



U.S. Fire Administration
Working for a fire-safe America

Board Up Procedures

April 2018



FEMA

Mission Statement

We provide national leadership to foster a solid foundation for our fire and emergency services stakeholders in prevention, preparedness and response.



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Board Up Procedures

Materials list and specifications

Security measures

1. All openings in the basement; all first floor doors and windows; and all points of entry accessible from a porch, fire escape or other potential climbing point must be barricaded with plywood, 2-by-4 braces, carriage bolt sets, and nails. Particle board, waferboard, Masonite, or other similar materials should not be used for purposes of boarding up a building.
2. Openings that are at least 10 feet above ground level and are not accessible from a porch, fire escape, roof or other climbing point can be secured with nails in each brace and every 12 inches around the perimeter. For all openings, the plywood should be fitted so that it rests snugly against the exterior frame, butting up to the siding on wood-frame buildings and up to the brick molding edge on brick buildings. It may be necessary to remove the staff bead so the fit is flush and tight.
3. The structure must be posted with a “No Trespassing” sign at the completion of the board up.

Materials

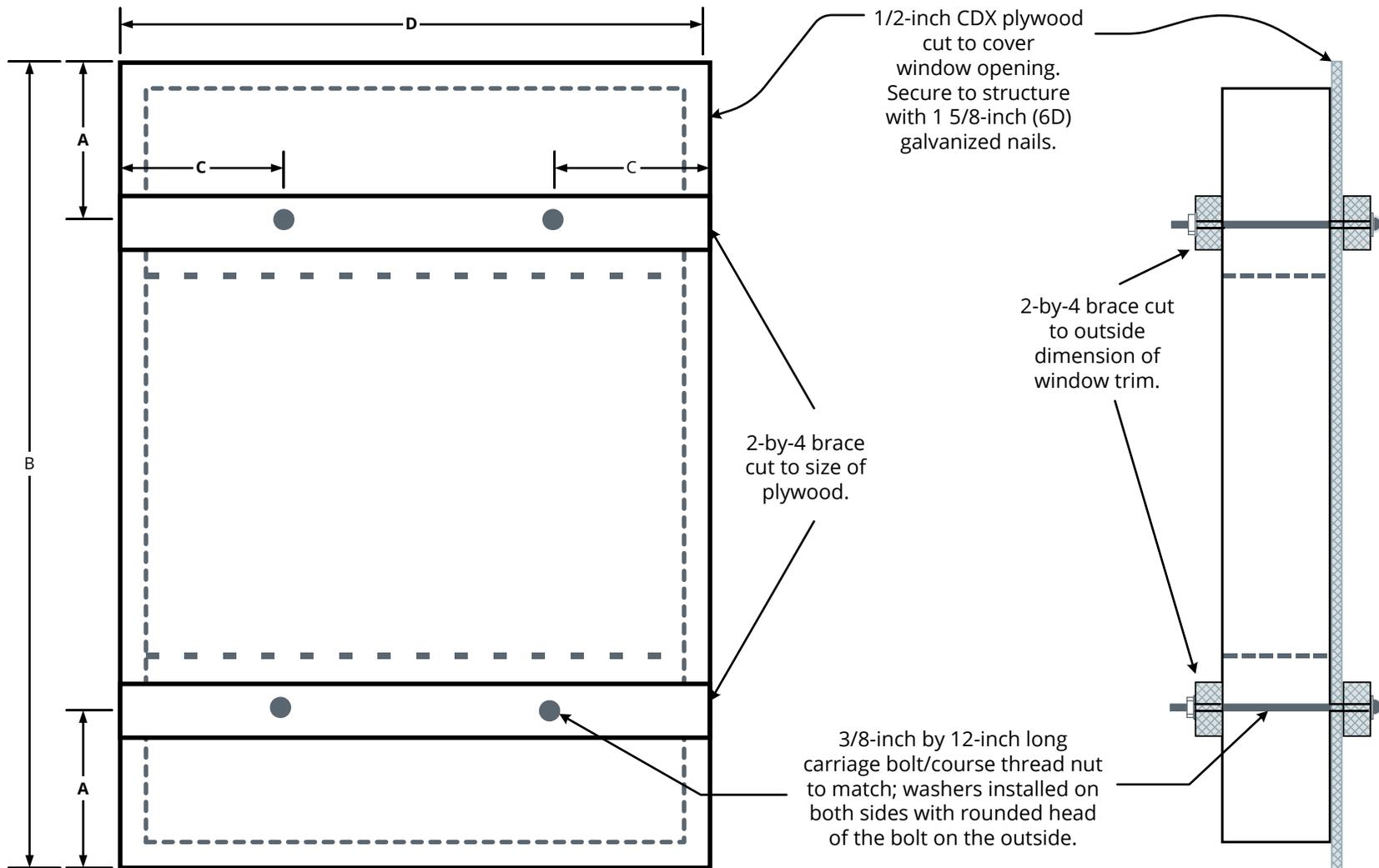
1. 1/2-inch (4 ply) CDX plywood, exterior grade.
2. Braces — 2-by-4 by 8 feet of construction-grade lumber.
3. 3/8-inch (coarse thread) by 12-inch long carriage bolts (rounded head on weather side).
4. 3/8-inch (coarse thread) construction-grade nuts.
5. 1/2-inch (USS standard) flat washers with an inside diameter large enough to bypass the wrench neck inside the carriage bolt head so that no lift edge is available beneath an installed carriage bolt head.
6. 3/8-inch (USS standard) diameter flat washers for installation beneath the nut inside the building.
7. 1 5/8-inches (6D) galvanized or stainless steel ring-shank nails or comparable deck nails.

Barrier assembly

1. Applying barriers is accomplished by a carpenter using appropriate tools and supplies. The carpenter will need a light. His or her exit is made with a ladder once the last window is boarded.
2. Plywood must be cut to fit over the window and door openings, flush with the outside of the molding/trimmer stud. Application of barriers should be completed so that all lift or pry points are avoided.
3. The 2-by-4 braces must be cut to fit the horizontal dimension of the plywood. Two exterior and two interior 2-by-4 braces must be provided for each window, as well as three sets for each door.
4. Window assembly — Braces are located horizontally, approximately one-third of the distance from the top and the bottom of the window. Bolt holes are located at one-third of the brace's length from the outside edge of the window jambs. Prior to installation, the assembly should be pre-assembled, and 3/8-inch holes should be drilled through all of the components.
5. Door assembly — Door braces will be placed horizontally: one in the center of the doorway, one at one-half the distance from the center to the top of the doorway, and one at one-half the distance from the center to the bottom of the doorway. Bolt holes are located at one-third of the brace's length from the outside edge of the door frame. Prior to installation, the assembly should be pre-assembled, and 3/8-inch holes should be drilled through all of the components.
6. Plywood used to cover exterior openings must be nailed every 12 inches along the window or door frame perimeter.
7. The 2-by-4 braces on the interior and exterior of the assemblies should be secured using carriage bolt assemblies that are 3/8 inch by 12 inches. Bolts should be inserted from the exterior with a 1/2-inch washer placed against the exterior brace and a 3/8-inch washer placed against the interior brace. The bolt is tightened from the inside so that it slightly compresses the interior brace.
8. To minimize the appearance, the barrier's exterior surfaces must be painted or stained the same color as the structure.

Should the through-bolt compression method be impossible, due to the size or condition of the opening, the opening must be covered with plywood and secured with deck or wood screws (minimum of 3-inches long) installed on 4-inch centers around the circumference of the opening.

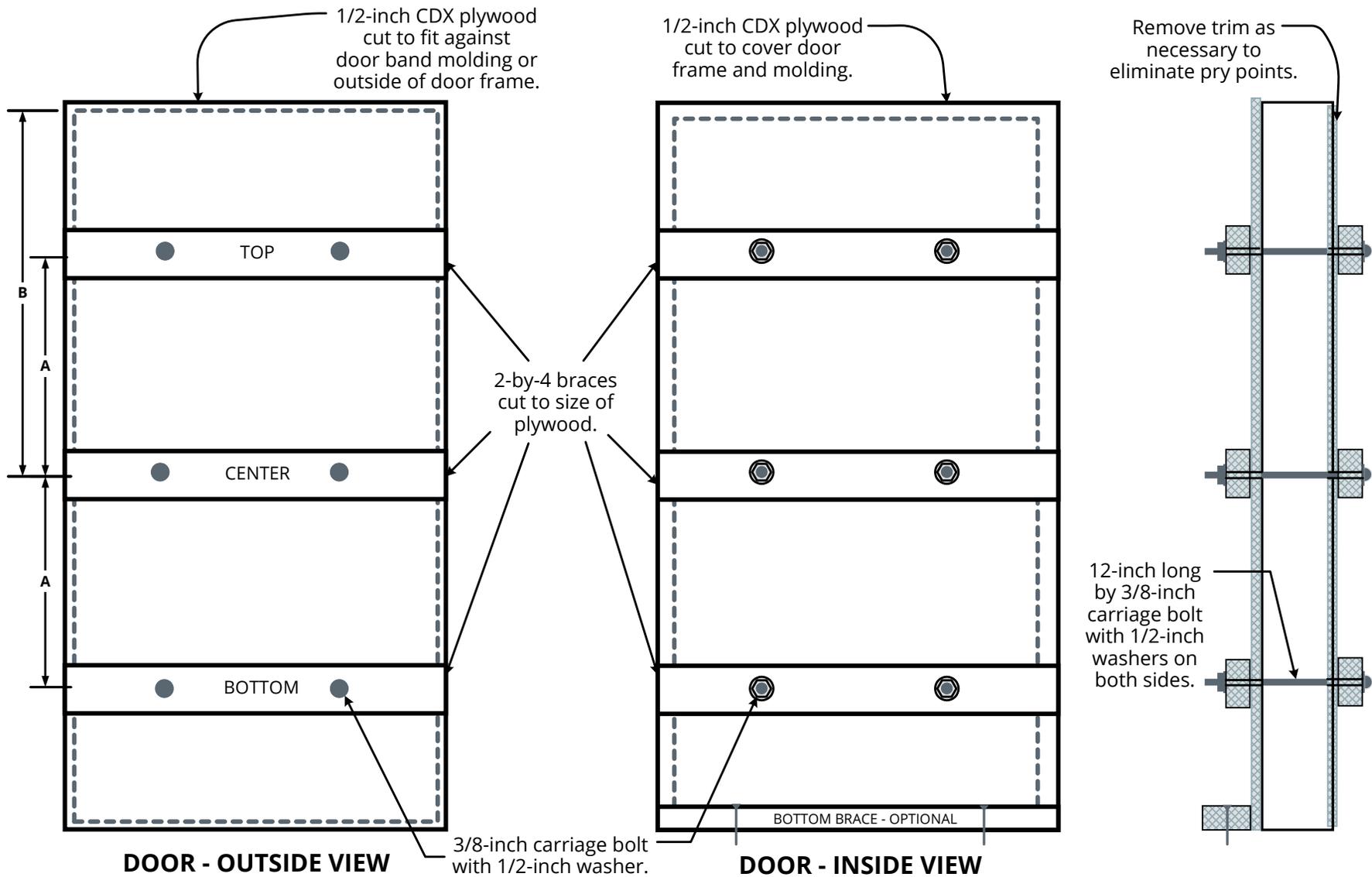
For buildings that require access by authorized personnel, a single door that is visible from the street may be secured using a solid-core wood or steel door. There should not be any windows or other openings in this door. The door should be securely locked using a padlock and hasp assembly that is bolted through the door. The lock loop portion of the hasp is attached to the door frame using wood screws that are a minimum of 3-inches long.



WINDOW - OUTSIDE VIEW

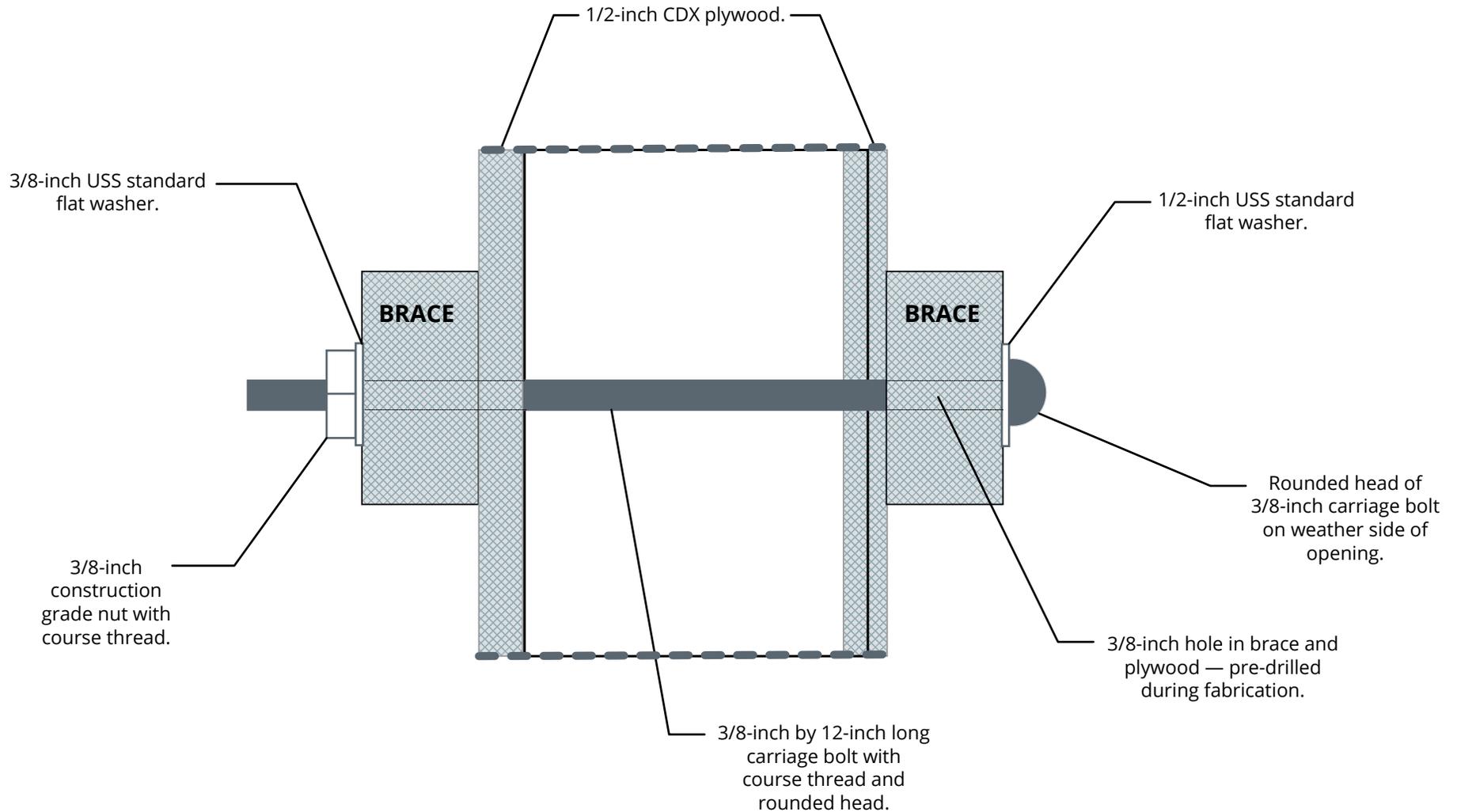
Notes:

1. For double hung windows, slide sash to center of unit and pass bolts through openings at top and bottom.
2. Storm windows should be removed and stored inside structure.
3. Outside trim may have to be removed to accommodate a flush and tight fit.
4. Tighten nuts from inside, enough to slightly compress the 2-by-4 brace.
5. Brace locations: $A = \frac{1}{3} B$ (see dimension locations on drawing).
6. Bolt hole locations: $C = \frac{1}{3} D$ (see dimension locations on drawing).



Notes:

1. Door is removed and stored inside building.
2. Use 3/8-inch by 12-inch long carriage bolts — rounded head on outside of building.
3. Tighten nuts from inside, enough to slightly compress the 2-by-4 brace.
4. If plywood can not be butted against band molding, cut to cover outside edge of door frame.
5. Bolt holes are located as they are for windows (see window detail).
6. Center brace located in center of doorway opening. Top and bottom braces are positioned where $A = 1/2 B$ (see dimension locations on drawing).



Notes:

1. Use 3/8-inch by 12-inch long carriage bolts — rounded head on outside of building.
2. Tighten nuts from inside, enough to slightly compress washer into the 2-by-4 brace.
3. Use 1/2-inch washer on weather side to accommodate the wrench neck of the bolt and eliminate pry points.

Window assembly

Materials required per window

One 1/2-inch CDX plywood sheet — cut to dimensions of window frame (weather side).

Four 2-by-4 braces — cut to width of plywood.

Four carriage bolt assemblies.

Door assemblies

Materials required per door

One 1/2-inch CDX plywood sheet — cut to dimensions of door frame (weather side).

One 1/2-inch CDX plywood sheet — cut to outside dimensions of door frame trim (inside).

Six 2-by-4 braces — three cut to width of outside plywood, three cut to width of inside plywood.

One 2-by-4 bottom brace — cut to width of door trim (optional).

Six carriage bolt assemblies.

Carriage bolt assemblies

One 12-inch by 3/8-inch carriage bolt — course thread.

One 1/2-inch USS standard flat washer (weather side).

One 3/8-inch USS standard flat washer (inside).

One 3/8-inch construction grade nut — course thread.

Number of windows to be secured (N_w): _____

Number of windows braces required: ($N_w \times 4$) _____

Carriage bolt assemblies required (B_w): ($N_w \times 4$) _____

Number of doors to be secured (N_d): _____

Number of door braces required: ($N_d \times 6$) _____

Number of bottom braces required: (N_d) _____

Carriage bolt assemblies required (B_d): ($N_d \times 6$) _____

Total carriage bolt assemblies required: ($B_w + B_d$) _____