



ICC Evaluation Service, Inc.
www.icc-es.org

Business/Regional Office ■ 5360 Workman Mill Road, Whittier, California 90601 ■ (562) 699-0543
Regional Office ■ 900 Montclair Road, Suite A, Birmingham, Alabama 35213 ■ (205) 599-9800
Regional Office ■ 4051 West Flossmoor Road, Country Club Hills, Illinois 60478 ■ (708) 799-2305

Legacy report on the 1997 Uniform Building Code™, the 2000 International Building Code®, the BOCA® National Building Code/1999 and the 1999 Standard Building Code®

DIVISION: 05—METALS
Section: 05400—Cold-Formed Metal Framing

BEARING AND NONBEARING STEEL STUDS

STEEL STUD MANUFACTURERS ASSOCIATION
8 SOUTH MICHIGAN AVENUE, SUITE 1000
CHICAGO, ILLINOIS 60603

ALLIED STUDCO
2525 NORTH 27TH AVENUE
PHOENIX, ARIZONA 85009

CEMCO
263 COVINA LANE
CITY OF INDUSTRY, CALIFORNIA 91744

CLARKWESTERN BUILDING SYSTEMS, INC.
6510 GENERAL DRIVE
RIVERSIDE, CALIFORNIA 92509

CONSOLIDATED FABRICATORS CORP.
7815 EAST SOMERSET
PARAMOUNT, CALIFORNIA 90723

CUSTOM STUD, INC.
8415 220TH STREET WEST
LAKEVILLE, MINNESOTA 55044

DESIGN SHAPES IN STEEL
10315 EAST RUSH
SOUTH EL MONTE, CALIFORNIA 91733

DIETRICH INDUSTRIES, INC.
500 GRANT STREET, SUITE 2226
PITTSBURGH, PENNSYLVANIA 15219

NEXFRAME
4819 FITE COURT
STOCKTON, CALIFORNIA 95215

OLMAR SUPPLY dba DENMAR STEEL, INC.
6765 PRESTON AVENUE #D
LIVERMORE, CALIFORNIA 94550

QUAIL RUN BUILDING MATERIALS, INC.
2102 WEST LONE CACTUS DRIVE
PHOENIX, ARIZONA 85027

SCAFCO CORPORATION
6212 EAST MAIN AVENUE
POST OFFICE BOX 11215
SPOKANE, WASHINGTON 99211-1215

STEEL CONSTRUCTION SYSTEMS
11250 ASTRONAUT BOULEVARD
ORLANDO, FLORIDA 32837

STEELER, INC.
10023 MARTIN LUTHER KING WAY SOUTH
SEATTLE, WASHINGTON 98178

UNITED METAL PRODUCTS, INC.
234 NORTH SHERMAN AVENUE
CORONA, CALIFORNIA 92882

UNITED STEEL MANUFACTURING
2966 EAST VICTORIA STREET
RANCHO DOMINGUEZ, CALIFORNIA 90221

1.0 SUBJECT

Bearing and Nonbearing Steel Studs, Joists and Tracks.

2.0 DESCRIPTION

The design of the steel studs, joists and tracks described in this report complies with Section 2217 of the 1997 Uniform Building Code™ (UBC), Section 2205 of the 2000 International Building Code® (IBC), Section 2206.1 of the BOCA National Building Code/1999 and Section 2204.1 of the 1999 Standard Building Code.

2.1 General:

Punched steel studs and unpunched joists and tracks are roll-formed in various depths with the metal thicknesses indicated in Table 1.

Section designations, section properties, steel yield strength, etc., are set forth on pages 6 through 11 and pages 2 through 5 of the accompanying Steel Stud Manufacturers

*Revised August 2003, May 2007, and December 2007

ICC-ES legacy reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, Inc., express or implied, as to any finding or other matter in this report, or as to any product covered by the report.



Association catalogs, "Product Technical Information," dated 7/01, and "Supplemental Product Technical Information," dated May 2001. Web crippling details and maximum web crippling loads are noted on pages 39 through 41, and pages 6 and 7, of the accompanying catalogs.

2.2 Nonbearing Wall Heights:

Allowable nonbearing wall heights for interior composite wall design are noted on pages 12 and 13 of the accompanying catalog dated 7/01. For tables on pages 12 and 13, the gypsum wallboard must be installed on both sides of the wall framing for the full wall height, with the long dimension of the gypsum wallboard parallel to the wall height. Allowable interior nonstructural wall heights, using only section properties of the steel, are noted on pages 14 and 15. Allowable limiting wall heights for curtain walls are noted on pages 16 through 19 of the accompanying catalog.

2.3 Load-bearing Wall Studs:

Allowable axial loads combined with lateral loads for various heights and stud spacings based on mechanical bracing at maximum 48 inches (1219 mm) on center and sheathing on both sides for lateral stability, with the design complying with Section C5 in the "Specification for the Design of Cold-formed Steel Structural Members," 1996 edition, are noted on pages 20 through 30 of the accompanying catalog dated 7/01.

2.4 Joist:

Allowable joist span for various loads, joist spacings and span conditions are noted on pages 31 through 36 of the accompanying catalog dated 7/01.

2.5 Header Load Table:

Allowable loads for header construction are noted on pages 37 and 38 of the accompanying catalog dated 7/01.

2.6 Ceiling Span:

Allowable ceiling span for 4 psf, 6 psf and 13 psf (192 N/m², 287 N/m² and 633 N/m²) total loading, L/240 and L/360 deflections, various spacings and span conditions are noted on pages 42 and 43 of the accompanying catalog dated 7/01.

2.7 Materials:

2.7.1 Steel Members: Studs, joists and tracks are formed from steel having a minimum 33,000 psi (228 MPa) yield point (ASTM A653 SS Grade 33 or ASTM A1011 SS Grade 33) for thicknesses of 0.0179 inch (18 mils) (0.454 mm) through 0.1180 inch (118 mils) (3 mm), and a minimum 50,000 psi (345 MPa) yield point (ASTM A 653 SS Grade 50, Class 1 or 3, or ASTM A 1011 SS Grade 50) for thicknesses of 0.0538 inch (54 mils) (1.366 mm) through 0.1180 inch (118 mils) (3 mm).

2.7.2 Gypsum Board: Gypsum board conforms to ASTM C 36, with thicknesses of $\frac{1}{2}$ inch (12.7 mm) and $\frac{5}{8}$ inch (15.9 mm).

2.7.3 Steel Screws: No. 6, Type S, $1\frac{1}{8}$ -inch-long (28.6 mm) steel screws conform to ASTM C 1002.

2.8 Tables and Details:

The catalogs entitled "Product Technical Information," dated 7/01, and "Supplemental Product Technical Information," dated May 2001, which are a part of this report, are available on the ICC-ES web site and on the ICC-ES evaluation report CD-ROM, under ER-4943. Only the items indicated in Table 3, for the catalog dated 7/01, are part of this report (the *entire* catalog dated May 2001 is part of this report).

Structural properties for the effective moments of inertia on pages 6 through 11 of the catalog dated 7/01, and pages 2 through 5 of the catalog dated May 2001, are based on Procedure I for deflection determination at the allowable moment Ma .

Allowable wall height tables on pages 14 through 19 of the catalog dated 7/01 are based on the following considerations:

- The tabulated partition heights are based on flexure, deflection and shear, whichever governs.
- Allowable end reaction based on table heights must be checked for web crippling allowable concentrated loads. End reaction = [load (psf)] [spacing (in.)] [height from table (ft.)]/24.
- Heights are based on web punchouts at a minimum distance of (1.5h) from the edge of bearing (h is the stud web depth).

Pages 47 and 48 of the catalog dated 7/01 are not recognized as part of this report.

2.9 Identification:

Each stud is identified with the manufacturer's name, yield strength [if over 33 ksi (228 MPa)], minimum base-metal thickness, and the report number embossed or stamped on the web of each section at a maximum of 48 inches (1219 mm) on center.

3.0 EVIDENCE SUBMITTED

Descriptive details, load test reports, engineering calculations, report of composite construction load test and proposed product technical information, in accordance with the ICC-ES Acceptance Criteria for Steel Studs, Joists and Tracks (AC46), dated January 2001.

4.0 FINDINGS

That the Steel Stud Manufacturers Association Bearing and Nonbearing Steel Studs, Joists and Tracks described in this report comply with the 1997 *Uniform Building Code*[™], the 2000 *International Building Code*[®], the BOCA[®] *National Building Code* 1999 and the 1999 *Standard Building Code*[®], subject to the following conditions:

- 4.1 Studs, joists and tracks are installed in accordance with this report and the manufacturer's instructions.**
- 4.2 Allowable heights and loadings comply with the accompanying tables.**
- 4.3 Uncoated minimum steel thickness of cold-formed members as delivered to the jobsite shall be at least 95 percent of the thickness used in design.**
- 4.4 Complete plans and calculations verifying compliance with this report must be submitted to the building official for each project.**
- 4.5 The studs are manufactured at the facilities noted in Table 1.**
- 4.6 Stud member end reactions, resulting from allowable heights and loads, as noted in the accompanying tables, must be checked with the web crippling tables noted in the accompanying catalog.**

This report is subject to re-examination in two years.

TABLE 1—METAL THICKNESS

MINIMUM THICKNESS ¹ (mils)	DESIGN THICKNESS (inch)	REFERENCE GAGE
18	0.0188	25
27	0.0283	22
30	0.0312	20 drywall
33	0.0346	20 structural
43	0.0451	18
54	0.0566	16
68	0.0713	14
97	0.1017	12
118	0.1242	10

For **SI**: 1 inch = 25.4 mm.

¹ Minimum thickness represents 95 percent of the design thickness and is the minimum acceptable thickness of base metal delivered to the jobsite.

TABLE 2—MANUFACTURING FACILITIES

COMPANY	MANUFACTURING FACILITY
Allied Studco	2525 N. 27th Ave., Phoenix, Arizona
CEMCO	263 Covina Lane, City of Industry, California
CEMCO	1001-A Pittsburgh Antioch, Pittsburgh, California
ClarkWestern Building Systems, Inc.	6510 General Drive, Riverside, California
Consolidated Fabricators Corp.	7815 E. Somerset, Paramount, California
Custom Stud, Inc.	21778 Highview Avenue, Lakeville, Minnesota
Design Shapes in Steel	10315 E. Rush, South El Monte, California
Dietrich Industries	420 South 53rd Ave, Phoenix, Arizona
Dietrich Industries	2525 South Airport Way, Stockton, California
Dietrich Industries	91-300 Hanua Street, Kapolei, Hawaii
Dietrich Industries	2001 Cooley Drive, Colton, California
Dietrich Industries	3351 East Valley Road, Renton, Washington
Dietrich Industries	6700 Franklin Street, Denver, Colorado
NEXFRAME	4819 Fite Court, Stockton, California
Olmar Supply dba Denmar Steel, Inc.	6765 Preston Avenue #D Livermore, California
Quail Run Building Materials, Inc.	2102 West Lone Cactus Dr., Phoenix, Arizona
SCAFCO Corporation	6212 E. Main Ave., Spokane, Washington
Steel Construction Systems	11250 Astronaut Boulevard, Orlando, Florida
Steeler, Inc.	6851 Smith Avenue, Newark, California
Steeler, Inc.	10023 Martin Luther King Way South, Seattle, Washington
United Metal Products, Inc.	234 N. Sherman Ave., Corona, California
United Steel Manufacturing	2966 East Victoria Street, Rancho Dominguez, California

TABLE 3—ITEMS FROM THE CATALOG DATED 7/01 THAT ARE PART OF THIS EVALUATION REPORT

ITEM	PAGES
General Product Information	1-5
Physical Structural Properties Tables	6-11
Interior Composite Wall Height Tables	12-13
Allowable Nonbearing Wall Heights Tables	14-19
Combined Lateral and Axial Load Tables	20-30
Joist Span Tables	31-36
Header Load Tables	37-38
Web Crippling Tables and Details	39-41
Ceiling Span Table and Detail	42-43
U-Channel and Furring Channel Section Properties and Spans	45-47
Typical Details	44, 49 and 50