UNBONDED BRACE™

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The most widely used BRB in the world

Unbonded Brace started the buckling-restrained brace (BRB) revolution in the U.S and is the brace of choice for owners, architects, engineers and fabricators seeking superior seismic performance.

It is the most rigorously reviewed and approved BRB system, accepted by more regulatory agencies than any other including the State of California Office of Statewide Health and Planning and Development (OSHPD), the State of California Division of the State Architect (DSA), as well as the U.S. federal government, county governments and numerous local jurisdictions.

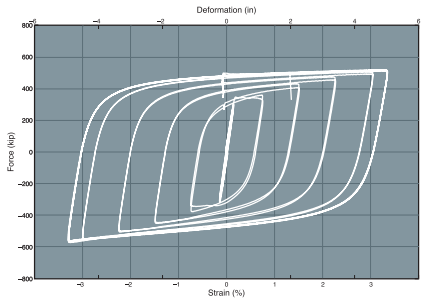
850+
Completed projects worldwide

70 feet
Longest UBB to date

2925 kips
Force of the largest Unbonded Brace

Over 25 years of quality & innovation

Unbonded Brace's superior hysteretic performance results from years of research and development, more than 15 full-scale testing programs in the U.S., and hundreds of braces tested in the U.S., Japan and around the world.



Nearly symmetric behavior with lower over-strength factors than other BRBs

Early 1980s Original research and development of BRBs by Nippon Steel Corporation.

1987 First Unbonded Brace project, Tokyo, Japan.

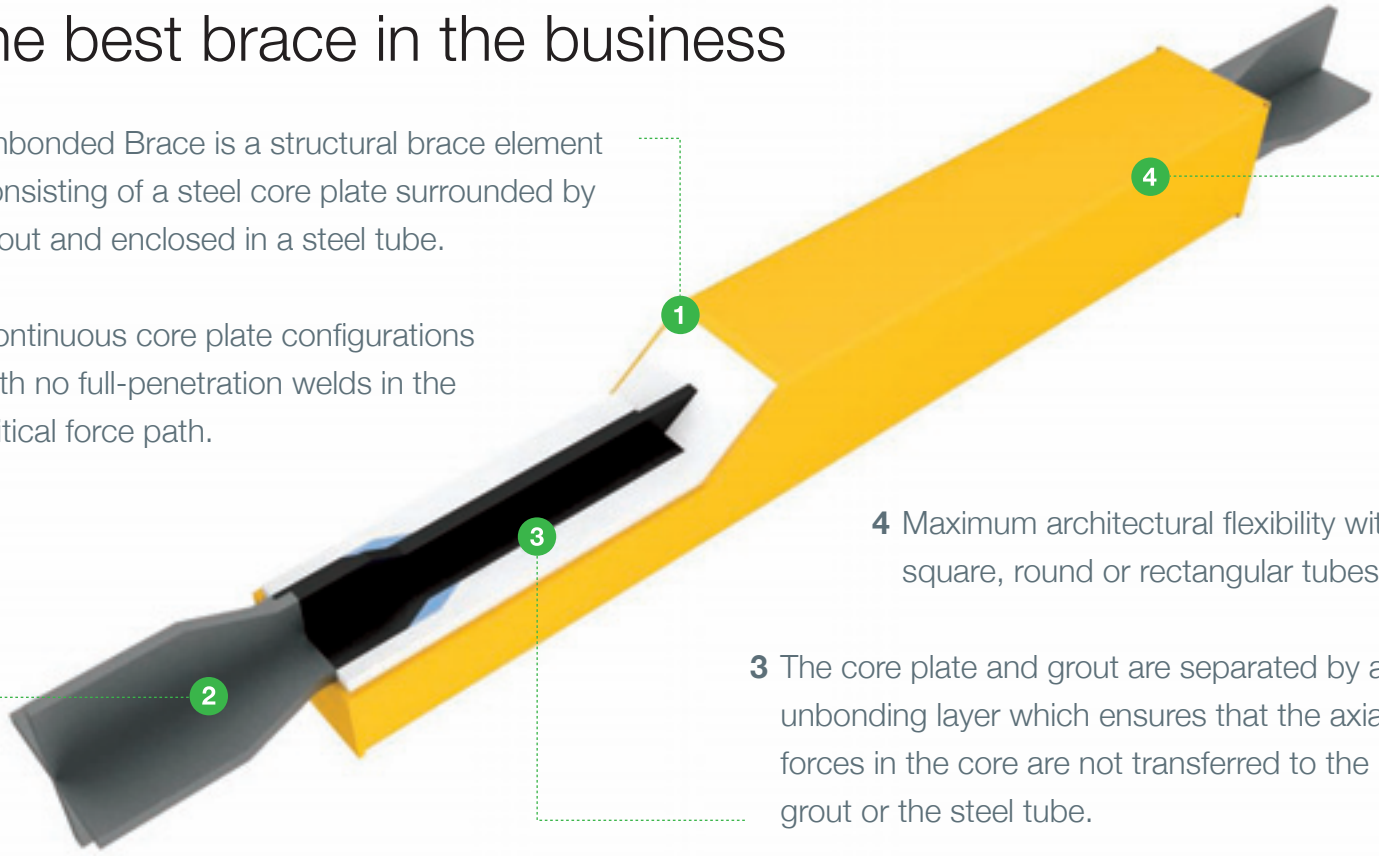
1999 First U.S. BRB/UBB project, the new Plant & Environmental Sciences Building at U.C. Davis.

2000 First
the seismic
County Civi

The best brace in the business

1 Unbonded Brace is a structural brace element consisting of a steel core plate surrounded by grout and enclosed in a steel tube.

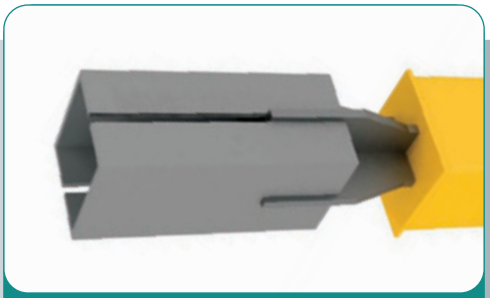
2 Continuous core plate configurations with no full-penetration welds in the critical force path.



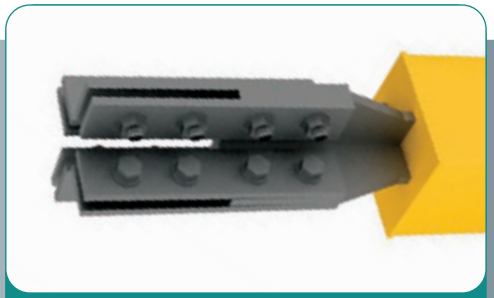
4 Maximum architectural flexibility with square, round or rectangular tubes.

3 The core plate and grout are separated by an unbonding layer which ensures that the axial forces in the core are not transferred to the grout or the steel tube.

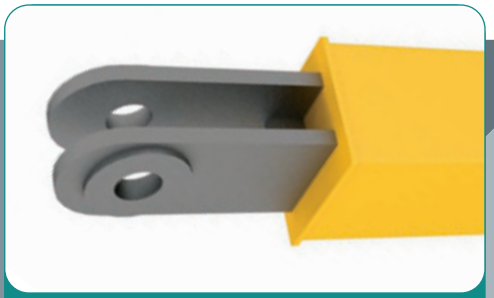
Customized connections for strength and aesthetics



Welded

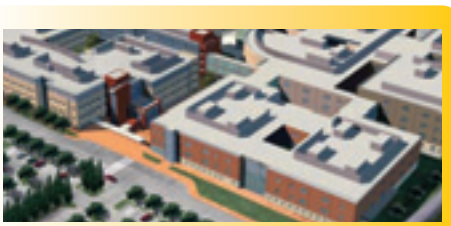


Bolted

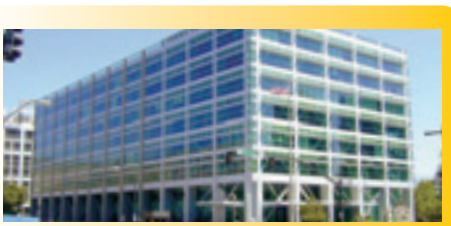


Pinned

U.S. retrofit application,
upgrade of the Marin
ic Hall of Justice.



2001 First U.S. hospital project, the Kaiser Permanente Santa Clara Medical Center in California.



2002 First U.S. federal building project, the Wallace F. Bennett Federal Building in Utah.

2002-2004 Five new buildi
San Bernadino Valley Colleg
California DSA projects.

Our engineers know BRBs

We are ready to provide design guidance, including stiffness and overstrength values, brace and connection design details, as needed throughout the design process.

We will provide modeling assistance including Unbonded Brace linear and nonlinear properties for structural analysis software packages including SAP, ETABS, PERFORM 3D, RISA, and Ram Structural System.

Designed and fabricated locally

Unbonded Brace is manufactured in Reno, Nevada, to the highest quality standards. The state-of-the-art manufacturing plant allows for efficient and large volume manufacturing and has an excellent track-record for on-time delivery and on-budget performance.

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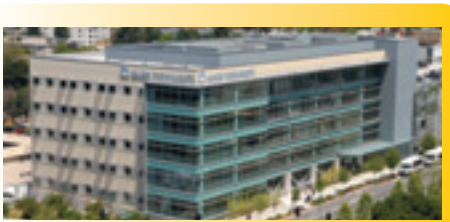


2005-2010 17 OSHPD approved Hospital, MOB and CUB projects.

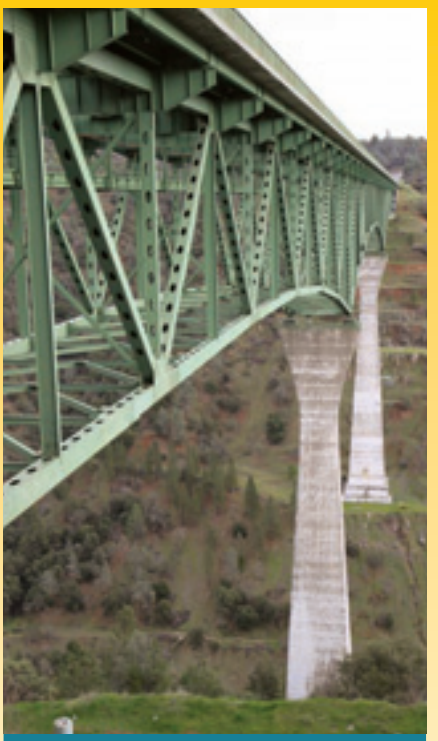
2011 First welded application, the new Veterinary Medicine Building at U.C. Davis.

2012 BRBs installed in the first U.S. bridge project, the seismic upgrade of the Foresthill Road Bridge.

Protecting lives & infrastructure around the world.

The Nippon TV Tower in Tokyo uses exposed Unbonded Braces to protect it from very large earthquakes in Japan. They are some of the largest BRBs in the world.

More than 640 Unbonded Braces protect the largest hospital to currently use buckling-restrained braces within the highest U.S. seismic zone.



Unbonded Brace BRBs were chosen for the first U.S. bridge application in order to safely and reliably limit the forces transmitted to the abutments during a seismic event.

UNBONDED BRACE™

by Nippon Steel Engineering USA, Inc.

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NIPPON STEEL ENGINEERING

PROUDLY MADE IN THE USA

U.S. Patents 6,826,874 & 7,231,743 and Patent Pending