



# Farabaugh Engineering and Testing Inc.

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Project No. T315-22

Report Date: November 18, 2022

No. Pages: 8 (inclusive)

## PERFORMANCE TEST REPORT

### AISI S914 LOAD STRENGTH TEST ON JOIST CONNECTORS

ON

### OEG 16" BIG APPLE K-SERIES JOIST

FOR

OEG BUILDING MATERIAL  
6001 BORDENTOWN AVE.  
SAYREVILLE, NJ. 08872

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### **Introduction**

Tests were performed at Farabaugh Engineering and Testing Laboratory, McKeesport, PA, an independent test laboratory. A description and summary of those tests are contained herein.

### **Purpose**

The purpose of the testing was to determine the structural performance and deformation behavior of joint connectors of the 16” deep joist connector under compressive loads.

### **Test Specimen**

Manufacturer: OEG BUILDING MATERIAL  
6001 Bordentown Ave.  
Sayreville, NJ. 08872

Specimen: 16” Big Apple K-Series Joists - (2) 16” deep x 1/8” thick x 10” long joist with L4x4x1/4” (nominal) angles welded to each side of the 10” long joists.

### **Test Completion Date:**

11/9/2022

### **Test Assembly**

Specimen was 18” long x 16” high joist connector which consisted of (2) 10” long x 16” high joists welded together at the top and bottom with two spot welds on each side of the joist and a 7” long angle welded to each side of the double joists. The test specimen was then supported on each side underneath each angle using 4” x 4” x 1/8” x 26” long square tube. A loading tube was placed along the center width of the top of the double joists. Note: See test set-up drawing for installation of specimen. Information on the individual tests conducted in this report may be found on the attached data sheets. All welds were 1/4” fillet welds as noted on drawings.

### **Test Procedure**

The load test procedure was per AISI S914-15 “Test Standard for Joist Connectors Attached to Cold-Formed Steel Structural Framing.” The test procedure was Conducting Load Strength Tests on the Joist Connector. The tests were performed with the joist connector supported in a manner to simulate the actual field conditions loads. Calibrated deflection gages were used to measure deflection of the specimens as shown on the attached drawings. Loading was provided on top of 4” square tube that transverse into uniform loading across the top center of the joist connector. A calibrated Tinius Olsen Machine was used to provide the loading. A uniform center point load was applied until failure occurred. Ultimate loads were recorded and observations were made as shown on the attached data sheets. Note: The loading rate speed was 1.0 in/min.

**COMPRESSIVE LOADING TEST RESULTS**  
**ON JOIST CONNECTOR**

**TEST #1**

<b>Load (lbs)</b>	<b>Deflection #1 (in)</b>	<b>Deflection #2 (in)</b>
0	0.000	0.000
1,000	0.006	0.005
2,000	0.008	0.010
3,000	0.010	0.011
4,000	0.010	0.013
5,000	0.012	0.013
6,000	0.013	0.015
7,000	0.013	0.016
8,000	0.015	0.017
9,000	0.016	0.018
10,000	0.017	0.020
15,000	0.023	0.026
20,000	0.029	0.032
25,000	0.034	0.040
30,000	0.041	0.048
35,000	0.052	0.061
40,000	0.066	0.080
45,000	0.084	0.109
49,000	0.109	0.148
50,000	0.114	0.159
50,250	0.123	0.176

Maximum Test Load (failure load): 50,300 lbs. (Yielding of Top Flange of joists)

**TEST #2**

<b>Load (LBS)</b>	<b>Deflection #1 (in)</b>	<b>Deflection #2 (in)</b>
0	0.000	0.000
1,000	0.008	0.015
2,000	0.010	0.020
3,000	0.012	0.022
4,000	0.013	0.024
5,000	0.014	0.025
10,000	0.021	0.030
15,000	0.028	0.035
20,000	0.035	0.040
25,000	0.042	0.045
30,000	0.051	0.052
35,000	0.061	0.060
40,000	0.074	0.070
45,000	0.089	0.082
50,000	0.112	0.100
53,000	0.133	0.115
54,000	0.141	0.121

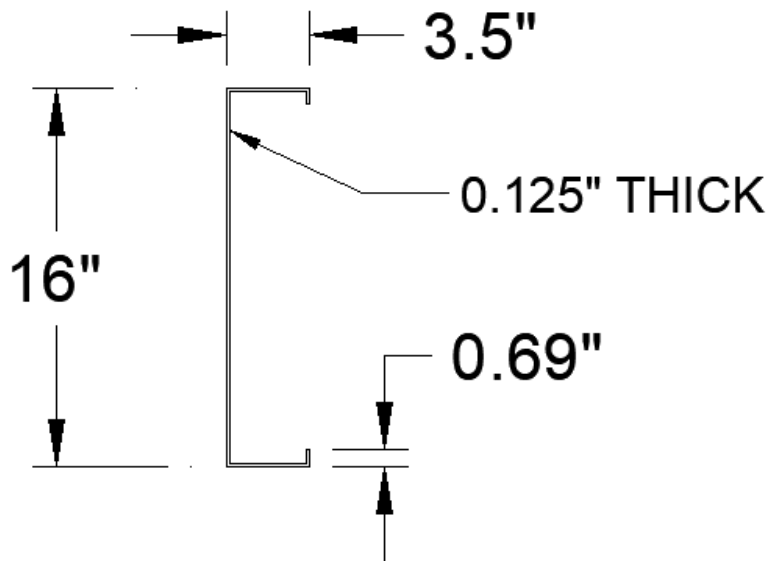
Maximum Test Load (failure load): 54,400 lbs. (Yielding of Top Flange of joists)

**TEST #3**

<b>Load (LBS.)</b>	<b>Deflection #1 (in)</b>	<b>Deflection #2 (in)</b>
0	0.000	0.000
1,000	0.018	0.038
2,000	0.029	0.058
3,000	0.033	0.074
4,000	0.037	0.082
5,000	0.040	0.089
6,000	0.042	0.094
7,000	0.044	0.098
10,000	0.048	0.105
15,000	0.054	0.113
20,000	0.060	0.120
25,000	0.066	0.129
30,000	0.073	0.138
35,000	0.079	0.150
40,000	0.095	0.174

Maximum Test Load (failure load): 40,900 lbs. (Vertical weld of angle to joist web broke)

## **BIG APPLE K-SERIES JOIST**

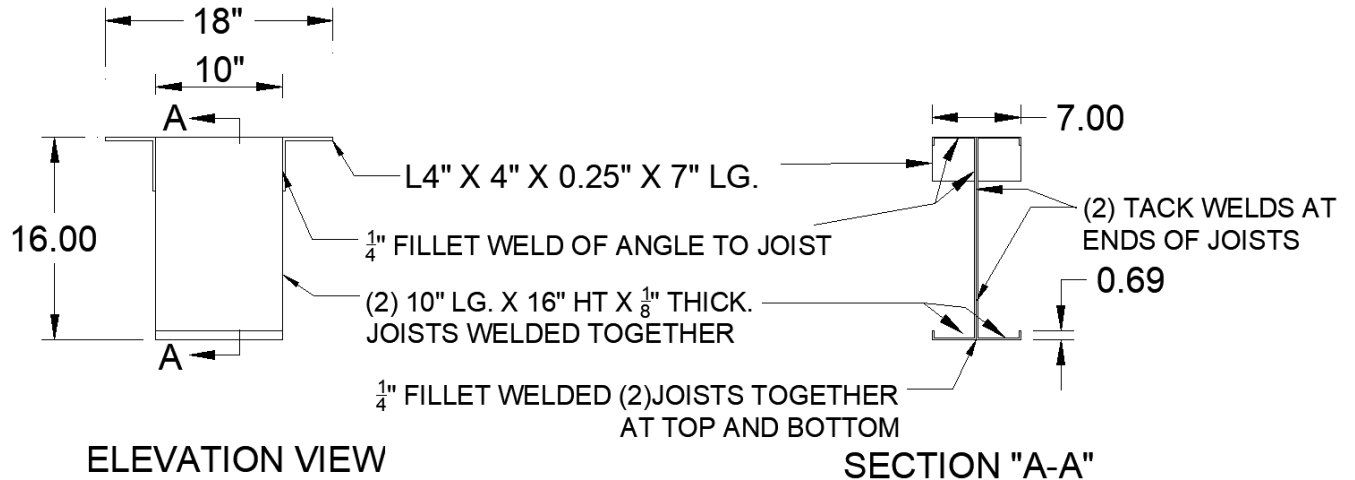


## **ELEVATION VIEW**

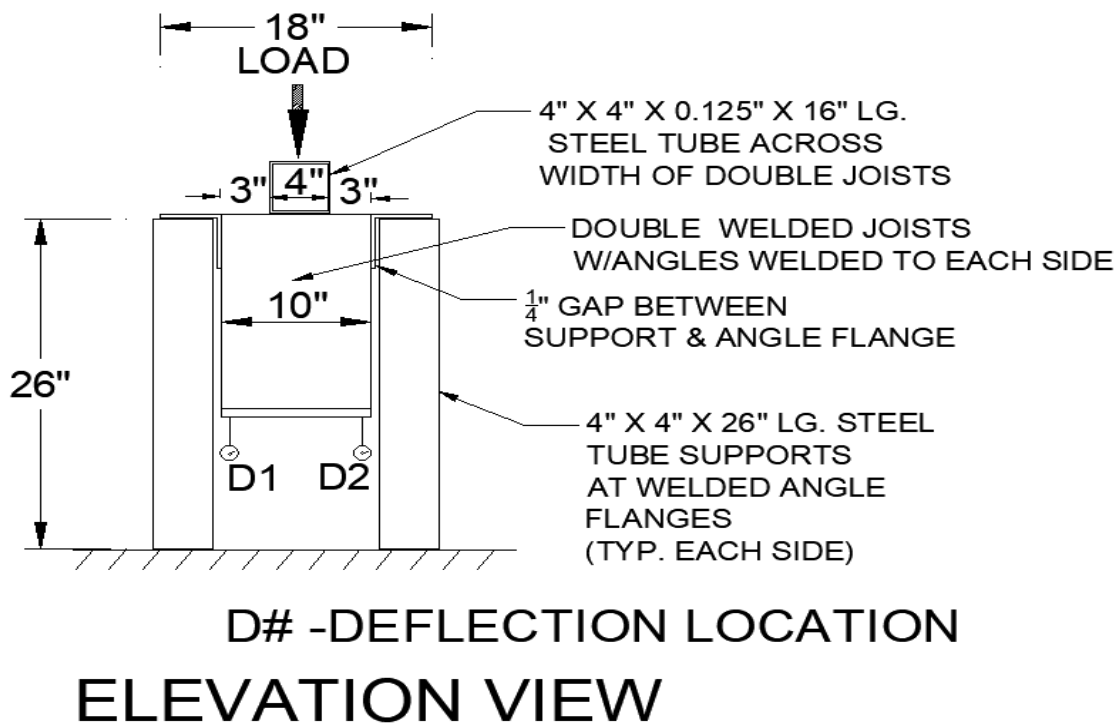
**((2) 10" LG. X 16" HIGH X 1/8" THICK JOISTS)**

# TEST SPECIMEN

## (JOIST CONNECTOR)



# TEST SETUP



## **FAILURE MODE**

### **TEST#1 & #2**



**YIELDING OF TOP FLANGE**

### **TEST #3**



**VERT. WELD BROKE AT ANGLE TO JOIST WEB CONNECTION**