

12. REFERENCES

ATLSS, ~~*Fractographic Analysis of Specimens from Failed Moment Connections*, (publication pending, title not exact)~~ Fracture Analysis of Failed Moment Frame Weld Joints Produced in Full-Scale Laboratory Tests and Buildings Damaged in the Northridge Earthquake, SAC95-08, 1995.

ATLSS, ~~*Testing of Welded "T" Specimens*, (publication pending, title not exact), SAC, 1995~~ *A Study of the Effects of Material and Welding Factors on Moment-Frame Weld Joint Performance Using a Small-Scale Tension Specimen*. Kauffman, E.J., and Fisher, J.W., SAC95-08 1995.

Allen J., Personal Correspondence, *Test Reports for New Detail*, July 30, 1995.

Allen J., Partridge, J.E., and Richard, R.M., *Stress Distribution in Welded/Bolted Beam to Column Moment Connections*. The Allen Company, March, 1995.

American Association of State Highway and Transportation Officials, *Bridge Welding Code AASHTO/AWS D1.5*, 1995.

American Institute of Steel Construction, *Seismic Provisions for Structural Steel Buildings*, April, 1997

American Institute of Steel Construction, *Statistical Analysis of Charpy V-notch Toughness For Steel Wide Flange Structural Shapes*, July, 1995.

American Institute of Steel Construction, *Manual of Steel Construction, ASD, Ninth Edition*, 1989.

American Institute of Steel Construction, *Manual of Steel Construction, LRFD, Second Edition*, 1998.

American Institute of Steel Construction, *Load and Resistance Factor Design Specification for Structural Steel Buildings*, December 1, 1993.

American Institute of Steel Construction, *Specification for Structural Joints using ASTM A325 or A490 Bolts*. 1985.

American Institute of Steel Construction, *AISC Northridge Steel Update I*, October, 1994.

American Welding Society, *Guide for Nondestructive Inspection of Welds, AWS B1.10-86*, 1986.

American Welding Society, *Guide for Visual Inspection of Welds, AWS B1.11-88*, 1988.

American Welding Society, *Surface Roughness Guide for Oxygen Cutting, AWS C4.1-77*, 1977.

American Welding Society, *Structural Welding Code - Steel AWS D1.1-94*, 1994.

References

American Welding Society, *Structural Welding Code – Steel AWS D1.1-98, 1998*

Anderson, J.C., Johnson, R.G., Partridge, J.E., “Post Earthquake Studies of A Damaged Low Rise Office Building” *Technical Report: Case Studies of Steel Moment Frame Building Performance in the Northridge Earthquake of January 17, 1994 SAC 95-07*. SAC, December, 1995.

Anderson, J.C., Filippou, F.C., *Dynamic Response Analysis of the 18 Story Canoga Building*, SAC, March, 1995.

Anderson, J.C., *Test Results for Repaired Specimen NSF#1, Report to AISC Steel Advisory Committee*, June, 1995.

Applied Technology Council, *Earthquake Damage Evaluation Data for California ATC-13*, Redwood City, CA 1985.

Applied Technology Council, *Procedures for Post Earthquake Safety Evaluations of Buildings ATC-20*, Redwood City, CA, 1989.

Applied Technology Council, *Guidelines for Cyclic Seismic Testing of Components of Steel Structures, ATC-24*, Redwood City, CA, 1992.

Astaneh-Asl, A. *Post-Earthquake Stability of Steel Moment Frames with Damaged Connections*. Proceedings of the Third International Workshop on Connections in Steel Structures, University of Trento, Trento, Italy, 1995.

Avent, R., “Designing Heat-Straightening Repairs,” *National Steel Construction Conference Proceedings*, Las Vegas, NV, AISC, 1992.

Avent, R., “Engineered Heat Straightening,” *National Steel Construction Conference Proceedings*, San Antonio, TX, AISC, 1995.

Barsom, J. M. and Korvink, S. A. “Through-thickness Properties of Structural Steels”, manuscript submitted to ASCE Journal of Structural Engineering, 1997.

Beck, J.L., May, B.S., Polidori, D.C., Vanik, M.W., “Ambient Vibration Surveys of Three Steel-Frame Buildings Strongly Shaken by the 1994 Northridge Earthquake”, *Analytical and Field Investigations of Buildings Affected by the Northridge Earthquake of January 17, 1994, SAC 95-04 Part 2*, SAC, December, 1995.

Bertero, V.V., ~~and Whittaker, A. and Gilani, A., *Testing of Repaired Welded Beam-Column Assemblies*~~ *Seismic Testing of Full-Scale Steel Beam-Column Assemblies*, SAC96-01, ~~publication pending (title not exact), 1995X1996.~~

Blodgett, O., “Evaluation of Beam to Column Connections”, *SAC Steel Moment Frame Connection Advisory No. 3*, Feb. 1995.

References

Bonowitz, D, and Youssef, N. “SAC Survey of Steel-Moment Frames Affected by the 1994 Northridge Earthquake”, *Surveys and Assessment of Damage to Buildings Affected by the Northridge Earthquake of January 17, 1994 SAC 95-06*, SAC, 1995.

Building Seismic Safety Council. *NEHRP Recommended Provisions for Seismic Regulations for New Buildings -1991 Edition FEMA 222, (Commentary FEMA 223)*, Washington D.C., January, 1992.

Building Seismic Safety Council. *NEHRP Recommended Provisions for Seismic Regulations for New Buildings -1994 Edition FEMA 222A, (Commentary FEMA223A)*, Washington D.C., July, 1995.

Building Seismic Safety Council. *NEHRP Recommended Provisions for Seismic Regulations for New Buildings and Other Structures. – 1997 Edition, FEMA 302, (Commentary FEMA303)*, Washington, D.C., February, 1998

Campbell, K.W. and Bazorgnia, Y., “Near Source Attenuation of Peak Horizontal Acceleration from World Wide Accelerogram Records from 1957 - 1993,” *Proceedings of the Fifth National Conference on Earthquake Engineering*, Chicago, Ill, 1994.

Campbell, S., “*Modeling of Weld Fractures Using the Drain Programs*”, *Technical Report: Parametric Analytical Investigations of Ground Motion and Structural Response, Northridge Earthquake of January 17, 1994 SAC95-05*. SAC, 1995.

Chen, S.J. and Yeh, C.H., *Enhancement of Ductility of Steel Beam-to-Column Connections for Seismic Resistance*, Department of Construction Engineering, National Taiwan University, May, 1995.

Diererlein, G. “Summary of Building Analysis Studies” *Analytical and Field Investigations of Buildings Affected by the Northridge Earthquake of January 17, 1994, SAC 95-04 Part 1*, SAC, December, 1995

Durkin, M. E., “Inspection, Damage, and Repair of Steel Frame Buildings Following the Northridge Earthquake”, *Technical Report: Surveys and Assessment of Damage to Buildings Affected by the Northridge Earthquake of January 17, 1994 SAC 95-06*, SAC, December, 1995.

Engelhardt, M.D., and Sabol, T.A. *Testing of Welded Steel Moment Connections In Response to the Northridge Earthquake*, Progress Report to the AISC Advisory Subcommittee on Special Moment Resisting Frame Research, October, 1994.

Engelhardt, M. D., Keedong, K.M. Sabol T. A., Ho, L., Kim, H. Uzarski, J. and Abunnasar, H. “Analysis of a Six Story Steel Moment Frame Building in Santa Monica”, *Analytical and Field Investigations of Buildings Affected by the Northridge Earthquake of January 17, 1994, SAC 95-04 Part 1* SAC, December, 1995.

References

Engelhardt, M. D., Keedong, K.M., Uzarski, J., Abunassar, H., Sabol, T.A., Ho, L., and Kim, H. “Parametric Studies on Inelastic Modeling of Steel Moment Frames”, *Technical Report: Parametric Analytical Investigations of Ground Motion and Structural Response, Northridge Earthquake of January 17, 1994 SAC95-05*. SAC, 1995.

Engelhardt, M.D., Sabol, T. A., and Shuey, B.D. *Testing of Repair Concepts for Damaged Steel Moment Connections*, et. al. ~~*Testing of Repaired Welded Beam Column Assemblies*~~, SAC96-01, publication pending (title not exact), ~~1995~~1996.

Engelhardt, M.D., Fowler, T.J., and Barnes, C.A., *Acoustic Emission Monitoring of Welded Steel Moment Connection Tests*, et. al. ~~*Acoustic Emission Recordings for Welded Beam Column Assembly Tests*~~, SAC95-08, publication pending (title not exact), 1995.

Frank, K.H. “The Physical and Metallurgical Properties Of Structural Steels” *State of Art Papers: Metallurgy, Fracture Mechanics, Welding, Moment Connections and Frame System Behavior SAC 95-09*. SAC, September, 1996

Fillippou, F.C. “Nonlinear Static and Dynamic Analysis of Canoga Park Towers with FEAP-STRUC”, *Analytical and Field Investigations of Buildings Affected by the Northridge Earthquake of January 17, 1994, SAC 95-04 Part 2*, SAC., December, 1995.

Fisher, J.W., Dexter, R.J., and Kauffman, E.J., “Fracture Mechanics of Welded Structural Steel Connections.” *State of Art Papers: Metallurgy, Fracture Mechanics, Welding, Moment Connections and Frame System Behavior SAC 95-09*. SAC, September, 1996

Forrel/Elsesser Engineers, Inc., *Lawrence Berkeley National Labs Steel Joint Test - Technical Brief*, San Francisco, CA, July 17, 1995.

Gates, W.E., and Morden, M., “Lessons from Inspection, Evaluation, Repair and Construction of Welded Steel Moment Frames Following the Northridge Earthquake”, *Surveys and Assessment of Damage to Buildings Affected by the Northridge Earthquake of January 17, 1994 SAC 95-06* SAC, December, 1995.

Gates, W.E. “Interpretation of SAC Survey Data on Damaged Welded Steel Moment Frames Following the Northridge Earthquake”, *Surveys and Assessment of Damage to Buildings Affected by the Northridge Earthquake of January 17, 1994 SAC 95-06*, SAC, December, 1995.

Green, M. “Santa Clarita City Hall; Northridge Earthquake Damage” *Technical Report: Case Studies of Steel Moment Frame Building Performance in the Northridge Earthquake of January 17, 1994 SAC 95-07*. SAC, December, 1995.

Hall, J.F., “Parameter Study of the Response of Moment-Resisting Steel Frame Buildings to Near-Source Ground Motions”, *Technical Report: Parametric Analytical Investigations of Ground Motion and Structural Response, Northridge Earthquake of January 17, 1994 SAC95-05*. SAC, 1995.

References

Hajjar, J.F., O'Sullivan D.P., Leon, R. T., Gourley, B.C. "Evaluation of the Damage to the Borax Corporate Headquarters Building As A Result of the Northridge Earthquake", *Technical Report: Case Studies of Steel Moment Frame Building Performance in the Northridge Earthquake of January 17, 1994 SAC 95-07*. SAC, December, 1995.

Harrison, P.L. and Webster, S.E., *Examination of Two Moment Resisting Frame Connectors Utilizing a Cover-Plate Design*, British Steel Technical, Swinden Laboratories, Moorgate, Rotherham, 1995.

Hart, G.C., Huang, S.C., Lobo, R.F., Van Winkle, M., Jain, A., "Earthquake Response of Strengthened Steel Special moment Resisting Frames" *Analytical and Field Investigations of Buildings Affected by the Northridge Earthquake of January 17, 1994, SAC 95-04 Part 1*, SAC., December, 1995

Hart, G.C., Huang, S., Lobo, R., and Stewart, J., "Elastic and Inelastic Analysis for Weld Failure Prediction of Two Adjacent Steel Buildings", " *Analytical and Field Investigations of Buildings Affected by the Northridge Earthquake of January 17, 1994, SAC 95-04 Part 1*, SAC, December, 1995.

Hart, G.C., Huang, S., Lobo, R., and Stewart, J., "Influence of Vertical Ground Motion on Special Moment-Resisting Frames", *Technical Report: Parametric Analytical Investigations of Ground Motion and Structural Response, Northridge Earthquake of January 17, 1994 SAC95-05*. SAC, 1995.

Heaton, T.H., Hall, J.F., Wald, D.J., and Halling, M.W. "Response of High-Rise and Base-Isolated Buildings to a Hypothetical M_w 7.0 Blind Thrust Earthquake" *Science Vol. 26, pp 206-211*, January, 1995.

International Conference of Building Officials, *Uniform Building Code UBC-97*, Whittier, CA, 1997.

International Conference of Building Officials, *Uniform Building Code UBC-94*. Whittier, CA, 1994.

Iwan, W.D., "Drift Demand Spectra for Selected Northridge Sites", *Technical Report: Parametric Analytical Investigations of Ground Motion and Structural Response, Northridge Earthquake of January 17, 1994 SAC95-05*. SAC, 1995.

Joyner, W.B., and Boore, D.M., "Ground Motion Parameters for Seismic Design," *Bulletin of the Seismological Society of America*, 1994.

Kariotis, J. and Eimani, T.J., "Analysis of a Sixteen Story Steel Frame Building at Site 5, for the Northridge Earthquake", *Analytical and Field Investigations of Buildings Affected by the Northridge Earthquake of January 17, 1994, SAC 95-04 Part 2*, SAC, December, 1995.

References

Krawinkler, H.K., “Systems Behavior of Structural Steel Frames Subjected to Earthquake Ground Motions” *State of Art Papers: Metallurgy, Fracture Mechanics, Welding, Moment Connections and Frame System Behavior SAC 95-09*. SAC, September, 1996

Krawinkler, H.K., Ali, A.A., Thiel, C.C., Dunlea, J.M., “Analysis of a Damaged 4-Story Building and an Undamaged 2- Story Building”, *Analytical and Field Investigations of Buildings Affected by the Northridge Earthquake of January 17, 1994, SAC 95-04 Part 1*, SAC, December, 1995.

[Ksai, K. , and Bleiman, D. “Bolted Brackets for Repair of Damaged Steel Moment Frame Connections,” 7th U.S.-Japan Workshop on the Improvement of Structural Design and Construction Practices: Lessons Learned from Northridge and Kobe, Kobe, Japan, January, 1996](#)

Leon, R. T., “Seismic Performance of Bolted and Riveted Connections” *State of Art Papers: Metallurgy, Fracture Mechanics, Welding, Moment Connections and Frame System Behavior SAC 95-09*. SAC, September, 1996

Miller, D.K. “Welding of Seismically Resistant Steel Structures” *State of Art Papers: Metallurgy, Fracture Mechanics, Welding, Moment Connections and Frame System Behavior SAC 95-09*. SAC, September, 1996

Naeim F., DiJulio, R., Benuska, K., Reinhorn, A. M., and Chen, L. “Evaluation of Seismic Performance of an 11 Story Steel Moment Frame Building During the 1994 Northridge Earthquake”, ” *Analytical and Field Investigations of Buildings Affected by the Northridge Earthquake of January 17, 1994, SAC 95-04 Part 2* SAC, December, 1995.

Newmark, N.M. and Hall W.J., *Earthquake Spectra and Design*. Earthquake Engineering Research Institute, 1982.

[NIST and AISC. *Modification of Existing Welded Steel Moment Frame Connections for Seismic Resistance*. National Institute of Standards and Technology and American Institute of Steel Construction. 1999](#)

Paret, T.F., Sasaki, K.K., “ Analysis of a 17 Story Steel Moment Frame Building Damaged by the Northridge Earthquake”, *Analytical and Field Investigations of Buildings Affected by the Northridge Earthquake of January 17, 1994, SAC 95-04 Part 2*, SAC, December, 1995.

Popov, E.P. and Yang, T.S. *Steel Seismic Moment Resisting Connections*. University of California at Berkeley, May, 1995.

Popov, E.P. [Blondet, M., Stepanov, L., and Stodjadinovic, B. *Full-Scale Beam-Column Connection Tests*](#), et. al. ~~*Testing of Repaired Welded Beam-Column Assemblies, SAC, publication pending (title not exact), 1995*~~ SAC 96-01. 1996..

SAC, *Proceedings of the International Workshop on Steel Moment Frames, October 23-24, 1994 SAC-94-01*. Sacramento, CA, December, 1994.

References

- SAC . *Steel Moment Frame Advisory No. 1*. September, Sacramento, CA, 1994.
- SAC . *Steel Moment Frame Advisory No. 2*. October, Sacramento, CA, 1994.
- SAC . *Steel Moment Frame Advisory No. 3 SAC-95-01*, February, Sacramento, CA, 1995.
- Shonafelt, G.O., and Horn, W.B.. *Guidelines for Evaluation and Repair of Damaged Steel Bridge Members*, NCHRP Report 271, Transportation Research Board, 1984.
- Skiles, J.L. and Campbell, H.H., “Why Steel Fractured in the Northridge Earthquake” *SAC Advisory No. 1*, October, 1994.
- Seismic Safety Commission, *Northridge Earthquake Turning Loss to Gain, Report to the Governor*, Sacramento, CA, 1995.
- Smith Emery Company. *Report of Test*, July, 1995.
- Sommerville, P, Graves, R., Chandan, S. *Technical Report: Characterization of Ground Motion During the Northridge Earthquake of January 17, 1994, SAC 95-03*, SAC, December, 1995.
- State of California. Division of the State Architect (DSA) and Office of Statewide Health Planning and Development (OSHDP). *Interpretation of Regulations Steel Moment Resisting Frames*, Sacramento, CA, 1994.
- Structural Engineers Association of California (SEAOC), Seismology Committee, *Recommended Lateral Force Requirements and Commentary*, Sacramento, CA. 1990.
- Structural Engineers Association of California (SEAOC), Seismology Committee, *Interim Recommendations for Design of Steel Moment Resisting Connection*,. Sacramento, CA, January, 1995.
- Structural Engineers Association of California (SEAOC), *Vision 2000: A Framework for Performance Based Engineering of Buildings*, Sacramento, CA, April, 1995.
- Structural Shape Producers Council, *Statistical Analysis of Tensile Data for Wide Flange Structural Shapes*, 1994.
- Thiel, C.C., and Zsutty, T.C., “Earthquake Characteristics and Damage Statistics,” *Earthquake Spectra*, Volume 3, No. 4., Earthquake Engineering Research Institute, Oakland, Ca. 1987.
- [Tremblay, R., Tchegotarev, N., and Filiatrault, A., “Seismic Performance of RBS Connections for Steel Moment Resisting Frames: Influence of Loading Rate and Floor Slab.” *Proceedings of the Second International Conference on the Behavior of Steel Structures in Seismic Area, Kyoto, Japan, August, 1997*](#)

Tsai, K.C. and Popov, E. P. "Seismic Steel Beam-Column Moment Connections" *State of Art Papers: Metallurgy, Fracture Mechanics, Welding, Moment Connections and Frame System Behavior SAC 95-09*. SAC, September, 1996

Uang, C.M. and Latham, C.T. *Cyclic Testing of Full-Scale MNH-SMRFä Moment Connections*, Structural Systems Research, University of California, San Diego, March, 1995.

Tsai, K.C. and Popov, E.P., *Steel Beam - Column Joints In Seismic Moment Resisting Frames*, Report No. UCB/EERC-88/19, Earthquake Engineering Research Center, University of California, Berkeley, Nov., 1988.

Uang, C.M., Yu, Q.S., Sadre, A., Bonowitz, D., Youssef, N. "Performance of a 13 Story Steel Moment-Resisting Frame Damaged in the 1994 Northridge Earthquake", " *Analytical and Field Investigations of Buildings Affected by the Northridge Earthquake of January 17, 1994, SAC 95-04 Part 2* SAC, December, 1995.

Uang, C.M. and Bondad, D. *Progress Report on Cyclic Testing of Three Repaired UCSD Specimens*, SAC, 1995.

Uang, C.M. and Lee, C.H. "Seismic Response of Haunch Repaired Steel SMRFs: Analytical Modelling and Case Studies" " *Analytical and Field Investigations of Buildings Affected by the Northridge Earthquake of January 17, 1994, SAC 95-04 Part 2*, SAC., December, 1995

Wald, D.J., Heaton, T.H., and Hudnut, K.W., *The Slip History of the 1994 Northridge, California, Earthquake Determined from Strong-Motion, Teleseismic, GPS, and Leveling Data*, United States Geologic Survey, 1995.

Watabe, M. *Performance of Wooden Houses and Steel Buildings during the Great Hanshin Earthquake*, Architectural Institute of Japan, May, 1995.

Youssef, N.F.G, Bonowitz, D., and Gross, J.L., *A Survey of Steel Moment-Resisting Frame Buildings Affected by the 1994 Northridge Earthquake*, NISTR 5625, Gaithersburg Md, April, 1995.

References