Acrovyn® High Load Design Handrail Assemblies Test Summary (1 of 2)

March 31, 2014
Revised: August 13, 2014

Mr. Tom Gay
Construction Specialties, Inc.
347 Broad Street
Hughesville, Pennsylvania 17737

RE: C/S HIGH LOAD DESIGN HANDRAIL ASSEMBLIES - TEST SUMMARY

Dear Mr. Gay:

Architectural Testing, Inc. was contracted by Construction Specialties, Inc. to witness horizontal load capacity testing of their high load design handrail assemblies using through bolts and stainless steel toggle anchors. All tests were performed at Construction Specialties, Inc.'s facility in Montgomery, Pennsylvania. Each test assembly consisted of one 46" long handrail with three mounting locations/brackets. Each specimen was mounted to a 48" wide by 16" high wall comprised of 20 gauge steel studs and 20 gauge steel strapping with 5/8" drywall covering the test side. The mounting brackets were attached to the aluminum retainer using standard stainless steel through bolts and toggle anchors through the steel strapping into the steel studs, at 16" on center.

For each rail tested, a machined hook was attached to the rail, six inches to the right of the right hand fastener center line location, and one inch from the end of the rail. A steel chain connected the machined hook to a calibrated pneumatically driven double action dynamometer. The rail was pulled away from the wall assembly at a speed of approximately 0.86 inches/second, with the peak load recorded for each test. The test was performed three times for each high load design handrail assembly, using a new sample each time to obtain an average load capacity value. The average load values are listed in the following table.

Specimen	Average Load [1] (lbs)	Full Detail Report No.
HRB-4CN	1,077	D2227.05-106-47
HRB-4CCMN	1,098	D2227.14-106-47
HRB-20N	1,075	D2227.06-106-47
HRB-20CMN	1,087	D2227.13-106-47
HRB-10CN	1,100	D2227.07-106-47
HRW-10C	1,100	D2227.12-106-47
HRBW-10CN	1,100	D2227.11-106-47

[1] *The equipment capacity was met prior to determining the failure weight of each model.*

Full details of these tests are available in the noted reports. If you have any questions regarding this test summary, please feel free to contact me at your convenience.

For ARCHITECTURAL TESTING, INC.:

Digitally Signed by: Todd D. Burroughs

Todd D. Burroughs
Senior Project Engineer
Components / Materials Testing

TDB:tdb/jas

Acrovyn® High Load Design Handrail Assemblies Test Summary (2 of 2)

February 23, 2017
Revision 2: March 28, 2017

Mr. Dustin Gardner
Construction Specialties, Inc.
Research and Development
193 Miller Avenue
Montgomery, Pennsylvania 17752

Dear Mr. Gardner:

Architectural Testing, Inc., an Intertek company ("Intertek-ATI"), was contracted by Construction Specialties, Inc. to evaluate the load capacity of the HRB-10CQLHLN, HRB-10CQLCMHLN, HRBW-10CQLHLN, and HRBW-10CQLCMHLN high load handrails tested. Testing was performed onsite at the Construction Specialties facility in Montgomery, Pennsylvania.

The specimens were evaluated in accordance with a client derived test method for load capacity.

Each test assembly consisted of one handrail measuring 46 in. long with three mounting brackets fastened 16 in. on center into the stud. The handrails were set 1-1/2 in. from the wall. The 46 in. long handrail specimen was mounted to a 48 in. wide by 16 in. high wall comprised of 20 gauge steel strapping and 20 gauge steels studs spaced 16 in. on center with 5/8 in. drywall screwed to one side. The mounting brackets were attached through the steel studs and strapping. Each bracket was secured using standard stainless steel through bolts and toggle anchors.

Each high load handrail assembly was attached to a test wall with the three brackets located 16 in. apart from each other mounted into the steel stud. For each handrail tested a machined steel hook was attached to the handrail one inch from the end of the handrail. The machined hook was connected to a calibrated dynamometer and a double action pneumatically actuated cylinder with a steel chain. The high load handrail was then pulled away from the wall assembly at a speed of approximately 0.86 in/s. The test was performed three times, using a new sample each time to obtain an average load capacity value.

Specimen	Average Load (lbs)*	Full Detail Report No.
HRB-10CQLHLN	1,100	G7349.03-106-47
HRB-10CQLCMHLN	1,100	G7349.04-106-47
HRBW-10CQLHLN	1,100	G7349.05-106-47
HRBW-10CQLCMHLN	1,100	G7349.06-106-47

**Testing was terminated when dynamometer reached 1,100 lbs to protect equipment. Failure of handrail was not achieved.*

For INTERTEK-ATI:

Digitally Signed by: Dennis Fassnacht

Dennis Fassnacht Jr.
Technician I
Components / Materials Testing

Digitally Signed by: Joseph M. Brickner

Joseph M. Brickner
Laboratory Supervisor
Components / Materials Testing

DMF:jmb/kf
cc: G7349.03-106-47

