ICC EVALUATION SERVICE, INC.
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June 19, 2008

TO: **PARTIES INTERESTED IN METAL PLASTER BASES (LATH)**

SUBJECT: Acceptance Criteria for Metal Plaster Bases (Lath), Subject: AC191-0508-R1 (MJ/BG)

Dear Madam or Sir:

Enclosed is a copy of the subject revised acceptance criteria approved by the ICC-ES Evaluation Committee on May 29, 2008, with an effective date of June 1, 2008.

The approved revisions are as follows:

1. Section 3.7.4.5: This new section allows alternative lath to be qualified for horizontal applications.
2. Section 4.4: This new section describes a comparative stiffness test for alternative lath intended to be applied horizontally.

A proposed Section 1.4 with a revised definition of alternative lath was not approved, so the definition in Section 3.7 still applies. ICC-ES staff considers an alternative lath to be one with compensating improvements where the dimensional or weight requirements in ASTM C 847, C 933, or C 1063 are not satisfied. A lath that is simply deficient in conforming to one or more of the ASTM requirements without a "trade-off" characteristic would not be considered as complying with AC191.

Evaluation reports issued on or after the effective date noted above, and falling within the scope of this criteria, will be required to comply with the revised published edition of the criteria. Evaluation reports issued prior to the effective date may be in compliance either with the revised acceptance criteria or with the previous edition. Evaluation reports based on a superseded version of an acceptance criteria must be brought into compliance with the most recent edition at the time the reports are reissued. Therefore, applicants should submit data verifying compliance at the time they apply for re-examination.

If you have any questions, please contact Michael C. Jones, Senior Evaluation Specialist, at (800) 423-6587, extension 3275. You may also reach us by e-mail at es@icc-es.org.

Yours very truly,

Kurt Stochlia, P.E.
Vice President

KS/raf

cc: Evaluation Committee

ACCEPTANCE CRITERIA FOR METAL PLASTER BASES (LATH)

AC191

Approved May 2008

Effective June 1, 2008

Previously approved February 2008, October 2007, February 2007, May 2006, February 2006, June 2004

PREFACE

Evaluation reports issued by ICC Evaluation Service, Inc. (ICC-ES), are based upon performance features of the International family of codes and other widely adopted code families, including the Uniform Codes, the BOCA National Codes, and the SBCCI Standard Codes. Section 104.11 of the *International Building Code*® reads as follows:

> The provisions of this code are not intended to prevent the installation of any materials or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been approved. An alternative material, design or method of construction shall be approved where the building official finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in quality, strength, effectiveness, fire resistance, durability and safety.

Similar provisions are contained in the Uniform Codes, the National Codes, and the Standard Codes.

This acceptance criteria has been issued to provide all interested parties with guidelines for demonstrating compliance with performance features of the applicable code(s) referenced in the acceptance criteria. The criteria was developed and adopted following public hearings conducted by the ICC-ES Evaluation Committee, and is effective on the date shown above. All reports issued or reissued on or after the effective date must comply with this criteria, while reports issued prior to this date may be in compliance with this criteria or with the previous edition. If the criteria is an updated version from the previous edition, a solid vertical line (**I**) in the margin within the criteria indicates a technical change, addition, or deletion from the previous edition. A deletion indicator (➜) is provided in the margin where a paragraph has been deleted if the deletion involved a technical change. This criteria may be further revised as the need dictates.

ICC-ES may consider alternate criteria, provided the report applicant submits valid data demonstrating that the alternate criteria are at least equivalent to the criteria set forth in this document, and otherwise demonstrate compliance with the performance features of the codes. Notwithstanding that a product, material, or type or method of construction meets the requirements of the criteria set forth in this document, or that it can be demonstrated that valid alternate criteria are equivalent to the criteria in this document and otherwise demonstrate compliance with the performance features of the codes, ICC-ES retains the right to refuse to issue or renew an evaluation report, if the product, material, or type or method of construction is such that either unusual care with its installation or use must be exercised for satisfactory performance, or if malfunctioning is apt to cause unreasonable property damage or personal injury or sickness relative to the benefits to be achieved by the use of the product, material, or type or method of construction.

Acceptance criteria are developed for use solely by ICC-ES for purposes of issuing ICC-ES evaluation reports.

ACCEPTANCE CRITERIA FOR METAL PLASTER BASES (LATH) (AC191)

1.0 INTRODUCTION

1.1 Purpose: The purpose of this criteria is to establish requirements for metal plaster bases (lath) to be recognized in ICC Evaluation Service (ICC-ES) evaluation reports under the 2006 *International Building Code*® (IBC), the 2006 *International Residential Code*® (IRC) and the 1997 *Uniform Building Code*™ (UBC). The bases of recognition are IBC Section 104.11, IRC Section R104.11 and UBC Section 104.2.8.

The reason for the development of this criteria is to provide a guideline for the evaluation of code-complying metal plaster bases (lath), since need for independent evaluation of code-complying laths has been expressed by code officials. Also, the prescriptive requirements of Chapter 25 of the IBC, Chapter 7 of the IRC and Chapter 25 of the UBC do not provide requirements for the alternative laths being used to support plaster.

1.2 Scope: This criteria applies to metal plaster bases, including expanded metal lath, welded wire lath, woven wire lath and accessories, used for installation and support of interior and exterior portland cement–based plaster and exterior cementitious wall coating systems.

1.3 Codes and Reference Standards:

1.3.1 2006 *International Building Code*® (IBC), International Code Council.

1.3.2 2006 *International Residential Code*® (IRC), International Code Council.

1.3.3 1997 *Uniform Building Code*™ (UBC).

1.3.4 ASTM A 641-03, Specification for Zinc-coated (Galvanized) Carbon Steel Wire, ASTM International.

1.3.5 ASTM C 847-00, Specification for Metal Lath, ASTM International.

1.3.6 ASTM C 109-02, Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens), ASTM International.

1.3.7 ASTM C 926-98a, Specification for Application of Portland Cement Based Plaster, ASTM International.

1.3.8 ASTM C 933-04, Specification for Welded Wire Lath, ASTM International.

1.3.9 ASTM C 1032-04, Specification for Woven Wire Plaster Base, ASTM International.

1.3.10 ASTM C 1063-06 Specification for Installation of Lathing and Furring to Receive Interior and Exterior Portland Cement Based Plaster, ASTM International.

1.3.11 ASTM E 119-00, Test Methods for Fire Tests of Building Construction and Materials, ASTM International.

2.0 BASIC INFORMATION

2.1 General: The following information shall be submitted:

2.1.1 Product Description: The description shall include complete information concerning material specifications, dimensions and manufacturing process.

2.1.2 Installation Instructions: The installation instructions shall include detailed placement and fastening methods. The instructions shall comply with installation requirements in Chapter 25 of the IBC, Chapter 7 of the IRC, or Chapter 25 of the UBC, or in an applicable ICC-ES evaluation report for an exterior cementitious coating system. Attachment methods, including fasteners, shall comply with the applicable requirements in the IBC, IRC, or UBC.

2.1.3 Packaging and Identification: A description of the method of packaging and field identification shall be provided. Identification information shall include the ICC-ES evaluation report number, the manufacturer's name and address, the product name and other details required by the applicable ASTM specification.

2.2 Testing Laboratories: Testing laboratories shall comply with Section 2.0 of the ICC-ES Acceptance Criteria for Test Reports (AC85) and Section 4.2 of the ICC-ES Rules of Procedure for Evaluation Reports.

2.3 Test Reports: Test reports shall comply with AC85.

2.4 Product Sampling: Product sampling shall be in accordance with Section 3.2 of AC85.

3.0 TESTS AND PERFORMANCE REQUIREMENTS

3.1 General: When the number of tests is not specified in the applicable test method or standard specification, a minimum of five specimens shall be tested. Except where specifically stated in the test method or standard specification, both the results for individual specimens, and the average results, shall comply with the minimum requirements of the specification.

3.2 Metal Lath: Metal lath shall be tested and found to comply with the applicable requirements in ASTM C 847, with a minium G60 coating. Weight shall also comply with applicable requirements in Table 3 of ASTM C 1063 for the support spacings indicated. For recognition under the UBC, the weight shall also comply with the applicable requirements in Table 25-B of the UBC.

If recognition of metal lath without a minimum G60 galvanized coating is requested, use of the lath shall be limited to interior, dry locations. If recognition of metal lath without a minimum G60 galvanized coating is requested for exterior or damp locations, comparison testing of G60 galvanized lath (control) to the non-G60 lath shall be conducted utilizing ASTM B 117 with one control and two test specimens of approximately 3 inches by 5 inches. The control specimens shall be lath that has been determined to comply with ASTM A 653 as a G60 coating. The control and test specimens shall be cleaned, dried and weighed prior to the start of the test. The test duration shall be 168 hours and the determination of results shall be that the test specimens shall not have any visual corrosion or weight loss exceeding that of the control specimen.

3.3 Welded Wire Lath: Welded wire lath shall be tested and found to comply with applicable requirements in ASTM C 933, with a minimum Class 1 zinc-coating. Weight shall also comply with applicable requirements in Table 3 of ASTM C 1063 for the support spacings indicated. All wire measurements shall comply with the minimum diameter requirements in Section 4.1 of ASTM C 933 and the diameter tolerances in Table 6 of ASTM A 641. For recognition under the UBC, the lath shall also comply with the applicable requirements (weight, wire diameter and opening size) in Table 25-B of the UBC.

If recognition of welded wire lath without a minimum Class 1 galvanized coating is requested, use of the lath shall be limited to interior, dry locations. If recognition of welded wire lath without a minimum Class 1 galvanized coating is requested for exterior or damp locations, comparison testing of Class 1 galvanized lath (control) to the non-Class 1 lath shall be conducted utilizing ASTM B 117, with one control and two test specimens of approximately 3 inches by 5 inches. The control specimens shall be lath that has been determined to comply with ASTM A 641 as a Class 1 coating. The control and test specimens shall be cleaned, dried and weighed prior to the start of the test. The test duration shall be 168 hours and the condition of acceptance shall be that the test specimens shall not have any visual corrosion or weight loss exceeding that of the control specimen.

3.4 Woven Wire Lath: Woven wire lath shall be tested and found to comply with the applicable requirements in ASTM C 1032. Wire shall be galvanized and comply as Class I (minimum) in accordance with ASTM A 641. Permissible variations in wire diameter shall be in accordance with Table 6 of ASTM A 641. Weight shall comply with Table 3 of ASTM C 1063, for the support spacings indicated. For recognition under the UBC, the lath shall also comply with the applicable requirements (weight, wire diameter and opening size) in Table 25-B of the UBC.

3.5 Lath with Backing: For lath with backing, backing material and placement shall comply with requirements set forth in ASTM C 847, ASTM C 933, or ASTM C 1032, as applicable, and Sections 3.5.1 and 3.5.2. For backing intended to serve as a water-resistive barrier, the material and placement shall also comply with the ICC-ES Acceptance Criteria for Water-resistive Barriers (AC38).

3.5.1 Embedment: Metal plaster bases with backing, intended for installation over solid substrates, shall be tested in accordance with Section 4.2. Where metal plaster bases with backing are intended for installation over open framing, testing in accordance with Section 4.2 may be conducted over open framing with only the backing attached to the metal plaster base.

3.5.2 Conditions of Acceptance: Metal plaster bases with backing shall provide a minimum $^1/_4$-inch (6.35 mm) embedment between the back plane of the metal plaster base and the back plane of the plaster for a minimum of one-half of the area of the metal plaster base.

Use of lath with backing as a component of shear walls or wall bracing resisting forces described in Chapter 23 of the IBC or Chapter 6 of the IRC, is not permitted.

Exception: Systems evaluated in accordance with the ICC-ES Acceptance Criteria for Racking Shear Evaluation of Proprietary Sheathing Materials Used as Braced Wall Panels (AC269).

3.6 Self-furring: For recognition of metal plaster bases as self-furring, metal plaster bases shall be tested in accordance with Section 4.2.

3.6.1 Conditions of Acceptance: Metal plaster bases shall provide a minimum $^1/_4$-inch (6.35 mm) embedment between the back plane of the metal plaster base and the back plane of the plaster for a minimum of one-half of the area of the metal plaster base.

3.7 Alternative Lath: For alternative laths that comply with ASTM C 847, ASTM C 933, or ASTM C 1032, except for dimensions or weight, the following requirements apply:

3.7.1 Transverse Loads:

3.7.1.1 The alternative lath shall be compared to lath complying with ASTM C 847, ASTM C 933, or ASTM C 1032, using transverse load tests described in Section 4.1 of this criteria. The purpose of this testing is to permit a third party to demonstrate that use of the alternative wire lath does not reduce the performance of a cement plaster wall-covering system. The results of transverse load tests conducted on assemblies incorporating both lath types tested under Section 3.7.1.2 of this criteria are compared.

3.7.1.2 The transverse load test assemblies shall be constructed and tested in accordance with Section 4.1 of this criteria, with a minimum of three assemblies tested for positive loads and three assemblies tested for negative loads for the code-complying lath and for each alternative lath type. The assemblies for each lath type tested shall be identical except for the lath and shall have the sheathing substrate removed. Framing, fasteners, fastener type and fastener spacing shall be such that failure of the test specimens is in the plaster or by pulling of the fasteners through the lath. The plaster to be used in the tests shall comply with ASTM C 926 based on plaster mix Type C. The first (scratch) coat shall be proportioned at a maximum ratio of one part by volume portland cement to four parts by volume of approved sand aggregate. The second coat shall be proportioned at a maximum ratio of one part by volume portland cement to five parts by volume approved sand aggregate.

3.7.1.3 The average ultimate transverse load for the assemblies incorporating the alternative wire lath shall be equal to, or greater than, the average ultimate transverse load for the assemblies incorporating the code-complying lath.

3.7.2 Shear Walls (Optional): Wall covering systems with portland cement plaster and the alternative lath shall be evaluated in accordance with the ICC-ES Acceptance Criteria for Racking Shear Evaluation of Proprietary Sheathing Materials Used as Braced Wall Panels (AC269). As an alternative, the CUREE procedures described in Section 5.1.5 of the ICC-ES Acceptance Criteria for Prefabricated Wood Shear Panels (AC130) shall be permitted.

3.7.3 Plaster Embedment:

3.7.3.1 The embedment of portland cement plaster into the alternative lath shall be tested in accordance with Section 4.2 of this criteria.

3.7.3.2 Conditions of Acceptance: Not less than one-half the total length and width of the wire shall be fully embedded in the plaster a minimum of $^1/_4$ inch (6.4 mm).

3.7.4 Fastener Attachment:

3.7.4.1 To evaluate fastener attachment effectiveness, the pull-out resistance of manufacturer-recommended fasteners and fastener locations shall be determined in accordance with Section 4.3.

3.7.4.2 Conditions of Acceptance: The minimum pull-out resistance shall be 85 lbf (378 N).

3.7.5 Horizontal Applications:

For use in horizontal plaster applications with exterior plaster, metal plaster bases shall be subjected to the Stiffness Test in accordance with Section 4.4.

3.7.5.1 Conditions of Acceptance: The average deflection of the test specimens shall be no greater than that for the control samples at each applied load.

3.7.6 Fire-resistance-rated Construction (Optional): The fire-resistance rating of floor-ceiling, roof-covering, or wall assemblies containing the alternative lath shall be established by tests in accordance with ASTM E 119. Wall assemblies shall be tested as load-bearing, restricted load-bearing, or nonload-bearing.

3.7.7 Thermal Barrier (Optional): The use of plaster and the alternative lath as a thermal barrier shall be established in accordance with Section 4.2 or 4.3 of the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12).

3.8 Accessories:

3.8.1 Weep Screeds: Weep screeds shall comply with applicable requirements in Section 2512.1.2 of the IBC, Section 2506.5 of the UBC, and Sections 6.2.3 and 6.3.2 of ASTM C 1063.

3.8.2 Corner Reinforcement: Corner reinforcement shall comply with requirements in Section 6.2.7 of ASTM C 1063.

4.0 TEST METHODS

4.1 Transverse Load Test: Test specimens shall be prepared in accordance with the IBC or IRC and the manufacturer's recommended installation instructions. Specimen preparation shall be verified by the testing laboratory or its representative. Specimens shall be a minimum of 4 feet square (1219 mm). Three 2-inch (50.8 mm) cubes of the plaster shall be prepared to determine ultimate compressive strength at 28 days, in accordance with procedures set forth in ASTM C 109. Specimens may be mounted horizontally or vertically to facilitate application of loads. Studs supporting the panel shall be located at the maximum spacing for which lath recognition is desired. In most instances, this will result in triple 16-inch (406 mm) spans or double 24-inch (610 mm) spans. The ICC-ES staff shall be contacted in the event that spans vary from this. Connections to framing members shall be based on minimum conditions, such that failure of test specimens occurs within the lath and plaster. Care shall be taken to avoid connections to members that are parallel to the span where the height-to-width ratio of the wall specimen is less than 2:1. Positive and negative loadings on the cementitious face of the test panel each require three tests. Load application after 30 psf (1436 Pa) (positive or negative) shall be in increments not exceeding 15 psf (718 Pa), and shall be maintained for a minimum duration of five minutes before the test proceeds to the next increment. Tests shall be completed within 45 days of specimen construction.

In addition to data specified in Section 2.3 of this criteria, the following shall be reported:

- Load-deflection readings.
- Compressive strength of cube specimens at 28 days.

4.2 Embedment Tests:

4.2.1 Procedure: The sample panels shall measure 48 inches (1219 mm) wide by 48 inches (1219 mm) high and consist of 2-by-4 wood studs spaced at 16 inches (406 mm) on center. The studs shall be sheathed with minimum $^1/_2$-inch-thick (12.7 mm) wood-based sheathing applied horizontally in accordance with the IBC. Two layers of a water-resistive barrier shall be attached to the wall sheathing using staples spaced approximately 12 inches (304.8 mm) on center around the panel perimeter. A $^3/_4$-inch-deep (19 mm) plaster stop or grounds shall be fastened around the panel perimeter.

When testing metal plaster bases with backing as required under Section 3.5, one layer of the water-resistive barrier shall be preapplied to the wood-based sheathing as the second layer is attached as part of the paper-backed metal plaster base.

For self-furring or alternative lath, the lath shall be applied to the sample panels with one horizontal lap and fastened in accordance with the manufacturer's instructions. Fastener locations with respect to lath and supports shall represent all placement methods recommended by the manufacturer.

The first (scratch) and second (brown) coats for the sample panels shall be proportioned, mixed, applied and cured in accordance with ASTM C 926. The first coat shall be applied to a thickness of $^3/_8$ inch (9.5 mm). After observing the curing periods described in ASTM C 926, the second coat shall be applied over the first coat for a minimum $^1/_4$-inch (6.4 mm) average thickness.

After the minimum curing period described in ASTM C 926 has passed, the sample panels shall be cut open from top to bottom. The cuts shall be made diagonally from the top intersection of one end stud to the bottom intersection of the opposite end stud.

4.2.2 Evaluation: The cross section of each diagonal cut shall be fully visible and each wire location shall be measured with respect to its embedment in the plaster. All measurements shall be made from the back plane of the lath or wire to the back plane of the plaster.

4.3 Fastener Attachment: Test specimens shall be prepared in accordance with the IBC or IRC and the recommended installation instructions for the lath. At least five sample panels shall measure 12 inches (1219 mm) wide and a height sufficient to permit placement or three or more fasteners and consist of 2-by wood studs, with one stud centered in panel, of the minimum specific gravity described in the recommended installation instructions for the lath. The studs shall be sheathed with minimum $^1/_2$-inch-thick (12.7 mm) wood-based sheathing applied horizontally in accordance with the IBC. One layer of a water-resistive barrier shall be attached to the wall sheathing using staples spaced approximately 12 inches (305 mm) on center around the panel perimeter. A $^3/_4$-inch-deep (19 mm) plaster stop or grounds shall be fastened around the panel perimeter.

The alternative lath shall be applied to the sample panels with one horizontal lap and fastened to the center stud in accordance with the manufacturer's instructions. Fastener locations with respect to lath and supports shall represent all placement methods recommended by the manufacturer.

The first (scratch) and second (brown) coats for the sample panels shall be proportioned, mixed, applied and cured in accordance with ASTM C 926. The first coat shall be applied to a thickness of $^3/_8$ inch (9.5 mm). After observing the curing periods described in ASTM C 926, the second coat shall be applied over the first coat for a minimum $^1/_4$-inch (6.4 mm) average thickness. After the plaster has cured, the sheathing shall be removed. The

center stud shall be placed in a rigid jig to assure each fastener receives equivalent loads. The sample panels shall then be tested in tension by pulling the stud away from the plaster surface at a rate of 2 inches per minute (51 mm/min) until failure occurs. Results shall be reported for each sample and each fastener in a sample.

4.4 Stiffness Test:

4.4.1 A minimum of three specimens shall be tested against three control samples of $^3/_8$-inch (9.52 mm), 3.4 lb/yd^2 rib lath complying with ASTM C 847. Testing shall be conducted on a deflection testing apparatus as shown in Figure 1. The span between the supports shall be 24 inches (1219 mm), with the load being applied at two equally spaced points. The load and support beams shall be 2-by-4 lumber with a length at least as great as the width of the test specimen.

4.4.2 Procedure:

• The test specimen shall be 28 to 30 inches (711 to 762 mm) long and the same width as the control sample [27 inches + $^3/_{16}$ inch (686 mm + 4.8 mm)].

• The specimen is centered on the upright supports. The test specimen shall be installed in the test apparatus with the face of the lath intended to be installed to the outside facing down. The test specimen shall be loosely laid on the supports and not be fastened to the supports.

• To ensure that the test specimen lies flat on the support, a 2-by-4 the same length as the supports is laid on top of th test specimen edges over the supports.

• Deflection measurements shall be taken at three equally spaced points along the center of the width of the test specimen.

• The load beams are placed against the lath specimen and deflection measurements taken.

• The load is increased evenly across the load beams in approximately 2-pound increments (0.9 kg), and the three deflection measurements are recorded at each load increment.

• The test is terminated when the load reaches 20 pounds (9 kg) or when the lath deflects to the bottom of the 2-by-4 supports.

5.0 QUALITY CONTROL

5.1 Quality documentation complying with the ICC-ES Acceptance Criteria for Quality Documentation (AC10) shall be submitted.

5.2 Third-party follow-up inspections are not required by this acceptance criteria. ■

Deflection Test Apparatus for Alternative Lath

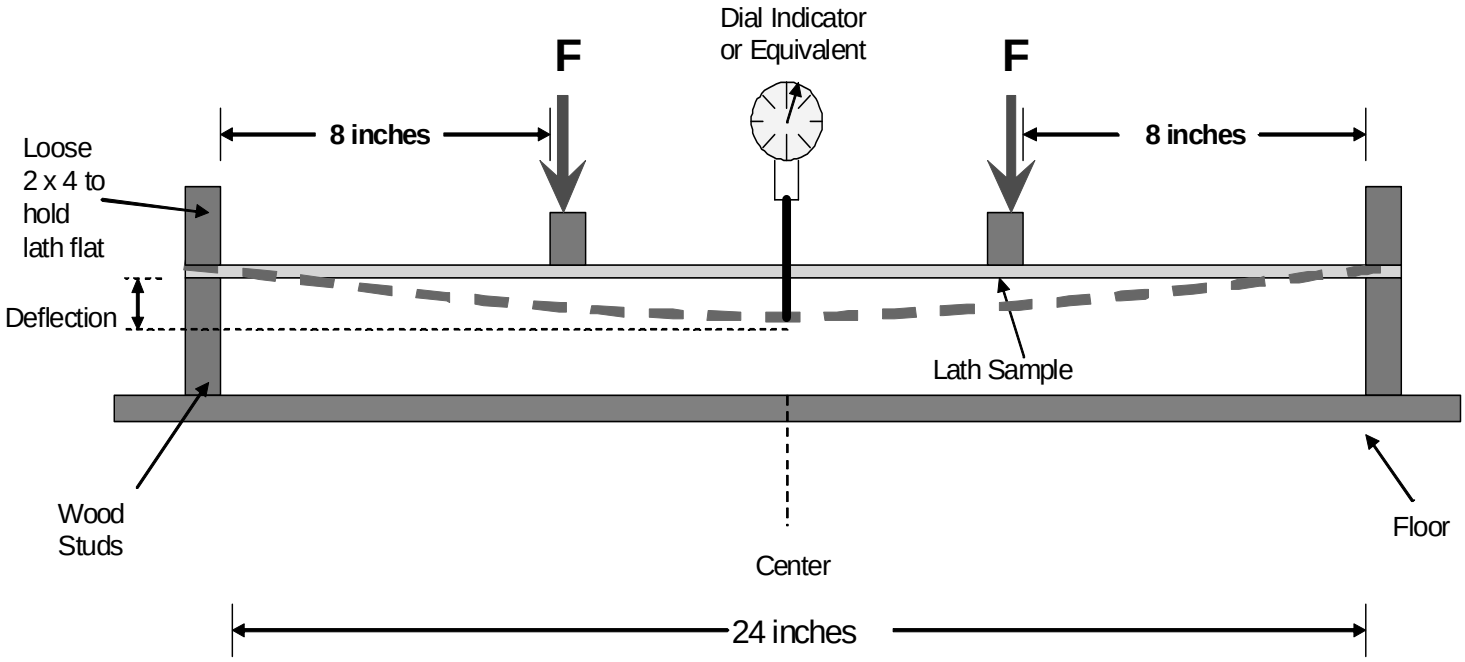

FIGURE 1 — SCHEMATIC OF TEST FIXTURE