

A Compendium of Steel References for the Design Office

The Committee on Design of Steel Building Structures of the Committee on Metals of the Structural Division of ASCE of the Structural Engineering Institute of ASCE was formed in 1981 with the express purpose of studying problems that are uniquely associated with the design of the overall structural steel building. Previous publications by this committee have been written to address specific design office problems that have not been addressed through concerted efforts of research and development.

As part of the continuing effort to bring useful information to the design community, the Committee on Design of Steel Building Structures recognized a need for a list of references covering a variety of subjects. Therefore, a compendium of selected, accurate, complete and available references on a wide variety of subjects regarding design of steel structures was assembled by collecting references that are used by the Committee members and their associates. The subjects were selected to cover a fairly wide range of subjects of interest to those practicing in a design office. The references were selected to be current, complete and easily available. As a general guideline, a maximum of three references were selected; hence some other very good references may not appear on the list. Therefore the absence of a reference from this list should not be taken as an unfavorable comment on that reference but rather a need to economize the listing.

This list is offered to the design community as a useful reference. It is expected that publication of this list will inspire responses from the design community, including added suggestions for references. Readers of this article are invited to offer comments on this list. Future discussion will allow these comments to be brought forth. Comments should be addressed to:

The Committee on Design of Steel Building Structures, Structural Engineering Institute, 1801 Alexander Bell Dr., Reston, VA 20191-4400 (email: sei@asce.org).

Anchor Rods and Embedments

- *Manual of Steel Construction - Load and Resistance Factor Design (LRFD)*, Second Edition, Vol. 2, "Connections," American Institute of Steel Construction (AISC), pp. 8-88, Chicago, Illinois, (1994).
- Fisher, J. M., "Industrial Buildings: Roofs to Column Anchorage," American Institute of Steel Construction (AISC) *Steel Design Guide Series, No. 7*, American Institute of Steel Construction (AISC), Chicago, Illinois, (1993).
- DeWolf, J. T., and Ricker, D. T., "Column Base Plates," American Institute of Steel Construction (AISC) *Steel Design Guide Series, No. 1*, American Institute of Steel Construction (AISC), Chicago, Illinois, (1990).

Base Plates

- *Manual of Steel Construction - Load and Resistance Factor Design (LRFD)*, Second Edition, Vol. 2, "Connections," American Institute of Steel Construction (AISC), pp. 11-54, Chicago, Illinois, (1994).
- *Manual of Steel Construction - Allowable Stress Design (ASD)*, Ninth Edition, American Institute of Steel Construction (AISC), pp. 3-106 to 3-110, Chicago, Illinois, (1989).
- DeWolf, J. T., and Ricker, D. T., "Column Base Plates," American Institute of Steel Construction (AISC) *Steel Design Guide Series, No. 1*, American Institute of Steel Construction (AISC), Chicago, Illinois, (1990).

Beams

- Salmon, C. G., and Johnson, J. E., *Steel Structures: Design and Behavior*, Fourth Edition, Chapters 7-10, Harper Collins College Publishers, New York, New York, (1996).
- Geschwindner, L. F., Disque, R. O., and Bjorhovde, R., *Load and Resistance Factor Design of Steel Structures*, Chapter 7, Prentice-Hall, Englewood Cliffs, New Jersey, (1994).

Beam-Columns

- Galambos, T. V., Ed., *Guide to Stability Design Criteria for Metal Structures*, Fourth Edition, Wiley-Interscience, New York, New York, (1988).

Bearing Plates

- Salmon, C. G., and Johnson, J. E., *Steel Structures: Design and Behavior*, Fourth Edition, Chapters 11 and 13, Harper Collins College Publishers, New York, New York, (1996).

Bolts

- "LRFD Specification for Structural Joints Using ASTM A325 and A490 Bolts," Research Council on Structural Connections, American Institute of Steel Construction (AISC), Chicago, Illinois, (1994).
- Kulak, G. L., Fisher, J. W., and Struik, J. H. A., *Guide to*

Design Criteria for Bolted and Riveted Joints, Second Edition, Wiley-Interscience, New York, New York, (1987).

- *Manual of Steel Construction - Load and Resistance Factor Design (LRFD)*, Second Edition, Vol. 2, "Connections," American Institute of Steel Construction (AISC), Chicago, Illinois, (1994).

Bracing

- "Is Your Structure Suitably Braced?," Structural Stability Research Council (SSRC), Lehigh University, Bethlehem, Pennsylvania, (1993).
- *Manual of Steel Construction - Load and Resistance Factor Design (LRFD)*, Second Edition, Vol. 2, "Connections," American Institute of Steel Construction (AISC), Chapter 7, (1994).
- Nair, R. S., "Forces on Bracing Systems," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 29, No. 1, pp. 45, First Quarter, (1992).
- Fisher, J. M., "The Importance of Tension Chord Bracing," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 20, No. 3, pp. 103-106, Third Quarter, (1983).
- Lutz, L. A., and Fisher, J. M., "A Unified Approach For Stability Bracing Requirements," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 22, No. 4, pp. 163-167, Fourth Quarter, (1985).
- Rongoe, J., "Design Guidelines for Continuous Beams Supporting Steel Joist Roof Structures," *National Steel Construction Conference Proceedings*, Phoenix, pp. 23.1-23.44, American Institute of Steel Construction (AISC), Chicago, Illinois, (1996).

Buckling

- Bleich, F., *Buckling Strength of Metal Structures*, McGraw-Hill Book Company, New York, (1952).
- Galambos, T. V., Ed., *Guide to Stability Design Criteria for Metal Structures*, Fourth Edition, Wiley-Interscience, New York, New York, (1988).

Cambering

- Larson, J. W., and Huzzard, R. K., "Economical Use of Cambered Steel Beams," *National Steel Construction Conference Proceedings*, Kansas City, American Institute of Steel Construction (AISC), Chicago, Illinois, (1990).
- Ricker, D. T., "Cambering Steel Beams," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 26, No. 4, pp. 136-142, Fourth Quarter, (1989).

Cladding Supports

- Fisher, J. M., and West, M. A., "Serviceability Design Considerations for Low Rise Buildings," American Institute of Steel Construction (AISC) *Steel Design Guide Series*, No. 3, American Institute of Steel Construction (AISC), Chicago, Illinois, (1990).

Columns

- Galambos, T. V., Ed., *Guide to Stability Design Criteria for Metal Structure*, Fourth Edition, Wiley-Interscience, New York, New York, (1988).
- Geschwindner, L. F., Disque, R. O., and Bjorhovde, R., *Load and Resistance Factor Design of Steel Structures*, Chapter 6, Prentice-Hall, Englewood Cliffs, New Jersey, (1994).

Cold Formed Steel Structures

- *Load and Resistance Factor Design (LRFD) Cold-Formed Steel Design Manual*, American Iron and Steel Institute

(AISI), Washington, D.C., (1991).

- Yu, W. W., *Cold-Formed Steel Design*, Second Edition, Wiley-Interscience, New York, New York, (1991).

Composite Construction

- Salmon, C. G., and Johnson, J. E., *Steel Structures, Design and Behavior*, Fourth Edition, Chapter 16, Harper Collins College Publishers, New York, New York, (1996).
- Viest, I. M., Editor-in-Chief, *Composite Construction Design for Buildings*, McGraw-Hill/ASCE, New York, New York, (1997).
- *Manual of Steel Construction - Load and Resistance Factor Design (LRFD)*, Second Edition, Vol. 2, "Connections," American Institute of Steel Construction (AISC), Chicago, Illinois, (1994).
- Thornton, W. A., and Kane, T., "Connections," *Structural Steel Designers Handbook, Section 5*, Brockenbrough, R. L. and Merritt, F. S., Eds., Second Edition, McGraw Hill, New York, (1994).

Coped Beams

- *Manual of Steel Construction - Load and Resistance Factor Design (LRFD)*, Second Edition, Vol. 2, "Connections," American Institute of Steel Construction (AISC), Chicago, Illinois, (1994).

Crane Runways

- Ricker, D. T., "Tips for Avoiding Crane Runway Problems," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 19, No. 4, pp. 181-205, Fourth Quarter, (1982).
- Fisher, J. M., "Industrial Buildings: Roofs to Column Anchorage," American Institute of Steel Construction (AISC) *Steel Design Guide Series*, No. 7, American Institute of Steel Construction (AISC), Chicago, Illinois, (1993).
- "Guide for the Design and Construction of Mill Buildings," Association of Iron and Steel Engineers (AISE) *Technical Report*, No. 13, Pittsburgh, Pennsylvania, (1991).

Deflections

- Fisher, J. M., and West, M. A., "Serviceability Design Considerations for Low Rise Buildings," American Institute of Steel Construction (AISC) *Steel Design Guide Series*, No. 3, American Institute of Steel Construction (AISC), Chicago, Illinois, (1990).
- Ruddy, J. L., "Ponding of Concrete Floor Decks," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 23, No. 3, pp. 107-115, Third Quarter, (1986).

Diaphragms

- Luttrell, L. D., Steel Deck Institute (SDI) *Diaphragm Design Manual*, Second Edition, Steel Deck Institute (SDI), (1990).

Drift

- "Wind Drift Design of Steel-Framed Buildings: State of the Art Report," Task Committee on Drift Control of Steel Building Structures, *Journal of Structural Engineering*, American Society of Civil Engineers (ASCE), Vol. 114, No. 9, pp. 2085-2108, September, (1988).
- Fisher, J. M., and West, M. A., "Serviceability Design Considerations for Low Rise Buildings," American Institute of Steel Construction (AISC) *Steel Design Guide Series*, No. 3, American Institute of Steel Construction (AISC), Chicago, Illinois, (1990).

Elevator Beams

- *Safety Code for Elevators and Escalators*, ANSI/ASME A17.1, American National Standards Institute (ANSI) and American Society of Mechanical Engineers (ASME), New York, New York, (1987).
- "Compendium of Design Office Problems," Committee on Design of Steel Building Structures, *Journal of Structural Engineering*, American Society of Civil Engineers (ASCE), Vol. 118, No. 12, pp. 3444-3465, December, (1992).

Erection

- "Code of Standard Practice for Steel Buildings and Bridges," American Institute of Steel Construction (AISC), Chicago, Illinois, (1992).
- Fisher, J. M., and West, M. A., "Erection Bracing of Structural Steel Frames," 1995 *National Engineering Conference Proceedings*, San Antonio, pp. 34.1-34.24, American Institute of Steel Construction (AISC), Chicago, Illinois, (1995).

Expansion Joints

- *Manual of Steel Construction - Load and Resistance Factor Design (LRFD)*, Second Edition, Vol. 1, 1-13 to 1-14, American Institute of Steel Construction (AISC), Chicago, Illinois, (1994).
- "Expansion Joints in Buildings", *Federal Construction Council Technical Report, No. 65*, National Academy of Sciences, National Research Council, Washington, D.C., (1974).

Fatigue

- Fisher J. W., *Fatigue & Fracture in Steel Bridges*, Wiley, New York, (1984).
- Barsom, J. M., and Rolfe, S. T., *Fracture and Fatigue Control in Structures*, Second Edition, Prentice Hall, Englewood Cliffs, New Jersey, (1987).

Fire Protection

- Lie, T. T., "Structural Fire Protection," American Society of Civil Engineers (ASCE) *Practice Manual, No. 78*, New York, New York, (1992).
- *Designing Fire Protection for Steel Beams*, Subcommittee on Fire Technology of the Committee on Construction Codes and Standards, American Iron and Steel Institute (AISI), Washington, D.C., (1984).
- *Designing Fire Protection for Steel Columns*, Subcommittee on Fire Technology of the Committee on Construction Codes and Standards, American Iron and Steel Institute (AISI), Third Edition, Washington, D.C.
- *Designing Fire Protection for Steel Trusses*, Subcommittee on Fire Technology of the Committee on Construction Codes and Standards, American Iron and Steel Institute (AISI), Second Edition, Washington, D.C., (1981).

Fracture Mechanics/Brittle Fracture

- Barsom, J. M., and Rolfe, S. T., *Fracture and Fatigue Control in Structures*, Second Edition, Prentice Hall, Englewood Cliffs, New Jersey, (1987).

Frame Stability

- Timoshenko, S. P., and Gere, J. M., *Theory of Elastic Stability*, Second Edition, McGraw-Hill Book Company, Inc., New York, New York, (1961).
- Galambos, T. V., Ed., *Guide to Stability Design Criteria for Metal Structures*, Fourth Edition, Wiley-Interscience, New York, New York, (1988).
- Chen, W. F., and Toma, S., *Advanced Analysis of Steel*

Frames Theory, Software and Applications, CRC Press, Boca Raton, Florida, (1994).

Framing Systems

- Fisher, J. M., West, M. A., and Van de Pas, J. P., *Designing with Steel Joists*, Joist Girders, Steel Deck, NUCOR Corporation, Charlotte, North Carolina, (1991).
- Englekirk, R., *Steel Structures, Controlling Behavior Through Design*, John Wiley & Sons, New York, New York, (1994).

Grid Beam System

- Elleby, H. A., "Automated Analysis of Grid Beam Systems," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 5, No. 3, pp. 123-127, Third Quarter, (1968).
- Vukov, V., "Limit Analysis and Plastic Design of Grid Systems," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 23, No. 2, pp. 77-83, Second Quarter, (1986)

Heat Straightening

- Avent, R. R., "Engineered Heat Straightening Comes of Age," *Modern Steel Construction*, American Institute of Steel Construction (AISC), Vol. 35, No. 2, pp. 32-39, February, (1995).
- Avent, R. R., "Engineered Heat Straightening," 1995 *National Steel Construction Conference Proceedings*, San Antonio, pp. 2-1 to 2-18, American Institute of Steel Construction (AISC), Chicago, Illinois, (1995).
- Avent, R. R., "Heat Straightening: Fact and Fable," *Journal of Structural Engineering*, American Society of Civil Engineers (ASCE), Vol. 115, No. 11, pp. 2773-2793, November, (1989).

Horizontally Curved Beams

- *Guide Specifications for Horizontally Curved Highway Bridges*, American Association of State Highway and Transportation Officials, (AASHTO), Washington, D.C., (1993).
- Brookhart, G. C., "Circular-Arc I-Type Girders," *Journal of the Structural Division*, American Society of Civil Engineers (ASCE), Vol. 93, ST6, pp. 133-159, December, (1967).

Human Response to Floor Vibrations

- Murray, T. M., "Building Floor Vibrations," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 28, No. 3, pp. 102-109, Third Quarter, (1991).

Industrial Buildings

- "Roof Framing with Cantilever Girders and Open Web Joists," Canadian Institute of Steel Construction, Willowdale, Ontario, Canada, (1989).
- Fisher, J. M., "Industrial Buildings: Roof to Column Anchorage," American Institute of Steel Construction (AISC) *Steel Design Guide Series, No. 7*, (1993).
- *Guide for the Design and Construction of Mill Buildings*, Association of Iron and Steel Engineers (AISE) Technical Report, No. 13, Pittsburgh, Pennsylvania, (1991).

Inspection

- *A Guide to Engineering and Quality Criteria for Steel Structures*, Fourth Edition, American Institute of Steel Construction (AISC), Chicago, Illinois, (1997).
- "Suggested Procedure for Inspecting and Upgrading Existing Structures," *Guide for the Design and*

Construction of Mill Buildings, Association of Iron and Steel Engineers (AISE) Technical Report, No. 13, Supplement II, Pittsburgh, Pennsylvania, (1991).

- Brock, D. S., and Sutcliffe, L. L., Jr., *Field Inspection Handbook*, McGraw-Hill, New York, (1986).

Instantaneous Center of Rotation

- Crawford, S. F., and Kulak, G. L., "Eccentrically Loaded Bolted Connections," *Journal of the Structural Division*, American Society of Civil Engineers (ASCE), Vol. 97, No. ST3, pp. 765-784, March, (1971).

Jumbo Shapes

- Bjorhovde, R., "Solutions for the Use of Jumbo Shapes," *1988 National Steel Construction Conference Proceedings*, Miami Beach, pp. 2.1-2.20, American Institute of Steel Construction (AISC), Chicago, Illinois, (1988).
- Fisher, J. W., and Pense, A. W., "Experience with Use of Heavy W-Shapes in Tension," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 24, No. 2, pp. 63-77, Second Quarter, (1987).
- Barsom, J. M., "Material Considerations in Structural Steel Design," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 24, No. 3, pp. 127-139, Third Quarter, (1987).

Knee Braces

- Vilas, H. K., and Surtees, J. O., "Analysis of Knee-Braced Portal Frames For Vertical Loading," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 20, No. 4, pp. 181-184, Fourth Quarter, (1983).
- Vilas, H. K., and Surtees, J. O., "Analysis of Knee-braced Portal Frames For Vertical Loading: Part 2 - Columns of Unequal Stiffness," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 21, No. 4, pp. 223-226, Fourth Quarter, (1984).

Lamellar Tearing

- "Commentary on Highly Restrained Welded Connections," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 10, No. 3, pp. 61-73, Third Quarter, (1973).
- Thornton, C. H., "Quality Control in Design and Supervision Combine to Eliminate Lamellar Tearing," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 10, No. 4, pp. 112-116, Fourth Quarter, (1973).
- Kloiber, L. A., "The Fabrication and Erection of Minneapolis Convention Center," *Proceedings of the Sessions Related to Steel Structures*, Structures Congress '89, San Francisco, pp. 165-174, American Society of Civil Engineers (ASCE), Washington, D.C., (1989).

Low Rise Buildings

- Fisher, J. M., and West, M. A., "Serviceability Design Considerations for Low Rise Buildings," American Institute of Steel Construction (AISC) *Steel Design Guide Series*, No. 3, American Institute of Steel Construction (AISC), Chicago, Illinois, (1990).
- Allison, H., "Low and Medium Rise Steel Buildings," American Institute of Steel Construction (AISC) *Steel Design Guide Series*, No. 5, (1991).

Material Properties

- Barsom, J. M., "Material Considerations in Structural Steel Design," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 24, No. 3, pp. 127-139, Third

Quarter, (1987).

- Barsom, J. M., "Properties of Bridge Steels," *Highway Structural Design Handbook*, Vol. 1, Chapter 3, American Institute of Steel Construction Marketing (AISC), Chicago, Illinois, May, (1991).
- Lankford, W. T., Samways, N. L., Craven, R. F., and McGannon, H. E., *The Making, Shaping and Treating of Steel*, Tenth Edition, Association of Iron and Steel Engineers (AISE), Pittsburgh, Pennsylvania, (1985).
- Geschwindner, L. F., Disque, R. O., and Bjorhovde, R., *Load and Resistance Factor Design of Steel Structures*, Chapter 4, Prentice-Hall, Englewood Cliffs, New Jersey, (1994).
- Brockenbrough, R. L., *Material Properties*, Chapter 1.2 in *Constructional Steel Design - An International Guide*, Dowling, P. J., Harding, J. E., and Bjorhovde, R., Eds., Elsevier Applied Science, London, England, (1992).

Metric Conversion

- *Manual of Steel Construction - Load and Resistance Factor Design (LRFD)*, Metric Conversion of the Second Edition, Vols. I and II, American Institute of Steel Construction (AISC), Chicago, Illinois, (1999).

Mill Practices

- Brockenbrough, R. L., *Material Properties*, Chapter 1.2 in *Constructional Steel Design - An International Guide*, Dowling, P. J., Harding, J. E., and Bjorhovde, R., Eds., Elsevier Applied Science, London, England, (1992).
- *Manual of Steel Construction - Load and Resistance Factor Design (LRFD)*, Second Edition, American Institute of Steel Construction (AISC), Chicago, Illinois, (1994).

Old Steel Shapes

- Ferris, H. W., *Iron and Steel Beams, 1873 - 1952*, American Institute of Steel Construction (AISC), Chicago, Illinois, (1985).

Painting

- Volume 1, *Good Painting Practice*, Second Edition, Steel Structures Painting Council, Pittsburgh, Pennsylvania, (1982).
- Volume 2, *Systems & Specifications*, Sixth Edition, Steel Structures Painting Council, Pittsburgh, Pennsylvania, (1991).

Parking Garages

- Troup, E. W. J., "Steel Frame Car Parks - New England Style," *Steel Construction Annual*, *New Hampshire Business Review*, Manchester, New Hampshire, (1989).

Plastic Design

- *Plastic Design in Steel: A Guide and Commentary*, Second Edition, American Society of Civil Engineers (ASCE) - Welding Research Council (WRC), New York, New York, (1971).
- Disque, R. O., *Applied Plastic Design in Steel*, Van Nostrand Reinhold Company, New York, (1971).
- *Specification for Structural Steel Buildings - Allowable Stress Design and Plastic Design*, American Institute of Steel Construction (AISC), Chicago, Illinois, (1989).

Plate Girders

- Geschwindner, L. F., Disque, R. O., and Bjorhovde, R., *Load and Resistance Factor Design of Steel Structures*, Chapter 8, Prentice-Hall, Englewood Cliffs, New Jersey, (1994).

- Salmon, C. G., and Johnson, J. E., *Steel Structures: Design and Behavior*, Fourth Edition, Chapter 11, Harper Collins College Publishers, New York, New York, (1996).
- Galambos, T. V., Lin, F. J., and Johnston, B. G., *Basic Steel Design with Load and Resistance Factor Design (LRFD)*, Chapter 7, Prentice-Hall, Upper Saddle River, New Jersey, (1996).
- *Manual of Steel Construction - Load and Resistance Factor Design (LRFD)*, Second Edition, Vol. 1, American Institute of Steel Construction (AISC), Chicago, IL, 1994.
- Zahn, C. J., "Plate Girder Design Using Load and Resistance Factor Design (LRFD)," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 24, No. 1, pp. 11-20, First Quarter, (1987).

Plate Structures

- "Design of Plate Structures," Committee of Steel Plate Producers, American Iron and Steel Institute (AISI) with cooperation of Steel Plate Fabricators Association, Downers Grove, Illinois, (1979).

Pre-engineered Metal Buildings

- *1996 Low Rise Building Systems Manual*, Metal Building Manufacturers Association (MBMA), Cleveland, Ohio, (1996).
- *Guide Specifications for Producer Engineered Steel Building Systems*, Metal Building Manufacturers Association (MBMA), Cleveland, Ohio, June, (1996).

Prying Action

- Thornton, W. A., "Prying Action - A General Treatment," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 22, No. 2, pp. 67-76, Second Quarter, (1985).
- Kulak, G. L., Fisher, J. W., and Struik, J. H. A., *Guide to Design Criteria for Bolted and Riveted Joints*, Second Edition, Wiley-Interscience, New York, New York, (1987).
- Thornton, W. A., "Strength and Serviceability of Hanger Connections" *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 29, No. 4, pp. 145-149, Fourth Quarter, (1992).
- *Manual of Steel Construction - Load and Resistance Factor Design (LRFD)*, Second Edition, American Institute of Steel Construction (AISC), Chicago, Illinois, (1994).

Riveted Joints

- Kulak, G. L., Fisher, J. W., and Struik, J. H. A., *Guide to Design Criteria for Bolted and Riveted Joints*, Second Edition, Wiley-Interscience, New York, New York, (1987).

Repair, Rehabilitation and Restoration

- Ricker, D. T., "Field Welding to Existing Steel Structures," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 25, No. 1, pp. 1-16, First Quarter, (1988).

Residual Stress

- Galambos, T. V., Ed., *Guide to Stability Design Criteria for Metal Structures*, Fourth Edition, Wiley-Interscience, New York, New York, (1988).
- Geschwindner, L. F., Disque, R. O., and Bjorhovde, R., *Load and Resistance Factor Design of Steel Structures*, Chapter 6, Prentice-Hall, Englewood Cliffs, New Jersey, (1994).

Rivets

- Kulak, G. L., Fisher, J. W., and Struik, J. H. A., *Guide to*

Design Criteria for Bolted and Riveted Joints, Second Edition, Wiley-Interscience, New York, New York, (1987).

Second Order Analysis

- Chen, W. F., and Toma, S., *Advanced Analysis of Steel Frames Theory Software & Application*, CRC Press, Boca Raton, Florida, (1994).
- Chen, W. F., and Sohal, I., *Plastic Design and Second-Order Analysis of Steel Frames*, Springer Verlag, New York, (1995).
- Galambos, T. V., Ed., *Guide to Stability Design Criteria for Metal Structures*, Fourth Edition, Wiley-Interscience, New York, New York, (1988).

Seismic Design

- *Recommended Lateral Force Requirements and Commentary*, Structural Engineers Association of California (SEAC), Sacramento, California, (1996).
- *Seismic Provisions for Structural Steel Buildings*, American Institute of Steel Construction (AISC), Chicago, Illinois, (1992), with *Supplement No. 1* (1999).
- *NEHRP Recommended Provisions for Seismic Regulations for New Buildings*, Federal Emergency Management Agency, Washington, D.C., (1994).
- Popov, E. P., "U. S. Seismic Steel Codes," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 28, No. 3, pp. 119-128, Third Quarter, (1991).
- Englekirk, R., *Steel Structures Controlling Behavior Through Design*, John Wiley & Sons, New York, New York, (1994).
- Naem, F., Ed., *The Seismic Design Handbook*, Van Nostrand Reinhold Company, New York, New York, (1989).
- Becker, R., Naem, F., and Teal E. J., *Seismic Design Practice for Steel Buildings*, Structural Steel Education Council, Moraga, California, (1988).

Semi-Rigid Frames and Connections

- Chen, W. F., and Toma S., *Advanced Analysis of Steel Frames*, CRC Press, Boca Raton, Florida, (1994).
- Chen, W. F., Goto, Y., and Liew, J. Y. R., *Stability Design of Semi-Rigid Frames*, John Wiley & Sons, New York, New York, (1996).
- Bjorhovde, R., Brozzetti, J., and Colson, A., *Connections in Steel Structures*, Elsevier Applied Science, London, (1988).
- Bjorhovde, R., Colson, A., Haaijer, G. and Stark, J. W. B., *Connections in Steel Structures II*, American Institute of Steel Construction (AISC), Chicago, Illinois, (1992).
- Bjorhovde, R., Colson, A., and Zandonini, R., *Connections in Steel Structures III*, Pergamon/Elsevier Science, Oxford, England, (1996).

Serviceability

- Leon, R. T., "Serviceability Criteria for Load and Resistance Factor Design (LRFD) Composite Floors," *1990 National Steel Construction Conference Proceedings*, Kansas City, American Institute of Steel Construction (AISC), Chicago, Illinois, (1990).
- Ellingwood, B. R., "Serviceability Guidelines for Steel Structures," *1988 National Steel Construction Conference Proceedings*, Miami Beach, American Institute of Steel Construction (AISC), Chicago, Illinois, (1988).
- Fisher, J. M., and West, M. A., "Serviceability Design Considerations for Low Rise Buildings," American Institute of Steel Construction (AISC) *Steel Design Guide*, No. 3, American Institute of Steel Construction (AISC), Chicago, Illinois, (1990).

Stability

- Nair, R. S., "Simple Solutions to Stability Problems in the Design Office," *1988 National Steel Construction Conference Proceedings*, Miami Beach, American Institute of Steel Construction (AISC), Chicago, Illinois, (1988).
- Galambos, T. V., Ed., *Guide to Stability Design Criteria for Metal Structures*, Fourth Edition, Wiley-Interscience, New York, New York, (1988).
- Timoshenko, S. P., and Gere, J. M., *Theory of Elastic Stability*, Second Edition, McGraw-Hill Book Company, New York, (1961).
- Chen, W. F., and Lui, E. M., *Structural Stability Theory and Implementation*, Elsevier Applied Science, London, (1987).

Staggered Truss Systems

- "Staggered Truss Framing Systems For High Rise Buildings," United States Steel (USS) *Technical Report ADUSS 27-5227-02*, Pittsburgh, Pennsylvania, (1972).

Stainless Steel

- *ASCE Specification for the Design of Stainless Steel Cold-Formed Structural Members*, American Society of Civil Engineers (ASCE) Standard No. ASCE-8-90.
- Pickering, F. B., Ed., *The Metallurgical Evolution of Stainless Steels*, American Society for Metals, Metals Park, Ohio, (1979).

Stairs

- *Metal Stairs Manual*, Fifth Edition, National Association of Architectural Metal Manufacturers, Chicago, Illinois, (1992)
- *Stock Components for Architectural Metal Work*, Catalog 16, Julius Blum & Company, Carlstadt, New Jersey, (1995-1999).
- *Code of Federal Regulation*, Title 29, Part 1926, Paragraphs 1926.500, 1926.1052, 1926.1053, U.S. Government Printing Office, Washington D.C., (1994).

Steel Deck

- *Design Manual for Composite Decks, Form Decks Roof Decks, and Cellular Metal Floor Deck with Electrical Distribution*, Publication No. 27, Steel Deck Institute, Canton, Ohio, (1995).
- *Standard for the Structural Design of Composite Slabs* ANSI/ASCE 3-91, American Society of Civil Engineers (ASCE), New York, New York, December, (1992).

Steel Joists

- Fisher, J. M., West, M. A., and Van De Pas, J. P., *Designing with Steel Joists, Joist Girders and Steel Deck*, Nucor Corporation, Charlotte, North Carolina, (1991).
- *Steel Joist Institute 60-Year Manual*, Steel Joist Institute, Myrtle Beach, South Carolina, (1992).
- *Standard Specifications, Load Tables, and Weight Tables for Steel Joists and Joist Girders*, Steel Joist Institute, Myrtle Beach, South Carolina, (1994).
- Brockenbrough, R. L., *Material Properties, Chapter 1.2 in Constructional Steel Design - An International Guide*, Dowling, P. J., Harding, J. E., and Bjorhovde, R., Eds., Elsevier Applied Science, London, England, (1992).

Steel Materials

- Brockenbrough, R. L., and Barsom, J. M., *Metallurgy, Chapter 1.1 in Constructional Steel Design - An International Guide*, Dowling, P. J., Harding, J. E., and

Bjorhovde, R., Eds., Elsevier Applied Science, London, England, (1992).

- Geschwindner, L. F., Disque, R. O., and Bjorhovde, R., *Load and Resistance Factor Design of Steel Structures*, Chapter 4, Prentice-Hall, Englewood Cliffs, New Jersey, (1994).
- Barsom, J. M., "Properties of Bridge Steels," *Highway Structures Design Handbook, Vol. 1*, American Institute of Steel Construction (AISC), Chicago, Illinois, (1991).
- Dieter, G., *Mechanical Metallurgy*, Third Edition, McGraw-Hill, New York, (1986).

Stepped Columns

- Lui, E. M., and Sun, M., "Effective Length of Uniform and Stepped Crane Columns," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 32, No. 3, pp. 98-106, Third Quarter, (1995).
- Agrawal, K. M., and Stafiej, A. P., "Calculation of Effective Length of Stepped Columns," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 17, No. 4, pp. 96-105, Fourth Quarter, (1980).
- "Guide for the Design and Construction of Mill Buildings," Association of Iron and Steel Engineers (AISE) *Technical Report, No. 13*, Pittsburgh, Pennsylvania, (1991).

Stress Corrosion Cracking

- Barsom, J. M., and Rolfe, S. T., *Fracture and Fatigue Control in Structures*, Second Edition, Prentice-Hall, Englewood Cliffs, New Jersey, (1987).

Tapered Members

- Lee, G. C., Ketter, R. L., and Hsu, *Design of Single Story Rigid Frames*, Metal Buildings Manufacturers Association (MBMA), Cleveland, Ohio, (1981).

Tension Members

- McGuire, W., *Steel Structures*, Prentice-Hall, Englewood Cliffs, New Jersey, (1968).
- Geschwindner, L. F., Disque, R. O., and Bjorhovde, R., *Load and Resistance Factor Design of Steel Structures*, Chapter 5, Prentice-Hall, Englewood Cliffs, New Jersey, (1994).

Thermal Movement

- "Expansion Joints in Buildings," *Federal Construction Council Technical Report, No. 65*, National Academy of Sciences - National Research Council, Washington, D.C., (1974).

Tolerances

- "Standard Specifications for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use," *ASTM A6*, American Society for Testing and Materials (ASTM), Philadelphia, Pennsylvania, (1992).
- *Code of Standard Practice for Steel Buildings and Bridges*, American Institute of Steel Construction (AISC), Chicago, Illinois, (1992).

Torsional Design

- Seaburg, P. A., and Carter, C. J., "Torsional Analysis of Structural Steel Members," American Institute of Steel Construction (AISC) *Steel Design Guide Series, No. 9*, American Institute of Steel Construction (AISC), Chicago, Illinois, (1997).
- Salmon, C. G., and Johnson, J. E., *Steel Structures: Design and Behavior*, Fourth Edition, Chapter 8, Harper Collins College Publishers, New York, New York, (1996).

Trusses

- Nair, R. S., "Secondary Stresses in Trusses," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 25, No. 4, p. 144, Fourth Quarter, (1988).

Tubular Structures

- *AWS D1.1 Structural Welding Code Steel*, American Welding Society (AWS), Miami, Florida, (1985).
- Kloiber, L. A., "Fabricating Architecturally Exposed Tube Structures," *1993 National Steel Construction Conference Proceedings*, Orlando, pp. 23.1-23.21, American Institute of Steel Construction (AISC), Chicago, Illinois, (1993).
- Packer, J. A., and Henderson, J. E., *Design Guide for Hollow Structural Section Connections*, Canadian Institute of Steel Construction, Willowdale, Ontario, Canada.
- Sherman, D. R., *Tubular Members, Chapter 2.4 in Constructional Steel Design - An International Guide*, Dowling, P. J., Harding, J. E. and Bjorhovde, R., Eds., Elsevier Applied Science, (1992).
- Wardenier, J., and Packer, J. A., *Connections Between Hollow Sections, Chapter 3.5 in Constructional Steel Design - An International Guide*, Dowling, P. J., Harding, J. E. and Bjorhovde, R., Eds., Elsevier Applied Science, (1992).
- *Hollow Structural Sections Connections Manual*, American Institute of Steel Construction (AISC), Chicago, Illinois, (1997).

Vibration

- Murray, T. M., Allen, D. E., and Ungar, E. E., "Floor Vibrations Due to Human Activity", American Institute of Steel Construction (AISC) *Steel Design Guide Series, No. 11*, American Institute of Steel Construction (AISC), Chicago, Illinois, (1997).

Weathering Steel

- "Uncoated Weathering Steel Bridges," *Highway Structures Design Handbook, Vol. 1, Chapter 9*, January, (1993).

Web Openings

- "Proposed Specification for Structural Steel Beams with Web Openings," ASCE Task Committee on Design Criteria for Composite Structures in Steel and Concrete, *Journal of Structural Engineering*, American Society of Civil Engineers (ASCE), Vol. 118, No. 12, pp. 3315-3324, New York, New York, December, (1992).
- "Commentary on Proposed Specification for Structural Steel Beams with Web Openings (with Design Example)," ASCE Task Committee on Design Criteria for Composite Structures in Steel and Concrete, *Journal of Structural Engineering*, American Society of Civil Engineers (ASCE), Vol. 118, No. 12, pp. 3325-3349, New York, New York, December, (1992).
- Darwin, D., "Design of Steel and Composite Beams with Web Openings," American Institute of Steel Construction (AISC) *Steel Design Guide Series, No. 2*, American Institute of Steel Construction (AISC), Chicago, Illinois, (1990).

Welding

- Blodgett, O., *Design of Welded Structures*, The James F. Lincoln Welding Foundation, Cleveland, Ohio, (1966).
- *AWS D1.1 Structural Welding Code Steel*, American Welding Society (AWS), Miami, Florida, (1985).
- Miller, D. K., "What Structural Engineers and Fabricators Need to Know About Weld Metal," *Engineering Journal*, American Institute of Steel Construction (AISC), Vol. 26, No. 3, pp. 110-116, Third Quarter, (1989).

- Julicher, A. J., "Weld Fundamentals for Structural Engineers," *Civil Engineering*, American Society of Civil Engineers (ASCE), pp. 60-61, January, (1981).
- Miller, D. K., "Assuring Weld Quality by the Proper Application of the D1.1 Structural Welding Code - Steel," *Proceedings of the American Institute of Steel Construction (AISC) Special Task Committee on the Northridge Earthquake Meeting*, Chicago, Illinois, (1994).
- *The Procedure Handbook of Arc Welding*, Twelfth Edition, The Lincoln Electric Company, Cleveland, Ohio, (1973).
- Linnert, G., *Welding Metallurgy*, Second Edition, American Welding Society (AWS), Miami, Florida, (1995).

Wind Response

- "Wind Loading and Wind-Induced Structural Response," a state-of-the-art report prepared by the Committee on Wind Effects, American Society of Civil Engineers (ASCE), New York, New York, (1987).
- Mehta, K. C., Marshall, R. D. and Perry, D. C., *Guide to the Use of Wind Load Provisions of ASCE 7-88*, American Society of Civil Engineers (ASCE), New York, New York, (1991).
- Simiu, E., and Scanlan, R. H., *Wind Effects on Structures: An Introduction to Wind Engineering*, Third Edition, Wiley-Interscience, New York, New York, (1996).

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