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CRYSTAL VALLEY DECORATING
INC.

TITAN BANNER BRACKET

QUALIFICATION TEST REPORT
FOR
80 MPH WIND

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CRYSTAL VALLEY DECORATING INC.
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QUALIFICATION TEST REPORT
FOR
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1- SCOPE:

- 1.1 This report covers the qualification of the Titan Bracket Assembly made by Crystal Valley Decorating Inc. to 80 Miles per Hour (MPH) nominal wind velocity.
- 1.2 The qualification is done in two stages. In the first stage, the effect of 80 MPH wind was done by calculations to determine the load on the bracket assembly, the second stage was done by testing of the banner assembly for the maximum capability of the banner until failure.
- 1.3 **Important Note:** The published general wind velocity of environment could be 80 MPH, but the wind velocity in the location of the banner cannot be predicted due to the surrounding buildings and other obstacles, and also the wind velocity is not constant all the time, therefore, this qualification report does not take into consideration the turbulence caused by the wind and the local wind velocity, which may be higher than 80 MPH published by the weather forecast and also the type of the banner which may cause unpredictable effects. Therefore, the qualification of the banner assembly is under static conditions. However, local wind velocities and turbulences may create unpredictable forces on the banner which is not part of this qualification.
- 1.4 The straps and the frictional forces created by the bracket bonding on any surface is not part of this qualification.
- 1.5 This qualification is based on having two identical bracket assemblies holding one banner and the wind velocity perpendicular to the face of the banner, where the total force is shared by the two bracket assemblies.

2- CONCLUSION:

The Titan Bracket Assembly can withstand 80 Miles per Hour wind velocity imposed by a banner which is 31" by 83" size, shared by two bracket assemblies..

RESULTS:

The banner bracket assembly was tested based on the procedure and test setup outlined in the PROCEDURE section. Two trials were conducted and the results are as follows:

Test No	Failure Load
1	254 lb
2	319 lb

In Test No. 1, portion of the rod sheared off before being broken, but the rod did not bread. A second rod was used for Test No. 2, this time the rod broke completely as shown in the picture above.

Based on the CALCULATIONS section, the force determined from The Drag Force Method is used to compare the failed load to the force acting on the rod at 80 miles per hour.

The Drag Force Method calculated the force acting on one support beam with a wind velocity of eighty miles per hour to be: 204.64 lbf whereas the rod failed at: 254 lbf Therefore, there is a safety margin between the qualified 80 MPH wind and the rod failure by 24.12% till the rod shears off before failure and a safety margin of 45.5% before the rod breaks.

Notes:

- 1- There was no failure or deformation of any other part of the banner assembly. As noted before, the straps are not part of the qualification of the banner assembly.
- 2- Consideration should also be given to the quality of the rod material during production so that material characteristics should not be inferior to the one supplied and tested.

CONCLUSION:

The Banner Assembly was tested for qualification for winds of up to 80 miles per hour. The calculations are based on the Drag Force Method. The Titan banner bracket assembly has a safety margin of 45.5% before the rod breaks.

Based on the test results, the design of the Titan banner bracket support will therefore withstand wind forces of up to 80 mph for a banner of size 31 by 83 inches. Any banner with a smaller surface area and aspect ratio meets this requirement.