ASC IsoWall Guide to High Performance Soundproofing

Table of Contents

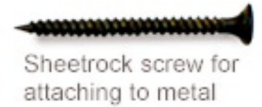ASC ACOUSTIC SCIENCES CORPORATION

Introduction: Easy as 1, 2, 3

Welcome to ASC IsoWall guide to high performance soundproofing. This guide will show you how it's done in basically three easy steps. Step 1 is **SITE PREP** such as insulation, HVAC ducts and vents, perimeter blocking, and electrical box placement. Step 2 is **INSTALL SUSPENSION SYSTEM** of gasket, RC Pads, and resilient channel*. Step 3 is **INSTALLING THE SHEETROCK** with WallDamp sandwiched between.

This system is based on the resilient channel method of soundproofing, a well proven technique that has been in use for over 50 years. The ASC IsoWall soundproofing system is an improvement on the resilient channel system because we add damping to the assembly. **If you are not familiar with installing resilient channel, consult the USG Gypsum Construction Handbook, www.usg.com.**
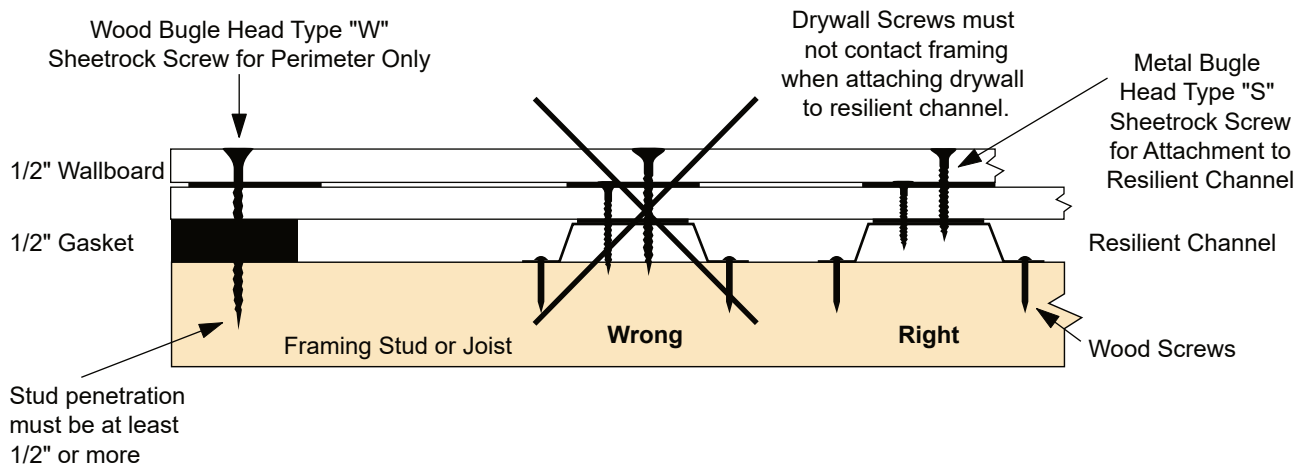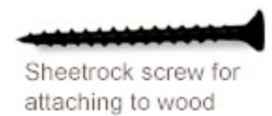
In all cases, **always be sure to follow your local building codes**, regardless of what we suggest in this guide. The ASC IsoWall Soundproofing System uses two layers of dissimilar sheetrock, one being regular 1/2" gypsum wallboard, the other being 1/2" "greenboard". Its up to you if you want to use thicker material.

Regardless, **screw length** and **type** is critically important to the success of your project. You MUST calculate the right length to achieve secure sheetrock attachment. Be sure to study this illustration below for proper screwing guidelines when attaching drywall.

Metal

Sheetrock screw for attaching to metal

Wood

Sheetrock screw for attaching to wood

Wood Bugle Head Type "W" Sheetrock Screw for Perimeter Only

Drywall Screws must not contact framing when attaching drywall to resilient channel.

Metal Bugle Head Type "S" Sheetrock Screw for Attachment to Resilient Channel

1/2" Wallboard

1/2" Gasket

Resilient Channel

Stud penetration must be at least 1/2" or more

Framing Stud or Joist

Wrong

Right

Wood Screws

WallDamp Installation Technique

WallDamp comes with a double sided adhesive which is completely non-toxic. It is a molecular migration type adhesive which takes time to fully stick to where ever it is placed. That said, the adhesive is there only to help you position it properly before screwing in the resilient channel or sheetrock. **The most important thing to understand is that, when placed in position, it will only stay there for a few hours before falling to the ground.** Don't position WallDamp pads and squares the day before. It's better to do the install in manageable stages or in steps that don't rely on WallDamp to remain in place over night.

Some installers prefer to use a mallet to help persuade the WallDamp to "stick around" longer. Once you get started, you'll see what works for you. Just remember, be gentle, don't hit it too hard.
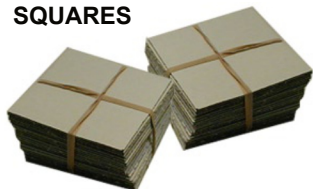
* For questions about installing resilient channel, visit USG's website at www.usg.com

IsoWall Ceiling Install

Materials We Supply

WALLDAMP SQUARES

WALLDAMP STRIPS

RC PADS

ACOUSTICAL SEALANT

dRC-1 Damped Resilient Channel for Walls

PERIMETER GASKET

Required Materials You Supply

TACK NAILS

MASKING TAPE

WIRE INSULATION SUPPORTS

CONSTRUCTION ADHESIVE

INSULATION BLANKET

SPRAY ADHESIVE

Bugle Head DRYWALL SCREWS Metal Type "S" for Attachment to Resilient Channel

Bugle Head DRYWALL SCREWS Wood Type "W" for Perimeter Attachment

3/8" TYPE S PAN HEAD SCREWS

1/2" REGULAR WALLBOARD

1/2" MOISTURE RESISTANT GYPSUM WALLBOARD

MALLET WITH PADDING

IsoWall Ceiling Prep

Position ceiling fixtures:

It's a good idea to plan ahead before you begin your IsoWall installation. The final ceiling thickness in the system is roughly 1-5/8" from the face of the joists. Be sure to place pot lights, HVAC vents and other junction boxes accordingly.

When installing the wallboard in the IsoWall system, leave a 1/4" gap around any fixtures. Later, these gaps will be filled with acoustical sealant. This is the same method used for sealing around the wall/ceiling perimeter edges.

When you have finished installing the system, apply another bead of acoustical sealant to the edges of each fixture, prior to applying any faceplates or coverings.

1 1/2" - 2" Outset for HVAC Openings
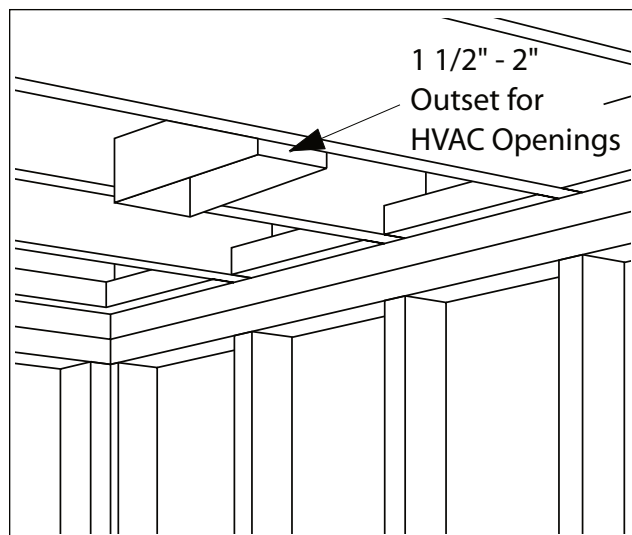
HVAC VENT INSTALLATION

Ceiling Installation

Install Perimeter Gasket

[1] With a urethane panel adhesive such as Liquid Nails™, glue **Perimeter Gasket** around perimeter of ceiling (Fig. 2A). Use tack nails (if needed) as extra holding strength while the adhesive dries.

[2] Determine placement of dRC1 resilient channel using our placement guide on page 5 (Fig. 3A).

[3] Remove release paper on one side of 1-1/2" x 3" **RC Pads** and apply them to the face of the ceiling joists where **dRC1**'s will be screwed on (Fig. 2A). Be sure to read **Install Technique** information above. Remove remaining release paper.
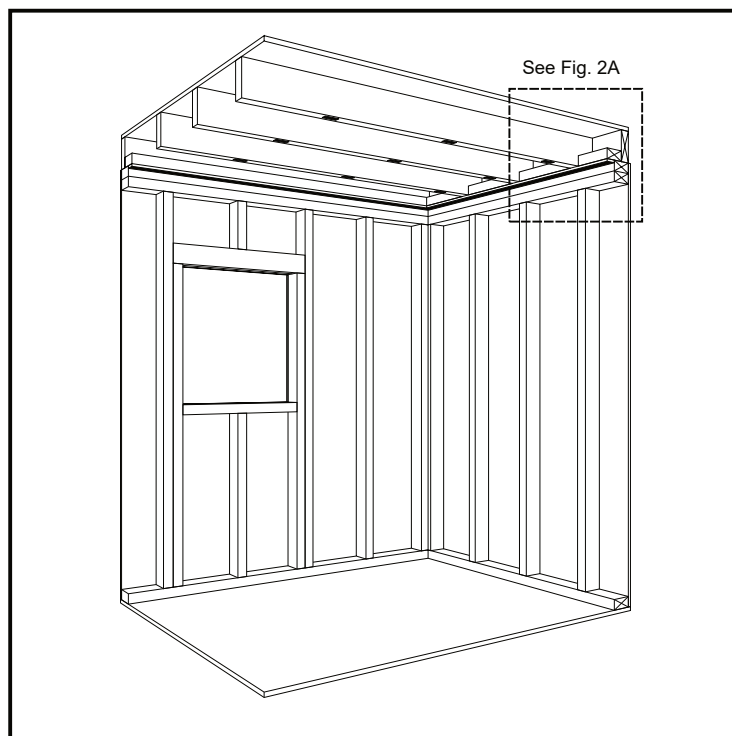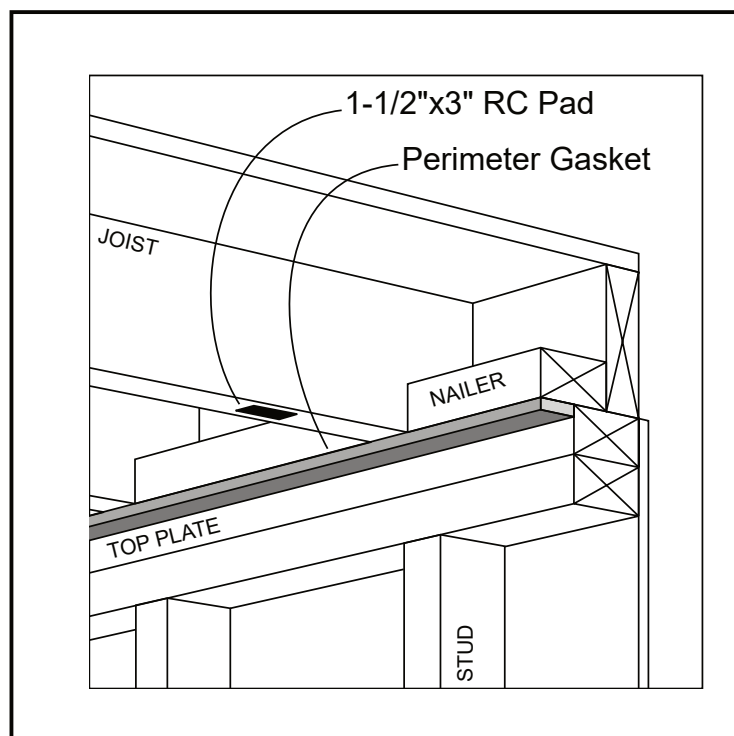

Fig. 2 CEILING INSTALLATION

Fig. 2A DETAIL

Install Insulation

[4] Press insulation blanket (not shown) into joist cavity. The paper or foil backing should either be glued to the ceiling with spray adhesive or it should be removed. If necessary, use wire insulation supports every 12" to 16" to hold up the blanket.

Install dRC-1 Resilient Channel

[5] Fasten **dRC-1**s perpendicular to ceiling joists with 1-1/4" wood type "W" drywall screws at each joist in both flanges.

Channel spacing should be no more than 12" on centers. Keep end Channels parallel to wall at least 12" from the wall /ceiling corner. Channel ends should overhang no more than 6" from final joist. (Fig. 3A)

Splice channels directly over joists by overlapping (not butting) at least 1-1/2" and driving screws through both flanges into the joists (Fig. 3B). If channel overlap falls between joists, overlap channels at least 6" and fasten both channels near ends with 3/8" Type "S" Pan Head Screws. (Fig. 3C)

TIP: Mark the location of the joists and the **dRC-1**s on wall's top plates with masking tape at the ends of each joist. This will be helpful for later installation.
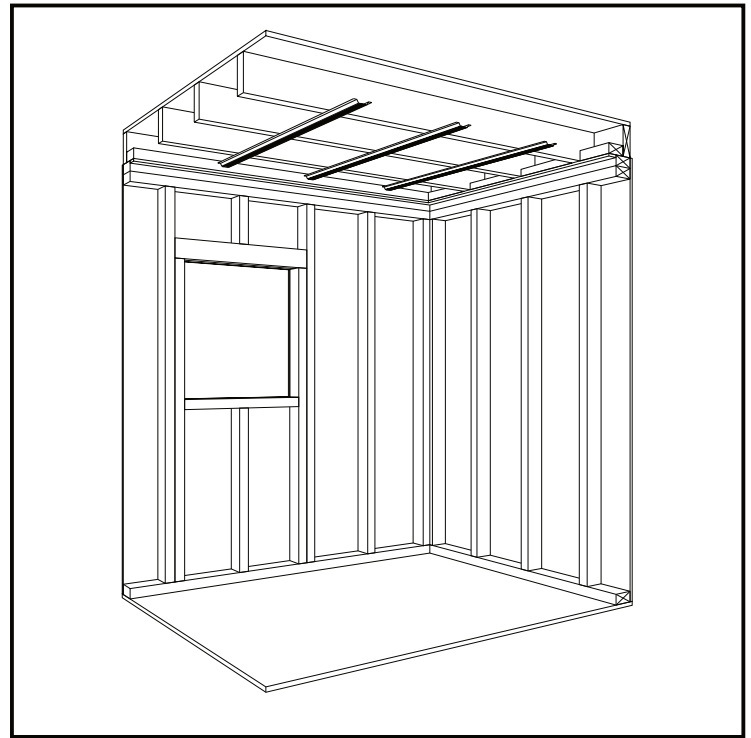
Fig. 3 CEILING INSTALLATION (cont'd)

WOOD TYPE "W" SHEETROCK SCREW

1-1/2" Min.
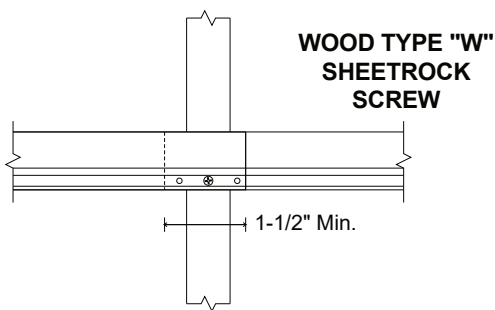
Fig. 3B   SPLICE CHANNELS OVER JOIST

3/8" TYPE S PAN HEAD SCREWS

6" Min.

Fig. 3C   SPLICE CHANNELS BETWEEN JOISTS

12" On Center

Joist

6" Max. Overhang

12" On Center

dRC-1

PERIMETER GASKET
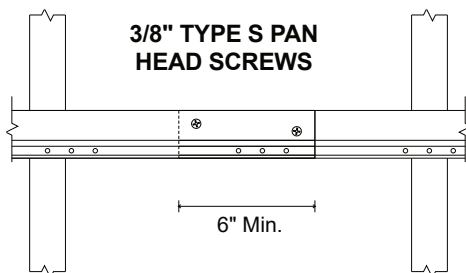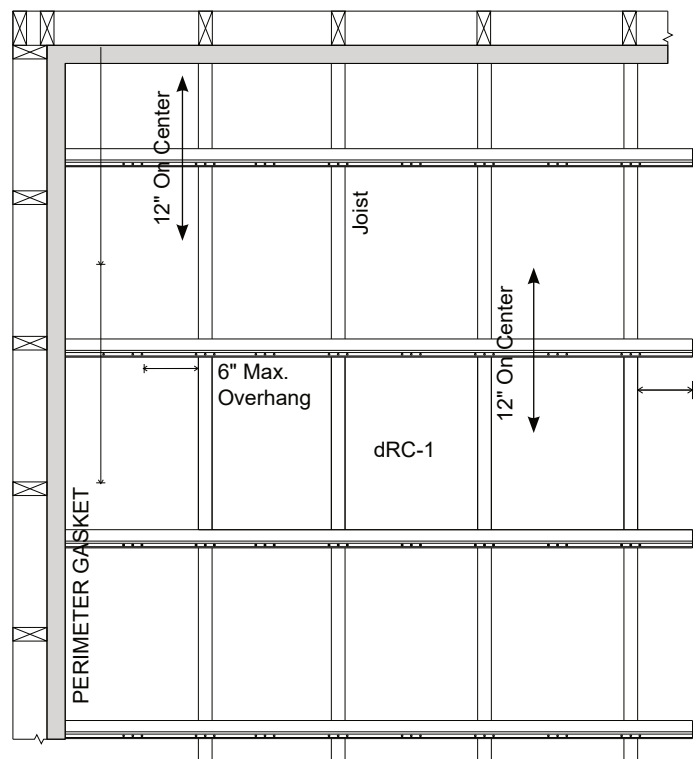
Fig. 3A CEILING PLAN

Prepare Perimeter Gaskets

[6] Apply 1/4" bead of panel adhesive to face of the installed **Perimeter Gasket** strips.

[7] Snap chalk lines on the wallboards to mark the location of the **dRC-1**s and the joists.

Install First Layer of Sheetrock

[8] Attach 1/2" Moisture Resistant wallboard perpendicular to **dRC-1**s with 1-1/4" drywall screws for metal, 12" (max.)* on centers. Avoid driving the screws to joists by keeping the screws a minimum 2" distance from joists. (Fig. 4A)

Note: Place the green side of the first layer board toward the framing, brown side facing out. The green side has tapered edges which prohibit adequate contact with WallDamp strips.

At the perimeter, use sheetrock screws for wood to screw wallboard to ceiling nailer 12" (max.) on centers through **Perimeter Gasket** strips and at least 1/2" or more into support blocking.

A 1/4" gap should be kept between ceiling wallboard and the top plates. Apply **Acoustical Sealant** to seal the gap.

[9] Decide and visualize the layout for the second layer wallboard. We recommend this layer should go the same direction as the first layer (perpendicular to **dRC-1**s). Joints between the two layers should be staggered, and centered over WallDamp Squares). Identify and mark where the joint seams will be.

Note: If the second layer of wallboard needs to be orientated parallel to the **dRC-1**s (opposite the first layer), be sure to space the **dRC-1**s so the second layer wallboard seams align centered over the **dRC-1**s.
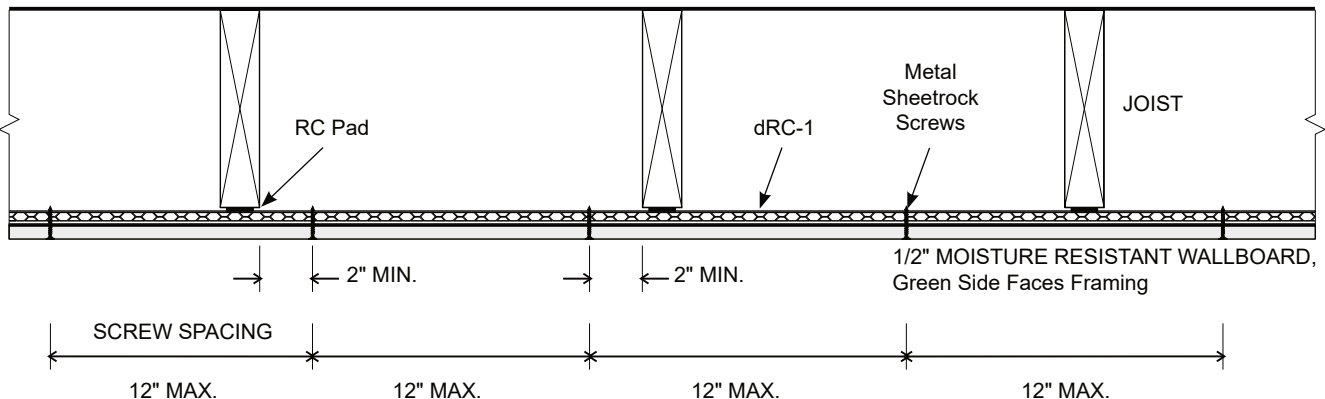
Fig. 4 CEILING INSTALLATION (cont'd)

*   Always follow local building codes!

Avoid Driving Sheetrock Screws into Framing

RC Pad

Metal
Sheetrock
Screws

dRC-1

JOIST

2" MIN.

2" MIN.

1/2" MOISTURE RESISTANT WALLBOARD,
Green Side Faces Framing

SCREW SPACING

12" MAX.   12" MAX.   12" MAX.   12" MAX.

Fig. 4A CEILING SECTION

Apply WallDamp

[10] Remove release paper from one side of the **WallDamp Strips**. Apply the strips over all the wallboard joint seams as well as around the ceiling perimeter. Be sure to read **Install Technique** information on page 4.

[11] Use chalk line to lay out your grid for WallDamp Square placement.

[12] Remove release paper from one side of the **WallDamp Squares**, starting about 6" in from the edges, apply the Squares to wallboard surface 12" on centers. Use rubber mallet if necessary (Fig. 5A). Be sure to read **Install Technique** information on page 4.

Note: Joints between the two layers of wallboard should be staggered, and centered over WallDamp Squares). Identify and mark where the joint seams will be.
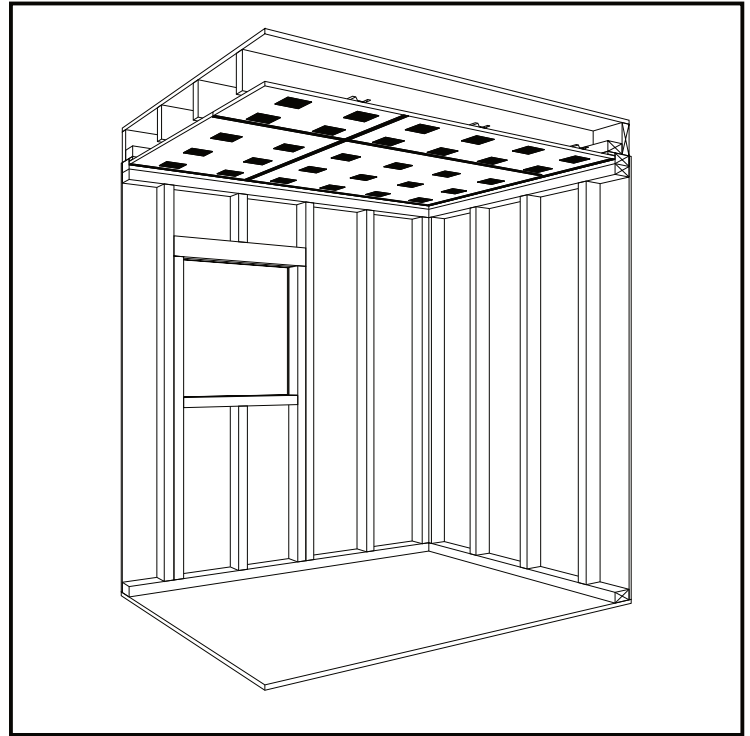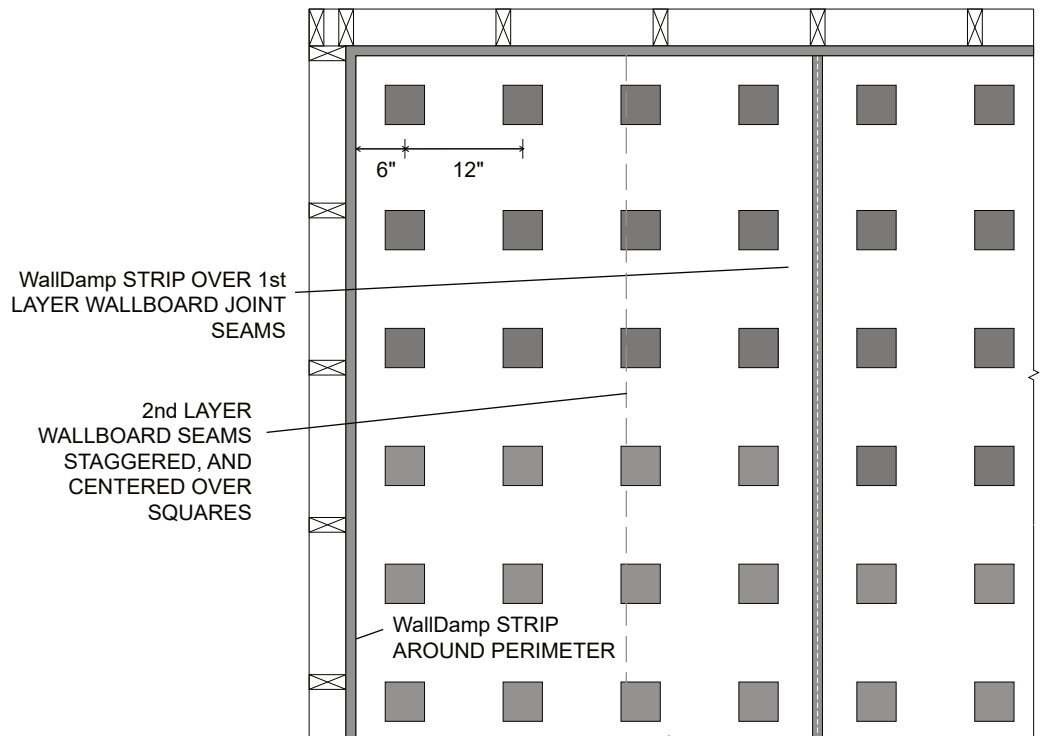

Fig. 5 CEILING INSTALLATION (cont'd)

6"   12"

WallDamp STRIP OVER 1st LAYER WALLBOARD JOINT SEAMS

2nd LAYER WALLBOARD SEAMS STAGGERED, AND CENTERED OVER SQUARES

WallDamp STRIP AROUND PERIMETER

Fig. 5A CEILING PLAN

Install Second Layer of Sheetrock

[13] Attach 1/2" regular wallboard to **dRC-1**s through the first layer Moisture Resistant wallboard with 1-3/4" drywall screws 12" (max.) on centers. Use sheetrock screws for metal. Avoid driving the screws to joists by keeping the screws a minimum 2" distance from joists. (Fig. 6A).

Note: We recommend this layer should go the same direction as the first layer (perpendicular to **dRC-1**s) with the seams staggered.

Place the tapered finished side of the board toward the interior of the room.

At the perimeter, use sheetrock screws for wood to screw wallboard to ceiling nailing blocks 12" (max.) on centers through first layer wallboard and **Perimeter Gasket** strips. Be sure screws penetrate wood at least 1/2".

A 1/4" gap should be kept between ceiling wallboard and the top plates. Apply a bead of **Acoustical Sealant** to seal the gap.

This completes your Ceiling Installation, now let's go on to the Wall Installation.
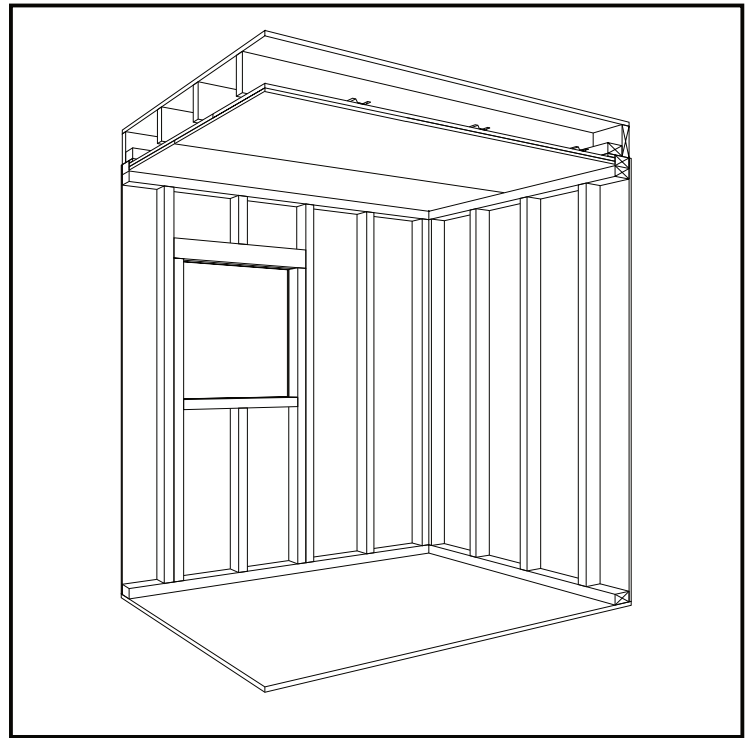

Fig. 6 CEILING INSTALLATION (cont'd)

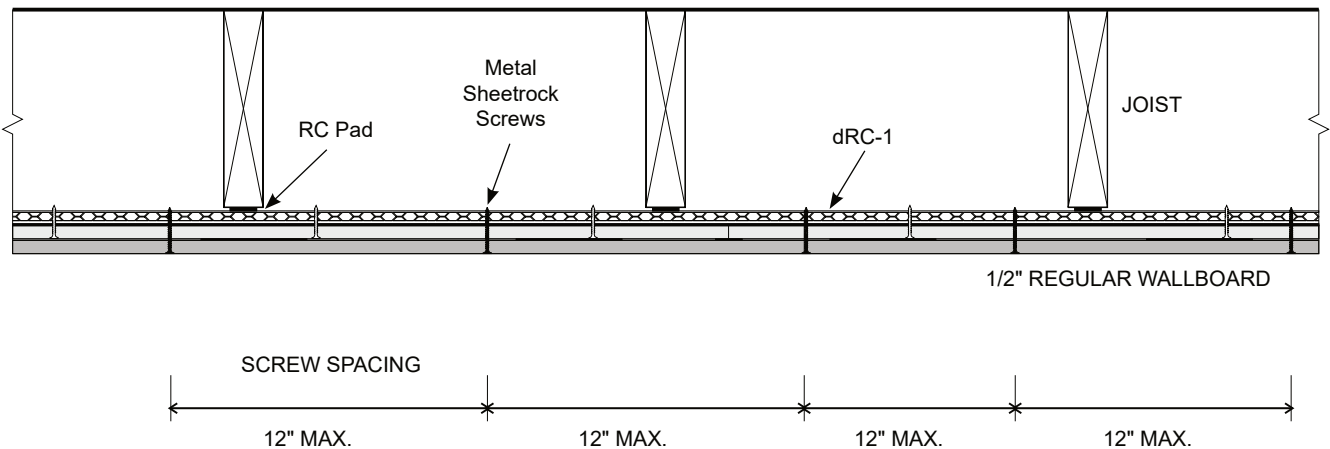## Avoid Driving Sheetrock Screws into Framing
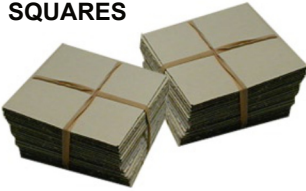

Fig. 6A CEILING SECTION

IsoWall Install

Materials We Supply

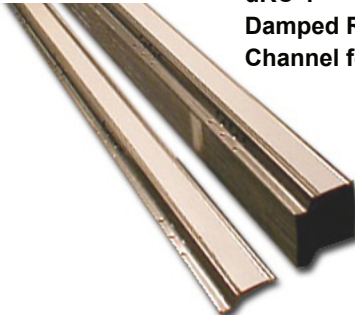**WALLDAMP SQUARES**

WALLDAMP STRIPS

RC PADS

ACOUSTICAL SEALANT

dRC-1 Damped Resilient Channel for Walls

PERIMETER GASKET

WALL BEARING FELT

Required Materials You Supply

CONSTRUCTION ADHESIVE

INSULATION BLANKET

TACK NAILS

MASKING TAPE

WIRE INSULATION SUPPORTS
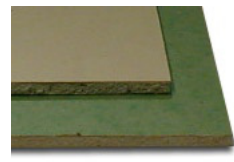
SPRAY ADHESIVE

Bugle Head DRYWALL SCREWS Metal Type "S" for Attachment to Resilient Channel

Bugle Head DRYWALL SCREWS Wood Type "W" for Perimeter Attachment

3/8" TYPE S PAN HEAD SCREWS

1/2" MOISTURE RESISTANT GYPSUM WALLBOARD

MALLET WITH PADDING

IsoWall Prep

Electrical outlets, light switches, and other in-wall fixtures:

It's a good idea to plan ahead before you begin your IsoWall installation. The final wall thickness in the system is roughly 1-5/8" from the face of the studs. Place electrical and other junction boxes accordingly.

When installing the wallboard in the IsoWall system, leave a 1/4" gap around any fixtures. Later, these gaps will be filled with acoustical sealant. This is the same method used for sealing around the wall/ceiling perimeter edges.

When you have finished installing the system, apply another bead of acoustical sealant to the edges of each fixture, prior to applying any faceplates or coverings.

1 1/2" - 2" Outset for Junction Boxes
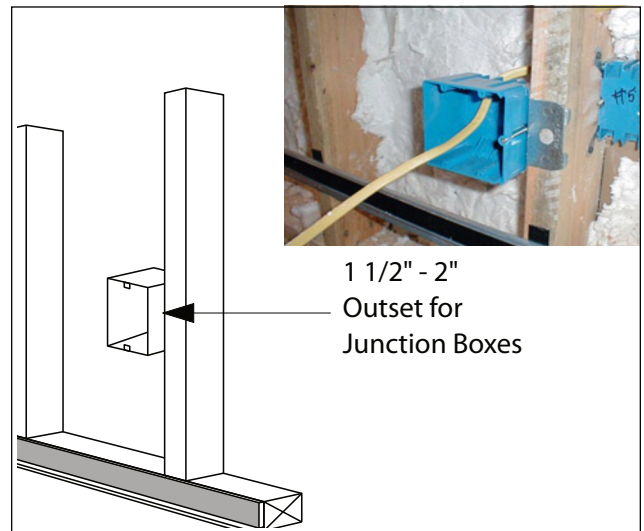
JUNCTION BOX INSTALLATION

Wall Installation

Install Insulation and Wall Bearing Felt

[1] Begin by pressing insulation blanket into stud cavity. The paper or foil backing should either be glued to the wallboard with spray adhesive or it should be removed. If necessary, use wire insulation supports every 12" to 16" to hold up the blanket.

[2] Remove release paper from the 1-1/2" **Wall Bearing Felt** and glue it on floor around perimeter of room. Secure the Felt with tack nails if needed. Caulk with **Acoustical Sealant** below Felt if floor is irregular.
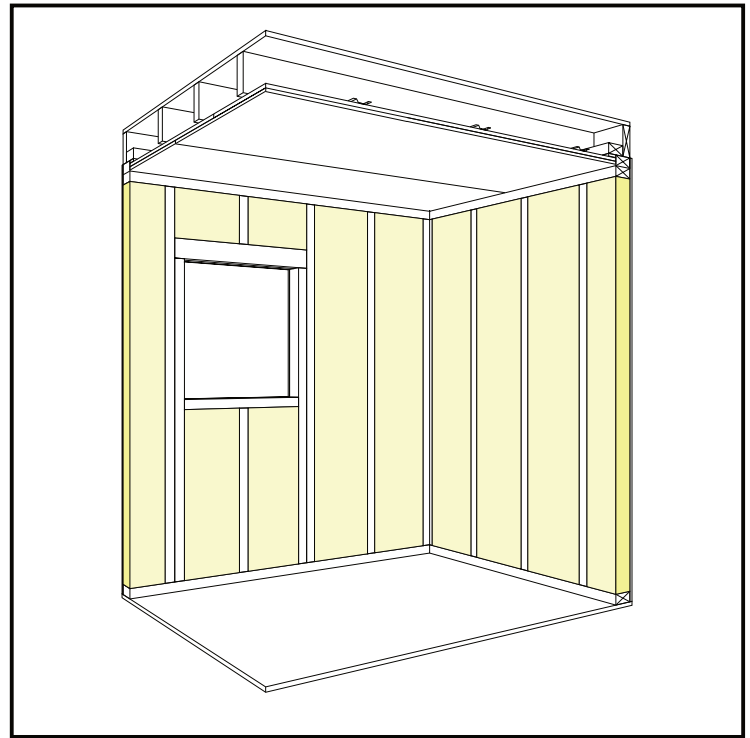

Fig. 7 WALL INSTALLATION

INSULATION BLANKET

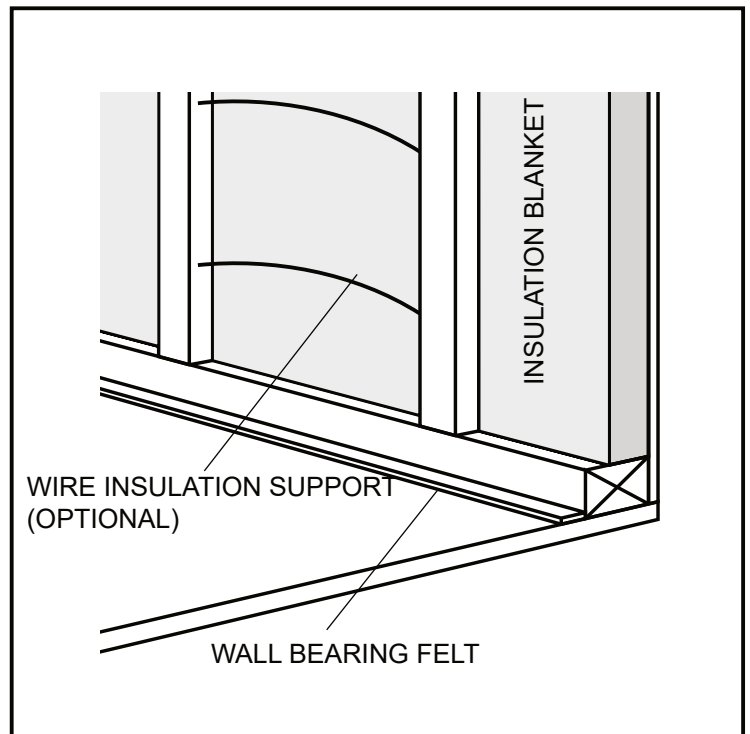WIRE INSULATION SUPPORT (OPTIONAL)

WALL BEARING FELT

Fig. 7A DETAIL

Install Perimeter Gasket

[3] With a urethane panel adhesive such as Liquid Nails™, glue **Perimeter Gasket** strips onto edge of top /sole plates around wall perimeter as well as around openings, such as door and window headers, sills, etc. Use tack nails (if needed) as extra holding strength while the adhesive dries.

[4] Determine resilient channel placement based on Fig. 9A on page 12. Mark locations using a chalk line.

Install RC Pads

[5] Remove release paper on one side of 1 1/2" x 3" **RC Pads** and apply them to the face of the studs where **dRC-1**'s will be screwed on. (Fig. 8A). Be sure to read **Install Technique** information on page 4.
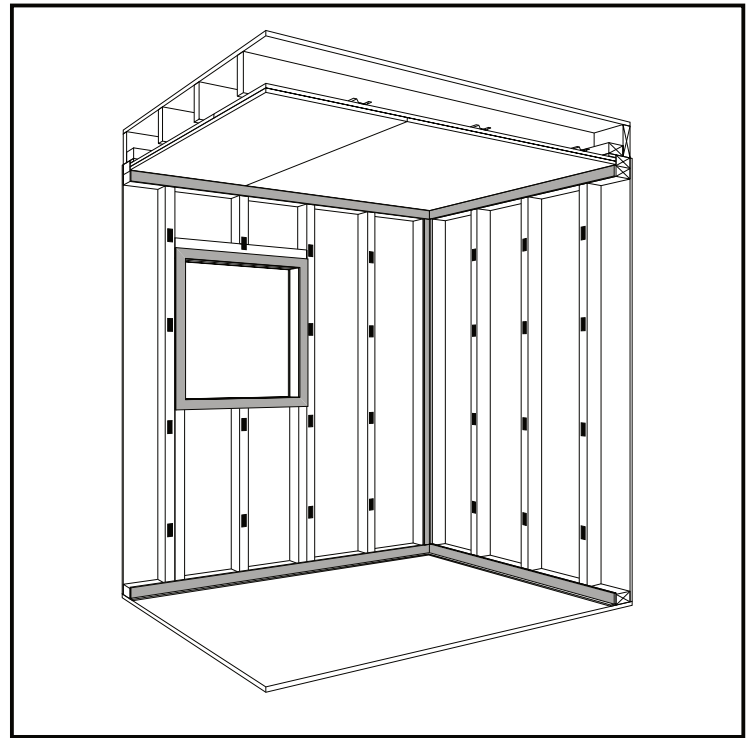
Remove remaining release paper.
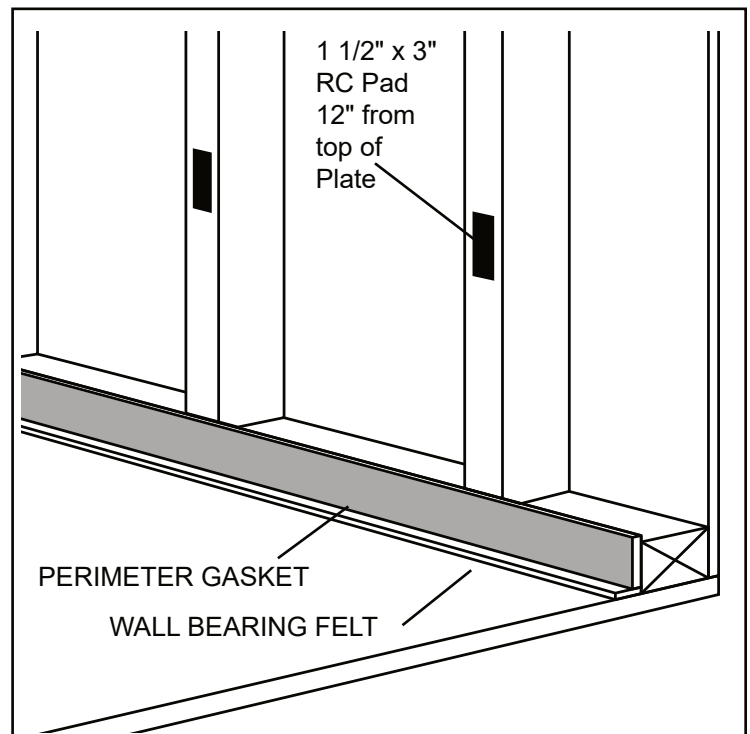

Fig. 8 WALL INSTALLATION (cont'd)

1 1/2" x 3" RC Pad 12" from top of Plate

PERIMETER GASKET

WALL BEARING FELT

Fig. 8A DETAIL

Install Resilient Channel

[6] Fasten **dRC-1** (leg flange down) perpendicular to studs with 1-1/4" type "W" drywall screws for wood at each stud.

Channel spacing should be 24" (max.) when stud spacing is 16", or 16" (max.) for 24" stud spacing. Top and bottom Channels should be 12" from floor or ceiling. Channel ends should be held back from intersecting surfaces but cantilevered no more than 6" from studs. (Fig. 9A)

Splice channels directly over studs by overlapping (not butting) at least 1-1/2" and driving screws through both channels into the studs (Fig. 9B). If channel overlap falls between studs, overlap channels at least 6" and fasten both channels near ends with 3/8" Type S Pan Head Screws. (Fig. 9C)

TIP: Mark the location of the studs and the **dRC-1**s on floor and ceiling with masking tape at the ends of each stud. This will be helpful for later installation.

Fig. 9 WALL INSTALLATION (cont'd)
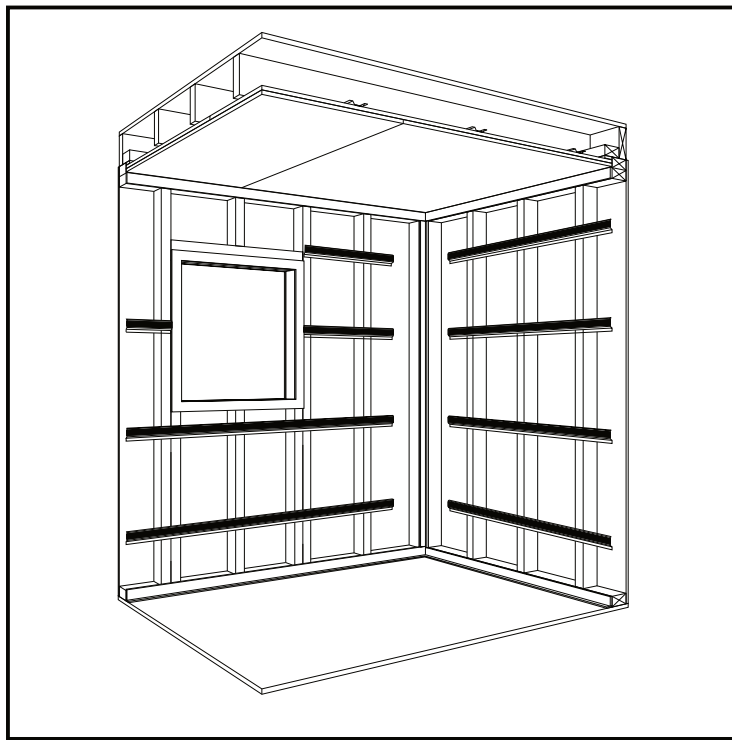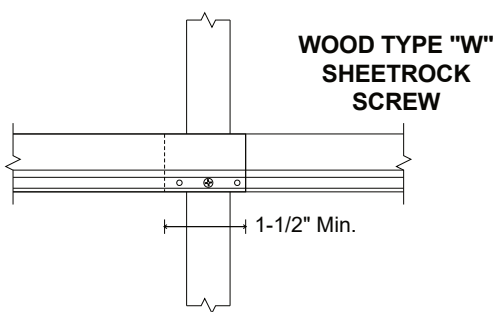
WOOD TYPE "W"
SHEETROCK
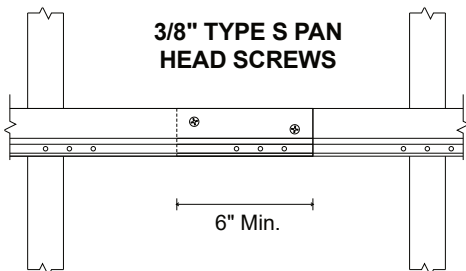SCREW

1-1/2" Min.

Fig. 9B SPLICE CHANNELS OVER STUD

3/8" TYPE S PAN
HEAD SCREWS

6" Min.

Fig. 9C SPLICE CHANNELS BETWEEN STUDS

12" Min.
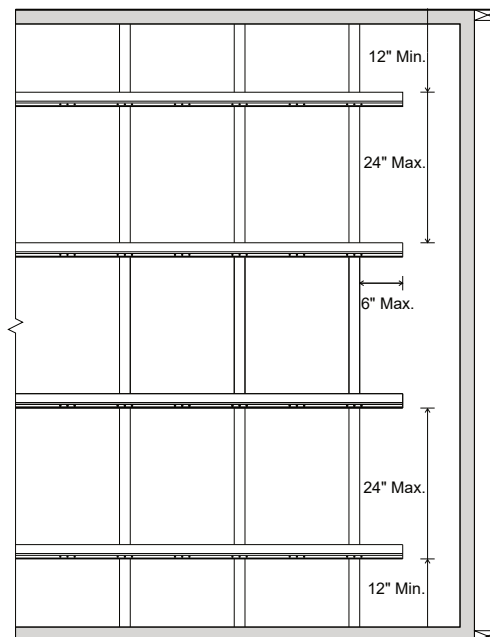
24" Max.

6" Max.

24" Max.

12" Min.

Fig. 9A WALL ELEVATION

Install First Layer of Sheetrock

[7] Apply 1/4" bead panel adhesive to face of the installed **Perimeter Gasket** strips.

[8] Snap chalk lines on the wallboards to mark the location of the studs and the **dRC-1**s.

[9] Attach 1/2" Moisture Resistant wallboard perpendicular to **dRC-1**s with drywall screws for metal, 12" (max.) on centers. Avoid driving the screws to studs by keeping the screws a minimum 2" distance from studs (Fig. 10A).

Note: Place the green side of the first layer board toward the framing, brown side facing out*.

At the perimeter, use sheetrock screws for wood to screw wallboard to ceiling nailing blocks 12" (max.) on centers through first layer wallboard and **Perimeter Gasket** strips. **Be sure screws penetrate wood at least 1/2".**

A 1/4" gap should be kept between the wall and ceiling as well as all adjacent walls. Apply a bead of **Acoustical Sealant** to seal the gap.

[10] Decide and visualize the layout for the second layer wallboard. We recommend this layer should go the same direction as the first layer (perpendicular to **dRC-1**s). Joints between the two layers should be staggered, and centered over WallDamp Squares). Identify and mark where the joint seams will be.

Note: If the second layer of wallboard needs to be orientated parallel to the **dRC-1**s (opposite the first layer), be sure to space the **dRC-1**s so the second layer wallboard seams align centered over the **dRC-1**s.
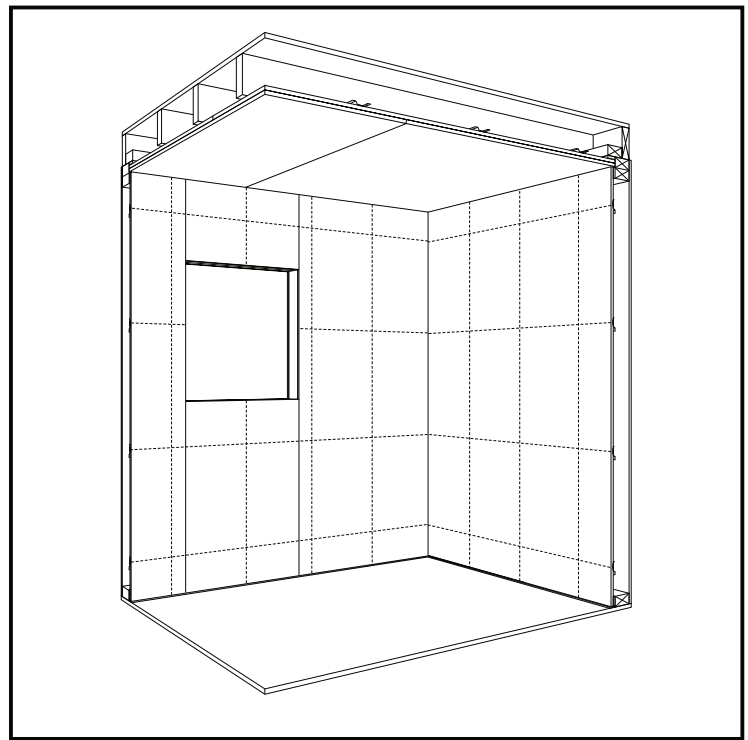

Fig. 10 WALL INSTALLATION (cont'd)

* Green side has tapered edges which prohibit adequate contact with WallDamp strips.

Avoid Driving Sheetrock Screws into Framing

RC Pad   dRC-1   Metal Sheetrock Screws   STUD

2" MIN.   2" MIN.

1/2" MOISTURE RESISTANT WALLBOARD, Green Side Faces Framing

SCREW SPACING

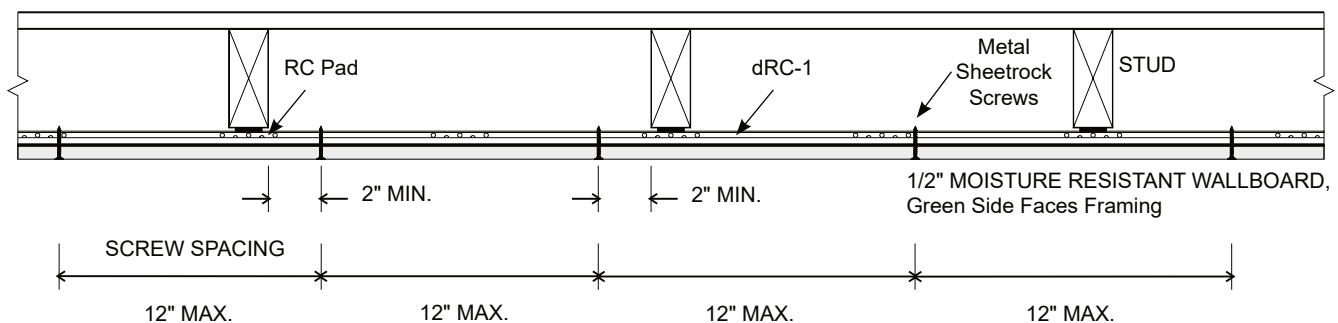12" MAX.   12" MAX.   12" MAX.   12" MAX.

Fig. 10A TOP VIEW, WALL SECTION

Install WallDamp

[11] Remove release paper from one side of the **WallDamp Strips**. Tape the strips over all the joint seams as well as perimeter of walls and openings. (Fig. 11A). Be sure to read **Install Technique** information on page 4.

[12] Determine placement of WallDamp Squares starting about 6" from the wall edges and 12" on center within the field. Snap chalk lines to help speed application. Remove release paper from one side of the **WallDamp Squares** and apply. Use mallet if necessary. Be sure to read **Install Technique** information on page 4.

Note: Joints between the two layers of wallboard should be staggered, and centered over WallDamp Squares). Identify and mark where the joint seams will be.
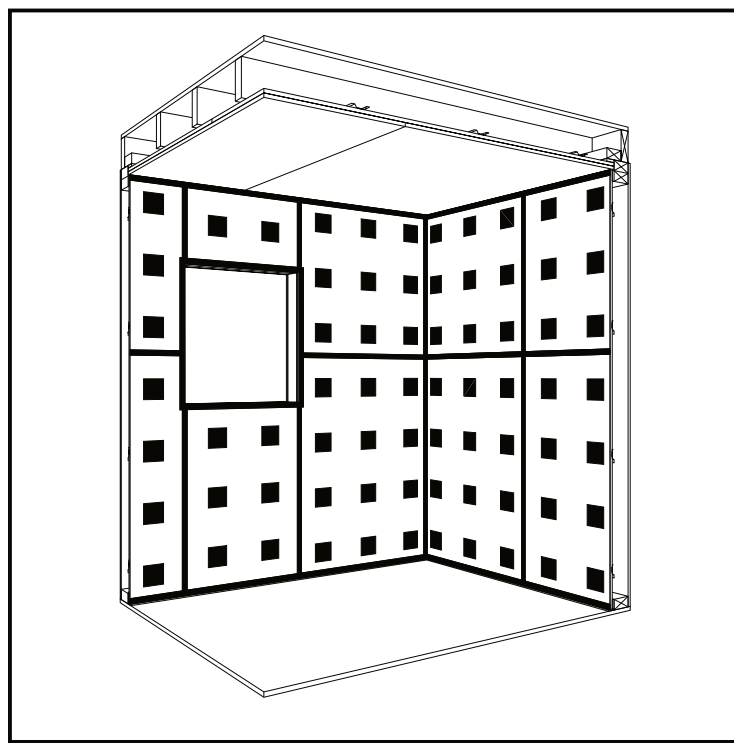

Fig. 11 WALL INSTALLATION (cont'd)

WallDamp STRIP AROUND OPENING PERIMETER

WallDamp STRIP AROUND WALL PERIMETER

2nd LAYER WALLBOARD SEAMS STAGGERED, AND CENTERED OVER SQUARES

WallDamp STRIP OVER 1st LAYER WALLBOARD JOINT SEAMS
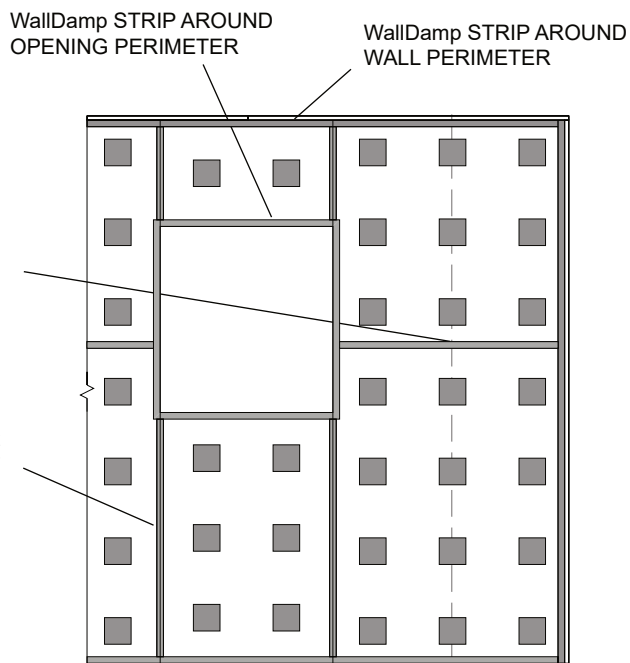
Fig. 11A WALL ELEVATION

Wall Installation (cont'd)

Install Second Layer of Sheetrock

[13] Attach 1/2" regular wallboard perpendicular to **dRC-1**s through the first layer Moisture Resistant wallboard with drywall screws for metal, 12" (max.) on centers. Avoid driving the screws to studs by keeping the screws a minimum 2" distance from studs. Se Fig. 10A on page 12.

Note: Place the tapered finished side of the board toward the interior of the room.

At the perimeter, use sheetrock screws for wood to screw wallboard to ceiling nailing blocks 12" (max.) on centers through first layer wallboard and **Perimeter Gasket** strips. Be sure screws penetrate wood at least 1/2".

A 1/4" gap should be kept between wallboard and the corner studs, or other framing members. Apply a bead of **Acoustical Sealant** to seal the gap.

[14] Tape and apply drywall joint compound to wall and ceiling.

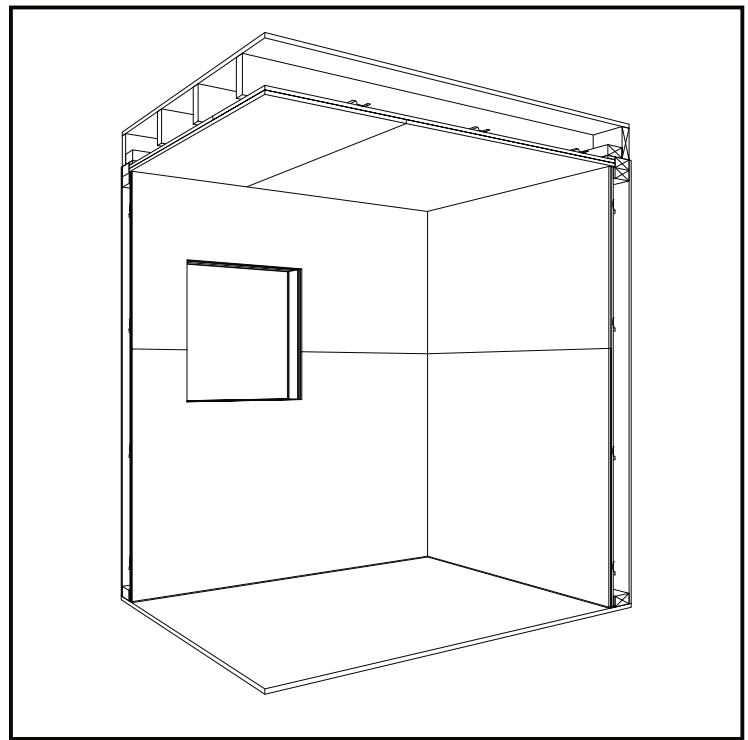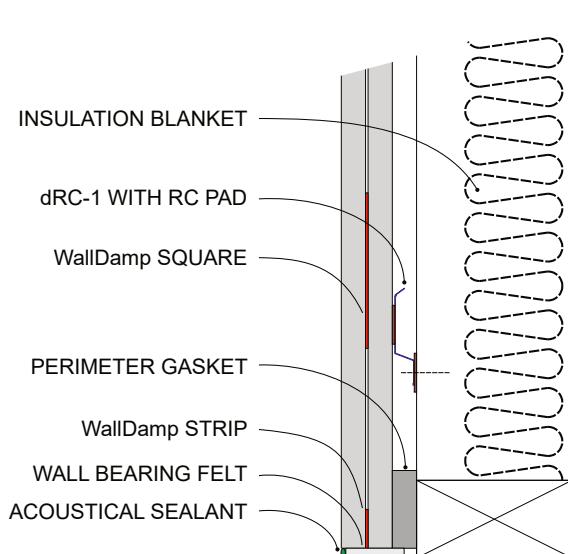### Congratulations, you are now done!

Fig. 12 WALL INSTALLATION (cont'd)

IsoWall System Overview

INSULATION BLANKET
dRC-1 WITH RC PAD
WallDamp SQUARE
PERIMETER GASKET
WallDamp STRIP
WALL BEARING FELT
ACOUSTICAL SEALANT

SECTION - WALL /FLOOR DETAIL

dRC-1 WITH RC PAD
PERIMETER GASKET
ACOUSTICAL SEALANT
WallDamp STRIP
PERIMETER GASKET
WallDamp SQUARE
dRC-1 WITH RC PAD
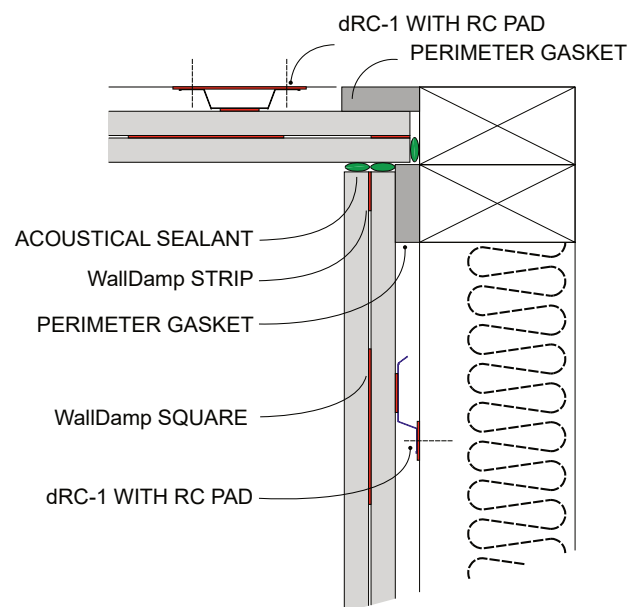
SECTION - WALL /CEILING DETAIL

Local Codes Super cede Our Guidelines

Always follow local building codes, even if we suggest something contrary. Just make sure to adhere to the basic principle of isolating walls and ceilings from the framing.

Feel Free to Incorporate Time Saving Techniques

If you prefer to work from a stack of sheetrock on the floor, by all means do so. The overhead application of WallDamp Squares and Strips to ceilings is tough work. On large commercial projects where the benefits of WallDamp is desired, it may be easier for you to apply WallDamp on each sheet before installing it instead of after. There is no hard and fast rule as long as the end result is the same.

As for application of WallDamp be sure to use a rubber mallet to help set the adhesive along.

Always Peel the Backing Paper

When a crew gets into the production mind set, its easy to overlook the pesky backing paper. Before you know it, 5 or 6 sheets of rock have gone up and now you're looking at white squares. Just remove the sheetrock, remove the backing paper and reinstall the rock.

Clean up as you work

The Teflon coated paper is slippery. Boots are no protection either since this stuff is totally anti-friction. Better to have a job site trash can on hand while peeling WallDamp backing paper.

Don't Hang RC Channel Upside Down

We see some confusion on the advantages to which way to mount RC channel. It's supposed to be mounted with the long leg up, short leg down. However, once positioned correctly, its easy and fast to cruise through the process.

Don't Let This Happen

Correct Positioning