BarSplice PRODUCTS INC.

FiTT®

GRADE 60

FIELD INSTALLED THREADED TERMINATION FOR GRADE 60 REINFORCEMENT

PERFORMANCE TEST DATA

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INTRODUCTION

Barsplice Products, Inc. has conducted a series of in-air tests on the FITT® (Field Installed Threaded Termination) system of reinforcing bar mechanical end anchorages, sizes No. 4 through No. 11. The purpose of this testing is to ensure that they are manufactured to the quality standards of BPI's ISO 9001 Quality System and are capable of exceeding various Building Codes strength requirements.

Two head diameter designs of the FITT® are available, depending on application requirements. Heads with a gross bearing face area exceeding 5x the rebar area (FITT5) are designated as $5A_b$ and heads with a gross bearing face area exceeding 10x the rebar area (FITT10) are designated as $10A_b$.

TENSILE TEST PROCEDURE

Test specimens were loaded monotonically in tension to failure to determine the capability of the FITT® headed bar system. The tests were conducted in accordance with ASTM A370, "Standard Test Methods and Definitions for Mechanical Testing of Steel Products" and ASTM A1034, " Standard Test Methods for Testing Mechanical Splices for Steel Reinforcing Bars." Loads were applied through the bearing area of the head. The testing was performed to exceed the mechanical anchorage strength requirements of ACI (American Concrete Institute) 318-19 Section 25.4.5.1 and ASTM A970, Class A and Class HA.

All monotonic tension tests were carried out in a 600 kip Forney universal testing machine, located at the Barsplice manufacturing facility. Current calibration certificates for the test machine are on file.

The reinforcing steel used in these tests conforms to the requirements of ASTM A615, Grade 60 and ASTM A706, Grade 60.

TEST RESULTS

Results of the FITT® tension testing described above are summarized in Table 1 and represented in Chart 1.

SUMMARY

Tension test specimens exceeded the strength requirements of ACI 318-19*, namely 100% x specified yield strength of Grade 60 reinforcement, specifically 60,000 psi (420 MPa).

Additionally, the tension test specimens exceeded the strength requirements stated in ASTM A970, Class A and Class HA, namely the specified tensile strength of Grade 60 bar, specifically 80,000 psi (550 MPa).

* In meeting the strength requirements of ACI-318, the FITT® system complies with IBC 2021 Section 1901.2.

TABLE 1: FITT® TENSILE TEST RESULTS

BAR SIZE	FITT TYPE	TEST LAB ID # & REF #		PEAK STRENGTH MAX STRESS (psi)	PEAK STRENGTH % SPEC. TENSILE GR. 60
No. 4	5Ab	4T4449	4A	118,862	149%
		4T4688	4A	119,532	149%
		4T4689	4A	117,885	147%
		4T4690	4A	108,531	136%
			4B	114,171	143%
		4T4694*	4A	104,459	131%
		4T4695*	4A	103,982	130%
		4T4766	4A	106,409	133%
No. 5	5Ab	5T11957	5A	112,051	140%
		5T12683	5A	110,721	138%
			5B	110,238	138%
		5T12684	5A	111,942	140%
		5T12685	5A	107,867	135%
		5T13394*	5B	96,007	120%
		5T13395*	5C	100,404	126%
		5T13407*	5B	98,795	123%
No. 6	5Ab	6T7843*	6A	90,924	114%
			6B	91,058	114%
		6T8249	6A	111,130	139%
			6B	110,105	138%
		6T8251	6A	111,367	139%
		6T8312	6A	108,546	136%
			6B	109,514	137%
		6T8332	6A	110,016	138%
No. 7	5Ab	7T3833	7A	112,032	140%
			7B	113,325	142%
		7T3844*	7A	93,876	117%
			7B	93,980	117%
		7T4049	7A	108,980	136%
		7T4050	7A	107,685	135%
			7B	105,165	131%
		7T4052	7A	106,367	133%

BAR SIZE	FITT TYPE	TEST LAB ID # & REF #		PEAK STRENGTH MAX STRESS (psi)	PEAK STRENGTH % SPEC. TENSILE GR. 60
No. 8	5Ab	8T4758	8A	117,525	147%
		8T5082	8A	109,424	137%
		8T5082	8A	105,459	132%
		8T5083	8A	110,030	138%
		8T5084	8A	113,575	142%
		8T5085	8A	101,324	127%
		8T5229*	8B	98,190	123%
		8T5240*	8B	96,173	120%
No. 9	5Ab	9T3116	9A	109,568	137%
		9T3117	9A	113,194	141%
		9T3298	9A	110,531	138%
			9B	110,447	138%
			9C	108,980	136%
			9D	113,688	142%
		9T3309*	9B	93,573	117%
		9T3383*	9B	92,154	115%
No. 10	5Ab	10T2793	10A	111,881	140%
		10T2794	10A	106,368	133%
			10B	101,099	126%
		10T2795	10A	105,984	132%
		10T2842	10A	102,043	128%
		10T2843	10A	105,225	132%
		10T2883*	10B	93,460	117%
		10T2894*	10B	92,668	116%
No. 11	5Ab	11T5099	11A	117,570	147%
		11T5126	11A	116,710	146%
		11T5144*	11A	94,804	119%
			11B	95,501	119%
		11T5306	11A	106,253	133%
		11T5307	11A	112,650	141%
		11T5334	11A	110,056	138%
		11T5335	11A	105,773	132%

* Test conducted on ASTM A706 reinforcement bar

CHART 1: FITT® TENSILE TEST RESULTS