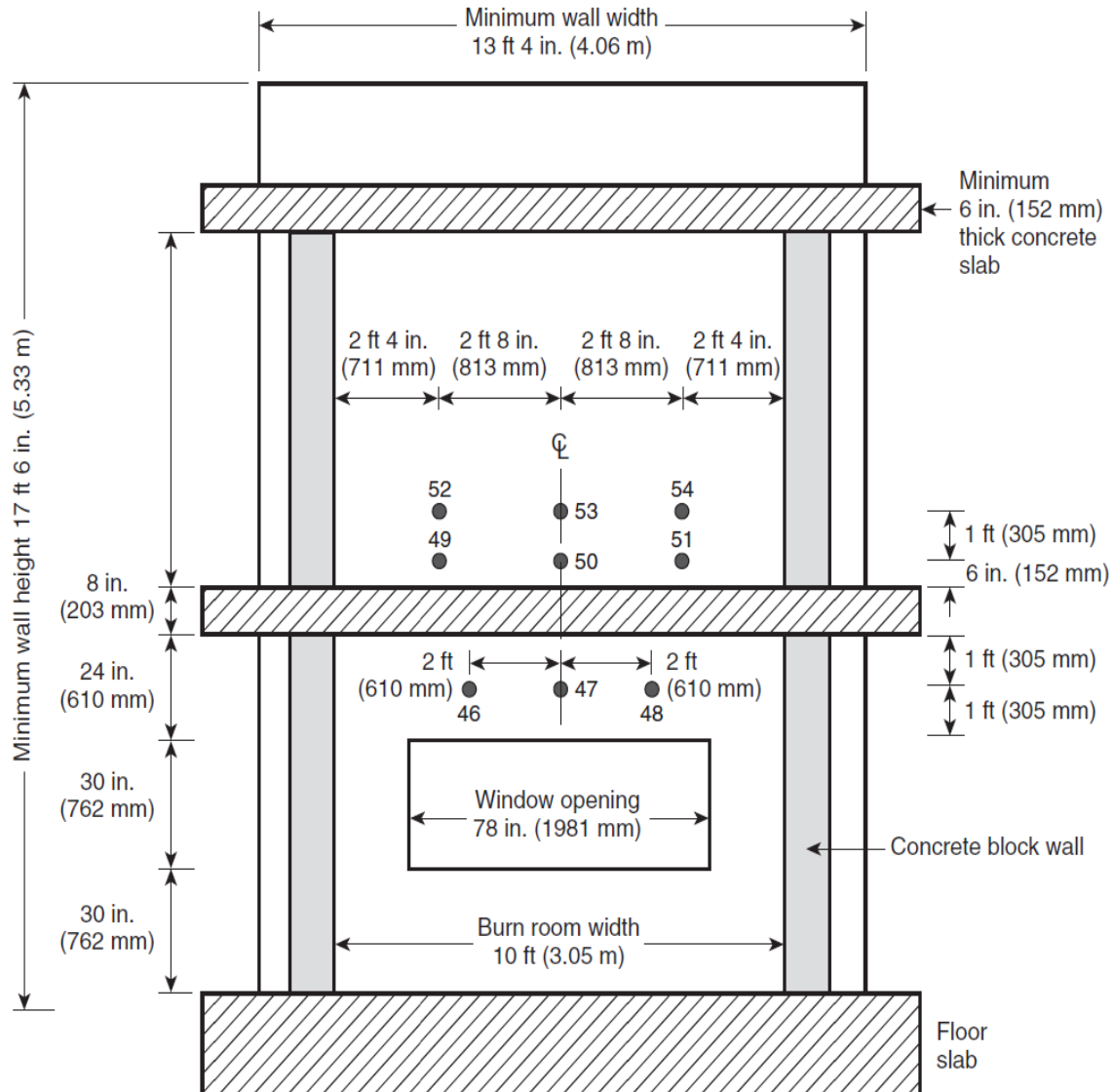
○ Thermocouples — In the wall cavity air space or the insulation, or both, as shown in Figure 6.1(b) Details A through I.

() Thermocouples — Additional thermocouples in the insulation or the stud cavity, or both, where required for the test specimen construction being tested, as shown in Figure 6.1(b) Details C through I.

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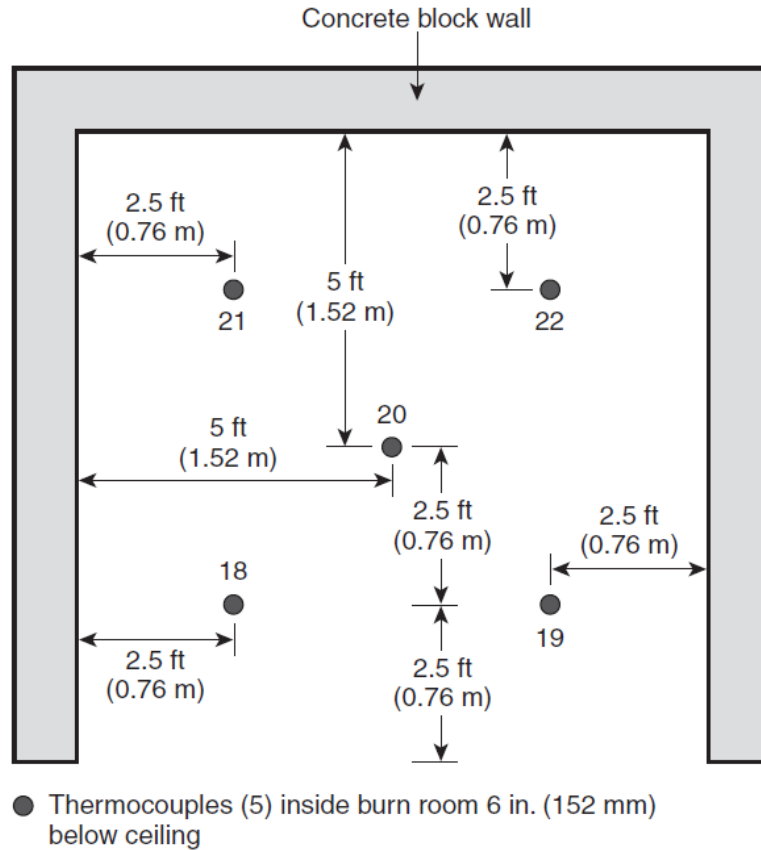


● Thermocouples — 1 in. (25 mm) from interior wall surface

TEST REPORT FOR STACBOND

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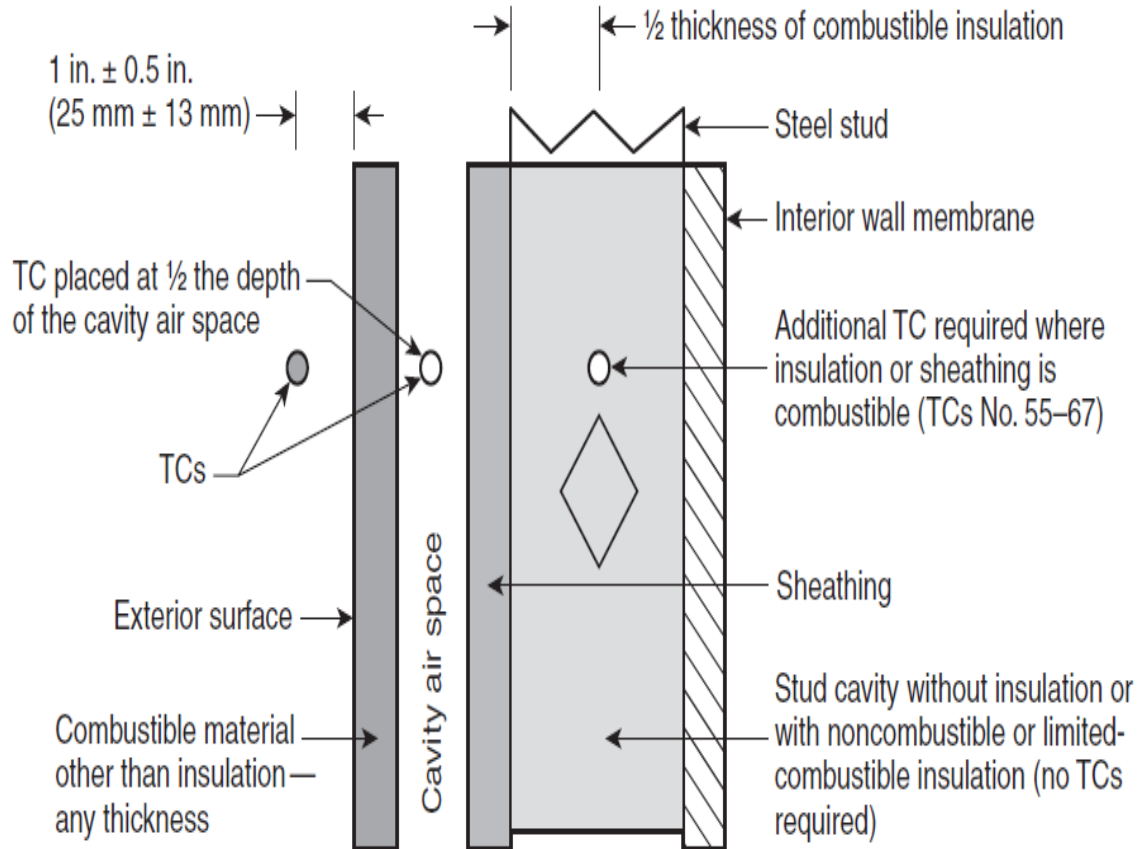
Date: 02/14/18



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Report No.: H2419.01-121-24-R0

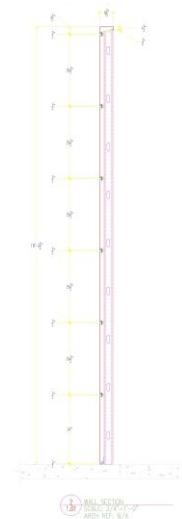
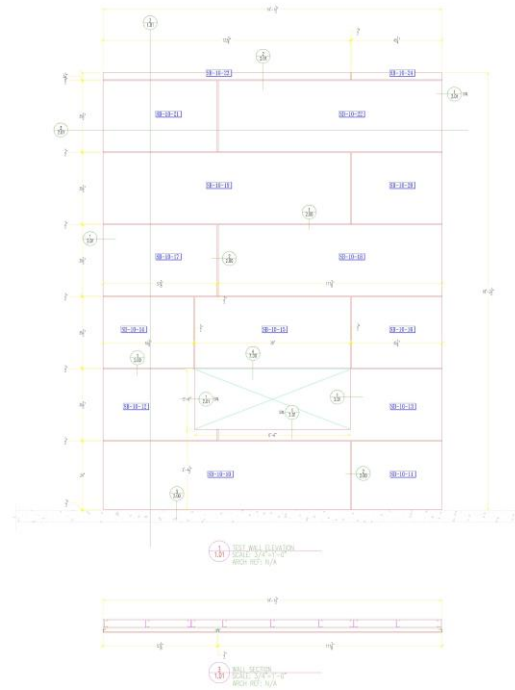
Date: 02/14/18



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Date: 02/14/18



intertek Report #: H2419.01-121-24
Total Quality. Assured. Date: 01/31/18
Verified by: [Signature]

Miller Construction 130 Derry Court York, PA 17406 717-764-7700 www.millerconstruction.com	
STACBOND NEPA285 TEST WALL	
Project: Standard Wall Test Wall Location: York, PA Address: 130 Derry Court City: York, PA 17406 State: PA Country: USA	
Test No: 1001 Date: 01/31/18 Re: 1001	
MOCK-UP R: 1.01	

TEST REPORT FOR STACBOND

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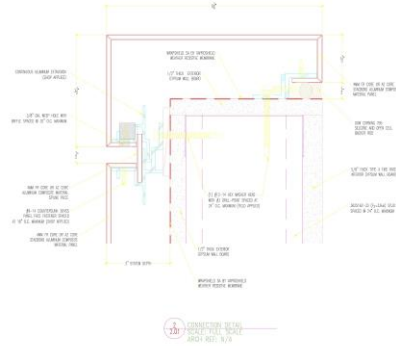
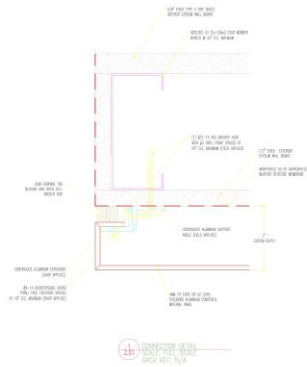
Date: 02/14/18



TEST REPORT FOR STACBOND

Report No.: H2419.01-121-24-R0

Date: 02/14/18



intertek Report #: H2419.01-121-24
Total Quality. Assured. Date: 01/31/18
Verified by: [Signature]

Miller Construction 130 Derry Court York, PA 17406 717-764-7700 www.millerconstruction.com	
STACBOND NEPA285 TEST WALL	
Project: Standard Wall, 10' x 10' x 10' Location: York, PA Contract #: 10000000000000000000	Test: STACBOND NEPA285 Spec: 10' x 10' x 10' Test: 100
Test: STACBOND NEPA285 Spec: 10' x 10' x 10' Test: 100	Test: STACBOND NEPA285 Spec: 10' x 10' x 10' Test: 100



Total Quality. Assured.

130 Derry Court
York, Pennsylvania 17406

Telephone: 717-764-7700
Facsimile: 717-764-4129
www.intertek.com/building

TEST REPORT FOR STACBOND

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SECTION 15

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	02/14/18	N/A	Original Report Issue