MAXIMUM EFFICIENCY

Building codes recognize the improved seismic behavior of Buckling Restrained Braced Frames (BRBFs), allowing **DESIGN LOAD REDUCTIONS OF 25% OR MORE**, compared to other commonly used lateral systems. This means:

- **FEWER** frames
- **LESS** structural weight
- **SMALLER** foundations

CoreBrace® BRBs are engineered to have essentially the same capacity in tension and compression, resulting in less overstrength built into the structure. Additionally, they can be used in single diagonal configurations without design penalties. This means:

- **FEWER** braces and connections
- **SMALLER** frame columns and beams
- **SMALLER** connections to the structure and foundations

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**LATERAL SYSTEM SEISMIC LOAD COMPARISON**

**CALIFORNIA SITE**

**BASE SHEAR COEFFICIENT**

**BUILDING HEIGHT FEET (M)**

**DESIGN RESPONSE SPECTRUM**

**4 STORY BUILDING – CALIFORNIA SITE**

**SPECTRAL RESPONSE ACCSa (g)**

**PERIOD T (SEC)**

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**COREBRACE BRBF CHEVRON**

**TYPICAL CBF CHEVRON**

**BRBF vs. Typical CBF Frame Comparison**
Complete Control
CoreBrace® BRBs are manufactured in our AISC CERTIFIED SHOP. This means:
- Fabrication constantly monitored to meet the HIGHEST QUALITY STANDARDS
- Maximum SCHEDULE CONTROL

Reduced Construction Time
CoreBrace® BRBs are designed to be extremely QUICK AND EASY TO INSTALL. Our team works in close coordination with the steel fabricator in the detailing phase of the project to minimize conflicts in the field. This means:
- FASTER ERECTION of buildings
- NO ADDITIONAL LEAD TIME beyond that required by the structural steel fabricator

Sustainable, Resilient Design
Life-cycle prediction models and SUSTAINABILITY GUIDELINES help get the most out of BRB projects.
- CoreBrace® reCOREder provides owners and engineers with tools to calculate the remaining life of BRBs after a seismic event.

Non-Proprietary System
BRBs are a codified building lateral load resisting system. This means:
- NO LICENSING FEES are required to use CoreBrace® BRBs.

CoreBrace’s superior seismic performance means lower risk with cost savings
Highly Ductile Performance

CoreBrace® Buckling Restrained Braces are structural elements composed of a steel core encased in a grout-filled steel tube. The casing and grout assembly confines the core, increasing its critical load to a point that the axial capacity in compression is limited only by the yield stress of the steel. The concept allows the core to resist the design axial forces utilizing the Full Steel Strength while the casing provides overall buckling stability of the BRB. A proprietary interface material is used to separate the two resisting systems, with Minimized Friction. The result is a high performance brace that Does Not Buckle.

In this system, the steel core yields in tension and compression, dissipating energy with a Sustained Symmetric Hysteretic Behavior. Consequently, the BRB acts as the structural fuse, concentrating the seismic activity in the plastic range, while gussets, beams, and columns remain elastic during a seismic event. CoreBrace® BRBs use a Stable End Projection from the casing, eliminating the need for CJP welds. This provides improved redundancy in the load path and allows for post-event visual inspection.

### Engineering Overview

<table>
<thead>
<tr>
<th>CoreBrace® BRB COMPONENT</th>
<th>DESCRIPTION</th>
<th>MATERIAL SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Core Plate</td>
<td>Flat (−) or cruciform shape (+)</td>
<td>ASTM A36 (F_y = 249) MPa</td>
</tr>
<tr>
<td>2 Steel Casing</td>
<td>Square, rectangular or round</td>
<td>ASTM A500 Gr B (F_y = 290) MPa () ASTM A-53 (F_y = 242) MPa</td>
</tr>
<tr>
<td>3 Grout</td>
<td>Casing infill</td>
<td>Per CoreBrace® specification</td>
</tr>
<tr>
<td>4 Connection to Gusset</td>
<td>Bolted (shown), welded or pinned</td>
<td>ASTM A572 Gr 50 (F_y = 345) MPa</td>
</tr>
</tbody>
</table>
Additionally, to assist with the generation of project documents, CoreBrace® can provide CONNECTION DETAILS and REVIT FAMILIES.

EASY DESIGN AND DOCUMENTATION

CoreBrace® provides engineers with REAL TIME DESIGN ASSISTANCE during all stages of the project. Our professionals can also design the gusset plates that connect the BRBs to the frame columns and beams. Elastic and inelastic modeling guides and parameters for structural analysis software (RAM, ETABS, RISA, SAP, PERFORM 3D, and others), including fully-integrated BRB sections in selected platforms, are available to help engineers accurately capture the BRB’s behavior in their structural models with the desired level of refinement. RESILIENCY & FATIGUE-LIFE GUIDELINES are also available to help plan for a sustainable and resilient design and show the beneficial performance of BRBs with significant improvements over the FEMA P-58 defaults.
MAXIMUM VERSATILITY

CoreBrace® Buckling Restrained Braces can meet the most demanding project constraints including extreme brace geometry layouts, architectural aesthetic considerations, erection and construction issues, and structural design requirements. The following example options are available to build braces that will suit any specific need:

- Square, rectangular, or round casing
- Bolted, pinned, or welded connections
- Shop applied coatings, galvanizing and AESS finishes

CONSTRUCTION ADMINISTRATION

The CoreBrace® team is ready to assist in the construction phase of the project when needed. We pride ourselves on providing PROMPT RESPONSE to any job site inquiries and RFIs and on making every effort to help contractors meet schedule.
SAMPLE PROJECTS

- **Spruce Goose Retrofit**  
  Los Angeles, CA  
  Bolted Lug Braces

- **Wellington Carpark**  
  Wellington, New Zealand  
  Hybrid Pinned/Welded Braces

- **Vancouver City Hall**  
  Vancouver, BC  
  Bolted Lug Braces

- **Medical University of South Carolina**  
  Charleston, SC  
  Bolted Lug Braces

- **Center Court Building Retrofit**  
  Eugene, OR  
  Welded Braces

- **Mistral Izmir Towers**  
  Izmir, Turkey  
  Pinned Outrigger Braces (Progetto CMR)

- **Vincent Thomas Bridge**  
  San Pedro, CA  
  Pinned Braces

- **PWC Haus Office Bldg Harbour City**  
  Port Moresby, Papua New Guinea  
  Pinned Braces

- **NFL Levi’s Stadium**  
  Santa Clara, CA  
  Bolted Lug Braces

- **Gateway South Bldg 4**  
  San Bernadino, CA  
  Bolted Lug Braces

- **One Rincon Hill Phase II**  
  San Francisco, CA  
  Bolted Lug Outrigger Brace

Rev 3/2020