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ANSI/SDI AISI S916-2020 (R2024)

Test Standard for Determining the Strength and Stiffness of Cold-Formed Steel-Framed Nonstructural Interior Partition Walls Sheathed with Gypsum Board

Approved American National Standard ANSI

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PREFACE

(This Preface is not part of the ANSI/SDI AISI S916-2020 (R2024), *Test Standard for Determining the Strength and Stiffness of Cold-Formed Steel-Framed Nonstructural Interior Partition Walls Sheathed with Gypsum Board*, but is included for informational purposes only.)

This Standard is a reaffirmation of ANSI/AISI S916-2020.

This Standard has been developed as a consensus document for the design of cold-formed steel members and structures. The intention is to provide criteria for routine use and not to provide specific criteria for infrequently encountered problems, which occur in the full range of structural design. The Symbols and Appendices to this Standard are an integral part of the Standard. A non-mandatory Commentary has been prepared to provide background for the Standard provisions and the user is encouraged to consult it. Additionally, non-mandatory User Notes may be interspersed throughout the Standard to provide concise and practical guidance in the application of the provisions. The user is cautioned that professional judgment must be exercised when data or recommendations in the Standard are applied, as described more fully in the disclaimer notice preceding this Preface.

AISI S916-20

American Iron and Steel Institute

AISI STANDARD

Test Standard for Determining the Strength and Stiffness of Cold-Formed Steel-Framed Nonstructural Interior Partition Walls Sheathed With Gypsum Board

2020 Edition

Approved by
the AISI Committee on Specifications for the Design of
Cold-Formed Steel Structural Members

DISCLAIMER

The material contained herein has been developed by the American Iron and Steel Institute (AISI) Committee on Specifications. The organization and the Committee have made a diligent effort to present accurate, reliable, and useful information on testing of cold-formed steel members, components or structures. The Committee acknowledges and is grateful for the contributions of the numerous researchers, engineers, and others who have contributed to the body of knowledge on the subject. With anticipated improvements in understanding of the behavior of cold-formed steel and the continuing development of new technology, this material will become dated. It is anticipated that future editions of this test procedure will update this material as new information becomes available, but this cannot be guaranteed.

The materials set forth herein are for general information only. They are not a substitute for competent professional advice. Application of this information to a specific project should be reviewed by a registered professional engineer. Indeed, in most jurisdictions, such review is required by law. Anyone making use of the information set forth herein does so at their own risk and assumes any and all resulting liability arising therefrom.

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PREFACE

The American Iron and Steel Institute Committee on Specifications developed this *Standard* to establish a rational method of determining the strength and stiffness of nonstructural interior partition wall assemblies framed with cold-formed steel. In addition to the cold-formed steel framing, gypsum board panels are considered part of the wall assembly. This *Standard* provides an alternative to the calculation of capacity based on AISI S100, *North American Specification for the Design of Cold-Formed Steel Structural Members*. The *Standard* also permits manufacturers to determine limiting height values for the assemblies.

The Committee acknowledges and is grateful for the contribution of the numerous engineers, researchers, producers and others who have contributed to the body of knowledge on this subject.

User Notes and Commentary are non-mandatory and copyrightable portions of this *Standard*.

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AISI S916-20
TEST STANDARD FOR DETERMINING THE STRENGTH AND STIFFNESS OF COLD-FORMED STEEL-FRAMED NONSTRUCTURAL INTERIOR PARTITION WALLS SHEATHED WITH GYPSUM BOARD

1. Scope

This *Standard* applies to performance test methods for the determination of the strength and stiffness of nonstructural interior partition wall assemblies subjected to uniform static nominal pressure loads up to 15 pounds per square foot (0.72 kPa), framed with cold-formed steel *nonstructural members,* and sheathed on one or both sides with gypsum board panel products.

This *Standard* consists of Sections 1 through 11 inclusive.

2. Referenced Documents

The following documents or portions thereof are referenced within this *Standard* and shall be considered as part of the requirements of this document:

a. American Iron and Steel Institute (AISI), Washington, DC:

AISI S100-16 (2020) w/S2-20, *North American Specification for the Design of Cold-Formed Steel Structural Members* With Supplement 2

AISI S220-20, *North American Standard for Cold-Formed Steel Nonstructural Framing*

b. ASTM International (ASTM), West Conshohocken, PA:

ASTM A370-20, *Standard Test Methods and Definitions for Mechanical Testing of Steel Products*

ASTM C1396/C1396M-17, *Standard Specification for Gypsum Board*

ASTM C473-19, *Standard Test Methods for Physical Testing of Gypsum Panel Products*

IEEE/ASTM SI 10-16, *American National Standard for Metric Practice*

3. Terminology

Where the following terms appear in this *Standard*, they shall have the meaning as defined herein. Terms not defined shall have the ordinary accepted meaning for the context for which they are intended.

Nonstructural Member. A member in a steel-framed system that is not a part of the gravity load-resisting system, lateral force-resisting system or building envelope.

Test Set. A set of three or more identical test specimens.

4. Symbols

B	=	Controlling peak test load from end reaction tests, psf (kPa)
$F_{y\text{-specified}}$	=	Specified yield stress of the steel, ksi (MPa)
$F_{y\text{-tested}}$	=	Measured test yield stress of steel, ksi (MPa)
EI	=	Composite stiffness per stud, lb-ft^2 (kN-m^2)

H_1 = Derived limiting height for a specific deflection target and design load based on the controlling EI value from short wall *test set,* ft (m)
H_2 = Derived limiting height for a specific deflection target and design load based on the controlling EI value from tall wall *test set*, ft (m)
L_1 = Span of short wall *test set,* ft (m)
L_2 = Span of tall wall *test set,* ft (m)
L_d = Limiting height based on deflection, ft (m)
L_f = Limiting height based on flexural strength, ft (m)
L_{f1} = Limiting height based on the flexural strength from short wall *test set*, ft (m)
L_{f2} = Limiting height based on the flexural strength from tall wall *test set*, ft (m)
L_{LH} = Limiting wall height, ft (m)
L_r = Limiting height based on end reaction strength, ft (m)
L_t = Span of test specimen, ft (m)
P = Controlling peak test load, psf (kPa)
p = Test pressure at target deflection value, psf (kPa)
R_s = Adjustment factor for thickness and yield stress
s = Stud spacing, ft (m)
W = Transverse design load, psf (kPa)
$t_{specified}$ = Specified design steel thickness, inch (mm)
t_{tested} = Measured test uncoated steel thickness, inch (mm)
Ω = Safety factor based on Section K2 of AISI S100
Δ_{target} = Measured deflection at target deflection, ft (m)
ψ = Target deflection coefficient (120, 180, 240 or 360)

5. Units of Symbols and Terms

Any compatible system of measurement units shall be permitted to be used in this *Standard*, except where explicitly stated otherwise. The unit systems considered in this *Standard* shall include U.S. Customary units (force in pounds and length in inches or feet) and SI units (force in Newtons and length in meters or millimeters) in accordance with IEEE/ASTM SI 10.

6. Precision

6.1 Pressure shall be recorded to a precision of 0.1 psf (4.8 Pa).

6.2 Deflections shall be recorded to a precision of 0.001 in. (0.025 mm).

6.3 Devices used to measure loads and deformations shall be maintained in good operating order, used only in the proper range, and calibrated.

6.4 Instrument calibration readings taken over the full range anticipated in the test shall be no less accurate than the precision requirements for the device given above.

7. Test Setup

7.1 The test setup for transverse load tests shall be in accordance with Figure 7-1. Vacuum pressure loading shall be used, and test specimen shall have a width of 48 inches (1220 mm). Cylindrical roller supports shall be used at both end supports of the test specimen to reduce rotational restraint. The top and bottom tracks of the test specimen shall not be attached or fastened to supports.

User Note:
For tall walls with thin material, it may be necessary to add a bearing plate between the bottom track and the supporting roller to prevent localized failure. The compressible material or springs under the roller are to allow the roller to move as the wall assembly deflects.

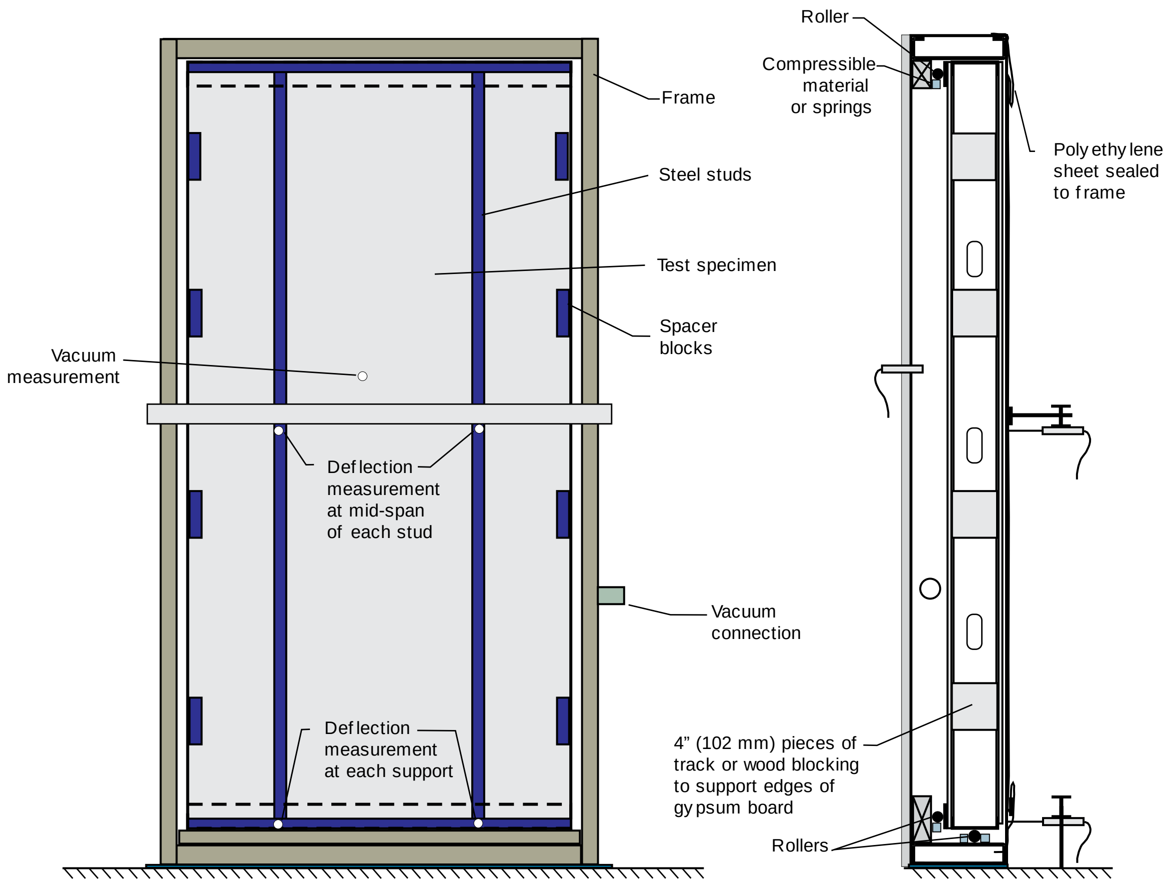

Figure 7-1 Transverse Load Test Setup

7.2 The test setup for end reaction load tests shall be in accordance with Figure 7-2. Vacuum pressure loading shall be used, and the test specimen shall have a width of 48 inches (1220 mm). Cylindrical roller supports shall be used at the top of the assembly to reduce rotational restraint. The top track of the test specimen shall not be attached or fastened to the support. The bottom track of the test specimen shall be attached to a wood or steel member in a manner representative of actual construction.

User Note:
The end reaction tests measure the strength of the stud-to-track connection.

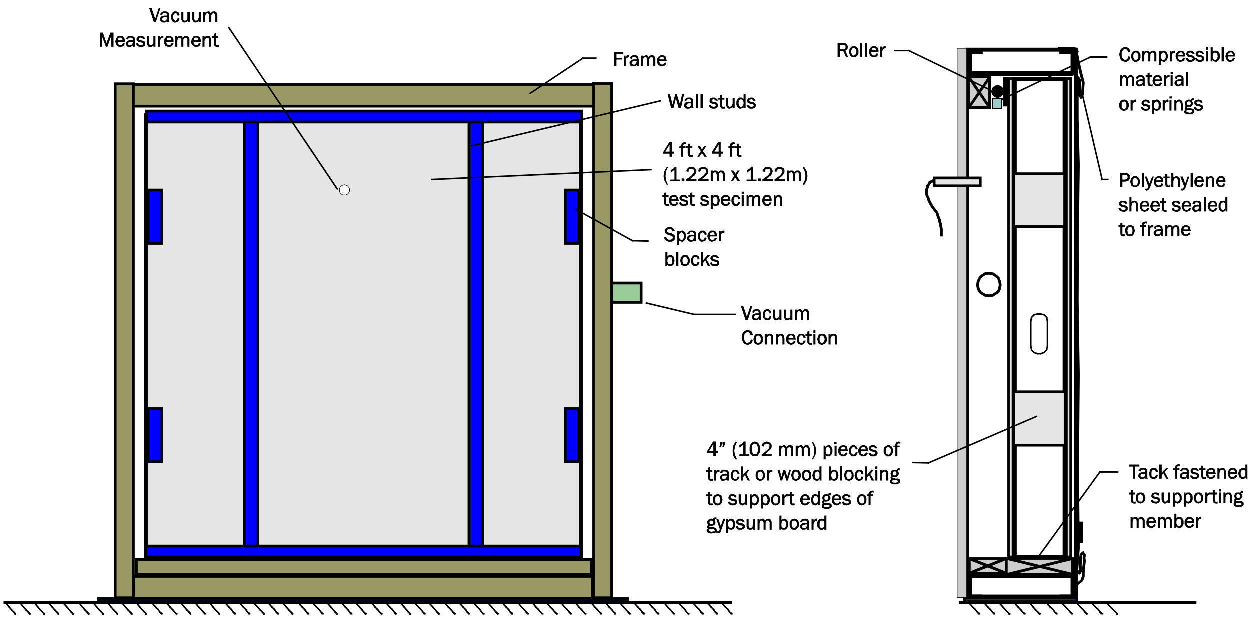

Figure 7-2 End Reaction Load Test Setup

8. Test Specimen

8.1 Cold-Formed Steel Framing Members

8.1.1 Studs shall be oriented along the major axis of the panel, and spaced at 12, 16, or 24 in. (305, 406 or 610 mm) on center.

8.1.2 Studs shall be friction fit into top and bottom tracks; no screws shall connect the track to the stud. Tracks shall extend the full width of the specimen and shall be attached to the gypsum panel sheathing. Tracks shall have a minimum 1 in. (25.4 mm) flange width.

8.1.3 If framing screws or other attachments are used to make steel-to-steel connections, they shall be described in the test report.

8.1.4 The mechanical properties of the cold-formed steel studs, including yield stress, tensile strength, percent elongation and uncoated base steel thickness, shall be determined from standard tension tests in accordance with ASTM A370.

8.1.5 The measured test uncoated steel thickness shall not vary from the specified design steel thickness by more than ±5 percent.

8.1.6 When the manufacturing process that cold-forms the steel stud to shape makes thickness measurements impossible, a minimum of 10 samples cut from flat sheets taken from the same coil of steel used to manufacture the steel studs shall be obtained. The measured test steel thickness shall be the mean of the measured thickness.

8.1.7 One representative steel sample shall be obtained from each tested wall assembly to verify the cold-formed steel stud thickness both before and after removal of metallic coating.

8.2 Gypsum Board Panel Materials and Connections

8.2.1 Gypsum board panels shall match the thickness, type, and manufacturer listed in the test report and shall comply with ASTM C1396. Representative samples of the gypsum board panel material from each shipment received for testing shall be selected and tested for flexural strength in accordance with ASTM C473.

8.2.2 Unless otherwise required by the gypsum board panel product manufacturer's installation instructions, or a specific connection type is being tested, gypsum board sheathing panels shall be attached to framing with #6 bugle head screws of a sufficient length that the screw extends through the framing member by a minimum of three exposed threads. Fastener spacing shall be in accordance with Sections 8.2.2.1 through 8.2.2.2.

8.2.2.1 The screw spacing shall be described in the test report and shall be a maximum 16 inches (406 mm) on center.

8.2.2.2 Where unequal screw spacing is required due to test specimen or gypsum board panel lengths, equal spacing as stated above shall be maintained except a smaller spacing shall be permitted between the first and second row of fasteners at the top and bottom of the test specimen and at a joint between gypsum board panels.

8.2.3 None of the fasteners used to connect the gypsum board panel to framing shall extend through both the stud and the track.

8.3 Configuration of Nonstructural Interior Partition Wall Test Specimens

8.3.1 Nonstructural interior partition wall test specimens shall be constructed as defined by the cold-formed steel stud manufacturer and detailed in the test report.

8.3.2 All nonstructural interior partition wall test specimens in the *test set* shall be constructed in the same manner.

8.3.3 Unsymmetrical nonstructural interior partition wall assemblies shall be tested in the weakest and most flexible direction. At least one test shall be performed in each configuration to verify which loading direction governs.

8.3.4 The gypsum board panels shall be cantilevered at the edges of the test specimen at a distance representative of the tributary load area for the cold-formed steel studs. To prevent premature failure of the cantilevered edges of the gypsum board panels in the test specimen, maximum 4-inch-long (102 mm) cold-formed steel tracks or wood blocks, having the same depth and width as the cold-formed steel studs, shall be placed at the unsupported edges of the gypsum board panels. These supports shall be located 12 in. (305 mm) from the ends of the test specimen and spaced 24 in. (610 mm) on center, and be attached with a screw on one side of the test specimen, provided the method of attachment does not increase the stiffness of the test specimen.

8.3.5 Test specimens for the end reaction load tests are permitted to include a gap between the end of the cold-formed steel stud and bottom track. The amount of this gap shall be included in the test report.

8.3.6 All test specimens shall have a 0.25 in. (6.4 mm) gap between the bottom edge of the gypsum board panel and the web of the bottom cold-formed steel track.

9. Test Procedure

Testing for determining nonstructural interior partition wall limiting heights shall include transverse load testing at two different heights in accordance with Section 9.1, and end reaction testing in accordance with Section 9.2.

9.1 Procedures Specific to Transverse Load Testing

9.1.1 Transverse load testing shall use uniform air pressure loading on 4-foot (1.22 m)-wide test specimens placed in a vertical position as described in Section 7.1.

9.1.1.1 An initial load, or preload, is permitted to be applied to seat the test specimen. This preload shall not exceed the load associated with an L/1200 deflection target value. Alternatively, a preload not exceeding 10 percent of the average load associated with the L/120 deflection target value is permitted.

9.1.1.2 The method of loading shall be used with an airtight frame surrounding the test specimen. A polyethylene sheet or equivalent shall cover the test specimen, overlap the frame, and be sealed so that it is airtight. The polyethylene sheet or equivalent shall be applied loosely, such that it does not contribute to the stiffness of the test assembly and there is slack to accommodate the deflection of the test specimen. A vacuum shall be used to reduce air pressure within the chamber behind the test specimen. The difference between the chamber pressure and the ambient pressure shall be recorded.

9.1.1.3 Mid-height lateral deflections shall be measured using dial gages or electronic instruments that are aligned with at least two cold-formed steel studs in the nonstructural interior partition wall assembly and are mounted on a reference frame. The average of the deflection readings shall be used to determine the mid-height deflection of the test specimen at each loading increment. As an alternate, a single deflection gage is permitted at the center of the test specimen, provided it is aligned midway between the cold-formed steel studs. Deflection readings, taken at the base of the test specimen to measure any support deflection, are permitted to be deducted from the measurements taken at mid-span.

9.1.1.4 Successive incremental loading shall be applied for five minutes at each designated deflection target of L/360, L/240 and L/120. Deflections shall be measured at the initial application of each load increment, after five minutes of set, after release of the load increment, and after five minutes of set. Additional deflection targets or alternative targets are permitted to be considered based on the specific test specimen response characteristics, provided at least three target levels are investigated.

9.1.1.5 The test specimen shall be loaded continuously to failure following the load increments, where failure is defined as when the maximum pressure cannot be sustained without sudden or continuous movement of the test specimen.

9.1.1.6 After the conclusion of each test, the test specimen shall be visually inspected. The mode of failure and the measured load at failure shall be reported for each test specimen.

9.1.2 *Test sets* at two different heights shall be tested.

9.1.3 A *test set* shall define each combination of variables that affects the performance of the nonstructural interior partition wall assembly, such as stud depth, base steel design steel thickness, and minimum and maximum stud spacing; type and thickness of gypsum board panel products, panel orientation, and location of panel joints; and type and size of fasteners and fastener schedule.

9.1.4 If it can be shown that both the average failure load and the average stiffness for all tested nonstructural interior partition wall assemblies with minimum spaced studs are within 15 percent of the average values for tested nonstructural interior partition wall assemblies with maximum spaced studs, then only the nonstructural interior partition wall assemblies with maximum spaced studs need to be tested.

9.1.5 A *test set*, consisting of not fewer than three identical test specimens, shall be tested provided deviation of any individual failure load from the average failure load does not exceed ±15 percent. If such a deviation from the average value exceeds ±15 percent, more tests of the same kind shall be conducted until the deviation of any individual test result from the average value obtained from all the tests does not exceed ±15 percent, or until at least three additional tests have been conducted.

9.2 Procedures Specific to End Reaction Load Testing

9.2.1 End reaction load testing shall use uniform air pressure loading on a nominally 4-foot-tall by 4-foot-wide (1.22 m by 1.22 m) test specimen placed in a horizontal or vertical position, as described in Section 7.2.

9.2.2 Cold-formed steel studs shall be spaced as intended for actual construction. Cold-formed steel track sections shall be placed at the ends of the studs, and the test specimen shall be sheathed with gypsum board panel products in the same manner that simulates actual top and bottom wall construction. The minimum end distance of web holes of studs shall be considered in construction of the test specimen.

9.2.3 One end of the test specimen shall bear against a cylindrical roller, and the other end shall be attached to a wood or steel plate in such a manner that is representative of actual construction. The plate shall be set against a rigid support of the test fixture.

9.2.4 An initial load, or preload, to seat the test specimen is permitted but not required. This preload shall not exceed 10 percent of the average peak load.

9.2.5 The test specimen shall be loaded continuously to failure, where failure is defined as when the maximum pressure cannot be sustained without the sudden or continuous movement of the test specimen. The mode of failure and the measured load at failure shall be reported for each test specimen.

9.2.6 As a minimum, a series of three identical tests shall be performed for each combination of variables that affect the performance of the nonstructural interior partition wall assembly, provided deviation of any individual test failure load from the average value does not exceed ±15 percent. If such a deviation from the average value exceeds ±15 percent, more tests of the same kind shall be conducted until the deviation of any individual test result from the average value obtained from all the tests does not exceed ±15 percent, or until at least three additional tests have been conducted. Variables affecting performance include stud depth, spacing, and base steel design thickness; track configuration and base steel design thickness; manufacturer, type and thickness of gypsum board panel products; fastener type, size, and schedule used to construct the nonstructural interior partition wall assemblies; and fasteners used to attach the track to the supporting construction.

9.2.7 If various wall configurations are being tested, the worst-case configuration may be tested. If higher ratings are sought for stronger configurations, the additional configurations shall be tested.

10. Data Evaluation

10.1 General

10.1.1 Evaluation of the test results and the determination of the safety factor in Sections 10.2 and 10.3 shall be made in accordance with the procedures described in Section K2 of AISI S100. The following variables for the resistance factor equation in Chapter K of AISI S100 shall be used:

For walls subjected to transverse nominal loads greater than 10 psf (0.45 kPa)

β_o = Target reliability index
= 2.5
M_m = Mean value of the material factor
= 1.0
V_M = Coefficient of variation of the material factor
= 0.10
V_F = Coefficient of variation of the fabrication factor
= 0.15

For walls subjected to transverse nominal loads 10 psf (0.45 kPa) or less

β_o = Target reliability index
= 1.6
M_m = Mean value of the material factor
= 1.10
V_M = Coefficient of variation of the material factor
= 0.10
V_F = Coefficient of variation of the fabrication factor
= 0.05

10.1.2 No test result shall be eliminated unless a rationale for its exclusion can be given.

10.1.3 The transverse nominal design loads, W, listed in Sections 10.2 and 10.3 shall be limited to 5, 7.5, 10 and 15 psf (0.24, 0.36, 0.48 and 0.72 kPa) and shall not be multiplied by any other factor associated with short-term loading.

10.1.4 If either the measured test yield stress or measured test uncoated thickness of steel used is different than the specified design values, the reduction factor, R_s, shall be calculated as follows:

$$R_s = \left(\frac{F_{y-specified}}{F_{y-tested}}\right) \times \left(\frac{t_{specified}}{t_{tested}}\right) \leq 1.0 \qquad (Eq.\ 1)$$

where

$F_{y\text{-specified}}$ = Specified yield stress of the steel, ksi (MPa)
$F_{y\text{-tested}}$ = Measured test yield stress of the steel, ksi (MPa)
$t_{specified}$ = Specified design steel thickness, inch (mm)
t_{tested} = Measured test uncoated steel thickness, inch (mm)

10.2 Limiting Heights Based on Partition Wall Assembly Flexural Strength

10.2.1 Nonstructural interior partition wall assembly limiting heights based on flexural strength shall be derived based on the following:

$$L_f = \sqrt{\frac{R_s P L_t^2}{\Omega W}} \qquad (Eq.\ 2)$$

where

L_f = Limiting height based on flexural strength, ft (m)

R_s = Adjustment factor for thickness and yield stress

P = Controlling peak test load, psf (kPa)

L_t = Span of test assembly, ft (m)

Ω = Safety factor based on Section 10.1.1

W = Transverse design load, psf (kPa)

10.2.2 Limiting wall heights based on wall assembly flexural strength are derived based on the average between the derived limiting height value (L_{f1}) from the short wall *test set* and the derived limiting height value (L_{f2}) from the tall wall *test set*:

$$L_{LH} = \frac{(L_{f1} + L_{f2})}{2} \qquad (Eq.\ 3)$$

where

L_{LH} = Limiting wall height, ft (m)

L_{f1} = Limiting height based on the flexural strength from short wall *test set*, ft (m)

L_{f2} = Limiting height based on the flexural strength from tall wall *test set*, ft (m)

10.3 Limiting Heights Based on End Reaction Strength

10.3.1 Nonstructural interior partition assembly limiting heights based on end reaction strength shall be derived based on the following:

$$L_r = \frac{R_s B L_t}{\Omega W} \qquad (Eq.\ 4)$$

where

L_r = Limiting height based on end reaction strength, ft (m)

R_s = Adjustment factor for thickness and yield stress

B = Controlling peak test load from end reaction tests, psf (kPa)

L_t = Span of test assembly, ft (m)

Ω = Safety factor based on Section 10.1.1

W = Transverse design load, psf (kPa)

10.4 Limiting Heights Based on Partition Wall Assembly Stiffness

10.4.1 Test specimen bending stiffness, EI, shall be based on the equation for mid-span deflection of a simply supported beam with uniformly distributed loading over its entire span as follows:

$$EI = \frac{5 p s L_t^4}{384 \Delta_{target}} \text{ (lb-ft}^2\text{) (kN-m}^2\text{) per stud} \qquad (Eq.\ 5)$$

where

p = Test pressure at target deflection value, psf (kPa)

s = Stud spacing, ft (m)

L_t = Span of test assembly, ft (m)

Δ_{target} = Measured deflection at target deflection, ft (m)

Nonstructural interior partition wall assembly limiting heights based on stiffness shall be determined for various combinations of pressure and target deflection values as follows:

$$L_d = \left[\frac{384EI}{5Ws\psi}\right]^{\frac{1}{3}} \qquad (Eq.\ 6)$$

where

L_d = Limiting height based on deflection, ft (m)

EI = Composite stiffness, lb-ft^2 (kN-m^2) per stud

W = Transverse design load, psf (kPa)

s = Stud spacing, ft (m)

ψ = Target deflection coefficient (120, 180, 240 or 360)

10.4.2 An EI value for each mid-span deflection target shall be calculated based on the incremental deflection from the previous set deflection after release of the load to the current set deflection after application of load.

10.4.3 Average EI values for each deflection target shall be determined from the test results for each *test set*. For a test specimen, the average of the EI values derived from each deflection target shall be used when the deviation of any individual deflection target EI value does not exceed ±15 percent of the test specimen's average EI value. The overall average EI values shall be used to calculate the limiting heights for the *test set*.

10.4.4 If the variation of any deflection target EI value for a test specimen exceeds the test specimen's average EI by more than ±15 percent, the specific deflection target EI values for all test specimens of that *test set* shall be considered separately. The averaged deflection target specific EI values shall be used to calculate the limiting heights for the *test set*.

10.4.5 If a deflection target is not attained by all test specimens of a *test set*, then that deflection target specific EI shall not be derived for that *test set*. The averaged available deflection target specific EI values derived for the *test set* shall be used to calculate the deflection target specific limiting heights for the *test set*.

10.4.6 The *test set*'s controlling EI value derived in accordance with Sections 10.4.2 through 10.4.5 shall be used to calculate limiting wall heights for deflection target values of L/360, L/240 and L/120 (if an L/120 deflection level cannot be obtained, it shall be permitted to use EI values determined for the deflection target value of L/180 as a direct substitute for L/120); and transverse nominal design loads of 5, 7.5, 10 and 15 psf (240, 360, 480 and 720 Pa).

10.4.7 Nonstructural interior partition wall assembly limiting heights based on wall assembly stiffness are derived by linear interpolation between the derived limiting height value (H_1) from the short wall *test set* and the derived limiting height value (H_2) from the tall wall *test set:*

$$L_{LH} = \left(\frac{(L_1)(H_2) - (L_2)(H_1)}{H_2 - H_1 - L_2 + L_1} \right) \qquad (Eq.\ 7)$$

where

L_{LH} = Interpolated limiting wall height, ft (m)

L_1 = Span of short wall *test set,* ft (m)

L_2 = Span of tall wall *test set*, ft (m)

H_1 = Derived limiting height for a specific deflection target and design load based on the controlling EI value from short wall *test set,* ft (m)

H_2 = Derived limiting height for a specific deflection target and design load based on the controlling EI value from tall wall *test set,* ft (m)

10.4.8 If the derived limiting height from the short wall *test set* is greater than twice the height of the tall wall *test sets,* then the calculated limiting height based on the tall wall *test sets* shall be used rather than an interpolated value.

10.4.9 If for any specific design load and deflection target combination the derived limiting wall height is less than the actual span of the short wall *test set,* the derived limiting height value obtained from consideration of both the short and tall wall *test sets* shall be discarded.

10.4.10 In no case shall the interpolated value, L_{LH}, be greater than the mean value between derived values H_1 and H_2.

10.4.11 Linear extrapolation of the controlling EI value is permitted to be used to determine limiting wall heights greater than those tested, up to twice the height of the tall wall *test set.*

11. Report

11.1 The test report shall include a description of the tested specimens, including a drawing detailing all pertinent dimensions, details and specifications of the gypsum panel products, cold-formed steel framing members, fastener type and size. For cold-formed steel framing configurations not listed in AISI S220, this will include dimensions, location, and radii of all offsets and ribs.

11.2 The test report shall include tabulated limiting wall heights rounded to the nearest 1 in. (25 mm).

11.3 The test report shall include the measured mechanical properties of the cold-formed steel framing members and the measured flexural strength of the gypsum board panels.

11.4 The test report shall include a detailed drawing of the test setup depicting location and direction of load application, location of displacement instrumentation and their point of reference, and details of any deviations from the test requirements. Photographs shall be permitted to supplement the detailed drawings of the test setup.

11.5 The test report shall include individual and average maximum test load values observed and a description of the nature, type and location of failure exhibited by each specimen tested. It is permitted to supplement the description of the failure mode(s) with photographs.