

REFERENCIA VARIAS

Nota.- Documento complementario de las visitas periodicas por internet, y que necesita ser re-trabajado para la clasificación, ordenación y jerarquización de la información revisada.

Structure magazine

- Sept 2010 Steel pipe support structures; A rational method to design vehicular barriers
- January 2013 Snow Roof collapse and building code
- July 2012 Waterfront crane runway
- March 2015 Understanding seismic design through a musical analogy
- February 2012 Seismic design of structural steel pipe racks

Journal of Constructional Steel Research

- Vol 81 Feb 2013 Re examination of double angle knife shear connection

Earthquake Spectra

- Vol 26 No 2 May 2010 Cyclic behavior of zipper-braced frames
- Vol 29 No S1 March 2013 Damage to steel buildings observed after

the 2011 Tohoku-Oki earthquakes



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**Earthquake Spectra -- November
2004 -- Volume 20, Issue 4, pp.
1265-1278**

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Criticism of Current Seismic Design and Construction Practice in Venezuela: A Bleak Perspective

Gary R. Searer,^a M.EERI and Eduardo A. Fierro,^a M.EERI

^a Wiss, Janney, Elstner Associates, Inc., 2200 Powell Street, Suite 925, Emeryville, CA 94608

(Received 28 May 2003; accepted 15 March 2004)

During a recent visit to Caracas, Venezuela, the authors discovered that while Venezuela has adopted a building code with modern seismic provisions (Norma Covenin 1756-98) and does in fact enforce a majority of these provisions, significant conceptual errors in the design of the lateral force-resisting systems of new buildings are recurring on a near-universal level, often as a result of ignoring the potential adverse effects of nonstructural elements on the structural system. In the event of a large earthquake, this design philosophy will have substantial economic and life-safety repercussions unless the typical design philosophy of Venezuelan engineers and architects changes. It is hoped that this paper will serve as a call to action for engineers of all countries to recognize the potential adverse effects of nonstructural elements on the behavior of the lateral force-resisting system. ©2004 Earthquake Engineering Research Institute

Vol 30 No 1, February 2014 Telecommunication systems performance: Christchurch earthquakes

EERI Newsletter

A partir de Septiembre 2013 ha sido reemplazado por la publicación quincenal **The Pulse of Earthquake Engineering** y los antiguos archivos de EERI Newsletter se pueden leer en www.eeri.org/cohost/member-resources/pulse/archives.

November 1996, A brief history of the International Association of Earthquake Engineering <http://nees.org/resources/5617>

Reducing earthquake losses: from research to practice Performance, Analysis and design of flexural concrete walls. U of Washington, Seattle, Dawn Lehman and Laura Lowes

Report to the Canterbury Earthquake Royal Commission

August 2011 Structural design for earthquake resistance, Rajjesh Dhakal

JSEE: Special Issue on Bam Earthquake

Performance of batten columns in steel building during the Bam earthquake of 26 December 2003

WCEE

Ver www.iaeee.or.jp

The papers from 15WCEE are now available online. The electronic copies of the 3345 papers presented in the 15th World Conference on Earthquake Engineering in Lisbon, Portugal, 2012 are posted online (<http://www.nicee.org/wcee/>).

16 WCEE Chile, 2017

Pendiente vaciar lista

15 WCEE Lisboa 2012

Paper 2996 A. Imanpur, R. Tremblay. Steel CBF seismic evaluation of multi-panel

14 WCEE China 2008

Pendiente vaciar lista. Descargados trabajos chinos e italiano sobre escaleras

13 WCEE Canada 2004

Battened built-up beam columns under cyclic loads, Paper No. 67

The effect of the length and location of yield zones on the accuracy of the spread plastic models, Paper 921

Paper 882 A simple low cycle fatigue model and its implications for seismic design

9th US National and 10th Canadian Conference on Earthquake Engineering

Seismic performance of steel built-up battened columns Paper 1327

Torsional behavior of steel braced frames Paper 1080

Seismic design of steel structures in accordance with CSA-S16-09 Paper 1768

Comparison US and Canadian code requirements for seismic design of steel buildings Paper 296

AISC

AISC February 14, 2001 AISC Advisory

Changes to T , k and k_1 dimensions for W-Shapes

Afecta el calculo de h/t_w (sección 4.2.1, Tabla 4.1 y Cap.17 de la Covenin 1618-98

AISC Technical Bulletin # 3 21 February 1997 Steel industry announces improved structural Grade for Buildings, ASTM A 572 GR50

AISC Teaching Aids for structural steel design courses, slides

MSC

MSC February 1997 AISC Advisory on Mechanical Properties near the Fillet of wide flange shapes and Interim Recommendations, January 10, 1997

October 2003 Blast resistant design

February 2002 Design for cost efficient fabrication (Cartelas)

March 2009 Design of Vertical bracing connections for high-seismic drift

Wooten's Third law's steel column design

January 2009 Simple and Direct (DAM) , Shankar

May 2007, Stability analysis and the 2005 AISC Specification , Shankar (NASCC 2007)

April 2013, Stability analysis design , C. Schwinger (NASCC)

February 2014, Stability Matters

Are you sure that's fracture critical? Connor, Frank, etc

March 2001, Tips for avoiding Office Buildings floor vibrations
 August 2002 Carefully evaluate “code requirements” Duane Miller
 December 2014 eccentricity on top edge beam,
 Splices in bent edge plate,

MSC Steelwise

December 2014 The right connection
 February 2008 Simple shear connection Limit states
 December 2008 Under floor , composite design
 May 2008 What every fabricator wants you to know about welding
 November 2011 Resolving a conflict in seismic requirements for non
 buildings structures
 July 2008 The hole story
 March 2008 Roof diaphragm and low rise seismic design

AISC Engineering Journal

3Q 2007 Geometric Formulas for Gusset Plate Design
 3Q 2010 Transfer forces in steel structures
 4Q 2006 Evaluating Single Angle compression struts using an effective slenderness
 approach
 4Q 2013 Torsional and constrained-axis flexural-torsional buckling tables for steel
 W Shapes in compression
 4Q 2014 Evaluation and repair of bridge truss gusset plate
 3Q 2013 A flexibility-based formulation for the design of continuity plates in steel
 SMF
 3Q 2013 A simplified approach for joist girder moment frames design using
 equivalent beam theory
 3Q 2013 Stability design of cross-bracing systems for frames
 3Q 2013 Notes on the nodal and relative lateral stability bracing requirements of AISC
 360
 2Q 2013 Flange bending in single curvature
 1Q 2010 Critical evaluation of equivalent moment factor procedures for laterally
 Unsupported beams
 1Q 2014 Experimental Investigations of steel joist design for ductility strength Limit state
 1Q 2001 Fundamentals of beam bracing, Yura
 2Q 2011 On the need for stiffeners for and effect of lap eccentricity on extended single
 plate connections
 1Q 2014 Local stability of double-coped beams
 1Q 2015 Plastic strength of connection elements
 1Q 2010 Notes on the impact of hole reduction on the flexural strength on rolled beams
 4Q 2009 Design and behavior on multi-orientation fillet weld connection
 4Q 2009 Design aspects of single-angle members
 3Q 2012 Prying action for slip-critical connections with bolt tension and shear interaction
 2Q 1997 Truss analogy for steel moment connections
 1Q 2010 Impact of diaphragm behavior on the seismic design of low rise steelbuilding
 1Q 2008 Block shear equations Revisited..Again
 1Q 2012 Recommendations for shear lag factors for longitudinally welded tension
 members

- 4Q 2012 Axial capacity of eccentrically loaded equal Leg single angles: comparisons of various design methods
- 3Q 1997 Calculation of the plastic section modulus using computer
- 1Q 2012 Recommended for shear lag factors for longitudinally welded tension members
- 1Q 2008 Block shear equations revisited,,, again
- 3Q 2010 Single plate shear connection design to meet structural integrity requirements

Single-Plate Shear Connection Design to Meet Structural Integrity Requirements

LOUIS F. GESCHWINDNER and KURT D. GUSTAFSON

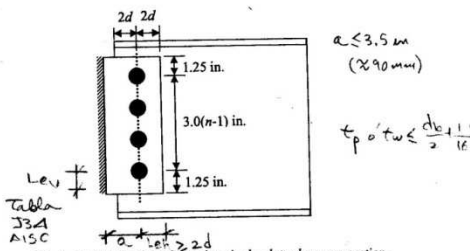
No se recomienda este tipo de conexión.

INTERNATIONAL BUILDING CODE REQUIREMENTS

Section 1614 of IBC 2009 provides structural integrity requirements that apply to high-rise buildings in occupancy categories III and IV. Simply stated, this means buildings

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 Kurt D. Gustafson, S.E., P.E., Director of Technical Assistance, American Institute of Steel Construction, Chicago, IL. E-mail: solutions@aisc.org

$$T_n \geq V_u \quad (\text{ASD}) \quad (1)$$



$$a \leq 3.5 \text{ in.} \quad (\approx 90 \text{ mm})$$

$$t_p \text{ o } t_w \leq \frac{d_b}{2} \leq \frac{1}{16}$$

Fig. 1. Conventional configuration single-plate shear connection.

ENGINEERING JOURNAL / THIRD QUARTER / 2010 / 189

12.5 in = 32 mm

De ASD-LRFD, $V_u = \frac{V_u}{\phi_v}$ con $\phi_v = 1.5$

$T_n \geq \frac{2}{3} V_u$

$T_n \geq 10 \text{ kips}$

$V_u = \frac{V_u}{1.5} = \frac{2}{3} V_u$

Entonces, $T_n \geq \frac{2}{3} V_u$, como $V_u \geq \phi V_n$

$T_n \geq \frac{2}{3} \phi V_n$ o $1.5 T_n \geq \phi V_n$

$T_n \geq \frac{2}{3} V_u \quad (\text{LRFD}) \quad (2)$

Equation 10 has the nominal tension strength on one side

the required shear strength at a beam end. The simplest way to satisfy this requirement, if the beam is not symmetrical, is to make the connections symmetrical. That way, the connection at each end will be guaranteed to meet the structural integrity requirements.

Antecedentes

- Abolhassan Astaneh, et al (1989) Design of single plate shear connectors. AISC EJ 10 1989, p 21-32. 2 ejemplos
- Abolhassan Astaneh (2005). Design of Shear Tab connections for gravity and seismic loads. STEEL TIPS, June 2005.
- Geschwindner, L.; Bisque, R.; Bonhede, R (1998) LRFD Design of Steel Structures, p. 912-416

Evolución en el tiempo del procedimiento de diseño.

AISC, manual of steel construction, LRFD, vol III, 1994, p. 9-147-9-151, LRFD, 3rd edition, 2001; p. 10-112-10-116, 13th, 2005, p. 10-101-10-102.

ERRATA

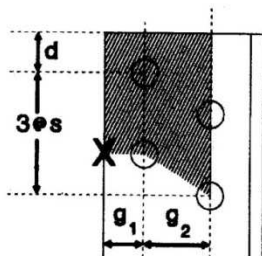
An Experimental Study of Block Shear Failure of Angles in Tension

Paper by HOWARD I. EPSTEIN

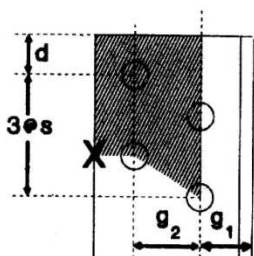
(Second Quarter 1992)

Errata by HOWARD I. EPSTEIN

Figure 1 in this paper showed, in part:



The paper states that standard gage lines were used for the angles and g_1 and g_2 are given in the paper for the 5-in. and 6-in. connected legs. This figure incorrectly showed the gages. The correct labeling should have been:



242 / ENGINEERING JOURNAL / FOURTH QUART

2002

This error was brought to light by the discussion of the paper "AISC Rules for Block Shear—A Review" by Geoffrey L. Kulak and Gilbert Y. Grondin. It should be noted that the numbers shown in the 1992 paper are correct and are based on the gages shown in the corrected figure and on the governing block shear equations at the time of publication. The LRFD block shear equations have gone through two revisions since that publication.

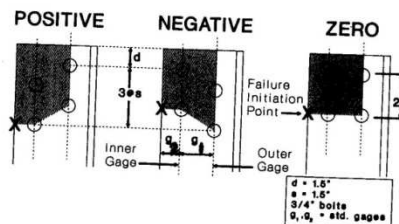


Fig. 1. Sign of stagger.

1/2 -	#37-6x3	③ BOLTS	2/1 +	#38-5x3
2/2 +	#1-6x6 #9-6x4 #17-6x3.5 #25-5x5 #29-5x3.5 #33-5x3	③ BOLTS	2/2 0	#3-6x6 #11-6x4 #19-6x3.5
2/2 -	#2-6x6 #10-6x4 #18-6x3.5 #26-5x5 #30-5x3.5 #34-5x3	③ BOLTS	2/2 +	#4-6x6 #12-6x4 #20-6x3.5 #27-5x5 #31-5x3.5 #35-5x3
2/3 -	#4-6x6 #12-6x4 #20-6x3.5 #27-5x5 #31-5x3.5 #35-5x3	③ BOLTS	2/3 0	#5-6x6 #13-6x4 #21-6x3.5 #28-5x5 #32-5x3.5 #36-5x3
3/3 0	#7-6x6 #15-6x4 #23-6x3.5	③ BOLTS	4/4 0	#8-6x6 #16-6x4 #24-6x3.5
		③ BOLTS		

Fig. 2. Connections tested.

- 2Q 1992 An experimental study of block shear failure of angle in tension
- 4Q 2001 AISC LRFD Rules for block shear in bolted connection – a review; discussion in 4Q 2002 ; closure 4Q 2002
- 1Q 2005 Discussion Using moment and axial interaction equations to account for moment and shear lag effects in tensionmembers
- 4Q 2002 Block shear and net section capacities of structural tees in tension : test6 results and code implications
- 4Q 2010 Prediction of bolted connectioncapacity for block shear failure along atypical paths
- 4Q 2010 todo el EJ
- 3Q 2011 Seismic design and response of crane supporting and heavy industrial steel structures

SSRC**Celebra sus reuniones anuales dentro del NASCC de AISC**

- 2012 Experimental studies of stability: have we solved the problem. Peter C Birkemoe
- 2007 Recommendations for the use of direct second-order inelastic analysis to design steel frames
- 2012 New shear design criteria for plate girders, Sing C Lee, Doo S Lee and Chai H Yoo
- 2009 A proposed simplified Canadian beam design approach
- 2009 Stiffener requirements to prevent edge buckling, Bo Dowswell
- 2012 Moment-shear interaction in plate girders Sing C Lee, Doo S Lee and Chai H Yoo
- Effective slenderness approach for evaluating single angle compression struts, LeRoy A. Lutz

December 1998 Research Report UMCEE 98-44 Special truss frames. Design Guide. Subhash Goel, et al. The University of Michigan \$19

NASCC

Pendiente incorporar lista de las mas recientes

- 2014 N50 The use and design of slip critical bolts
- 2005 Stability design of steel buildings . A new Approach. Larry Griffis and Don White, con ejemplo
- 2014 N54 Stability analysis of single plate shear connection and double coupled beams
- 2014 C5 AISC seismic Provisions then and now
- 2014 N18 Direct Analysis method , Now and the future
- 2008 Impact of diaphragm behavior on the seismic design of low rise steel buildings, Tremblay
- 2014 C7 Column base and splice details
- 2014 N15 Design tips for constructible steel framed buildings in high seismic regions
- 2014 N55 Effect of Frame action, Chevron Brace Gusset connections
- 2014 ES5 Murray Floor vibration Theory and applications
- 2014 N32 Three dimensional finite elements simulation of the behavior of multi-tier brace frames
- 2014 Design of multi-tier CBF in-plane seismic demand
Ver tesis doctoral "Seismic behavior and design of friction CBF for steel Buildings" 1993 U of British Columbia; Tambien Michael Bloom, Master Thesis (2009) Elastic and inelastic stability of two-panel tiered CBF. Marquette University
- 2014 N9 Design, fabrication and Construction problems
- 2014 N24 Selecting the appropriate seismic system for your steel project
- 2013 N4 Malley AISC 341
- 2013 N72 Welding symbols and presentation for designers and detailers
- 2013 N7 Multi-tier CBF
- 2013 N6 2nd edition of Seismic Manual

- 2011 T.H.Higgins SCBF Gusset plate connection design Charles Roeder and Dawn Lehman
- 2010 D10 Filet weldings
- 2010 E27 Slip critical connections. Design specifications and current research
- 2009
- X2 Connections
 - E3a Design of vertical bracing connections for high seismic drift ,Thornton and Muir
- 2006 Crane runway loadings for industrial facilities-vertical, lateral and longitudinal. A review of international codes and standards.
- One approach to inelastic analysis and design , Ronald Ziemian, Donald White, Gregory Deierlein, William McGuire, 19-1 y siguientes
- N4 Malley Special CBF Provisions
- Finley A. Charney, Economy of steel framed buildings through identification of structural behavior
- 2005 Recent research on seismic behavior of deep column to beam welded RBS moment connections and design implications
- 2001 Seismic design of connections in concentrically brace frames, William A. Thornton, Cives Engineering Corporation
1996. Roof and floor diaphragms, L. D: Lutrell
1996. LRFDDesign of stepped crane columns in industrial buildings. Laurie Kennedy
- Combined stresses in gusset plates, W.A. Thornton Cives Engineering Corporation
- Connection design for steel structures. Bracing. Structural Design Solutions, LLC

ArcelorMittal

- Earthquake resistant steel structures
- Steel Buildings in Europe. Edificios de acero de una sola planta. Parte 1: Guia del arquitecto
- Design Guide for Floor Vibrations

PSSC

- 2004: Ductile Gusset plates-Test and analysis. Dean T. Mullin and J.J. Roger Cheng
- Response of seismically loaded low rise steel CBF Structures with inelastic Gusset Plate Connections Dean T. Mullin and J.J.j:J. Roger Cheng
- Performance and behavior of Gusset Plate connections. Charles Roeder, Dawn Lehman
- SCBF Gusset Plate connections design . Charles Roeder, Dawn Lehman
- Performance-based seismic design of braced-frame connections. Charles Roeder, Dawn Lehman, Jung Han Yoo
- How accurate are current floor vibration analysis procedures? Murray

STEEL TIPS (www.steeltips.org)

- June 2008 Seismic Behavior and design of base plates in braced frames, AbolhassanAstaneh-Asl

NEES

- 2007 Structural Congress in Long Beach, 16-19 May Behavior and design of zipper Frames, Chuang-Sheng Yang, Roberto T Leon, Reginald DesRoches

ASCE

Journal of Structural Engineering

- December 2003 New design rule for intermediate transverse stiffeners attached on web panels
- April 2003 Steel- concrete composite beams considering shear slip effects
- June 2003 Behavior and modeling of a bolt bearing on a single plate. El modelo justifica distancia desde el borde del agujero al borde de la plancha $L_e = 0.5db$
- September 2006 Behavior of steel double-channel built up chords of special truss moment frames under reversed cyclic bending
- June 2002 streamline geometry optimization in beam-column connection
- January 2004 Compressive strength of solid round steel bars
- August 1994, Guidelines for design of joints between steel beams and reinforced concrete columns

PRACTICE Periodical on structural design and construction

Revisada en la Biblioteca de la USB, Sartenejas

- February 1996 Simple formula for eccentric bolted connection design
- August 1998 Comparison of BS 5950 and AISC LRFD Codes of practice

Canadian Journal of Civil Engineering

Revisada en la Biblioteca de Funvisis

- 1996 23 Sesimic design of steel buildings: lesson from the 1995 Hyogo-ken Nanbu earthquake
- 2013 40 Damage to industrial structures due to the 27 february 2010 Chile earthquake

VARIOS

Webinar

EERI/NEES Webinar Feb 15, 2012 Improving the seismic performance of CBF, Charles Roeder and Dawn Lehman

FEMA

FEMA 450-september 2005 Seismic considerations for steel storage racks located in areas accesibles to the public

June 5-8, 2002 Structural specialty conference of the Canadian Society of Civil engineering, Block shear failure of bolted gusset plates, Bino Baljit, Gilbert Grondin

Connections in steel structures V, June 3-4, 2004 Evolution of shear lag block shear provisions in the AISC Specification

Connections in steel structures IV, October 22-25, 2002 Block shear failure in steel members – a review of design practice

TEG

Formato pdf de internet

Jesus E Molina. UCV. Elaboracion de un manual de diseño sismorresistente de Edificaciones de acero bajos los sistemas SMF, SCBF y EBF basado en las normas ANSI/AISC 360-05 y 341-05

Five useful stability concepts , Joseph A Yura
 Fabio Hoyos Toro. Conectores de cortante para entresijos metalicos

www.engr.usask.ca/classes/CE website CE 461.3

Ingeniería 8-3 (2004). Julio cesar Baeza, Gabriel Vargas, David Perez Navarrete. La peligrosidad de las mamparas elevadas (anuncios espectaculares) ante viento huracanado

JOURNAL of Constructional Steel Research

Vol 102 November 2014 Local failures of coped steel beams- A state of the art review

Revista internacional de Desastres Naturales, Accidentes e Infraestructura Civil

Vol8 (2) Curvas de fragilidad debidas a viento para edificaciones industriales metalicas,
 Luis A Godoy

Vol 1 1, Mayo 2001 Verificacion de las curvas de capacidad de Hazus para Puerto Rico

Vol 6 (1) Analisis dinamico de mastiles arriostrados (guyed towers)

Vol 6 (1) Daños causados por el huracan Katrina en Biloxi, Mississippi

Vol 6(1) Daños en tanques de almacenamiento de combustible debidos al huracan Rita

Distribucion de presiones de vientos huracanados sobre tanques cortos mediante estudio de túnel de viento. Luis A Godoy

Vol 3 (1) Mayo 2003 Colapso de un tanque metalico en construccion bajo la acción del viento, Luis A Godoy

Vol 5 (2) Metodologia para la estimación de daños estructurales ocasionados por vientos huracanados en edificaciones industriales

Vol 12 (2) Patrones de carga reglamentarios para torres de transmisión de alta tensión sujetas a viento intenso.

Vol 10 (2) Analise dinamica de una torre estaiada submetida a tormenta EPS

SOCIEDAD MEXICANA DE INGENIERÍA SÍSMICA

No. 85 2011 Comportamiento no lineal de marcos ductiles de concreto reforzado con contraventeo metálico chevron. Propuesta de diseño . Arturo Tena CoOlunga

WELDING INNOVATION

Vol XV BIII No 2, 2001 Mixing welds and bolts, Part 1, Duane Miller

Vol XIX No 2, 2002 Mixing welds and Bolts , Part 2 Duane Miller

Vol XIX No 1, 2002 Designing fillet welds for skewed T-Joints, Part 1

Joint Structural Division Annual Seminar 2004. New perspectives in the Design & Construction Foundation Structures.

Interaction between structural and Geotechnical engineer. Professor J.B. Burland

Daniel T. Li, Engineering International. Ejemplos de calculo. Composite beam design with Verco Floor Deck based on AISC.ASD

Australian Steel Institute.

Steel Construction Vol 32 Number 4 dec 1998 Full scale experimental of a steel portal frame building. Reproduction of V32N4 Dec 1998 Printing

Vitelmo Bertero *The role of ductility in seismic-resistant design of structures*. Dejamos en Caracas una copia y ha sido imposible recuperarla por internet, aun entre sus alumnos de la U de Berkeley.

www.ksssc.or.kr Steel structures Numerical evaluation on Warping constants of general cold-formed steel open sections. Dung M. Lue, Jui-Ling Lui and Ching.Hau Lin

Electronic Journal of Structural Engineering

The seat angle role on moment –rotation response of bolted angle connections . A. Pirmoz, F. Danesh

The University of Sydney, School of civil engineering. Research report R912 March 2010. N.S: Trahair. Steel cantilever strength by inelastic lateral buckling+

NIST GCR

NIST GCR 10-917-4

Seismic design of cast-in –place concrete diaphragms chords, and collectors . A Guide for Practice Engineers Jack Moehle, John Hooper, etcv

CIRSOC/ INTI

Presentacion CIRSOC 201 Ing. Tomas del carril, buena presentación de la parte de confiabilidad

NZZSEE

2012 NZZSEE

P Bonelli, Improvement for the seismic design of reinforced concrete walls in Chile and suggestions for the refinement of other seismic code provisions

Rajish P Dhakal, Strategy for anti-buckling design of transverse reinforcement

ACI

Concrete International

Sam Eckildsen, Footing interaction diagrams . Concrete International , March 2003, 104-109

Journal of Structural Engineering, Sept 2001

Oguzhan Bayrak and Sheikh, A, Plastic hinge analysis

Tom Murray, Column base plates- design to erection, EAC 2013, June 12-14 , 2014

Bozidopr Stojadnivo, et al. Influence of semi.rigid column-base models on the response of steel MRF buildings, 6th US national Conference on Early. Eng.

Libros dejados en Caracas

Para el Ing.Sigfrido Loges

Biblioteca USB

TA 645 / H3 Handbook of structural stability edited by Column research Committee of Japan

TA 407.2/R6 Roark's Formulas for stress and strain , 6th ed. McGraw Hill

Buscar otra vez en internet

US Army Corps of Engineering

Technical instructions design of deep foundation, TI 818-02 3 august, 1998

PCA

PCA Concrete Information Underground concrete Tanks

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