

BAILEY BENT TAB BRIDGING CHANNEL SYSTEM

FINAL REPORT

FOR
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INTRODUCTION

In curtain wall construction in Canada, lateral bridging must be provided at 5'-0" o.c. or less in order to keep studs aligned and to provide the required structural integrity during the construction stage. The critical stage during construction is when only outside sheathing is provided and the wind can cause compression of the unsupported stud flanges. After inside sheathing is applied, lateral torsional buckling of the studs is prevented and only local as well as distortional buckling can occur, which is considered in the limiting height tables. Bailey has developed a new bridging channel system called, the "Bailey Bent Tab Bridging Channel System" which can be used in place of the traditional Clip Angle Bridging Channel System.

In order to establish the structural performance/integrity of the Bailey Bent Tab Bridging Channel System in comparison to the traditional Clip Angle Bridging Channel System, physical tests were carried out at ArcelorMittal in Hamilton [1].

The Bailey Bent Tab Bridging Channel System is a new innovative and patented bridging channel system that eliminates the traditional clip angle and reduces the on-site labour cost considerably. It is intended to be used with curtain wall installations that are subjected to wind load only. The bent tab is the knockout element that is bent perpendicular to the stud, requiring only one screw to support the bridging channel at each stud location (see Figure 1).

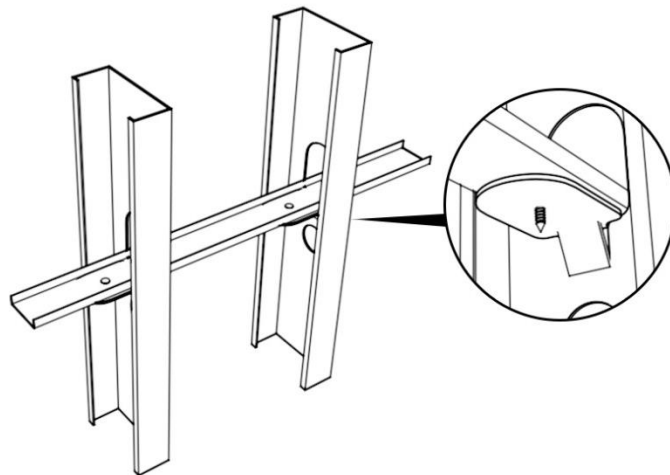


Figure 1 - Bailey Bent Tab Bridging Channel System

The Clip Angle Bridging Channel System is still one of the most common systems used in the industry to provide the required lateral stability during the construction stage. As can be seen in Figure 2, four screws are required at each stud location to create this connection. In recent years, other bridging channel systems have been introduced that reduce the on-site installation cost.

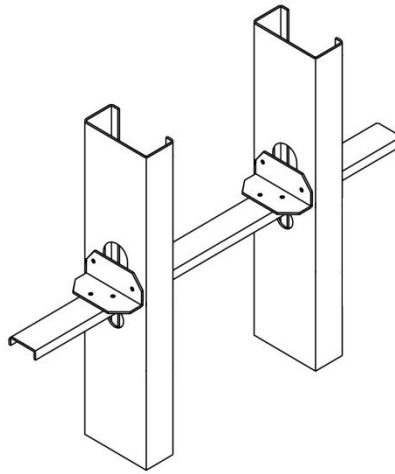


Figure 2 – Clip Angle Bridging Channel System

TESTING

All tests were carried out at ArcelorMittal in Hamilton [1]. Two different steel thicknesses were tested in the case of tests 1 through 4 and only one thickness in the case of test 5. With each specimen, one layer of plywood sheathing was attached to the 4’x10’ wall assembly with one bridging line at the centre of the 10’ assembly. A uniformly distributed load was then applied until failure. Summarized in Table 1 below are the test failure loads of both bridging channel systems tested, which are presented in detail in Table 2 of Section 2.1 [1]. In the case of the clip angle system, only one test was performed in each case since it is a well-established system in the industry. Being that the bent tab system is new, three identical specimens were tested in the case of tests 1 through 4 and two specimens in the case of test 5.

Table 1 – Summary of Test Failure Loads

TEST	SPECIMEN	CLIP ANGLE (psf)	BENT TAB (psf)
1	600S162-33	82.3	78.3*
2	600S162-43	121	131*
3	362S162-33	50.6	56.8*
4	362S162-43	79.6	82.3*
5	800S162-43	178	163+

* Average of three tests. + Average of two tests.

CONCLUSIONS

As can be observed from Table 1, the strength of the Bailey Bent Tab Bridging Channel System is for all intense and purposes equal to or greater in comparison to the Clip Angle Bridging Channel System tested. Only in the case of Specimen 800S162-43 was the Clip Angle Bridging Channel failure load 8.4% greater in comparison to the Bailey Bent Tab Bridging Channel System. This can be considered comparative since the % difference is within an acceptable test scatter limit. Based on these comparative tests, it has been established that the Bailey Bent Tab Bridging Channel System can be used in place of the traditional Clip Angle Bridging Channel System in curtain wall applications. It is recommended that the reader consult Reference 1 for details of the test program.

REFERENCE

- [1] Michael Gulas, "Bailey Bridging Channel UDL Test", ArcelorMittal, Hamilton, Ontario, Project No. CSF-AMA-003-PSD-002, September 18, 2019.