

Standard from CSI Part Section Format.

**05160 For Metal Framing
09226 For Gypsum Sheathing**

**Specifications for SURE-BOARD® Series 200BX/200BXW Panels to be used for:
Blast/Ballistic and 1 hour DOS (US Department of State) Forced Entry Resistance**

SURE-BOARD® Series 200B is available in the following Specific Types:

- A.) *200BB-Ballistic Resistant Panels/Ballistic Kevlar Bag BBS®**
- B.) 200BI-Interior Blast Resistant Panels (Except DOS Forced Entry-Use 200BB Interior)**
- C.) 200BX-Exterior Blast Resistant Panels**

PART 1.0 GENERAL

1.01 WORK INCLUDED

A. General Material/Design Drawing Description:

1. The extent of SURE-BOARD® Series **200B/200BB/200BX** panel is shown on the drawings, including basic layout, gypsum, non-combustible or combustible sheathing materials to be laminated to our steel sheet, fastener type, spacing for attachment of Series **200B/200BB 200BX** Sure-Board® that may be required to resist Blast/Ballistic/FE attack for interior and exterior use. When location and layout of BXW pre-fabricated walls or Fabricated BRM (Blast Resistant Module) length and width of the Modules have been determined the construction of these multiple panelized wall or continuous walls construction or built within the BRM framework, **must be constructed as follows:**

B. Fabrication Procedure for BXW for Panelized and BRM Construction Module Projects:

- a.) The wall framing required per the DOS test program performed at OBL Laboratory on June 11, 2014 is to be constructed with 600S200-97 Vanadium Steel Alloy Studs and 600T200-97 Mild Steel Track top and bottom of walls.
- b.) Studs are to be attached to track at top and bottom on both sides tracks with #10 x ¾" self drilling screws to create the typical framed wall. No blocking is required within any of the stud cavities due to the installation of the BBS® Ballistic Bag System.
- c.) All BXW walls when framed must be bolted, as tested, to the foundation or tube frame, as in the case of the BRM module, with 5/8" x 4" expansion anchors in any concrete slab and 5/8" x 2" expansion anchors in Steel Tube at 12" o.c. minimum. In the condition of multiple panels, each panel must be bolted together using ¾" x 1" low carbon steel hot dipped galvanized machine bolts at 12" o.c. spacing minimum. (Grade 8 high tensile hardened bolts may also be used at the same spacing.)
- d.) When walls have been bolted in place and plumbed up, the next step is to attach the exterior side Sure-Board® Series **200BX** sheathing to the panelized wall structure or steel tube frame of the BRM units. The attack side of the BXW wall must be sheathed with the Sure-Board® Series **200BX** sheathing and fastened with #10 x 1 5/8" self drilling fasteners at the 6" o.c. spacing minimum into all framing and track members.
- e.) After sheathing is attached with screw fasteners, the 14 gage steel sheets must be welded

to each stud and track top and bottom within the wall cavity with 2 1/2" minimum stitch welds on each side of each stud at 12" o.c. to the 14 gage steel sheet.

- f.) After welding the sheathing to the framing studs, the BBS® Ballistic bags are installed within each stud cavity and attached using the nylon straps stitched to each BBS® Ballistic bags to stud flange on each side of stud cavity at the top and middle to allow the BBS® bags to be suspended within the stud cavity to be filled from top of bag after Series **200BB** sheathing is attached to wall on interior side of BXW up to 12" from top. BBS Ballistic bags are then filled to the top or designed protected level using Granular Fill (Local fill sand is acceptable as tested.)
- g.) After BBS® Ballistic bags have been installed into stud cavities and the interior Sure-Board® Series **200BB** 14 gage panels have been attached to framing members in the same manner as performed on the exterior side of the walls, with #10 x 1 5/8" self drilling fasteners at 6" o.c. spacing, (no welding on interior sheathing is required), leaving the top 12" wide wall section open, in order to install the Granular Fill into BBS® bags. After fill is installed in all of the BBS® Ballistic bags the final 12" Sure-Board® Series **200BB** panel is installed and screwed to framing in the same manner and screw spacing as described above at 6" o.c. spacing. The BXW wall system is now complete and ready to be finished and painted inside and out as desired.

Note: Any questions regarding the fabrication of the BXW wall system utilizing the Sure-Board® Series 200BX and Series 200BB panels to panelized wall systems or manufactured BRM Modules please contact Sure-Board® Technical Support Hotline at (866) 469-7432

1.02 RELATED WORK SPECIFIED ELSEWHERE.

A. Related Sections:

- 1. Structural Steel Framing: Section 05400.
- 2. Gypsum Board: Section 09226.

1.03 CODE COMPLIANCE

A. Codes and standards:

- 1. AISI, North American Specifications for the Design of Cold-Formed Steel Structural Members, 2007 Edition.
- 2. 2009/2012/2015 IBC/2009/2012/2015 IRC/ASCE/SEI 7-05/2013 CBC/2014 LABC.
- 3. ASTM, designations as specified.
- 4. IAPMO-ES Evaluation Report Number ER-0126 for Steel framing.
- 5. UL-752 Equivalent Ballistic Standards.
- 6. UCSD Blast Center Approval (Dated March 22, 2011)
- 7. DOS/GSA Blast Resistant Standards.

1.04 QUALITY ASSURANCE

A. Annually Inspected/Approved Manufacturing:

- 1. Sure-Board® Panel IAPMO Quality Assurance Manual.

1.05 PERFORMANCE REQUIREMENTS

A. Blast/Ballistic Wall Design:

- 1. The gage for framing and required attachment of the Sure-Board® Series **200B** panel

- must be designed by the EOR . DOS/FE Wall requires 12 gage minimum framing members.
2. Alternate methods of attachment or framing other than those tested for Sure-Board® Series **200B** Panels may be acceptable provided the changes are approved by the Designers and EOR and Accepted on Stamped Construction Drawings.
 3. No other similar sheathing materials, using the Sure-Board® stated blast/ballistic resistant capacities, testing performance or methods of attachment to framing studs/track other than those actually tested and reported in section 1.03 under Code Compliant approvals for Sure-Board® Series **200B** products can be acceptable as an equal.

B. Fire Rated Use:

1. Sure-Board® Series **200B** Sure-Board® panels have been fire tested by ITS Intertek Testing Laboratory to be used on 1 and 2 hour fire rated, load bearing and non-load bearing assemblies for interior and exterior use.

1.06 SUBMITTALS

A. Shop drawings:

1. Blast/Ballistic wall layout, framing and supports, with dimensions and sections.
2. Blast/Ballistic tables using Sure-Board® Series **200B** panels contain gage of steel sheet, type of sheathing, fastener size/type, stud gage and size with required on center spacing of each for all Blast/Ballistic Resistant Wall on plans.
3. Details of proprietary or non-proprietary components will also be included in plans.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Sure-Board® Series 200B panel:

1. All Sure-Board® Series **200B** panels shall be packaged and handled to prevent damage during shipping and unloading.
2. Cover Sure-Board® Series **200B** panels with waterproof material and ventilate to avoid condensation before installation.
3. Store Sure-Board® Series **200B** off ground with one end elevated for moisture drainage.
4. Do not bend sheet steel or break/mar gypsum board sheet while handling. If damage to panel should occur, repair of panel may be approved by manufacturer.

PART 2.0 PRODUCTS

2.01 MATERIALS, FASTENERS, ADHESIVE, KEVLAR BAGS AND FINISHED PANELS

A. Galvanized Steel:

1. **200BI** - No.22 gage 0.027 inch (0.686mm) base-metal thickness minimum per ASTM A 653 CS Grade 33/hot dipped galvanized G40 minimum per ASTM A 924.
2. **200BB/200BX** – No.14 gage 0.068 inch (1.732mm) base metal thickness minimum per ASTM A 653 SS Grade 50/hot dipped galvanized G60 minimum per ASTM A 924.

B. Wallboard Compliance:

1. Wallboard complies with ASTM C 1369, C 1325, C 1177 and C 1278.

C. Fasteners:

1. The fasteners used to fasten the Sure-Board® Series **200BB/200BI** Panels to the steel framing are self-drilling/self-tapping pilot point bugle head screws, #10 minimum

diameter 0.138-inch (3.5 mm), with a minimum 0.3145-inch (8.0 mm) head diameter, 1 5/8" (31.7 mm) long, and a **3/8-inch minimum drill tip**, complying with SAE J78 and ASTM C 954. ER 5280 by John Grabber & Assoc. or equal. **Series 200BX** Panels when fastened to steel framing are attached with #10 X 1 5/8" minimum self-Drilling bugle-head screws.

2. The DOS Forced Entry **Series 200BX** Panels 14 gage sheathing must be welded to framing members as well as T/B track to studs per approved welding schedule as tested.

D. Adhesives:

1. The non-structural adhesive used to attach the steel to the non-structural sheathing shall be a water soluble, non-combustible type adhesive.

E. Kevlar® Bags within the BBS® Ballistic Bag System:

1. Tailored Kevlar® Ballistic Bags® are measured and manufactured to be attached within each stud cavity utilizing **BGF Industries Model #5745 Fabric** (Data Sheet available at BGF website: www.bgf.com) or Equivalent Tested Fabric for Ballistic Resistance using the UL 752 Ballistic Standards and tested for Level 3 to Level 8. Quad layered Kevlar® bag system is filled with minimum 2 inch rigid foam for insulation and to retain shape for Level 3 and Ballistic Granular Fill is required for Level 8 Resistance. Design of all Ballistic Walls utilizing the BBS® system is the responsibility of the EOR. The required Sure-Board® Series **200B** panels must be as described below in Section 2.01 E as **200BB** and must be installed on each side of all ballistic protected walls up to the required ballistic protected height. BBS® Bags are attached to framing members at upper and middle portion of each bag on each side with minimum #6 self drilling screws through nylon straps stitched to bags when manufactured to hold position in stud bay until wall is sheathed, except top 12" on interior side, and bags are filled. Sure-Board® sheathing is installed over straps and attached to framing members as required per DOS test program. Series **200BX** sheathing must be welded to framing members prior to installation of BBS® Bags for DOS/FE approval.

E. Finished Sure-Board® Sheet Steel Panels: A) 200BB B) 200BI C) 200BX

1. **B) 200BI**-The sheet steel is No. 22 gage /0.027 inch (0.686 mm) minimum base-metal thickness complying with ASTM A 653 CS, Grade 33, and is provided with a G40 minimum hot-dipped galvanized coating conforming to ASTM A 924.
Not used on DOS FE wall system. **(Only A/C 14 gage panels may be used.)**
2. **A/C) 200BB/200BX**-The sheet steel is No.14 gage 0.068 inch (1.732mm) base metal thickness Minimum per ASTM A 653 SS Grade 50 and is provided with a G60 minimum hot dipped galvanized coating conforming to ASTM A 924. Both steel sheets are available in width of 48 inches (1219 mm) and lengths of 8 feet (2438 mm).

F. Finished Sure-Board® Panels: A) 200BB B) 200BI C) 200BX

1. Sure-Board® Series **200B** Panels:
Each panel consist of 1/2, 5/8 or 3/4 inch (12.7, 15.9 or 19.1 mm) thick square or tapered-edge Type X or Type C Fire Rated gypsum wallboard or water resistant core sheathing complying with ASTM C 1369, fiber reinforced cement board complying with ASTM C 1325 as well as glass mat gypsum substrate complying with ASTM C 1177 and fiber reinforced gypsum panels complying with ASTM C 1278, laminated with water soluble adhesive to steel sheet.

2. Series 200 Panel Composite Make-up: A) 200BB B) 200BI C) 200BX

B) 200BI-The steel sheet is No. 22 gage /0.027 inch (0.686 mm) minimum base-metal thickness, complying with ASTM A 653 CS, Grade 33, and is provided with G40 minimum hot-dipped galvanized coating conforming with ASTM A 924.

A/C) 200BB/200BX-The sheet steel is No.14 gage 0.068 inch (1.732mm) base metal thickness minimum per ASTM A 653 SS Grade 50 and is provided with a G60 minimum hot dipped galvanized coating conforming to ASTM A 924. Both finished panels are available in width of 48 inches (1219 mm) and standard lengths of 8 feet (2438 mm).

PART 3.0 INSTALLATION/CUTTING/REPAIRING SURE-BOARD®

3.01 Installation and Cutting Sure-Board ® Series 200B

A. Condition of Material Pre-Installation Sure-Board® Series 200B

1. Always install Sure-Board® Series **200B** when conditions and material are dry. If the Sure-Board® Series **200B** panels are not covered or stored in a dry location, and should get wet due to inclement weather conditions, allow them to air dry before installing. We suggest, as with all gypsum products, you keep materials dry at all times, before installation. All gypsum panels are different in their physical composition and are manufactured for specific uses. Follow all appropriate manufacturers recommendations for storage, handling and installation of your Sure-Board®. The steel sheet is always attached against the framing studs to accomplish blast/ballistic resistance.

B. Tools, Fasteners and Application for Installing/Repairing Sure-Board® Series 200B Panels

1. Installing Sure-Board® Series **200B** only requires the use of standard electric gypsum screw guns, if you intend to use hand fed screws. If you choose to use a collated screw gun, which can be very cost effective, due to the large quantity of fasteners required for some Sure-Board® panel installation, that is acceptable as well. **Note:** We have noticed over the years, that when contractors are field installing Sure-Board®, instead of building walls using panelization or a prefabricated system in a factory controlled environment, the Sure-Board® panels are commonly cut and tacked in place by the more experienced or journeyman installers, and then the actual “screwing off” process is commonly performed by an apprentice worker at a lower cost per hour to the contractor. With the collated screw gun application, this method can be very cost effective. When constructing **DOS FE** wall system, Series **200BX** Sheathing must be welded to framing studs at required spacing per approved drawings before installing BBS® bag system into stud cavity. Installation of interior Series **200BB** panels need only be attached to framing with #10 x 1 5/8” minimum self drilling winged screws at required spacing per approved plans and specifications.
2. One very important requirement when installing Sure-Board® Series **200B**, is to install the screws into the studs at the approved spacing, per your stamped construction drawings, and use our suggested #8, #10 or #12 diameter screw which are readily available, in the required length (per your specific conditions and approved plans). The screws must have a longer drill tip (minimum 3/8” long), to avoid the “jacking” of the sheet steel from the stud and track during installation. The longer drill tip screws and a list of many other important tools and fasteners that are suggested for use with Sure-Board® may be attached to this installation letter. If not attached, they are also available on our website at and at www.sureboardtools.com. The depth of the head of the bugle head

screws into the gypsum that occurs during the installation of the fasteners, is adjustable on all standard gypsum screw guns used today. We suggest that the fastener heads be installed flush to the panel face material or just below the surface at the field and perimeter edges, and a minimum of 3/8" setback from all edges of the panel. Sometimes this edge spacing will vary, but as long as the majority of the screws are within 1/4" from the edge of the panel, the structural integrity is not compromised. Unlike wood based products (plywood and OSB), Sure-Board® may have screws added where necessary, if some of the fasteners are over-screwed below the surface of the panel or even have some fasteners installed closer than the recommended 3/8" to center of fastener from the perimeter edge, without compromising the structural integrity of the panel. Note: If unintentional over-screwing occurs in excess as defined by EOR, additional screws between the existing screws may be added, with no adverse affect to the structural performance of the Sure-Board® panel.

C. Repairs on Field Damaged Gypsum on Sure-Board® Series 200B Panels

1. There are isolated situations where the gypsum panel is damaged during construction by field staff, weather conditions, etc. In those cases, the repair of the damaged Sure-Board® panels may be completed using the following method: **1.)** Identify the damaged piece of gypsum. **2.)** Score the gypsum panel with a drywall knife or router (set to depth of gypsum sheet). **3.)** Remove existing bugle-head fasteners in the damaged portion and re-fasten the sheet steel at the prescribed spacing with a minimum #8 x 3/4" self tapping pan-head fasteners into **new** holes in the Sure-Board® sheet steel and the studs. **4.)** After completing this operation, the Sure-Board® panel is secure. Reinstall gypsum board patch and screw off only as necessary to accommodate the taping process. The gypsum patch need only be screwed to the sheet steel of the Sure-Board® to accommodate this process.

***Important Variation when Installing Panels for "Blast and Ballistic" Combined" Walls Construction:**

When Series **200BB** Panels are used for *Blast and Ballistic* Protection, the first row of Panels on Exterior and Interior sides of the Wall, from the **Floor** level up (On All Required Levels), typically 4' wide x 8' long Panels, must be installed with the long axis in the **Vertical** orientation **only**, since Interior Series **200BB** and the Exterior Panels Series **200BX** are both 14 gage 0.068 inch (1.732mm) base metal thickness minimum steel sheet. Because the panels have an additional steel thickness there is no tab on the Interior Panel Series **200BI** on the long axis edge. If a tab were added, the two steel thicknesses may be troublesome, if installed horizontally and fasten to the upper Panels at these horizontal joints. This **Recommended Method** of Installation and Attachment using our Sure-Board® Series **200BI** Panels from all tested Blast Resistant Walls is manufactured using 22 gage 0.027 inch (0.686mm) base-metal thickness minimum steel sheet, and is referenced in our literature for Blast Resistance only. This vertical installation of the **200BB** Panels will eliminate the need for additional blocking or backing to be added to the wall up to the 8 feet level and will reduce unwanted bumps in the finish wall surface. Panels above that level may be installed horizontally if desirable to do so by the Contractor with no additional blocking or backing needs to be added to wall for *Blast* or *Ballistic* Protection using Sure-Board® Panels.

PART 4.0 FIRE RATED SURE-BOARD® ASSEMBLIES

4.01 1 and 2-Hour Firewall Conditions and Sure-Board® Series 200B Panels

A. Important Cost Saving Application

1. (Single and Double layer 2-Hour condition) You may take advantage of the tested application of the 2nd layer of gypsum in a 2-hour firewall condition, where Sure-Board® Series **200B** panels are the first layer. After inspection of the shear wall attachment, you may screw the 2nd layer of gypsum into the 22 or 14 gage sheet steel. This is considerably easier than attaching the 2nd layer of gypsum to the heavier gage studs. When using this method, the two important requirements are to stagger the joints of each layer of gypsum, and use a minimum #6 x 2" laminating screw at the required spacing into the 22 or #8 x 2" self tapping screw into the 14 gage sheet steel. This will save the contractor many man hours for the typical 2-hour firewall assembly or any double layer gypsum wall assembly.

Note: If there is not, however, a first layer of Sure-Board® on the 1 and 2-hour assembly, unfortunately you have no other choice, you must screw into the studs on each layer.

PART 5.0 RECOMMENDED TOOLS FOR SURE-BOARD® SERIES 200B

5.01 Recommended Tools and Cutting of Sure-Board® Series 200B

A. Cutting Sure-Board® is Simple

1. Cutting Sure-Board® Series **200B** is achieved very efficiently with the use of a ferrous metal cutting blade in a typical “sidewinder” type skilsaw. There are also several specifically designed metal cutting saws with a selection of metal cutting blades, described on our Sure-Board® Tools list, for cutting up to 3/8” thick steel plate. They significantly reduce the metal fragments exiting from the guard area with their revolutionary design, keeping in mind that all metal cutting tools require the use of eye and hand protection for the Safety of the operator. Refer to our website for our available list for recommended tools, blades and fasteners used today to make the installation of Sure-Board® efficient and ultimately more profitable for the contractor.

SAFETY FIRST

Be sure to wear proper eye and hand protection when cutting the Sure-Board® Series 200B Panels. Series 200B is best cut from the backside. Please contact manufacturer with any questions you might have. Contact Technical Support at (866) 469-7432 or send email to: support@sureboard.com

All cutting of Sure-Board® may be viewed on our Website: www.sureboard.com or we would be pleased to send you a copy of our installation video upon request.