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Roxul® RHM Series Marine Insulations for IMO FTP Code "A-60" Class Divisions on "*Unrestricted*" Bulkhead Installations

This document deals with the typical detailed installation for Roxul Inc. mineral wool *marine* insulations. It is applicable for the use of Roxul® RHM 60A and Roxul® RHM 60AC on **Class "A-60" "*Unrestricted*" Steel Bulkhead** installations.[Note1] *Administration approval* is maintained with the most onerous test criteria of IMO Resolution A.754(18) as well as IMO **Non-combustibility** verified in accordance with IMO Resolution A.799 (Part 1, Annex 1 of the FTP Code) testing criteria using standard ISO 1182:1990 procedure.

Check with local authority for any additional installation requirements.

1.0 See **Figures 1, 1A, 1B, & 1C** for the **Stiffener Side of an *"Unrestricted"* Steel Bulkhead "A-60" Class Installation.**

1.1 Following appropriate bulkhead preparation to insure proper pin welding to the bulkhead and stiffeners, 12 gauge steel weld pins are welded to the bulkhead face plate between the stiffeners and on the face of the stiffeners, up to 14 inch (356 mm) on centers at the locations shown in **Figure 1,** and **1A** or **1B** or **1C**. Weld pin placement must be maintained with a maximum of 6 inches (152 mm) from horizontal insulation seams and a maximum of 3 inches (76 mm) from the closest vertical outside edge of the stiffener insulation. For a void space less than 2 inch (51 mm), **Figure 1B**, measuring between the core insulation and stiffener flange, the insulation encasing the stiffener shall be made wider to include the attachment of the closest weld pin holding the structural core insulation in place. Should the stiffener leg be equal to or greater than 2 inch (51 mm) measuring between the core insulation and steel stiffener flange, **Figure 1C**, install additional weld pins on the same stiffener pin placement centers equidistance between stiffener flange and the top of structural core insulation.

1.2 Roxul® RHM 60A or RHM 60AC marine insulation, 3 inch (76 mm) thick, is sized for the structural core and installed on the stiffener side of the bulkhead, between the stiffeners insuring a very tight fit to the core face and the stiffener's legs. Square or round min. 1 inch (25 mm) self-locking washers are installed on the pins over the marine insulation as located in **Figure 1** to provide good contact with the insulation but shall be compressed no more than ¼ inch (6 mm).

1.3 In the event that the stiffener cavity is not entirely filled with the structural core insulation (when weld pins on web of stiffener are required), **Figure 1C**, fill the void with additional Roxul® RHM 60A or RHM 60AC marine insulation to completely contain the opening between stiffener flange and the structural core insulation.

1.4 Encase each stiffener, **Figures 1,** and **1A or 1B** or **1C,** with 1.5 inch (38 mm) thick Roxul® RHM 60A or RHM 60AC marine insulation. Square or round min. 1" (25 mm) self-locking washers are installed on the pins over the marine insulation as located in **Figure 1**, to provide good contact with the insulation but shall not be compressed by more than ¼ inch (6 mm).

1.5 The approved IMO FTP Code "A" Class Division bulkhead installation does not require the use of wire mesh to fasten the marine insulation to the bulkhead or it's stiffeners.

1.6 The marine insulation maybe applied to the smooth side of the Bulkhead using the guidelines of **1.1** and **1.2.**

Note 1: RHM70A through RHM100A can be substituted under USCG and European jurisdictions.

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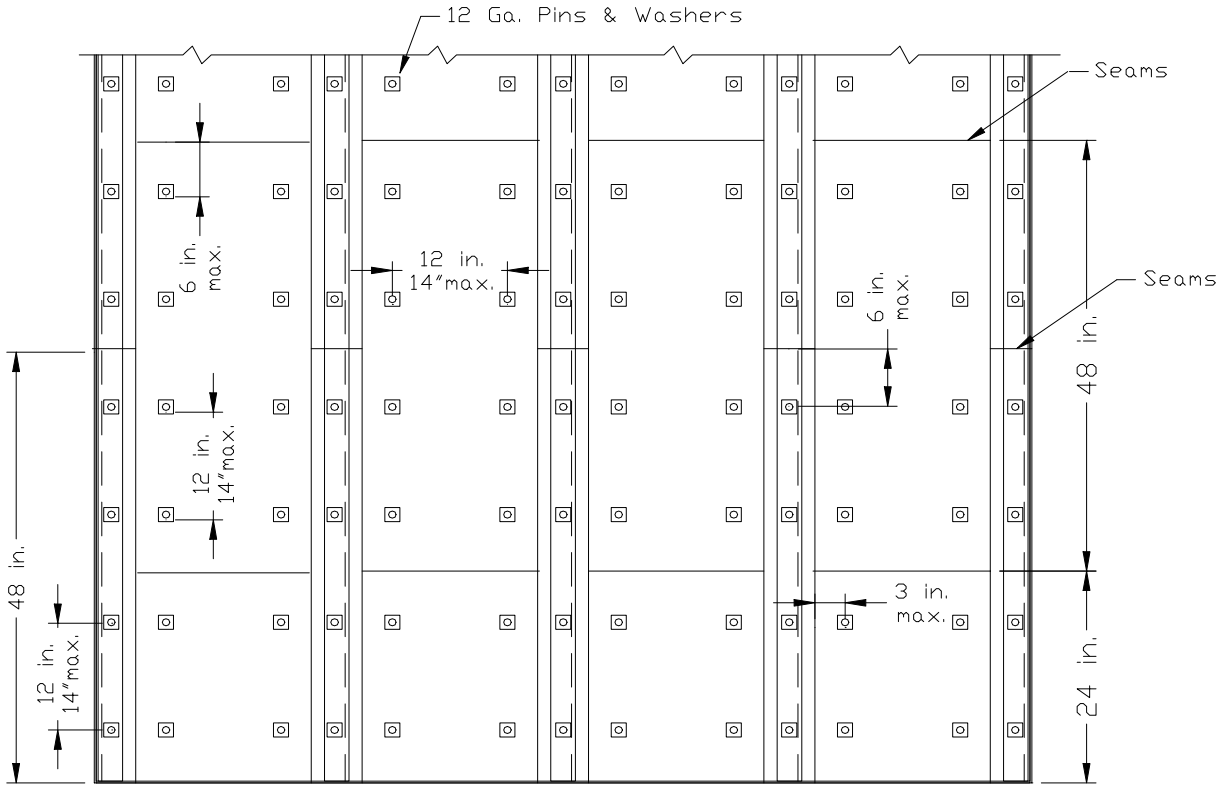
FIGURE 1

"Unrestricted A-60" Class Installation for Stiffener Side of a Steel Bulkhead



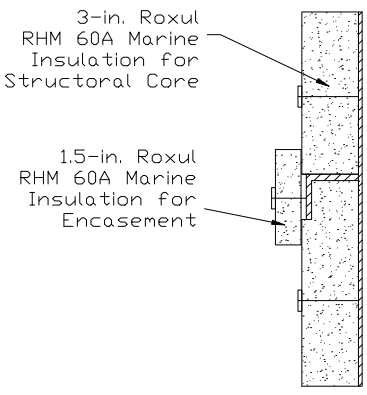


Figure 1A

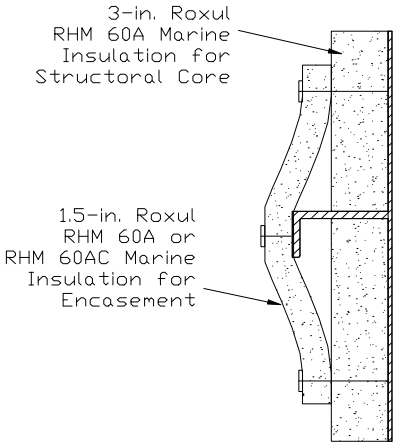


Figure 1B

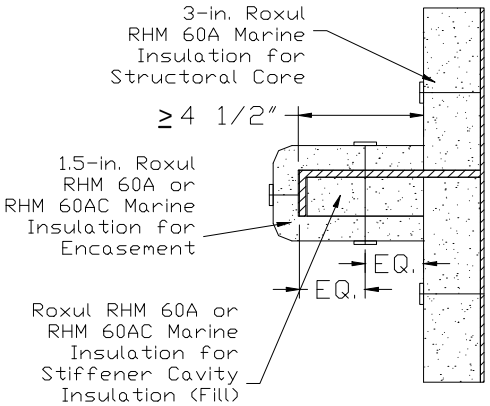


Figure 1C

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Roxul® RHM Series Marine Insulations for IMO FTP Code "A-60" Class Divisions on "*Unrestricted*" Bulkhead Installations

An alternative typical detailed installation for Roxul Inc. mineral wool *marine* insulations is applicable for the use of Roxul® RHM 60A and Roxul® RHM 60AC on **Class "A-60"** "***Unrestricted***" **Steel Bulkhead** installations.[Note1] *Administration approval* is maintained with the most onerous test criteria in IMO Resolution A.754(18) as well as IMO **Non-combustibility** verified in accordance with IMO Resolution A.799 (Part 1, Annex 1 of the FTP Code) testing criteria using standard ISO 1182:1990 procedure.

Check with local authority for any additional installation requirements.

2.0 See **Figures 2**, **2A, & 2B** for the **Stiffener Side of an *"Unrestricted"* Steel Bulkhead "A-60" Class Installation.**

2.1 Following appropriate bulkhead preparation to insure proper pin welding to the bulkhead and stiffeners, 12 gauge steel weld pins are welded to the bulkhead face plate between the stiffeners and on the face of the stiffeners, up to 14 inch (356 mm) on centers at the locations shown in **Figure 2**. Weld pin placement must be maintained with a maximum of 6 inches (152 mm) from horizontal insulation seams and a maximum of 3 inches (76 mm) from vertical outside edge of the stiffener insulation. Should the stiffener leg dimension, as shown in **Figure 2B**, be equal to or greater than 4½" inches (114 mm) measured between the core insulation and stiffener flange, an additional weld pin shall be installed on the same stiffener pin placement centers equidistance between flange and the top of structural core insulation.

2.2 The stiffener cavity shall be filled with Roxul® RHM 60A or RHM 60AC insulation as shown in **Figure 2A or 2B.**

2.3 Encase each stiffener with 1.5 inch (38mm) thick Roxul® RHM 60A or RHM 60AC marine insulation. Square or round min. 1" (25 mm) self-locking washers are installed on the pins over the marine insulation as located in **Figure 2, and 2A** or **2B** to provide good contact with the insulation but shall not be compressed by more than ¼ inch (6 mm).

2.4 Roxul® RHM 60A or RHM 60AC marine insulation, 3 inch (76mm) thick, is sized for the structural core and installed on the stiffener side of the bulkhead, between the each stiffener's encased insulation insuring a very tight fit to the core face and the insulation on the stiffener legs. Square or round min. 1" (25 mm) self-locking washers are installed on the pins over the marine insulation as located in **Figure 2,** to provide good contact with the insulation but shall not be compressed by more than ¼ inch (6 mm).

2.5 The approved IMO FTP Code "A" Class Division bulkhead installation does not require the use of wire mesh to fasten the marine insulation to the bulkhead or it's stiffeners.

2.6 The marine insulation maybe applied to the smooth side of the **Bulkhead** using the guideline of **2.1** and **2.4** paragraphs.

Note 1: RHM70A through RHM100A can be substituted under USCG and European jurisdictions.

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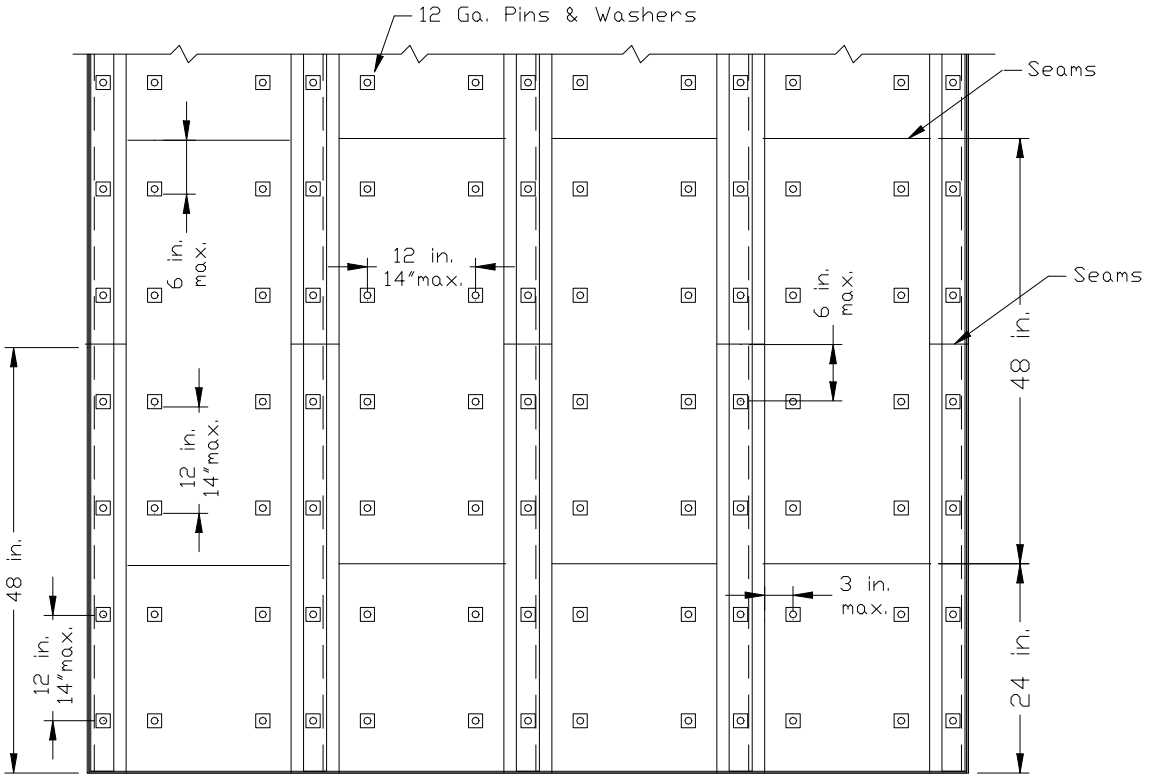
FIGURE 2

Alternate "Unrestricted A-60" Class Installation for Stiffener Side of a Steel Bulkhead



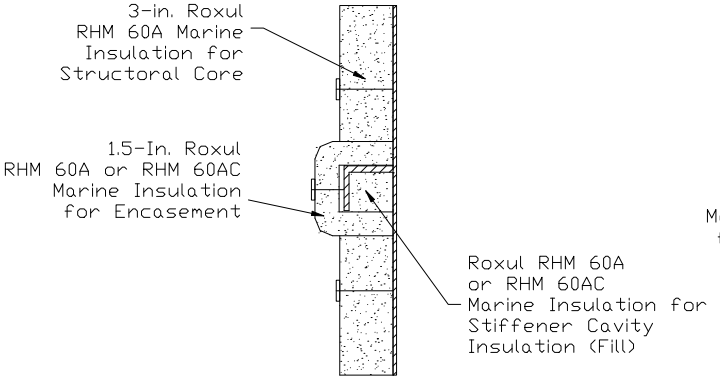


Figure 2A

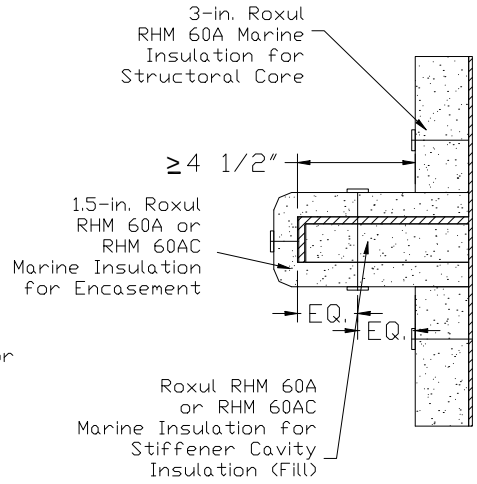


Figure 2B

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Roxul® RHM Series Marine Insulations for IMO FTP Code "A-60" Class Divisions on Steel Deck and *"Restricted"* Bulkhead Installations

This document deals with the typical detailed installation for Roxul Inc. mineral wool *marine* insulations. It is applicable for the use of Roxul® RHM 60A and Roxul® RHM 60AC on **Class "A-60" Steel Deck** and ***"Restricted"*** **Bulkhead** installations.[Note1] *Administration approval* is maintained with the test criteria of IMO Resolution A.754(18) as well as IMO **Non-combustibility** verified in accordance with IMO Resolution A.799 (Part 1, Annex 1 of the FTP Code) testing criteria using standard ISO 1182:1990 procedure.

Check with local authority for any additional installation requirements.

3.0 See **Figures 3**, **3A, & 3B** for the **Underside of a Steel Deck** and ***"Restricted"*** **Bulkhead** **"A-60" Class Installation.**

3.1 Following appropriate underside deck preparation to insure proper pin welding to the deck and stiffeners, 12 gauge steel weld pins are welded to the deck face plate between the stiffeners and on the face of the stiffeners, both up to 14 inch (356 mm) centers between stiffeners and parallel to stiffeners at the locations shown in **Figures 3,** and **3A** or **3B**. Weld pin placement must be maintained with a max. of 3 inches (76 mm) from horizontal insulation seams and from the closest vertical outside edge of the stiffener insulation. Should the stiffener leg, as shown in **Figure 3B**, be equal to or greater than 4½" inches (114 mm) measured between the core insulation and stiffener flange, install additional weld pins on the same stiffener pin placement centers equidistance between flange and the top of structural core insulation.

3.2 The stiffener cavity shall be filled with Roxul® RHM 60A or RHM 60AC marine insulation as shown in **Figure 3A or 3B.**

3.3 Roxul® RHM 60A or RHM 60AC marine insulation, 1.5 inch (38 mm) thick, is encased (boxed, mitered, or wrapped) around each stiffener. It may be necessary to temporally hold the sides of the marine blanket insulation in place, for each stiffener leg with a C-shaped piece of sheet metal form, until the structural core marine insulation is installed. Holes cut into the face of the C-shaped piece of sheet metal at the stiffener pin locations can accommodate placement of the square or round self-locking washers. This sheet metal C-shaped form, while holding the marine insulation in place, enhances the installation of the 2 inch (51 mm) thickness of Roxul® RHM 60A marine insulation for the structural core and can easy be removed once the RHM 60A insulation is tightly butted adjacent to the encased stiffener insulation. Square or round min. 1½" (38 mm) self-locking washers are installed on the pins over the marine insulation as located in **Figures 3, and 3A** or **3B** to provide good contact with the insulation but shall not be compressed by more than ¼ inch (6 mm).

3.4 Roxul® RHM 60A or RHM 60AC marine insulation, 2 inch (51mm) in thickness, used to insulate the structural core of the deck and sized to fill the space between the stiffener's insulation is impaled over the 12 gauge steel weld pins, as shown in **Figures 3, and 3A or 3B**. Square or round min. 1½" (38 mm) self-locking washers are installed on the pins over the marine insulation as located in **Figures 3, and 3A** or **3B** to provide good contact with the insulation but shall not be compressed by more than ¼ inch (6 mm).

3.5 The *approved* IMO FTP Code "A" Class Division deck and bulkhead installation does not require the use of wire mesh to fasten or hold in place the marine insulation to the deck, bulkhead, or any stiffeners.

3.6 The marine insulation maybe applied to the smooth side of the ***"Restricted"*** **Bulkhead** using the guideline of **3.1** and **3.4** paragraphs.

Note 1: RHM70A through RHM100A can be substituted under USCG and European jurisdictions.

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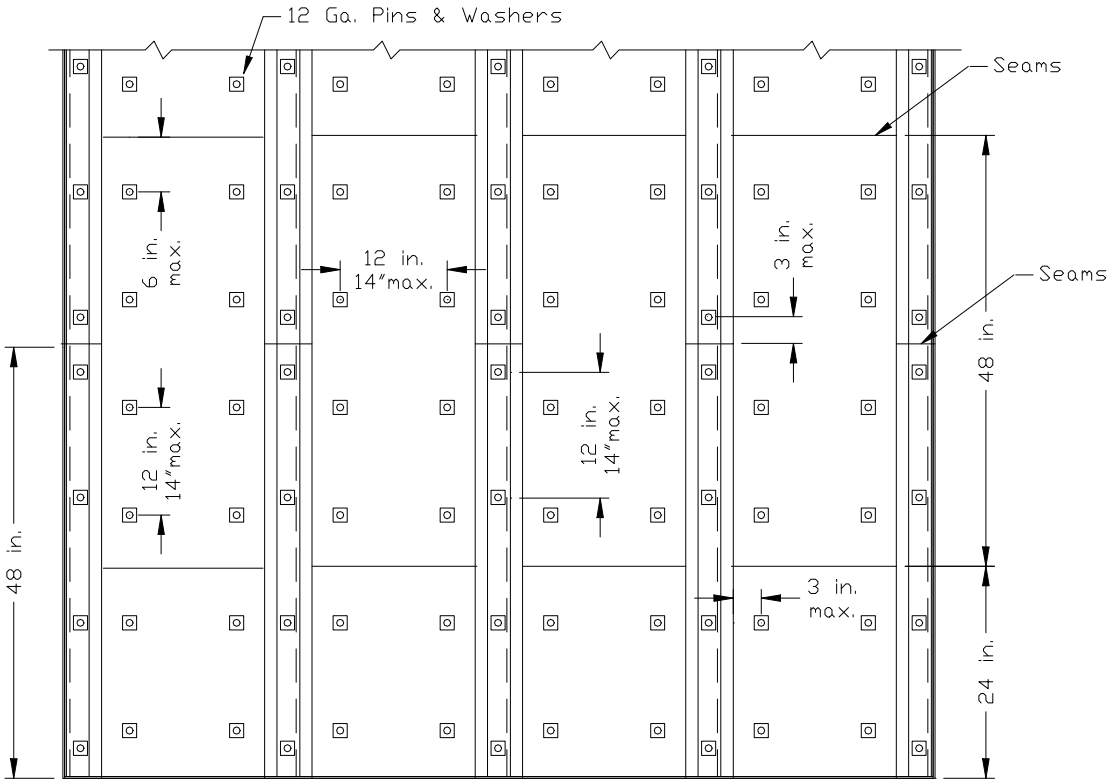
FIGURE 3

Typical "A-60" Class Installation for Underside of a Steel Deck or "Restricted" Bulkhead



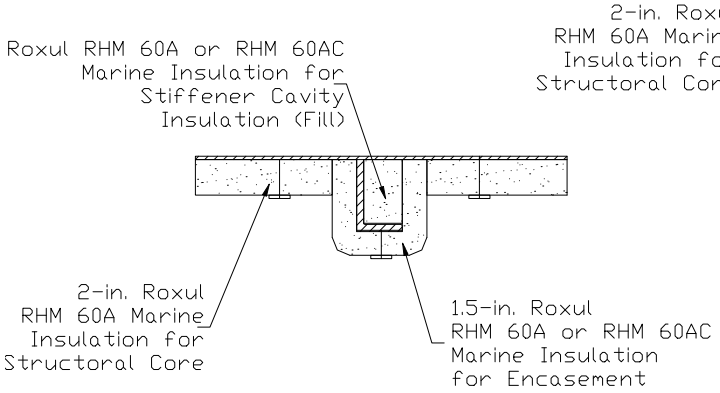


Figure 3A

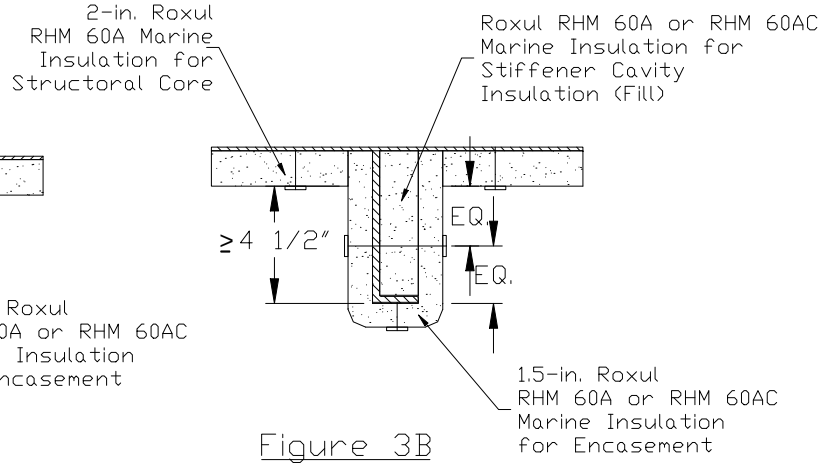


Figure 3B

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Roxul® RHM Series Marine Insulations for IMO FTP Code "A-60" Class Divisions on Steel Deck and *"Restricted"* Bulkhead Installations

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Check with local authority for any additional installation requirements.

4.0 See **Figures 4**, **4A, & 4B** for the **Underside of a Steel Deck** and ***"Restricted"*** **Bulkhead** **"A-60" Class Installation.**

4.1 Following appropriate underside deck preparation to insure proper pin welding to the deck and stiffeners, 12 gauge steel weld pins are welded to the deck face plate between the stiffeners and on the face & web of the stiffeners, all on up to 14 inch (356 mm) centers at the locations as shown in **Figure 4.** Weld pin placement must be maintained with a maximum of 6 inches (152 mm) from stiffener core insulation seams and a maximum of 3 inches (76 mm) from the closest vertical outside edge of stiffener insulation. Should the stiffener leg, as shown in **Figure 4B** be equal to or greater than 4½" inches (114 mm) measured between the core insulation and stiffener flange, install weld pins, using the same stiffener pin placement centers, on the stiffener web equidistance between flange and the top of structural core insulation.

4.2 Roxul® RHM 60A or RHM 60AC marine insulation, 2 inch (51mm) in thickness, used to insulate the structural core of the deck and sized to fill the entire space snugly between the stiffeners is impaled over the 12 gauge steel weld pins. Square or round min. 1½" (38 mm) self-locking washers are installed on the pins over the marine insulation as located in **Figures 4, and 4A** or **4B** to provide good contact with the insulation but shall not be compressed by more than ¼ inch (6 mm).

4.3 The stiffener cavity shall be filled with Roxul® RHM 60A or RHM 60AC marine insulation as shown in **Figure 4A or 4B**.

4.4 Roxul® RHM 60A or RHM 60AC marine insulation, 1.5 inch (38 mm) thick, is encased (boxed, mitered, or wrapped) around each stiffener, impaled over 12 gauge steel weld pins, and fastened on both sides and face of the stiffener with minimum 1½ inch (38 mm) square or round self-locking washers. Square or round min. 1½" (38 mm) self-locking washers are installed on the pins over the marine insulation as located in **Figures 4, and 4A** or **4B** to provide good contact with the insulation but shall not be compressed by more than ¼ inch (6 mm).

4.5 The *approved* IMO FTP Code "A" Class Division deck and bulkhead installation does not require the use of wire mesh to fasten or hold in place the marine insulation to the deck, bulkhead, or any stiffeners.

4.6 The marine insulation maybe applied to the smooth side of the **"*Restricted*" Bulkhead** using the guideline of **4.1** and **4.2** paragraphs.

Note 1: RHM70A through RHM100A can be substituted under USCG and European jurisdictions.

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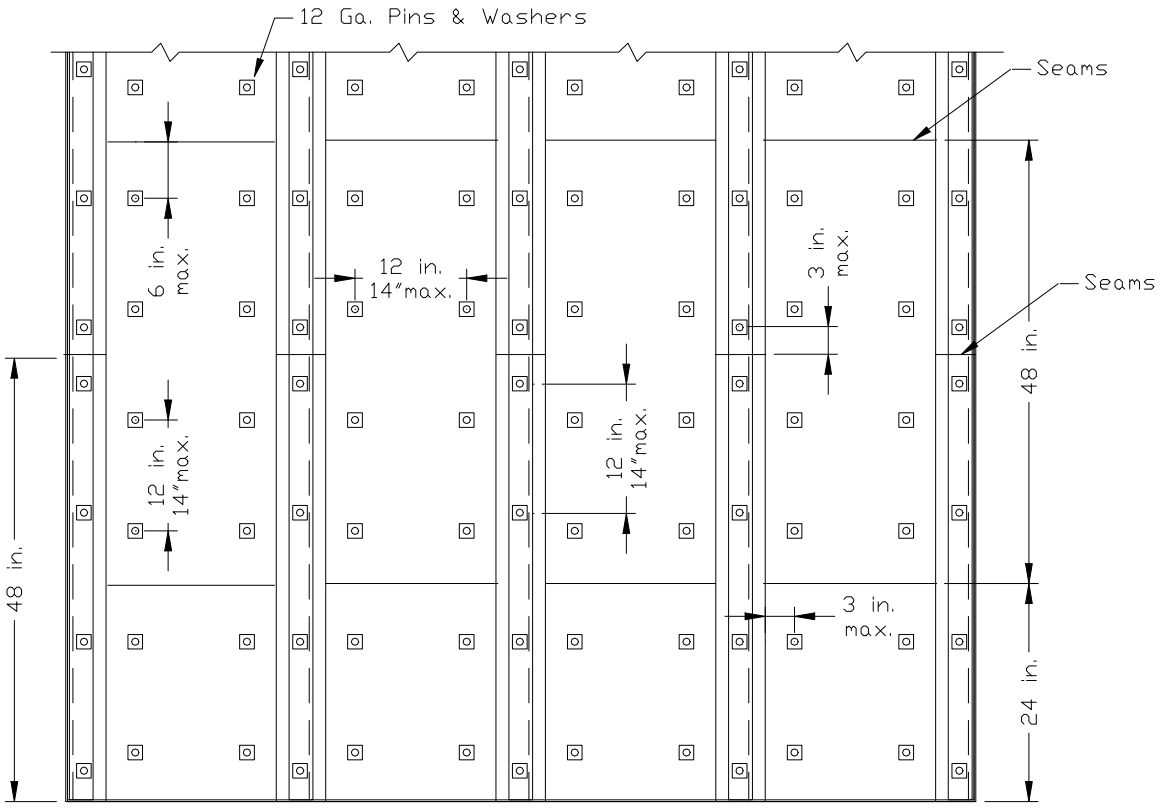
FIGURE 4

Alternate "A-60" Class Installation for
Underside of a Steel Deck or "Restricted" Bulkhead



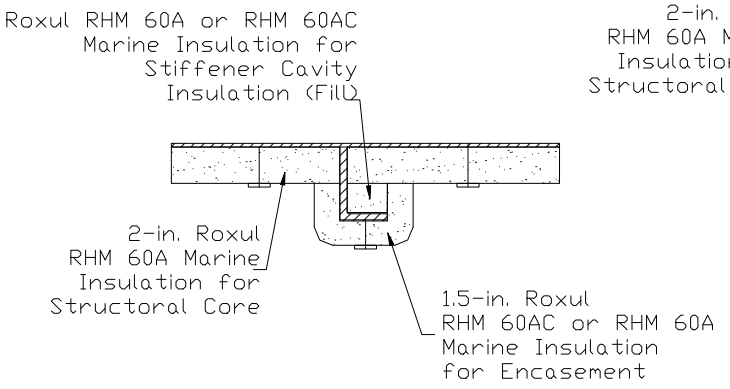


Figure 4A

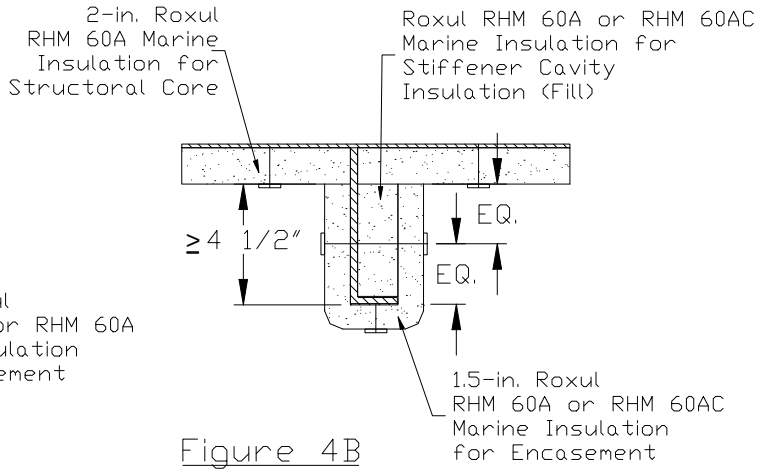


Figure 4B