

The Sound Design Guide

a transparent resource for sound & fire information





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if your walls could talk they would ask for us

Architects and specifiers face many design challenges, knowing what your walls really want shouldn't be one of them. Walls and ceilings are not something just to hold up paint, they play a critical role in your building design. As a manufacturer, we have taken great strides in simplifying this part of the building envelope by providing new comprehensive tools and rich online resources to you, the architect and specifier.

Our product specifications and sustainability tools, available at www.PABCOgypsum.com and **ARCAT**, have been paired with new continuing education courses that cover everything from sound and acoustic challenges to discussions related to new 2015 industry standards.

Meet your design goals with ease. Be it our trusted FLAME CURB[®], light-weight LITECORE[®], protective PABCO GLASS[®] or our award winning QuietRock[®]; **we have what the job demands.**

 **PABCO[®] Gypsum**
what the job demands[™]

PABCO[®] Gypsum technical services: 866.282.9298
www.PABCOgypsum.com

QuietRock[®] acoustical products: 800.797.8159
www.QuietRock.com

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WE'RE ALWAYS HERE TO HELP

QuietRock® and PABCO® Gypsum prides itself on the unsurpassed expertise that we offer our customers: architects, engineers, contractors, distributors and owners. Our team of experts are available to answer your questions and assist in the selection of the right product for your project.



PABCO® GYPSUM TECHNICAL SERVICES

We are here for you. At PABCO® Gypsum, technical support is one of the most important services we provide to the building community. Our technical services team is staffed by some of the most experienced professionals in the field.



QuietRock® Acoustical Products Support

QuietRock® product division have a sales organization of inside and outside sales professionals that are focused on your success.

Sales Support by phone 800-797-8159
By Email info@QuietRock.com
On the Web www.QuietRock.com

Fire and Installation Support:

Our technical services team focuses on gypsum products, from selecting the right product for the job, fire assemblies to proper installation questions, our expertise is always available to you.

PABCO® Technical Support by phone 866-282-9298
By Email techservices@PABCOgypsum.com

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The PABCO® Gypsum Story

More than 60 years has passed since Fred Anderson opened a small lumber yard in Sacramento, California. The small business that he launched on a shoestring grew to a billion-dollar-a-year building materials enterprise. Fred Anderson had a vision:

“Listen to your customers, determine their needs and how you can serve them better, and expand the business to do that as opportunities present themselves.”

An opportunity presented itself in 1972 with the purchase of an idle gypsum wallboard plant in Newark, California - the birth of PABCO® Gypsum. As demand grew, so did our aspirations and in 1977 PABCO® expanded into Las Vegas, Nevada with the acquisition of an existing gypsum wallboard plant. This time located on over four thousand acres that included a gypsum ore processing facility and extensive deposits of gypsum. PABCO® Gypsum has become an integral part of Fred Anderson’s legacy known today as Pacific Coast Building Products, Inc. comprised of 75 distribution, manufacturing and contracting facilities in 11 states with over three thousand employees.

**“We run the company like a family.
Our business is built on relationships.
That is what distinguishes us from
our competition”**

David J. Lucchetti

President and Chief Executive Officer,
Pacific Coast Building Products, Inc.

Family owned and operated from the very beginning, PABCO® Gypsum has been providing quality gypsum wallboard products and superior customer service throughout North America. After multiple expansions and modernizations, PABCO’s two facilities supply over 1.65 billion square feet of gypsum boards to all types of building projects every year.

The Las Vegas, Nevada gypsum manufacturing and mining operation is the cornerstone to PABCO’s dedication to quality. Our quality begins from the ground up, literally. Due to the unique placement of our gypsum deposits, PABCO® re-engineered the method of extracting the ore from the ground and loading it directly into our wallboard manufacturing facility. Our ore is extracted, processed, refined and turned into salable gypsum panels all within our 4,200 acre footprint under the watchful eyes of some of the most tenured gypsum professionals in the country.

As a family concerned with the future, PABCO® Gypsum adopted practices throughout its operations to minimize its impact on our environment. This is achieved by reducing and reusing waste, manage water consumption and using alternative energy in its production facility. Our focus on sustainable manufacturing contributed to the recognition of our Las Vegas plant as the 2008 World Wallboard Plant of the Year by the Global Gypsum Conference.

To ensure finishing quality and consistency, the face and backing paper is manufactured within the family by PABCO® Paper, located in Vernon, California. Using only recycled materials, PABCO® Paper produces a wide variety of paper for our wallboard products as well as maintaining a link to its lineage dating back to 1919 as a manufacturer of folding cartons.

QuietRock®, the first and most technically advanced sound reducing drywall, was developed in 2003. The award winning QuietRock® and its complete line of accessories products became part of the PABCO® Gypsum family in August 2013. With manufacturing located in Newark, California adjacent to PABCO’s existing wallboard plant, the QuietRock® product line is a natural complement to the over 40 year history of the PABCO Gypsum product line.

With over 40 U.S. and foreign patents and patent applications, QuietRock® achieves high sound attenuation and fire-resistance in one product using less space, less material and less labor than conventional alternatives. Its advanced development team and a broad network of distributors and contractors throughout the U.S. and Canada contribute to thousands of QuietRock projects worldwide.

PABCO’ and QuietRock’s experienced sales and technical services teams are ready to assist you in the selection of gypsum products and solutions for you and your customers.



Introduction

At PABCO® Gypsum, we know you have choices; choices in the assemblies that are selected, in the type of products selected for those assemblies and the manufacturer to provide those products. As with any choice it is with knowledge that a truly informed decision may be made. In the PABCO® Sound Design Guide featuring **QuietRock®**, we aim to arm you with knowledge. PABCO wants its customers to have a transparent resource for sound and fire information. We believe this is the most exhaustive and useful guide for sound rated assemblies using sound damped panel technology in wall designs.

The construction industry, as a whole, creates many “handbooks” designed to navigate and execute the correct assembly for specific fire requirements and include STC ranges, when available. Although many assemblies found in current handbooks are sound tested and are often easy to specify and build, the bulk of acoustic testing performed dates back to the 1960’s - a commonly overlooked detail that can impact the actual acoustic performance of the wall.

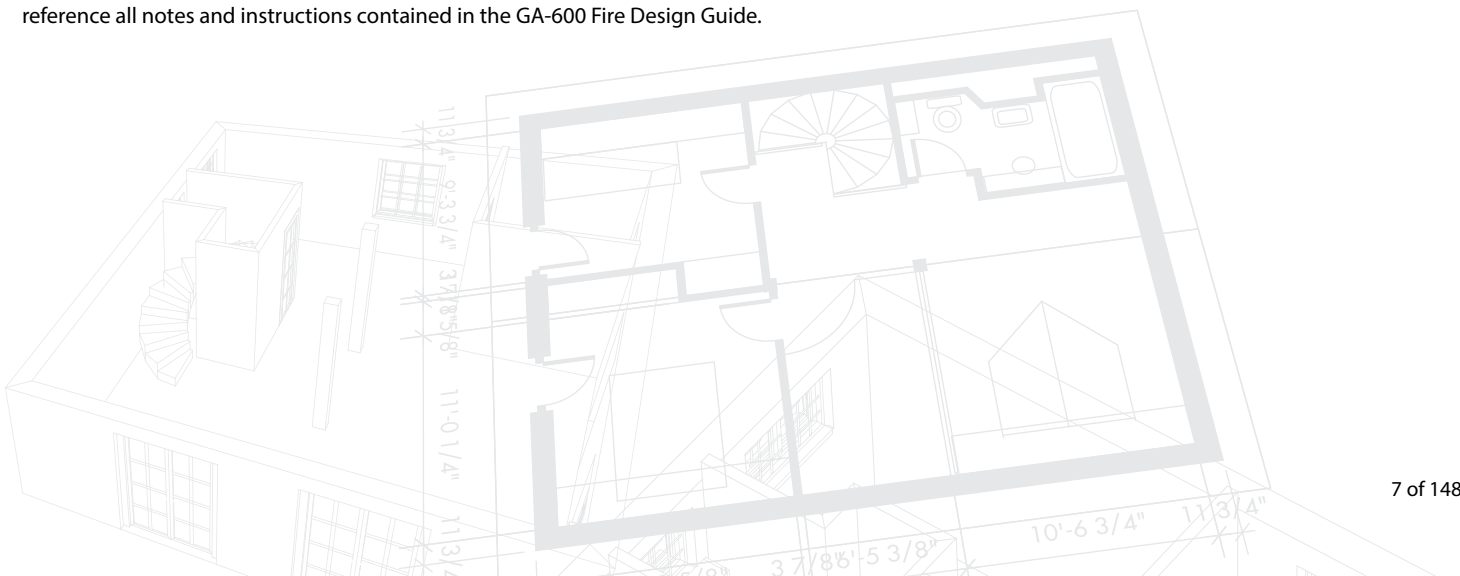
Sound isolation measurements and testing standards have been continuously revised since their inception decades ago. Yet old tests using outdated methodologies are considered “usable”. The way the Sound Transmission Loss (STL) of a partition was measured and the resulting Sound Transmission Class (STC) calculated, say from the 1960s will likely be different if tested using today’s standards. The ASTM standard for measuring laboratory STL changed the type of frequency range over the years. Another cause of result differences can be attributed to the evolution of building materials over the past 40 years; for example, a type X drywall panel today is lighter than one produced when some of these tests were conducted. Any assembly tested before these changes were implemented could result in relying on inflated expectations and could be misleading.

Simply put, if a standard wall assembly achieved an STC 51 rating in 1968 and was sent back to laboratories for testing today, it would not achieve an STC rating above 46. So what may have been acceptable by the building code in the 1960s may not meet code today even though these assemblies are still presented in current industry handbooks. For more information on this subject [see page 60, Contemporary Testing](#).

The **PABCO Gypsum QuietRock Sound Design Guide** can be used similarly to the Gypsum Association’s GA-600, Fire Resistance Manual. We however, present the information in a unique fashion:

1. The Primary purpose of this design guide is to provide details on **sound rated assemblies**; where the Fire Design Guide is rightly focused on the fire resistance rating.
2. We have described the systems based on the sound test, which in many cases, is different than the manner in which the assembly may have been built for the fire test. In instances where there is a difference, we have noted the variance so that you can make the choice to build for sound or if a fire rating is required, build for fire and know that if tested for sound, results may vary.
3. We have sorted this book by design, stud type and size, STC and fire rating. The order of presentation allows you to compare options needed to make a “sound choice” based on project needs.
4. Within this guide, we have included numerous short articles that simplify the often complex principles of sound attenuation.
5. We have also included a glossary of acoustic terms and concepts.

See the Guide Overview & General Notes, as well as the Appendix for additional information on sound and fire assemblies. We incorporate herein by reference all notes and instructions contained in the GA-600 Fire Design Guide.



FOR THOSE ABOUT TO ROCK

STAND AND BE RECOGNIZED! At PABCO® Gypsum, we take great **PRIDE** in our craft by supporting yours. Our **PASSION** goes beyond gypsum panels - we are dedicated to building **TRUST**. We build this trust by supplying **CONTRACTORS** and **DEALERS** with premium gypsum products when they need them, where they need them. Be it our trusted **FLAME CURB®**, light-weight **LITECORE®**, protective **PABCO GLASS®** or our **AWARD WINNING** QuietRock®; we have **WHAT THE JOB DEMANDS.**



PABCO® Gypsum technical services:
866.282.9298
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QuietRock® acoustical products:
800.797.8159
www.QuietRock.com

Guide Overview & General Notes

USE OF THIS GUIDE AND GENERAL EXPLANATORY NOTES

The systems are divided into five major categories and listed in the Table of Contents under these headings:

- Wall and Partition Systems – 25 Gauge Steel
- Wall and Partition Systems – 20 Gauge Steel
- Wall and Partition Systems – 16 Gauge Steel
- Wall and Partition Systems – Wood
- Area Separation Walls

Systems are ordered by fire-resistance rating starting with one hour and increasing. STCs are listed in descending order.

The STC value listed is the reported value reported by the independent testing lab and report number indicated for the assembly. Any misleading conclusions that can arise from displaying STC values as a range have been eliminated.

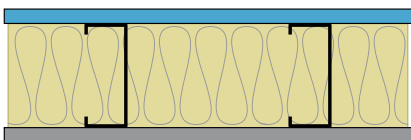
PABCO Gypsum Design Number – The PABCO Gypsum Design Number is a 10 character number (excluding dashes), the example below provides the numbering logic for our design numbers:

PGD-01-10-010

The **QuietRock® Sound Design Guide** includes reference numbers where applicable:

- PABCO® Gypsum Design Number
- GA File Number
- UL/ULC Design Number

All PABCO Gypsum Designs (PGD) contain a brief yet detailed description of the components used as the assembly was build for sound (STC) testing purposes. In instances where the sound assembly configuration differs from the fire test or is outside of the min max ranges of spacing, those differences are noted. The descriptions are listed in the order of material as one looks at the drawings from top to bottom.



Unless indicated otherwise, all load-bearing wood stud systems were tested while being subjected to the maximum load allowed by design under nationally recognized design criteria at the time of the test. Due to an increase in the maximum allowable loading in the National Design

Specifications (1982 and later editions), the American Forest and Paper Association issued the following statement: Where a load-bearing fire rated wood stud wall assembly contained in this Guide is specifically designed for structural capacity, the design value in compression parallel to grain adjusted for slenderness ratio (F_c') used in such analysis shall be taken as 78 percent of the maximum F_c' value determined in accordance with normal design practice but shall not exceed 78 percent of the F_c' value for such member having a slenderness ratio (l_e/d) of 33.

Unless otherwise stated in the listing, all wood framed wall systems in this Guide were tested using studs of nominal 2x4 or 2x6 dimension lumber. For information on the use of engineered wood wall framing, consult the supplier of the engineered wood product.

Note: Listing of a system in a specific category in this Guide is not intended to limit its use to that category (see General Explanatory Note 14 on page 10). However, this shall not be interpreted to imply that vertical systems, such as walls and partitions, are permitted to arbitrarily be used in a horizontal orientation. Contact PABCO Gypsum Technical Services for other products which satisfy the fire and sound requirements shown for the systems.

DESCRIPTION OF TERMS AND SYMBOLS USED IN THIS GUIDE

Gypsum Panel Products - defined in ASTM C11, Standard Terminology Relating to Gypsum and Related Building Materials and Systems, as “the general name for a family of sheet products consisting essentially of gypsum.”

Note: This term includes gypsum board, glass mat gypsum panels, fiber reinforced gypsum panels, and factory laminated gypsum panels.

Gypsum Board - defined in ASTM C11, Standard Terminology Relating to Gypsum and Related Building Materials and Systems, as “the generic name for a family of sheet products consisting of a noncombustible core primarily of gypsum with paper surfacing.”



Gypsum board may be further described as follows:

- **Regular Gypsum Board** - a gypsum board with naturally occurring fire resistance from the gypsum in the core; or
- **Type X Gypsum Board** - a gypsum board with special core additives to increase the natural fire resistance of regular gypsum board.
- **Load-Bearing** - unless otherwise noted in the detailed description, this means that a constant superimposed load was applied to the test specimen throughout the fire test to simulate 78% or more of the maximum allowable design load.
- **Mineral Fiber** - refers to either rock or slag wool products.
- **Metal Studs** - refers to steel studs and runners (track) manufactured to comply with ASTM C645 unless otherwise specified in the detailed description.
- **(NLB)** - nonload-bearing.

GENERAL EXPLANATORY NOTES

1. All dimensions, weights, temperatures, and pressures are in U.S. customary units. For commonly used metric (SI) conversions refer to the Appendix and IEEE/ASTM S10-2002, Standard for Use of the International System of Units (SI): The Modernized Metric System.
2. Nails shall comply with ASTM F547 or ASTM C514. Other nails, suitable for the intended use, and having dimensions not less than those specified in this Guide shall be permitted as substitutions.
3. Fasteners installed along the edges of gypsum board shall be placed along the paper bound edges on the long dimension of the board. Fasteners at the end shall be placed along mill or field cut ends on the short dimension. Fasteners on the perimeter of the board shall be placed along both edges and ends. Indicated fastener spacings are maximums. Closer fastener spacing may reduce the STC.
4. Screws meeting ASTM C1002 shall be permitted to be substituted for the prescribed nails, one for one, when the length and head diameter of the screws equal or exceed those of the nails specified in the tested system and the screw spacing does not exceed the spacing specified for the nails in the tested system.
5. Vertically applied gypsum board shall have the edges parallel to framing members. Horizontally applied gypsum board shall have the edges at right angles to the framing members. Intermediate vertical framing members are those between the vertical edges or ends of the board. Board orientation may not affect the STC.
6. Unless otherwise specified, the face layers of all systems, except exterior gypsum sheathing panels, shall have joints taped with either paper tape or glass fiber mesh tape (minimum Level 1 as specified in GA-214, Recommended Levels of Gypsum Board Finish) and fastener heads treated. Base layers in multi-layer systems shall not be required to have joints or fasteners taped or covered with joint compound.
7. Unless otherwise stated in the detailed description of the individual system, joints shall be staggered as follows:
 - a. Horizontal butt joints on opposite sides of a partition in single-layer applications shall be staggered not less than 12 inches.
 - b. Horizontal butt joints in adjacent layers on the same side of a partition in multi-layer applications shall be staggered not less than 12 inches.
 - c. Vertical joints on opposite sides of a partition in single layer applications shall not occur on the same stud.
8. When a fire-resistance rated partition extends above the ceiling, the gypsum board joints occurring above the ceiling need not be taped and fasteners need not be covered when all of the following conditions are met.
 - a. The ceiling is part of a fire-resistance rated floor-ceiling or roof-ceiling system;
 - b. All vertical joints occur over framing members;
 - c. Horizontal joints are either staggered 24 inches o.c. on opposite sides of the partition, or are covered with strips of gypsum board not less than 6 inches wide; or the partition is a two-layer system with joints staggered 16 inches or 24 inches o.c.; and
 - d. The partition is not part of a smoke or sound control system. Where joint treatment is discontinued at or just above the ceiling line, the vertical joint shall be cross taped at this location to reduce the possibility of joint cracking.
9. Metallic outlet boxes shall be permitted to be installed in wood and steel stud walls or partitions having gypsum board facings and classified as two hours or less. The surface area of individual boxes shall not exceed 16 square inches. The aggregate surface area of the boxes shall not exceed 100 square inches in any 100 square feet. Boxes located on opposite sides of walls or partitions shall be in separate stud cavities and shall be separated by a minimum horizontal distance of 24 inches. Approved nonmetallic outlet boxes shall be permitted as allowed by local code. Installing outlet boxes in sound control systems may reduce the STC. Outlet boxes installed in sound controlled systems should be treated with an acoustical putty such as QuietPutty® to mitigate flanking paths.
10. Water-resistant gypsum backing board shall be installed over or as part of the fire-resistance rated system in areas to receive ceramic or plastic wall tile or plastic finished wall panels. When fire or sound ratings are necessary, the gypsum board required for the rating shall extend down to the floor behind fixtures so that the construction will equal that of the tested system.

Note: The use of water-resistant gypsum backing board as a base for tile in wet areas is regulated by local codes. Consult local building codes for requirements.

11. When not specified as a component of a fire tested wall or partition system, either faced or unfaced mineral fiber, glass fiber, or cellulose fiber insulation of a thickness not exceeding that of the cavity depth shall be permitted to be added within the stud cavity. Adding insulation may improve the STC.
12. In each system containing batt or blanket insulation the insulation is specified to be either mineral or glass fiber and, for fire resistance, the system shall be built using the type specified. Insulation shall be permitted to be either faced or unfaced.
13. A vapor retarder shall be permitted to be added to any fire-resistance rated system.



14. Although the systems are arranged in general groupings (i.e. walls and interior partitions, floor- ceilings, roof-ceilings, etc.), this is not intended to limit their use only to the specific category in which they are listed. For example, systems listed as shaft walls shall be permitted to be used as interior partitions. However, systems tested vertically (walls and partitions) shall not be permitted to be arbitrarily used in a horizontal orientation.
15. Unless otherwise specified in the detailed description, the generic steel studs and runners used in nonload-bearing walls and partitions in this Guide were fabricated from flat steel having a bare metal thickness of not less than 0.0179 inch and have a return lip dimension of not less than 3/16 inch.

Note: Consult the steel stud manufacturer for performance data and recommendations before substituting proprietary steel studs that either are fabricated from steel having a bare metal thickness of less than 0.0179 inch or have a return lip dimension less than 3/16 inch.

16. Greater stud sizes (depths) shall be permitted to be used in metal- or wood-stud systems. Metal studs of heavier gage than those tested shall be permitted. The assigned rating of any load-bearing system shall also apply to the same system when used as a nonload-bearing system. Indicated stud spacings are maximums. Heavier gage studs or closer stud spacing may reduce the STC. Greater stud depth may improve the STC.
17. Within design limitations, the distance between parallel rows of studs, such as in a chase wall, shall be permitted to be increased beyond that tested. When stud cavities in walls constructed of parallel rows of steel studs exceed 9-1/2 inches and cross bracing is required the cross bracing shall be fabricated from steel studs. Greater wall depth may improve the STC.
18. Systems tested with metal furring channels attached directly to the bottom chords of steel beams, bar joists, or wood trusses or framing shall be permitted to be suspended. Generally, furring channels are attached to 1-1/2 inch cold rolled carrying channels 48 inches o.c. suspended from joists by 8 ga wire hangers spaced not greater than 48 inches o.c.
19. Where laminating compound is specified, taping, all-purpose, and setting type joint compounds shall be permitted.
20. Additional layers of type X or regular gypsum panels shall be permitted to be added to any system. Additional layers of gypsum board may improve the STC.
21. When not specified as a component of a fire- resistance rated wall or partition system, cementitious backer units and/or wood structural panels shall be permitted to be added to one or both sides. Such panels shall be permitted to be applied either as a base layer directly to the framing (under the gypsum board), as a face layer (over the face layer of gypsum board), or between layers of gypsum board in multi-layer systems. Where such panels are applied under the gypsum board or between layers of gypsum board the length of the fasteners specified for the attachment of the gypsum board applied over the

panels shall be increased by not less than the thickness of the panels. Fastener spacing for the gypsum board and the number of layers of gypsum board shall be as specified in the system description.

22. When additional panels, such as those noted in 20 and 21 above, are applied, and joints are staggered from previous layer, joints are not required to be finished.
23. Each system in this Guide lists specific products that are acceptable for use in the specific system in which they are listed. Consult PABCO® Gypsum Technical Services for information on products suitable for use in specific proprietary systems.

TESTING AGENCIES

Each detailed description is accompanied by a cross- section detail of the system. Also included is design information giving total thickness, limiting height where appropriate, and approximate weight of the system in pounds per square foot. Fire and sound test references identifying the agency which certified the test as well as a report number and date are also provided (see Tables I and II).

TABLE I - FIRE TESTING AGENCIES

NRCC	National Research Council of Canada
UC	University of California
UL	Underwriters Laboratories Inc.
ULC	Underwriters' Laboratories of Canada
WFCi	Western Fire Center, Inc.

TABLE II - SOUND TESTING AGENCIES

NRCC	National Research Council of Canada
OL	Orfield Laboratories, Inc.
RAL	Riverbank Acoustical Laboratories
WEAL	Western Electro Acoustical Laboratory, Inc.

PRODUCT IDENTIFICATION

All gypsum products are identified by the PABCO Gypsum product name and trademark, if applicable. The thickness and type of gypsum board are shown on the end bundling tape or on the board. Ready-mixed joint compounds are identified on the container. Bagged products are identified on the bag. ASTM standard product specifications are shown in Table III.



TABLE III - APPLICABLE ASTM PRODUCT STANDARDS

Product	ASTM Standard
Gypsum Board	C1396*
Gypsum Wallboard	C1396, Sec. 5*
Predecorated Gypsum Board	C1396, Sec. 5*
Gypsum Lath	C1396, Sec. 11*
Gypsum Sheathing Board	C1396, Sec. 9*
Gypsum Backing Board	C1396, Sec. 6*
Gypsum Coreboard	C1396, Sec. 6*
Gypsum Shaftliner Board	C1396, Sec. 6*
Water-Resistant Gypsum Backing Board	C1396, Sec. 7*
Gypsum Ceiling Board	C1396, Sec. 12*
Exterior Gypsum Soffit Board	C1396, Sec. 8*
Gypsum Base for Veneer Plasters	C1396, Sec. 10*
Glass Mat Gypsum Panels	C1658
Glass Mat Gypsum Substrate for Use as Sheathing	C1177
Glass Mat Water-Resistant Gypsum Backing Panel	C1178
Fiber Reinforced Gypsum Panels	C1278
Abuse-Resistant Non-decorated Interior Gypsum Panel Products	C1629
Factory-Laminated Gypsum Panel Products	C1766
Joint Compound	C475
Gypsum Plasters	C28
Gypsum Veneer Plaster	C587
Metal Lath	C847
Accessories for Gypsum Wallboard and Gypsum Veneer Base	C1047
Nails for the Application of Gypsum Board	C514
Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases (Types G, W, and S)	C1002
Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness (Type S-12)	C954
Nonstructural Steel Framing Members	C645
Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases	C955
* ASTM Specification C1396 is a consolidation of previous ASTM Standards C36, C37, C79, C442, C588, C630, C931, C960, and C1395, which have been withdrawn.	

ABBREVIATIONS

Abbreviations used in this Guide are shown in Table IV (also see Tables I and II on page 11).

TABLE IV - ABBREVIATIONS

C&P	carpet and pad
dB	decibel
dia	diameter
est	estimated
FSTC	Field Sound Transmission Class
FSTL	Field Sound Transmission Loss
ft	foot
ga	gage or gauge
galv	galvanized
Hz	hertz (cycles/second)
hr	hour
IIC	Impact Insulation Classification
in.	inch
lab	laboratory
lb	pound
mfr	manufacturer
mm	millimeter
min	minimum
nom	nominal
NLB	nonload-bearing
o.c.	on center
oz	ounce
pcf	pounds per cubic foot
psf	pounds per square foot
rev	revised
RC	Resilient Channel
sq	square
STC	Sound Transmission Class
STL	Sound Transmission Loss
T&G	tongue and groove



METRIC CONVERSIONS

TABLE V - METRIC CONVERSIONS		
	STANDARD	METRIC
Gypsum Panel Thickness	1/4 inch	6.4 mm
	3/8 inch	9.5 mm
	1/2 inch	12.7 mm
	5/8 inch	15.9 mm
	3/4 inch	19.0 mm
	1 inch	25.4 mm
Frame Spacing	8 inch	203 mm
	12 inch	305 mm
	16 inch	406 mm
	24 inch	610 mm
Fastener Spacing	2 inch	51 mm
	2-1/2 inch	64 mm
	7 inch	178 mm
	8 inch	203 mm
	12 inch	305 mm
	16 inch	406 mm
	24 inch	610 mm
Temperature	40°F	5°C
	50°F	10°C
	125°F	52°C

STEEL STUD REFERENCE

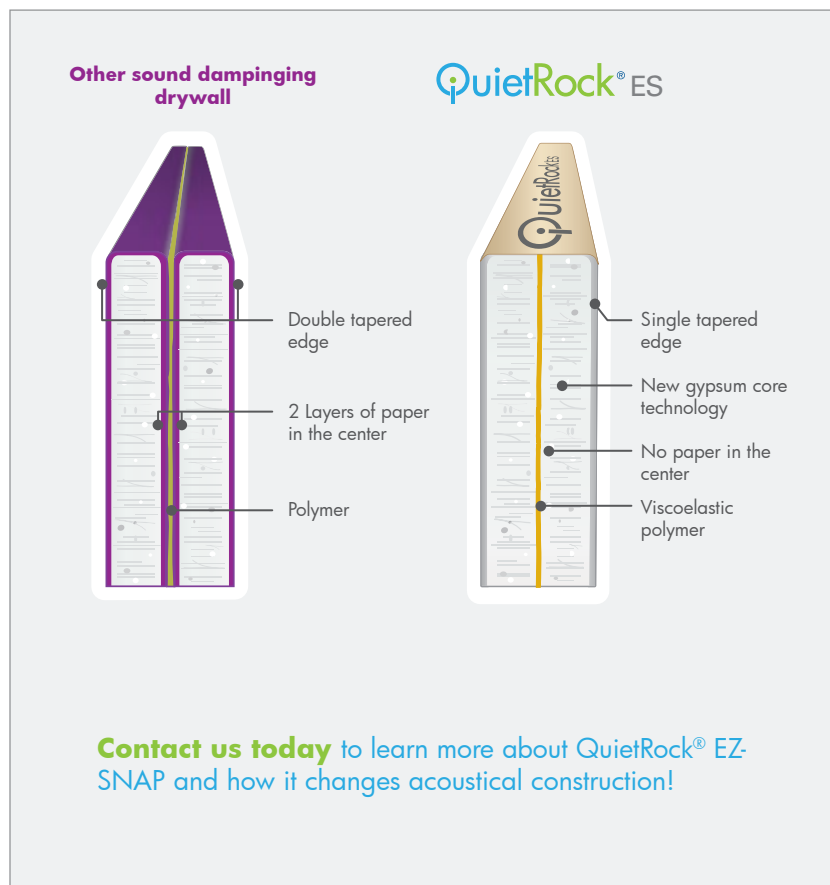
TABLE VI - STEEL STUD THICKNESS/ GAUGE REFERENCE			
GAUGE	DESIGNATION	MIL	THICKNESS RANGE
25	Equivalent	15 mil	.0147" - .0155"
	Drywall	18 mil	.0179"
20	Equivalent	18 mil	.0179"
		20mil	.0190" - .0200"
	Drywall	30 mil	.0235" - .0312"
18	Structural	33 mil	.0223"-.0346"
		43 mil	.0380"-.0428"
16	Structural	54 mil	.5380"
14		68 mil	.0678"
12		97 mil	.0960"

QuietRock® ES

Changing the Acoustical Drywall Industry

QuietRock® ES and ES Mold Resistant sound reducing drywall, with patented EZ-SNAP™ technology, is easier to score and snap compared to other sound reducing drywall products on the market. With less material to install, QuietRock® ES allows builders to save space, time and waste compared to multiple layers of drywall. This revolutionary acoustical drywall product will change how you build to reduce noise transmission.

- **High Performance and Reliability:** QuietRock® ES outperforms other sound-reducing methods, and can be used on ceilings and load bearing walls. Unlike resilient channel, QuietRock® ES cannot be easily short-circuited.
- **Lower Cost:** QuietRock® ES is easier and faster to install than other sound-isolating materials or methods - leading to increased productivity and lower labor costs.
- **Ease of Use:** QuietRock® ES has no paper in the middle making it easier to score and snap compared to other sound reducing drywall brands. With EZ-SNAP™ technology, QuietRock® ES is the professionals' choice for sound isolation.



POWERED BY EZ-SNAP

QuietRock® ES with EZ-SNAP™ technology has no paper on the inside of the panel yet delivers acoustical ratings higher than traditional noise reducing methods such as multiple layers of drywall. This 5/8" load bearing, type X, 1-hour fire rated panel, will help make your sound control installations a huge success. QuietRock® ES Mold Resistant available.

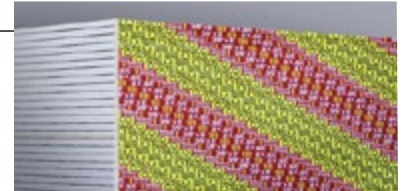


STANDARD INTERIOR PRODUCTS

PABCO® REGULAR

PABCO® Regular Gypsum Drywall is an interior panel composed of a naturally noncombustible, dimensionally stable, gypsum core. The core is wrapped in high quality 100% recycled facing and backing paper that will accept most decorative finishes. Regular Gypsum Wallboard is intended for non-fire rated residential construction. 1/2" Regular is sag resistant and suitable for ceiling applications.

Thickness	Type	UL Core
1/4"	Regular	N/A
3/8"	Regular	N/A
1/2"	Regular	N/A



PABCO FLAME CURB®

PABCO FLAME CURB® family of gypsum panels are composed of a naturally noncombustible, fire-resistant gypsum core, reinforced with glass fibers that provide increased strength and enhanced fire-resistant properties. The core is wrapped in high quality 100% recycled facing and backing paper that will accept most decorative finishes. FLAME CURB® is intended for fire-rated interior walls and ceilings in residential or commercial construction.

Thickness	Type	UL Core
1/2"	Super C	PC-C
5/8"	Type X	PG-11
5/8"	Type C	Type C
3/4"	Type X	PG-13



PABCO LITECORE®

PABCO LITECORE® is a light weight, dual purpose drywall product for use on walls and ceilings. It is dimensional stability; resists sagging, buckling and warping. This panel features a naturally noncombustible gypsum core and high quality 100% recycled facing and backing paper will accept most decorative finishes. It is not intended for load bearing or fire rated assemblies.

Thickness	Type	UL Core
1/2"	LiteCore	N/A



PABCO® FLEX

PABCO FLEX™ gypsum panels are ideal for concave and convex surfaces in non-structural walls and ceilings. The unique thickness of our PABCO FLEX Drywall allows you to create a curved wall with a single layer application and feather the finish into an adjoining flat wall surface.

Thickness	Type	UL Core
3/8"	FLEX	N/A



PABCO® INTERIOR CEILING

PABCO® INTERIOR CEILING board is designed for interior ceiling applications. PABCO INTERIOR CEILING board is manufactured with specific additives that add to its dimensional stability and significantly reduced the potential for ceiling sag. When tested to the ASTM C 473 humidified deflection test, PABCO INTERIOR CEILING board exceeds the allowable deflection permitted for 5/8" thick panels.

Thickness	Type	UL Core
1/2"	Regular	N/A



PABCO® SOUND CURB

SOUND CURB™ panels with Quiet® core gypsum technology are engineered to reduce sound transmission in floor/ceiling applications. SOUND CURB™ panels are ideal for most multilevel residential or light-commercial projects where fire resistance is a primary objective and where additional mass is desired for improved Sound Transmission Class (STC) and Impact Insulation Class (IIC) performance, especially in lower frequencies where sound control is proven difficult.

Thickness	Type	UL Core
3/4"	Type X	PG-13





STANDARD INTERIOR PRODUCTS

PABCO MOLD CURB® Plus

PABCO MOLD CURB® PLUS combines the mold resistant chemistry of MOLD CURB® with the water resistant formulation of WATER CURB® to make dual mold and water resistant panel that provides the most enhanced mold and moisture protection available in a gypsum board product. MOLD CURB® PLUS is comprised of a naturally noncombustible, fire-resistant gypsum core. The core is wrapped in high quality 100% recycled facing and backing paper that is treated with mold and water resistant agents to inhibit the growth of mold and mildew. The facing paper will accept most decorative finishes.

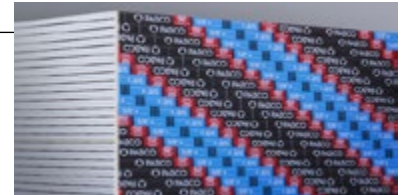
Thickness	Type	UL Core
1/2"	Regular	N/A
5/8"	Type X	PG-5W



PABCO ABUSE CURB®

PABCO ABUSE CURB® Type X is composed of a fire-resistant, non-combustible gypsum core that incorporated MOLD CURB® PLUS technology. ABUSE CURB® is the solution for situations where abuse-resistance, mold-resistance and water-resistance are needed. The core is encased in 100% recycled heavy mold and water-resistant paper facing and backing.

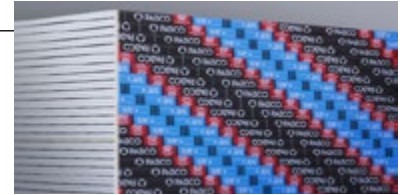
Thickness	Type	UL Core
5/8"	Type X	PG-5W



PABCO® IMPACT RESISTANT

PABCO® Impact Resistant Drywall panel is a true super panel: Type X fire resistant, mold resistant, water resistant, abrasion resistant and impact resistant. PABCO® Impact Resistant is manufactured with a proprietary high density fire resistant Type X core that incorporates an embedded fiberglass mesh to further enhance impact resistance.

Thickness	Type	UL Core
5/8"	Type X	PG-5W



EXTERIOR & EXPOSURE RESISTANT PRODUCTS

PABCO GLASS® SHEATHING

PABCO GLASS® SHEATHING is ideal for commercial and residential applications where the product's performance will not be compromised due to extended exposure. PABCO GLASS® SHEATHING can withstand extended exposure to normal weather conditions, up to 1 year, during construction. The combination of our proprietary glass fiber reinforced gypsum core encased in our distinctive orange, mold-resistant coated fiberglass mat facing provides added dimensional stability that resists warping, rippling, buckling, and sagging.

Thickness	Type	UL Core
1/2"	Regular	N/A
5/8"	Type X	PGS-WRS



PABCO GLASS® INTERIOR

PABCO GLASS® Interior, with its mold and water-resistant gypsum core encased in a glass fiber mat, provides greater moisture resistance and improved dimensional stability compared to standard gypsum board. The product is ideal for interior commercial and residential applications where moisture may be present including pre-rock installation and residential bathrooms and basements. The interior glass-faced panel is specially formulated to withstand extended exposure under normal weather conditions up to one year. 5/8" PABCO GLASS® Interior, with its proprietary fire-resistance rated core, provides fire protection to building elements such as walls, ceilings, columns and beams.

Thickness	Type	UL Core
1/2"	Regular	N/A
5/8"	Type X	PGI





EXTERIOR & EXPOSURE RESISTANT PRODUCTS

PABCO® GYPSUM SHEATHING

PABCO® GYPSUM SHEATHING Board is an economical moisture-resistant product and is designed for use as an exterior board providing a stable base for veneer finishing systems on residential and commercial buildings. PABCO® GYPSUM SHEATHING board has a water resistant core and water repellent paper.

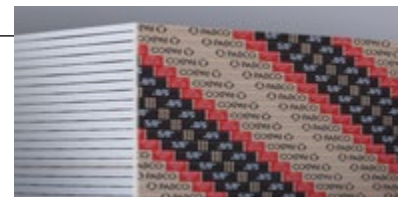
Thickness	Type	UL Core
5/8"	Type X	PG-5WS



PABCO® EXTERIOR SOFFIT

PABCO® EXTERIOR SOFFIT Board is designed for application on the underside of exterior soffits, open porches, walkways, carport ceilings and similar installations that are completely protected from contact with water. The gypsum core contains additives that enhance its ability to resist sagging. The core is wrapped in a moisture resistant paper to further increase its resistance to moisture.

Thickness	Type	UL Core
1/2"	Regular	N/A
1/2"	Super C	PG-C
5/8"	Type X	PG-11
5/8"	Type C	Type C



SHAFTLINER PRODUCTS

PABCORE® SHAFTLINER

PABCO MOLD CURB® PLUS combines the mold resistant chemistry of MOLD CURB® with the water resistant formulation of WATER CURB® to make dual mold and water resistant panel that provides the most enhanced mold and moisture protection available in a gypsum board product. MOLD CURB® PLUS is comprised of a naturally noncombustible, fire-resistant gypsum core. The core is wrapped in high quality 100% recycled facing and backing paper that is treated with mold and water resistant agents to inhibit the growth of mold and mildew. The facing paper will accept most decorative finishes.

Thickness	Type	UL Core
1"	Type X	PG-10



PABCO GLASS® SHAFTLINER

PABCO GLASS® SHAFTLINER protects your building from fire, mold and water in a Shaftliner format. The combination of our proprietary glass fiber reinforced gypsum core encased in our distinctive orange, mold-resistant coated fiberglass mat facing provides added dimensional stability that resists warping, rippling, buckling, and sagging.

Thickness	Type	UL Core
1"	Type X	PG-10



PABCO GLASS® SHAFTLINER was developed for lining elevator shafts and constructing light weight fire barriers for cavity shaft walls and Area Separation Walls in commercial and multi-family residential applications. PABCO GLASS SHAFTLINER can withstand extended exposure to normal weather conditions, up to 1 year, during construction.



SOUND-DAMPED DRYWALL PRODUCTS

QuietRock® 510

QuietRock 510 is a 1/2" thick panel drywall, requiring no special tools. QuietRock 510 is used on residential and commercial new and remodel projects improves STC performance at an entry level price. QuietRock 510 installs and finishes like standard drywall, requiring no special tools. QuietRock 510 is used on residential and commercial new and remodel projects

Thickness	Type	UL Core
1/2"	N/A	QR-510



QuietRock® ES

QuietRock ES is the first sound reducing drywall that easily scores and snaps using breakthrough EZ-SNAP technology. QuietRock ES has no paper, and no metal on the inside of the panel making installation a snap. QuietRock ES delivers acoustical ratings of up to STC 55 on single stud construction. This patented product is easy to install and is ideal for residential and commercial construction.

Thickness	Type	UL Core
5/8"	Type X	QRES



QuietRock® ES MR

QuietRock ES Mold Resistant is the first and only easy score and snap, mold resistant sound damping gypsum panel available. The mold resistant treatment to the paper and core can contribute to a healthier indoor environment. QuietRock ES MR has no paper, and no metal on the inside of the panel making installation a snap. QuietRock ES MR delivers acoustical ratings of up to STC 55 on single stud construction. It achieves the maximum score of 10 on the ASTM D3273 mold test, making it ideal for hospitals, schools, government projects and other mold sensitive applications

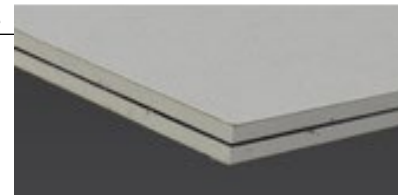
Thickness	Type	UL Core
5/8"	Type X	QRES



QuietRock® 530

QuietRock 530 is a versatile, high gypsum panel that delivers superb noise reduction. This super-panel' is UL fire-rated, STC-rated, shear-rated, and impact-resistant.

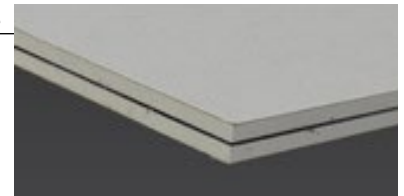
Thickness	Type	UL Core
5/8"	Type X	QR530



QuietRock® 530 RF

QuietRock 530 RF has all the benefits of QuietRock 530 with added Radio Frequency mitigation. QuietRock 530 RF allows builders to construct a fully grounded metal to metal connected room without the necessity of metal or foil underlayments. QuietRock 530 RF is used in SCIF rooms and healthcare facilities where radio frequency disturbances can effect sensitive data and equipment.

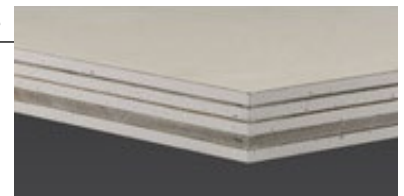
Thickness	Type	UL Core
5/8"	Type X	QR530



QuietRock® 545

QuietRock 545 is engineered to provide professional studios and music rooms benefit from the low frequency performance matched with long term durability. Noise reduction across a broad frequency range. High-end home theaters, commercial theaters, recording studios, mechanical rooms, and other spaces that need to address low-frequency noise.

Thickness	Type	UL Core
1-3/8"	N/A	QR545





QUIET SOUND DAMPING SYSTEM ACCESSORY PRODUCTS

QuietSeal® Pro

QuietSeal Pro is a high performance, non-hardening acoustical sealant designed to maintain acoustic performance in your walls, floors and ceilings. QuietSeal Pro remains soft long after application to prevent cracking and continues to reduce sound transmission over time. Use QuietSeal Pro and stop noise leaks in your wall, floor, or ceiling assembly. It's easy to use and fits into any standard caulking gun.

Using a standard caulking gun, apply QuietSeal Pro in accordance with good building practices around the perimeter of walls, ceilings, floors, any penetrations and seams not backed by a stud. Assure your assembly is airtight – completely fill gap with QuietSeal Pro.

Applied Thickness	Coverage	VOC
Approx. 1/4" bead	88 Linear feet using a 1/4" bead	Low VOC <0.1 g/L



QuietPutty®

QuietPutty® is formulated to maintain the performance of acoustically rated wall assemblies by sealing penetrations including common electrical outlets boxes, phone outlet boxes, electrical switches, HVAC duct, and plumbing hookups.

QuietPutty is a preformed 1/8"x 7"x7" moldable putty pad, so no tools are required for application. Simply adhere the putty manually to back of outlet box or target area and mold around the appliance to seal any potential sound leaks.

Size	Coverage
1/8" thick 7" x 7"	1 pad per 2"x4" junction box



OTHER ACOUSTIC ACCESSORY PRODUCTS

QuietGlue® Pro

QuietGlue® Pro is a high performance, low cost acoustical compound designed to be cost effective for commercial projects and small do-it-yourself projects. QuietGlue® Pro can be applied to drywall or wood (plywood, OBS, MDF, etc) to create a constrain-layer damped lamination in the field. Ideal applications include sub-floor laminations, curved walls, coffered ceilings or in situations where sourcing QuietRock® may not be practical.

QuietGlue® Pro is not a construction adhesive. Laminated layers must be mechanically attached in accordance with local building requirements.

Applied Thickness	Coverage	VOC
1/8" bead random pattern	One Tube per 4x8 sheet (32 ft²)	Low VOC <0.1 g/L



QuietCoat®

QuietCoat® is a leading paintable or sprayable viscoelastic polymer for noise and vibration damping. This is an extensional damping compound for use on steel (iron, galvanized, stainless), aluminum, brass, copper, alloys, plastics, PVC, composites and other nonporous materials.

Fully ROHS Compliant
Meets the highest industry flammability standards
Anti-fungal and anti-rust capability

Common uses include: plumbing and sewer pipes, consumer electronics, appliances, factory process and material handling equipment, HVAC, air handling units, ducts, elevators, escalators, vehicles, rail cars,

Applied Thickness	Coverage	VOC
1 to 3 mm total	40-80 ft² per gallon	Low VOC <0.1 g/L



QUIET WALLS DONE RIGHT

Exceed customer expectations and crush tight build schedules with QuietRock Sound Reducing Drywall. With 5/8" QuietRock EZ-SNAP, Architects and Builders can achieve fire ratings and Sound Transmission Class (STC) ratings in partitions using less material and time needed to install. PABCO's patented paper-free, viscoelastic polymer and gypsum core boosts STC performance while speeding up cutting time. Simply put, QuietRock EZ-SNAP sound reducing gypsum panels are a cut above the rest.

Visit www.QuietRock.com/tools for up-to-date STC performance on many UL fire rated assemblies.

 QuietRock®

California Pacific Medical Center, San Francisco, CA: QuietRock EZ-SNAP installation

Sound 101

How, what, when, where, why.

HEARING

The human ear is magnificent. Hearing is one of the first senses that we develop—long before birth—and one of the last to leave us before we expire. Hearing and sound affect virtually every facet of our lives.

WHAT IS SOUND

Sound is best defined as an auditory form of energy. Unlike light (electromagnetic energy), the propagation of sound requires the existence of a medium such as air or water.

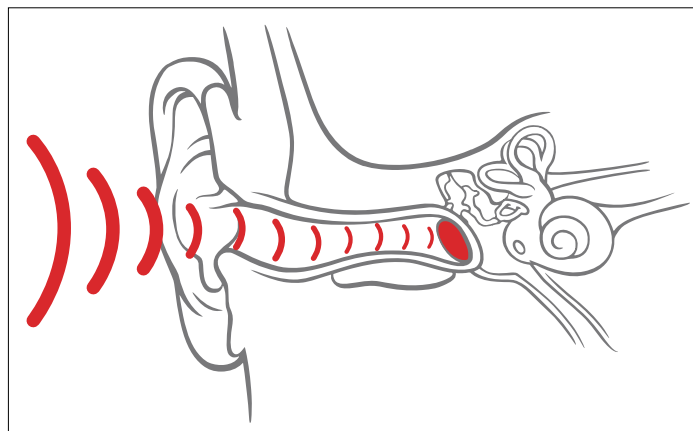
SOUND IS A WAVE

Small periodic changes in pressure reach our ears, resulting in audible sound. These sound waves radiate from all kinds of sound sources.

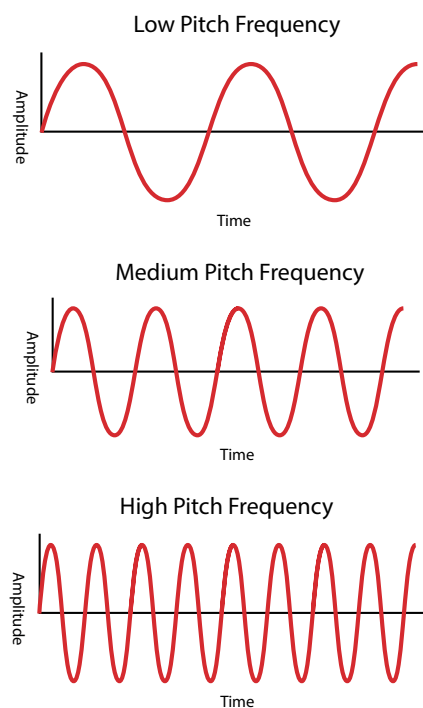
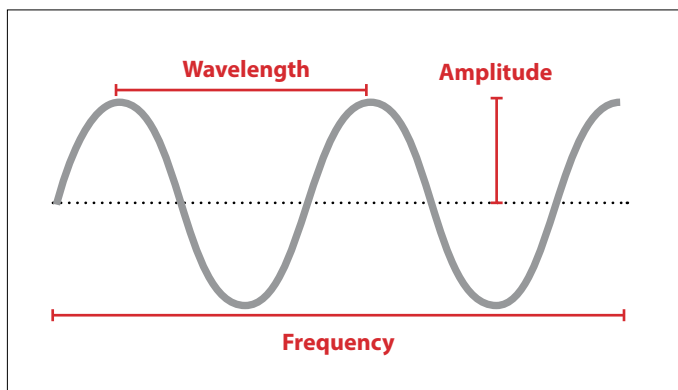
Sound waves have some essential characteristics that determine how they sound to us when they reach our ears. Storage boxes can come in different shapes, sizes, and colors that make them useful for organizing and storing. In a similar way, sound waves come in different frequencies (pitch), wavelengths (speed), and amplitudes (volume). Each characteristic changes how we perceive the sound we hear.

FREQUENCY & WAVELENGTH

If you are swimming in the ocean there is a big difference between the peaks of the waves when you are out in the open ocean versus when you are near the shore. Near the shore the wavelengths get smaller, causing you to float up and down faster. Sound waves behave similarly. When the wavelength of sound is shorter, the number of oscillations that occurs every second increases.



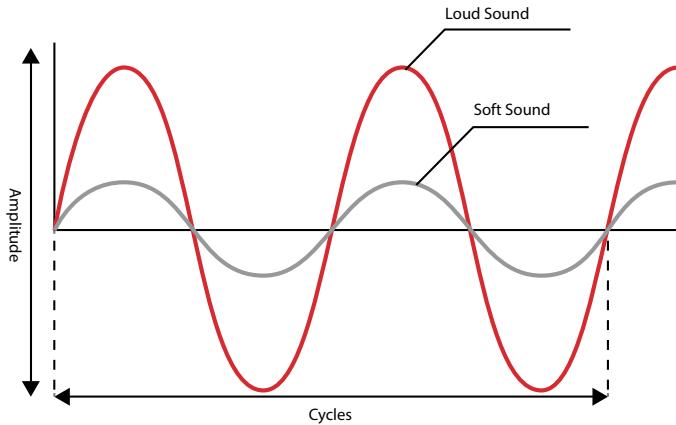
Frequency, measured in **Hertz (Hz)**, is the number of complete waves or oscillations at a point in time. Frequency is more commonly referred to as pitch. A high-speed dental drill has a higher frequency (shorter wavelength) than the passing of a dump truck down the street (longer wavelength). The audible range of frequencies for an average human is 20 Hz to 20,000 Hz.





AMPLITUDE

The amplitude of a sound wave is closely related to how loud we perceive the sound to be. What makes loudness both complicated and amazing is that we perceive sound waves at different loudness levels for each frequency in the audible range. What's even more amazing is that most humans' ears are capable of hearing such an incredible dynamic range of loudness levels that both the faint movement of a mouse and the screaming rockets of a jet engine are well within our ability to hear.



Although not directly related to loudness, sound is typically measured as a **sound pressure level (SPL)** in **decibels (dB)**. The general range of human hearing is from 0 to 120 dB. The sound of a quiet library is roughly 30 dB, while 120 dB is the threshold where the ears begin to feel pain because the sound is so loud.

THE DECIBEL IS NOT A LINEAR UNIT

Something important to remember about the decibel is that it is a non-linear (where $2\text{ dB} + 2\text{ dB}$ is NOT equal to 4 dB) unit of measurement.



Building materials such as **QuietRock® ES** can drastically affect the decibel level of sound that we hear through building partitions. The proper application of QuietRock®, for example, can help you lower the volume of your neighbors' loud argument to a faint muffle.

Noise Control in Buildings

Best practices

BUILDING NOISE CONTROL

Noise is a reality in every type of building, from classrooms to hospitals to hotels. The exact definition of noise will be different for everyone. Simply put, noise is sound that you don't want to hear. Although one person's noise is another person's music, we can agree that there are several sources of noise in buildings that most of us wish to avoid.

Within buildings, noise can come from a variety of radiating sound sources:

- footsteps across a hallway
- appliances
- loudspeaker systems
- human speech
- doors and cabinets opening/ closing
- sinks, bathtubs and toilets

Throughout an entire building structure, the number of noise sources can be enormous:

- HVAC equipment
- appliances
- chutes
- stairwells
- elevators
- people
- speakers
- plumbing and piping

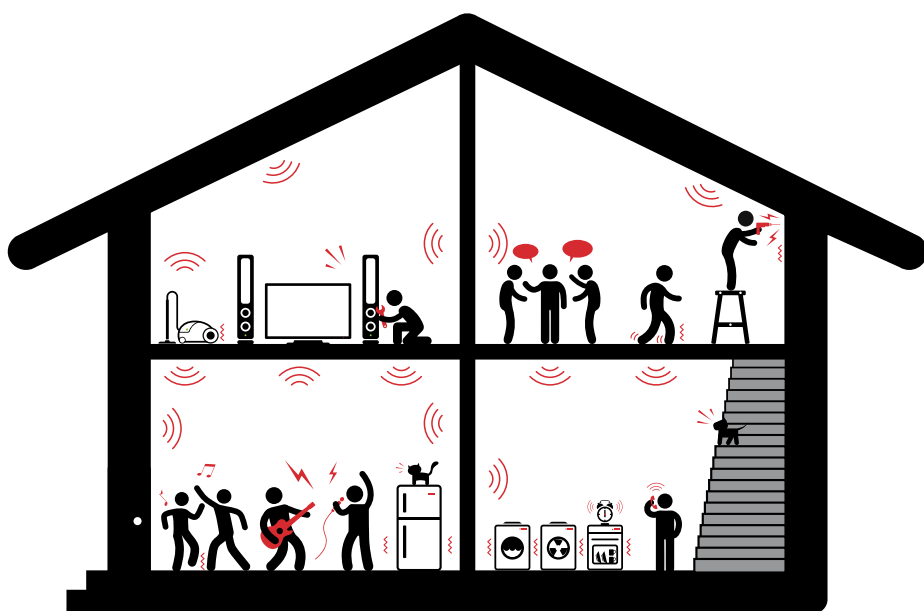
Noise is measured and characterized in buildings to ensure proper application, building design, and tenant comfort. Two different types of measurements are made in buildings:

- airborne noise
- structure-borne noise

Nearly all building noise metrics rely on a microphone measurement of two different sound sources: a loudspeaker (airborne) or a floor tapping machine (structure-borne).

Airborne-related metrics are used for airborne noise sources (speech, home theater systems, etc.). The following metrics are only the most basic ones used in the building industry today (definitions available in the Glossary): **Noise Criteria (NC)**, **Noise Reduction Coefficient (NRC)**, **Reverberation Time (T60)**, **Sound Transmission Class (STC)**, and **Speech Privacy Class (SPC)**.

Structure-borne noise is defined as any noise source whose primary radiation comes from impact (footsteps on an upstairs floor, for example) or vibration of solid structures. The **Impact Insulation Class (IIC)** is the main metric used in the building industry to characterize the structural noise in buildings.



Structure-borne noise & Airborne noise





CURRENT BUILDING NOISE CONTROL TECHNIQUES

MASS: Adding mass, or layers of mass, is probably the most commonly used noise control technique.

Advantages:

1. The low frequency performance can improve with each additional layer or with increasing concrete slab thickness.
2. It is the most commonly tested building noise control treatment, which makes predictions more accurate and design recommendations easier to validate.
3. It is commonly used and familiar to the building trades.
4. It is simple. Just add another layer or install a thicker slab.

Disadvantages:

1. Both the labor and material costs keep escalating with each additional layer.
2. Construction delays are more common when more materials and labor are required.
3. As the stiffness of the assembly increases (heavier gauge studs are used or the spacing between studs is decreased), which commonly occurs, the effect of additional weight decreases. Light-gauge (thin) steel studs show differences with each additional layer, but not so with heavy-gauge steel studs.
4. The weight of the assembly increases drastically, which becomes a problem for buildings with stringent structural requirements.
5. Thick assemblies utilize expensive floorspace that can never be recovered without enlarging the footprint of the building.

AIR SPACE & FRAMING ISOLATION: Where possible, studs and stud frames can be separated (staggered or double studs) resulting in a wider air cavity between panels. Resilient channels can also be used that add air volume and attempt to mechanically separate or isolate the panels from the assembly framing.

Advantages:

1. Again, there is an increase in low frequency transmission loss (more noise control at those difficult low frequencies).
2. It is a commonly tested building noise control treatment.
3. The combination of decoupling the assembly elements and adding more air space can result in better noise control, versus many layers of mass.
4. There is more room for piping and other in-the-wall elements so they are easier to isolate from the rest of the structure.

Disadvantages:

1. Building these assemblies is much more complicated and involved: more materials are needed and labor costs increase dramatically.

2. There is much greater risk of failure, especially for the decoupling and isolating treatments such as resilient channels (RC) due to short-circuiting (see glossary term) or improper installation.
3. There is a reduction of usable floor space for these assemblies.

DAMPING: Internally damped panels can provide increased sound isolation to building partitions without increasing the weight and overall thickness.

Advantages:

1. It is a simple solution: just replace the standard panel on one or both sides with a damped panel of the same thickness/fire resistance/structural properties.
2. You can increase the floor space from that required by other methods.
1. Cost to install **QuietRock® ES** is equal to the installation of a standard sheet of drywall.
2. It is a better treatment for speech noise (privacy) than multiple layers of drywall.
3. With fewer materials required to achieve equivalent results, less time is needed and building construction remains on schedule.

Disadvantages:

1. The material cost for these premium panels is higher than less-expensive standard materials even if the less-expensive panels cannot achieve the same performance.
2. Standard damped panels perform similar to standard gypsum panels at low frequencies. Higher-performance damped panels, such as QuietRock 545, are required to provide better sound isolation for low frequency noise sources such as sub-woofers and turbines.

Rules of Thumb for Applying Acoustic Treatment in Buildings

Sound waves, like water, will find any leakage point through a partition. Since air offers less resistance to sound than a piece of metal or wood, much of the sound energy will exit a structure through air openings. There are other reasons why an acoustical design might fail, including acoustic "short-circuiting" (see glossary) failures and layout failures.

Here are some general recommendations for reducing the risk of failure for acoustic treatments:

1. Properly and adequately address penetrations (outlet boxes and recessed lights, for example) with **QuietSeal® Pro**, **QuietPutty®**, or other recommended treatments.
2. Avoid partial-height partitions (build partitions from floor to structural ceiling).
3. Take time to read and follow manufacturer recommendations for installation procedures (failures with RC are common when the RC is installed upside down or when partition surfaces rigidly touch adjacent surfaces).
4. Consult with an acoustician (acoustical consultant) for efficient floor plan layout (doors and noisy mechanical rooms) and air handling design.

Flanking

The indirect path to annoy your next door neighbor

TYPICAL FLANKING PATHS

Although you may have carefully thought out and specified the correct wall, unwanted sounds may still travel through undetected flanking paths such as framing, ductwork, concrete slabs, open plenums or wall penetrations.

HOW TO ADDRESS FLANKING

There are a few ways to address flanking. Here are some layout suggestions that can reduce some of the flanking issues:

1. Eliminate direct ducting by running a main line down a corridor or attic and auxiliary lines to each room. The more turns in the ducting, the more difficult it is for sound to find its way through it.
2. Avoid back-to-back penetrations by installing or relocating electrical and plumbing penetrations in separate stud cavities.
3. Continue the demising wall assembly up to the floor deck to prevent sound moving through the plenum space.
4. Decoupling the cement slab adjacent to the bottom wall plate may be necessary in sensitive situations.

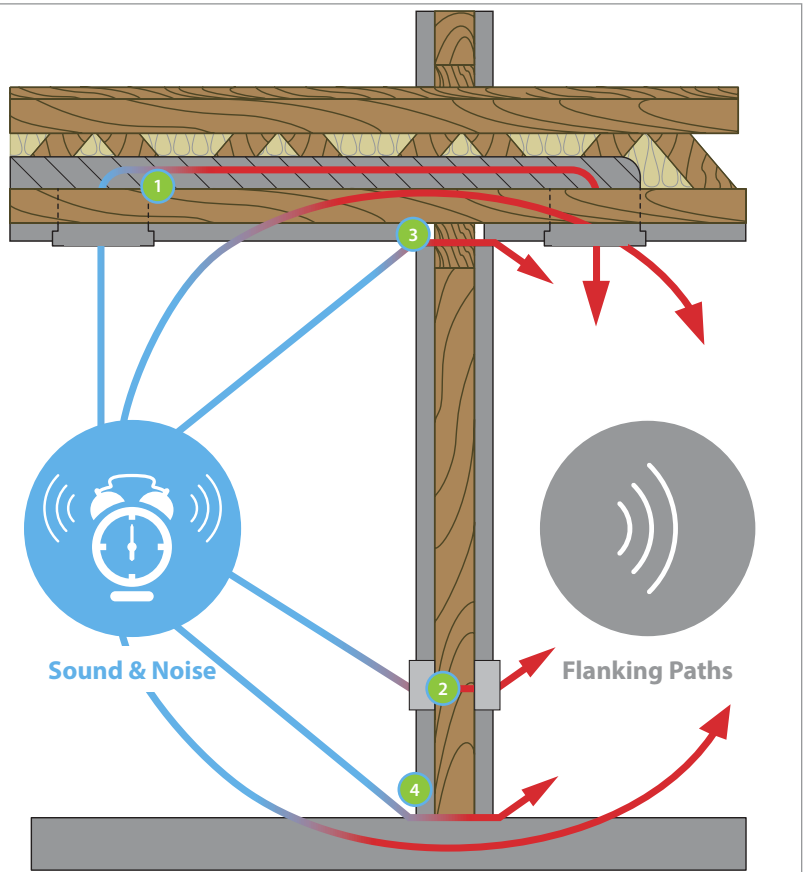
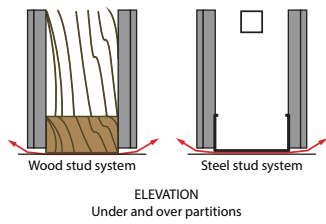


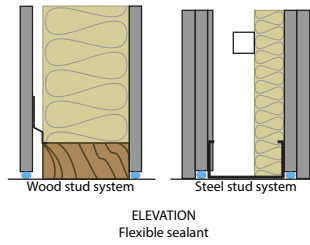
Figure 1: application of acoustic sealants prevent sound leaks and minimize the effects of flanking.

SOUND ISOLATION CONSTRUCTION

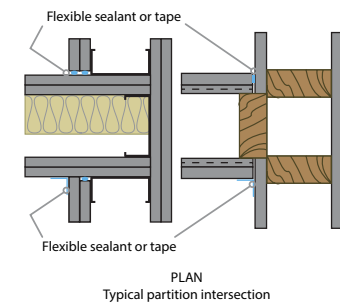
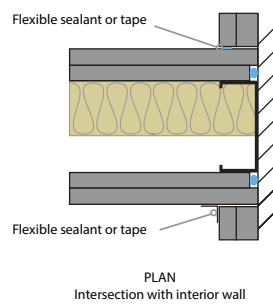
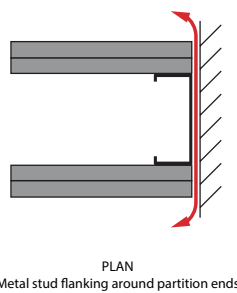
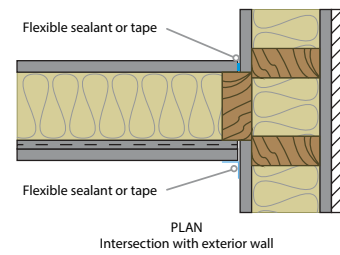
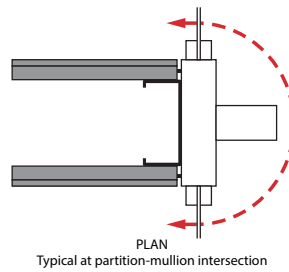
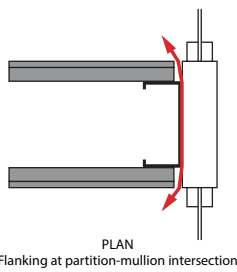
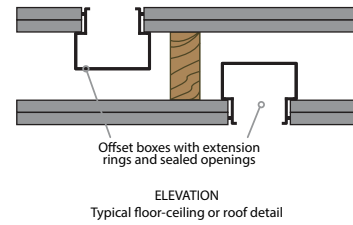
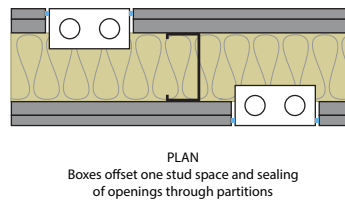
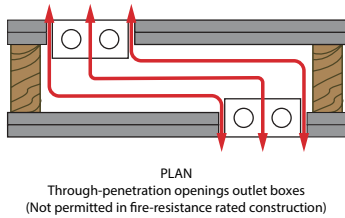
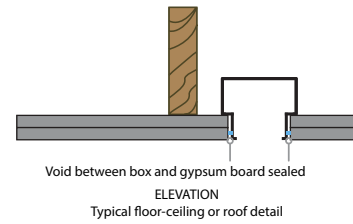
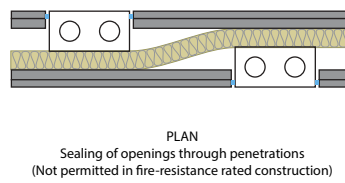
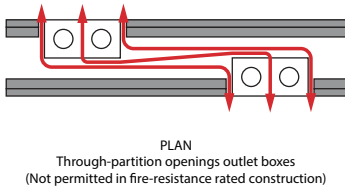
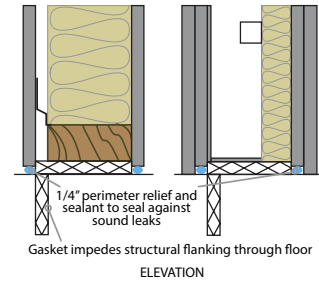
"NORMAL" CONSTRUCTION
ARROWS SHOW
FLANKING PATHS



"SELECT" CONSTRUCTION
SEALING OF RELIEF DETAIL AT
PERIMETER OF PARTITION AND AROUND
CUT-OUTS TO PREVENT SOUND LEAKAGE



"PRE-DESIGN" CONSTRUCTION
SIMULATED LABORATORY
CONDITIONS



Flanking

PREVENTING SOUND LEAKS

Many flanking issues can be easily addressed by **properly sealing the wall and ceiling assemblies**. In any sound rated assembly it is good building practice to seal the gap at the base of the wall as well as expansion (control) and drywall-to-non-drywall (e.g. window mullion) joints with an acoustical sealant such as **QuietSeal® Pro**. QuietSeal® Pro will remain soft and pliable, a key factor in choosing a good **acoustic sealant**. QuietSeal® Pro contains very **low VOCs** (<0.1 g/L VOC).

Another tool in the fight against flanking is **QuietPutty®**, an **acoustical putty** typically molded around outlet boxes and plumbing fixtures to prevent sound from penetrating through the fixtures. QuietPutty® is **also fire rated** (ASTM E84 Flame Spread Index Class B) and out performs leading fire putties.

Untreated gaps can reduce the effectiveness of your well designed wall and ceiling systems. The use of QuietSeal® Pro and QuietPutty® will enable you to prevent leaks and achieve the best performance of your wall and ceiling systems.

WALL PENETRATIONS AND RECESSED LIGHTS

In terms of flow and resistance, **sound behaves similar to water**. It follows the path of least resistance, "searching" for any leaks in a given building assembly partition. Any untreated penetration can potentially decrease a partition's sound isolation.

The ASTM C919 Standard Practice for Use of Sealants in Acoustical Applications specifies that a non-hardening sealant, such as QuietSeal® Pro, must be applied to the partition to prevent sound leakage.

Larger penetrations such as outlet boxes and plumbing fixtures must be effectively plugged to prevent sound leakage. Acoustic putty, such as QuietPutty®, can be applied to create such a plug.

Recessed Lights create large open holes in the ceiling and are very difficult to treat. Effective treatment for recessed light penetrations involves building a sound isolation box with QuietRock® around the light opening inside the joist cavity.

Alternatively, a track lighting system could be used to avoid numerous penetrations that are more difficult to address.

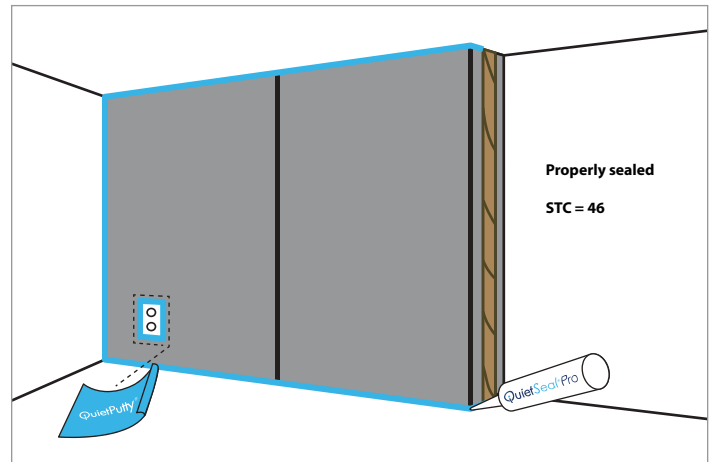


Figure 2: application of acoustic sealants prevent sound leaks and minimize the effects of flanking.

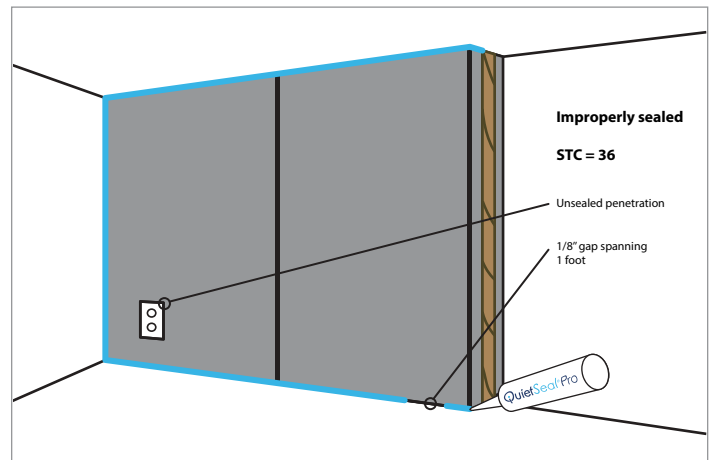


Figure 3: unsealed or improper application of acoustic sealant can open the path for sound to travel (flanking). The effects of sound leaks can reduce STC performance in any acoustically rated assembly.

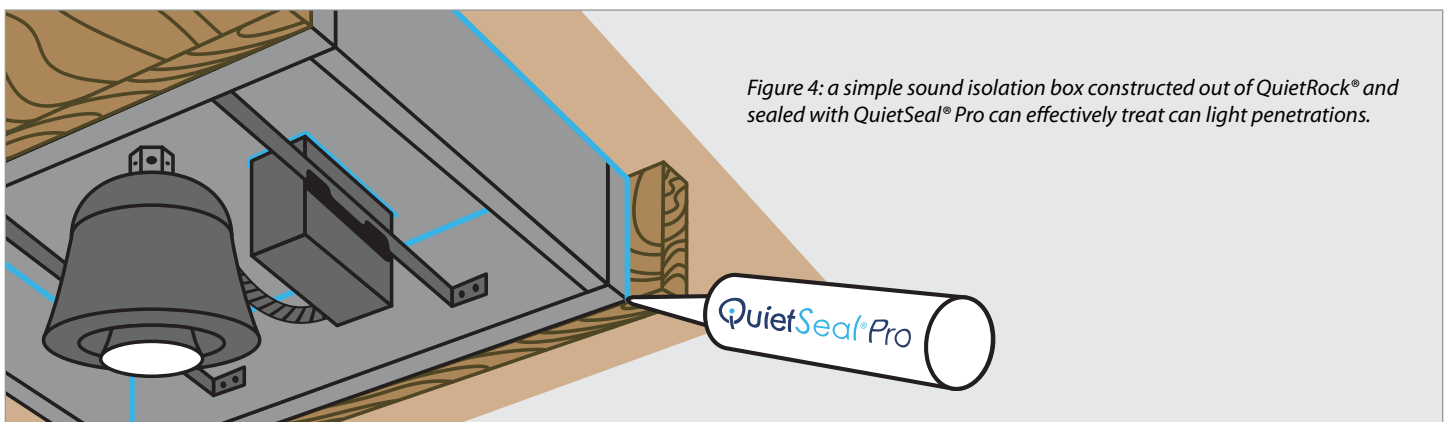
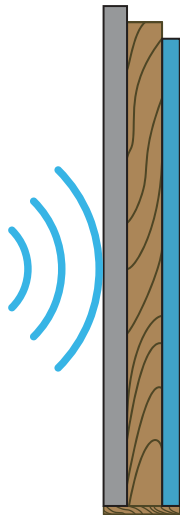


Figure 4: a simple sound isolation box constructed out of QuietRock® and sealed with QuietSeal® Pro can effectively treat can light penetrations.

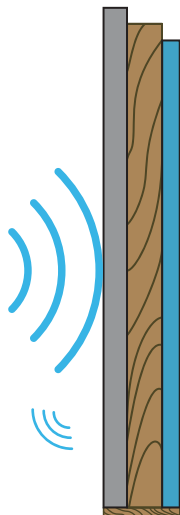
Absorption, Reflection, Transmission

What is the difference?

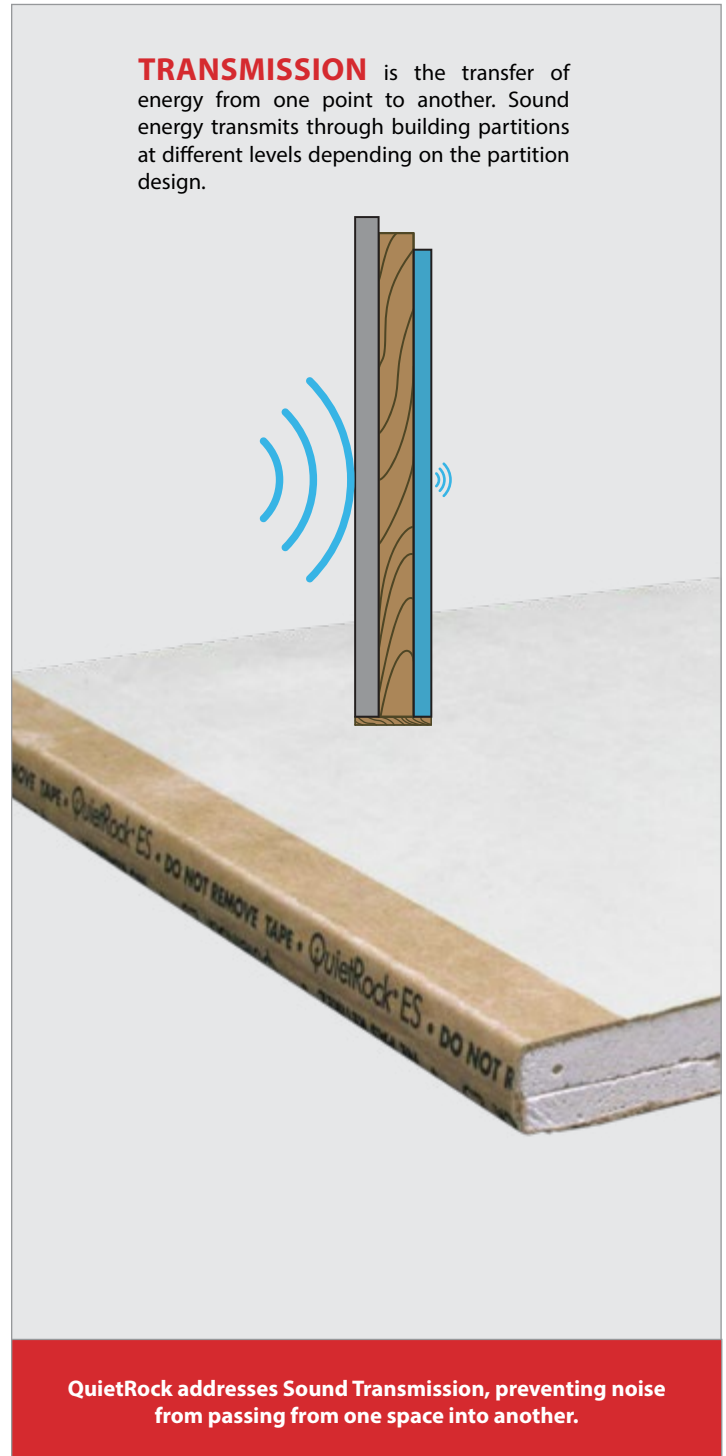
ABSORPTION occurs when energy is converted into another form in a material. For sound, absorption converts the sound energy into very tiny amounts of heat.



REFLECTION happens when waves encounter rigid surfaces and bounce (reflect) back towards the incoming wave. Sound waves reflecting off of hard surfaces create echoes.



TRANSMISSION is the transfer of energy from one point to another. Sound energy transmits through building partitions at different levels depending on the partition design.



QuietRock addresses Sound Transmission, preventing noise from passing from one space into another.

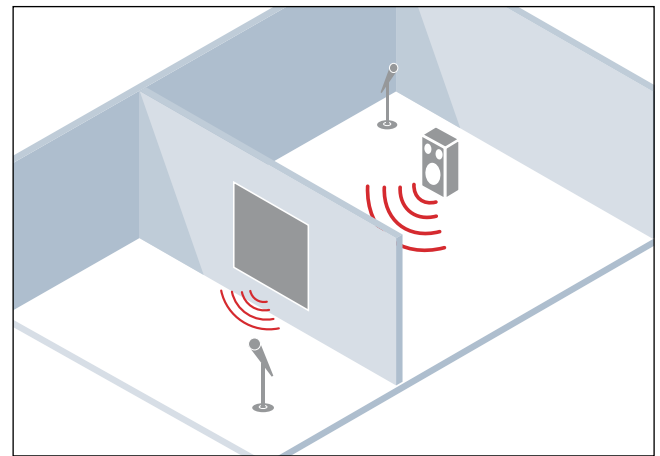
Sound Transmission Class (STC)

How it is Measured?

Sound Transmission Class (STC) is a metric of how well a wall, partition or floor/ceiling system attenuates airborne sound over a range of frequencies, though it is ultimately the result at 500 Hz. STC is calculated from Sound Transmission Loss (STL) measurements using ASTM International Classification E413 (Classification for Rating Sound Insulation). The STC rating very roughly reflects the decibel reduction in noise that a partition can provide.

In order to calculate a single STC value, a series **Sound Transmission Loss (STL)** data points must first be collected in a lab between 125 Hz to 4,000 Hz.

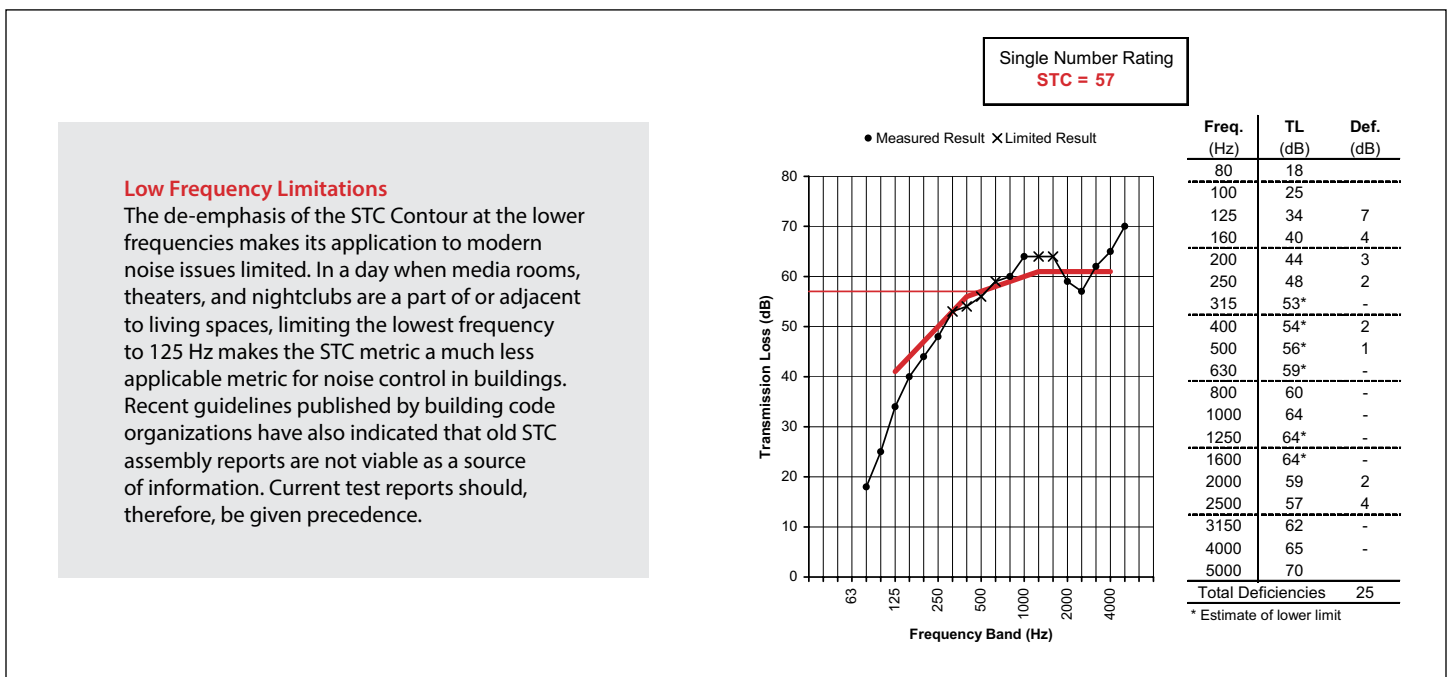
The data collection process is done by producing sound in one room, let's call it the source room, and with a microphone in the adjacent room, measuring the amount of sound it allowed to penetrate through the demising wall. The demising wall is usually a very dense partition that if solid, would be just about as "soundproof" (see glossary) as you can get. This wall however has a large opening in the middle so that the test wall can be placed or built in the cavity.



The STL measurements are plotted on a graph to graphically display the Sound **Transmission Loss Curve (TL Curve)**. Once plotted the STC Contour is superimposed over the TL Curve and adjusted up or down until 2 rules are satisfied:

1. There cannot be a deficiency greater than 8 dB at any measurement point.
2. The total of all deficiencies cannot exceed 32 dB.

Once those rules are satisfied and the STC Contour is set. The single number STC rating is determined by the dB reduction at the intersection of 500 Hz and the STC Contour. The higher the STC rating, the better the sound isolation of the wall partition.

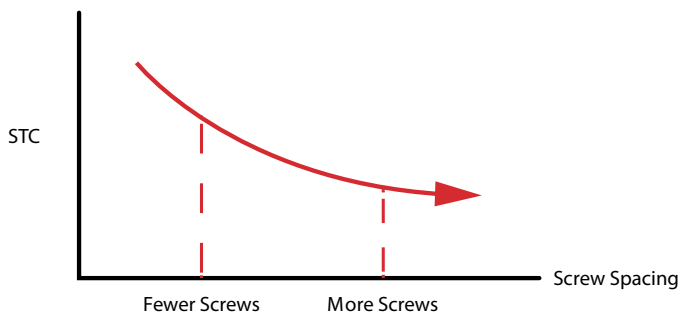


Key Factors that Contribute to STC

The effects of materials & design

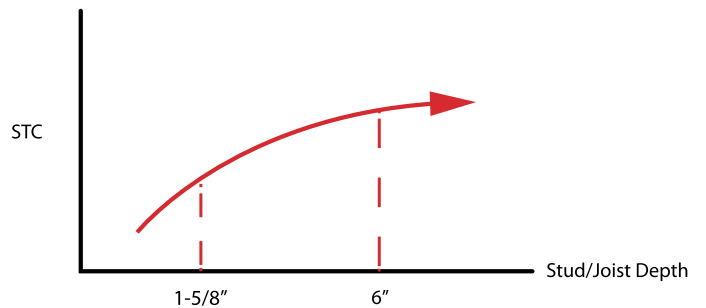
SCREW SPACING

Screws spaced closer together will decrease STC & sound isolation.



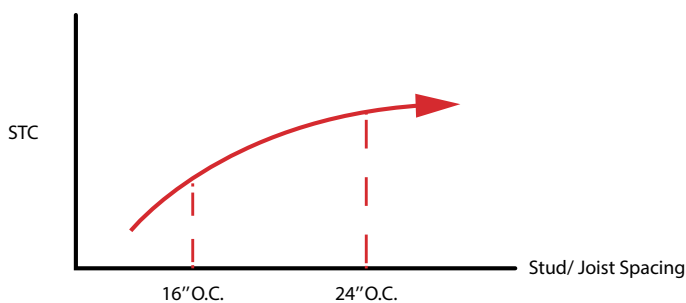
STUD/ JOIST DEPTH

Greater stud depth allows for more airspace and increased performance.



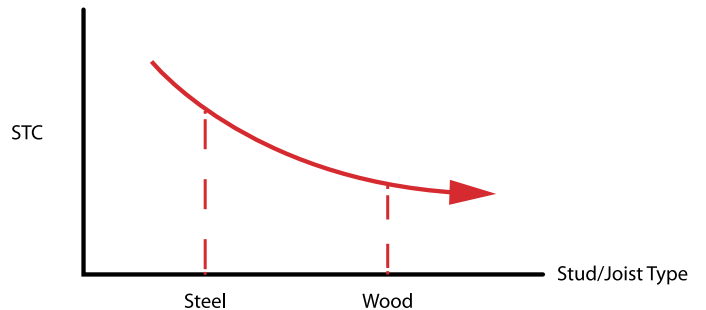
STUD/ JOIST SPACING

Wider stud spacing creates larger air cavities and decreased stiffness for better sound isolation.



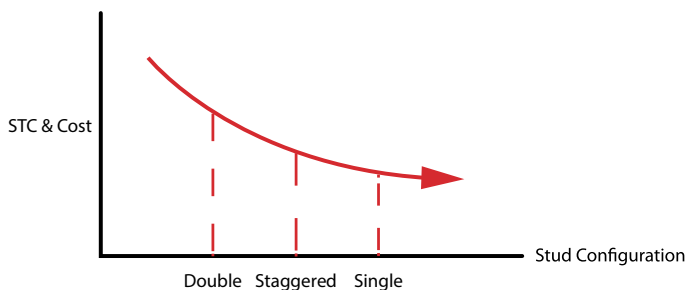
STUD/ JOIST TYPE

Steel studs allow greater flexibility and sound isolation without reducing structural integrity.



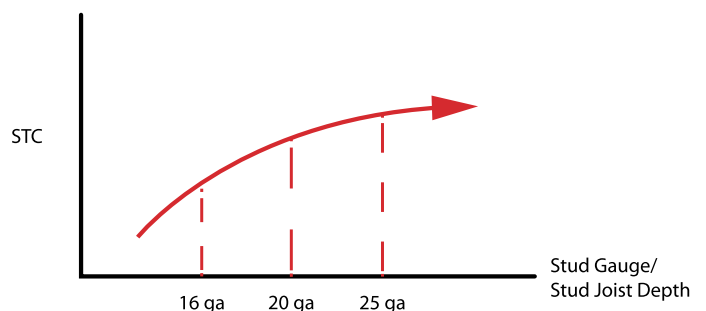
STUD CONFIGURATION

Separating stud frames adds decoupling and increased air space, increasing sound transmission loss.



STUD GAUGE

Light gauge studs provide better sound isolation than heavy gauge studs.



The higher the STC rating, the better the sound isolation of the partition.

The Impact of Steel Stud Selection

Sound Transmission Loss Performance

Steel studs are designed and manufactured to be specified in a wide range of building projects. The information provided in a steel stud specification will serve as a critical component for architects, acoustical consultants, and other design professionals, as they collaborate with structural engineers to specify the appropriate steel framing members for buildings. This collaboration ensures that all partitions are fire-safety compliant and meet local code and regulation - including Sound Transmission Class (STC) ratings. The selection and specification of steel framing components can have a direct impact on sound transmission loss (STL) performance. Four key topics of discussion and education regarding steel-framed designs for sound transmission loss (STL) in buildings are:

1. The effect of mil thickness on STL performance,
2. How mil thickness varies across steel manufacturers and what effect this has on STL performance,
3. The effect of steel spacing and width on STL performance, and
4. Laboratory testing concerns for the repeated use of the same steel frame over time.

The table below shows the difference between a drywall stud (non-structural, 15 mil to 23 mil) and structural stud (thicknesses greater than 23 mil). Use ASTM standard C645, more restrictions on tolerance and variability with the structural steel studs.

Steel Stud Thickness	Drywall Gauge	Structural Gauge
15 mil	25 ga. EQ	-
18 mil	25 ga.	-
18 mil	20 ga. EQ	-
19 mil	20 ga. EQ	-
30 mil	-	20 ga. EQ
33 mil	-	20 ga.
43 mil	-	18 ga.
54 mil	-	16 ga.
68 mil	-	14 ga.
97 mil	-	12 ga.

See ASTM standard C645 for more information on tolerance, variability, and restrictions for the structurally rated steel studs.

The subject of steel thickness and gauge has only recently been introduced in building partition design. Many architectural drawings still list steel stud framing as "metal studs" or similar without any mention of steel mil thickness or gauge. PABCO® has conducted hundreds of ASTM E90 laboratory tests on varying steel mil thicknesses (even for the same specified stud gauge).

We found that even the specification of steel gauge can be problematic for accurate sound isolation design in buildings. For example, steel framing may be listed as "20 ga," however, many steel manufacturers produce 20-ga steel from 19-mil thick up to 33-mil thick. Our testing has indicated that there is a very large difference in STC rating and STL performance for this large range of steel thickness. Steel gauge is, therefore, not an accurate, nor useful specification when it comes to sound isolation design. The steel mil thickness must be reported for greater accuracy and lower risk of field failure. Another important finding relevant to mil thickness is that once the stud thickness is increased to around 33- to 43-mil thickness, any changes in performance for standard 5/8" Type X Gypsum Wallboard (GWB) partitions are very small, even for multiple panel configurations. A larger amount of variation exists, even across these thicker steel frames, when damped panels are used for higher STL and STC ratings.

As a continuation of the above topic, the mil thickness of steel framing varies across steel manufacturers for the same gauge specification. One manufacturer's "20-ga" non-structural steel stud may perform drastically different from another manufacturer's steel stud with the same gauge specification. It is increasingly important to either specify stud mil-thickness in building design or to specify a range of STC ratings for the same steel gauge specification if multiple steel manufacturers are specified as options for a project.

The spacing and width of steel studs can have varying influence on the STC rating and STL of steel framed partitions. For 15-mil non-structural stud framing, there is a smaller difference in STC rating and STL for 16" OC versus 24" OC stud spacing. However, once the mil thickness increases to 20-mil (and increasingly as the mil-thickness increases), there exists much larger differences between the standard 16" OC and 24" OC stud spacing.

Initial findings also indicate that the repeated use of the same steel frame can influence the STL and STC rating of a partition. Most of our repeated testing has indicated that if you test one partition design, and then repeat this design after 4 or 5 uses of the same frame, the partition design first tested may increase by a significant amount of STC points. It is important to know how many times a particular steel frame had been used in a given test series, in order to assess how the STL or STC performance may have changed over the course of testing.

Speech Privacy Class (SPC) Methods & Examples

The words “speech privacy” often invoke images of top-secret government facilities or open office cubicles. The importance of speech privacy in building construction, however, expands to a great many project types. **Healthcare** building projects are regulated by codes or guidelines, such as the Health Insurance Portability and Accountability Act (HIPAA), that require privacy for sensitive conversations in enclosed rooms. **Office buildings** with conference rooms and human resources departments have need of enclosures that are capable of keeping conversations private. **Classrooms** with poorly designed separation walls contribute to an environment of distraction, inhibiting concentration required to learning. **Hotels** and **multi-family** dwellings become a nearly unbearable source of frustration and stress when conversations and other more disturbing noises can be heard through interior partitions. Frustration and distraction don’t need to interfere with our everyday lives. Adhering to guidelines and validated partition designs using current measurement standards enables building industry professionals to ensure a secure and private environment for their building project needs.

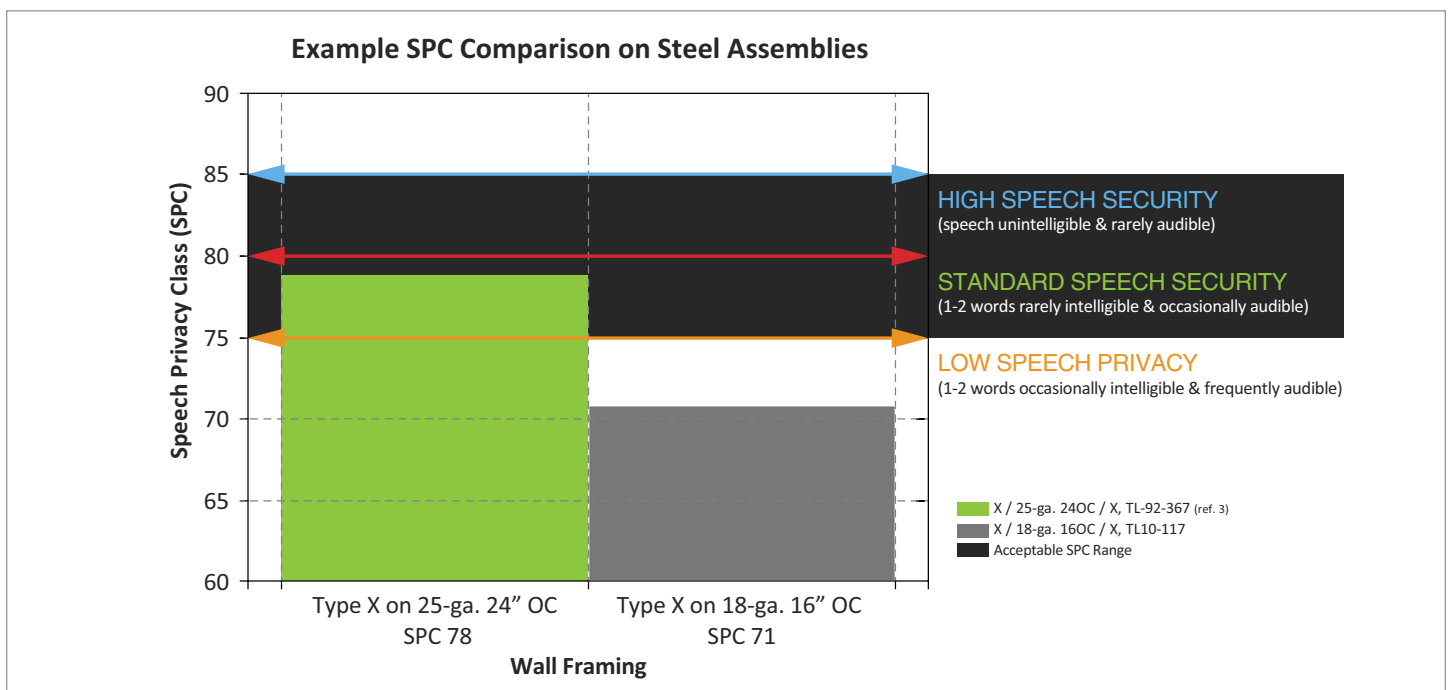
CALCULATING SPC

STC was originally designed to characterize speech. Due to recent studies indicating that STC is not appropriate for characterizing speech privacy, a new standard was developed for speech privacy in enclosed spaces and a new rating system was created: the **Speech Privacy Class (SPC)**.

The SPC is calculated by:

1. Measuring and averaging the background noise (Ln(ave)) over a range of frequencies, from 160 Hz to 5,000 Hz.
2. Measure and average the sound transmission loss (TL(ave)) over the same range of frequencies.
3. Simply add the two averaged values together and, if comparing laboratory-tested STL results, add one.

The graph below illustrates the different rating scales for the SPC.



Constrained-Layer Damping (CLD)

How QuietRock Works

CONSTRAINED-LAYER DAMPING

Constrained-layer damping (CLD) is a vibration isolation technique that was originally developed for naval vessels and airplane fuselages. CLD requires the application of materials that are viscoelastic—materials that can deform easily when stressed and then return back into their original form. QuietRock® products, through the application of viscoelastic materials (QuietGlue®) in gypsum panels, use shear-loading and vibration decay to reduce noise by 10 dB or more versus traditional treatments. Simply, QuietRock® makes it easier for the building partition to reduce vibration, which makes sound isolation much more efficient.

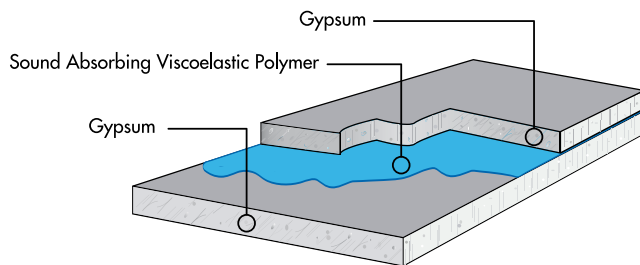


Figure 1: QuietRock uses advanced viscoelastic polymers (damping layer) between two layers of gypsum (constraining layers) to reduce sound vibrations in building partitions.

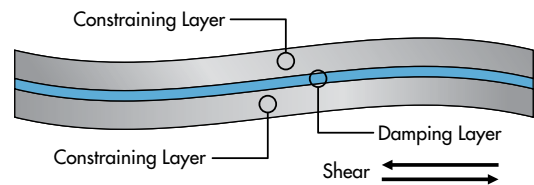


Figure 2: System under vibration (magnified). Note shearing of damping layer as panel flexes.

EXTENSIONAL FREE-LAYER DAMPING

Extensional damping is achieved by applying a damping compound, such as QuietCoat® to a non-porous metal or plastic substrate. Similar to CLD, extensional damping reduces vibration energy and sound. Examples of extensional damping in buildings include coating HVAC ducting, escalator & elevator wall panels, in wall pipes, and undercoating stainless steel sinks with QuietCoat. Extensional damping is appropriate in situations where the substrate is thin and non-porous.

Although extensional damping can be effective for some applications (listed above), it is not an effective sound isolation treatment for building partitions. It should, therefore, not be applied to a gypsum panel partitions. The gypsum panel is too thick in relation to the thickness of the coating and the panel surface too porous for the QuietCoat or other extensional damping material to function as a sound isolation treatment.



THIS IS WHAT STC 51 REALLY LOOKS LIKE

WE SHOULD KNOW, WE INVENTED IT.

QuietRock® sound reducing drywall is the first product of its kind to address sound-resistance and fire-resistance using a single panel - without compromise. QuietRock is easy to install and finishes just like standard Type X drywall to help keep builders and contractors on schedule. QuietRock's famous single-layer, thin-wall technology meets design requirements without sacrificing valuable floor space, time or reliability. At PABCO® Gypsum, we believe in transparent design details and these details make a big statement.

Learn more at www.QuietRock.com
or call 1-800-797-8159



[design PGD-01-10-201]

QuietRock®

by PABCO® Gypsum

PABCO Gypsum Sound & Fire Designs

Cross-Referenced Performance Ratings

HIGH-PERFORMANCE WALL PARTITIONS QUICK REFERENCE TABLE

DESIGN NUMBER	STC	FIRE-RATING	UL #	GA FILE #
PGD-01-00-010	50	Non-Rated	Non-Rated	
PGD-01-00-012	66	Non-Rated	Non-Rated	
PGD-01-00-016	58	Non-Rated	Non-Rated	
PGD-01-00-018	61	Non-Rated	Non-Rated	
PGD-01-00-020	48	Non-Rated	Non-Rated	
PGD-01-00-022	65	Non-Rated	Non-Rated	
PGD-01-00-030	43	Non-Rated	Non-Rated	
PGD-01-10-003	65	1 Hr	V464	
PGD-01-10-011	58	1 Hr	V464	GA WP-1002
PGD-01-10-017	59	1 Hr	V464	
PGD-01-10-021	55	1 Hr	V464	GA WP-0977
PGD-01-10-023	56	Non-Rated	Non-Rated	
PGD-01-10-030	56	1 Hr	U465	
PGD-01-10-041	52	1 Hr	U465; V464	GA WP-1027
PGD-01-10-045	55	1 Hr	V464	
PGD-01-10-055	58	1 Hr	U465	
PGD-01-10-060	54	1 Hr	U465	
PGD-01-10-061	52	1 Hr	V464	
PGD-01-10-065	52	1 Hr	U465	
PGD-01-10-075	60	1 Hr	U465	GA WP-0951
PGD-01-10-085	51	1 Hr	U465; V464	
PGD-01-10-091	48	1 Hr	U465	
PGD-01-10-101	58	1 Hr	V464	
PGD-01-10-105	58	1 Hr	U465	
PGD-01-10-111	47	1 Hr	V464	

DESIGN NUMBER	STC	FIRE-RATING	UL #	GA FILE #
PGD-01-10-121	54	1 Hr	V464	
PGD-01-10-131	53	1 Hr	V464	
PGD-01-10-135	58	1 Hr	U425	
PGD-01-10-141	46	1 Hr	U425	
PGD-01-10-142	64	1 Hr	V464	
PGD-01-10-145	47	1 Hr	U425	
PGD-01-10-151	45	1 Hr	U425	
PGD-01-10-155	55	1 Hr	U425	
PGD-01-10-161	54	1 Hr	U425	
PGD-01-10-165	50	1 Hr	U425	
PGD-01-10-171	44	1 Hr	U425	
PGD-01-10-181	50	1 Hr	U425	
PGD-01-10-191	54	1 Hr	U465	
PGD-01-10-201	51	1 Hr	U425	
PGD-01-10-205	57	1 Hr	U425	
PGD-01-10-211	43	1 Hr	U465	
PGD-01-10-212	38	1 Hr	U425	
PGD-01-10-213	50	1 Hr	U465; V464	
PGD-01-10-215	51	1 Hr	U425	
PGD-01-10-221	43	1 Hr	U465	
PGD-01-10-225	54	1 Hr	U425	
PGD-01-10-231	45	1 Hr	U425	
PGD-01-10-235	41	1 Hr	U465	
PGD-01-10-240	53	1 Hr	U425	GA WP-1359
PGD-01-10-250	49	1 Hr	U425	GA WP-1086
PGD-01-10-251	52	1 Hr	U425	
PGD-01-10-255	54	1 Hr	U425	
PGD-01-10-260	49	1 Hr	U425	GA WP-1088
PGD-01-10-261	51	1 Hr	U425	
PGD-01-10-265	50	1 Hr	U425	
PGD-01-10-270	48	1 Hr	U425	
PGD-01-10-271	45	1 Hr	U425	



DESIGN NUMBER	STC	FIRE-RATING	UL #	GA FILE #
PGD-01-10-280	46	1 Hr	U425	
PGD-01-10-281	37	1 Hr	U425	
PGD-01-10-290	56	1 Hr	U425	
PGD-01-10-310	50	1 Hr	U425	
PGD-01-10-314	46	1 Hr	U425	
PGD-01-10-315	45	1 Hr	U425	
PGD-01-10-320	38	1 Hr	U425	
PGD-01-10-340	56	1 Hr	U425	
PGD-01-10-345	50	1 Hr	U425	
PGD-01-10-350	47	1 Hr	U425	
PGD-01-10-355	43	1 Hr	U425	
PGD-01-10-360	38	1 Hr	U425	
PGD-01-20-011	55	2 Hr	U411	
PGD-01-20-015	45	2 Hr	U411	
PGD-01-20-021	42	2 Hr	U425	
PGD-01-20-025	50	2 Hr	U411	GA WP-1533
PGD-01-20-031	60	2 Hr	U425; W466	
PGD-01-20-035	45	2 Hr	U411	
PGD-01-20-041	44	2 Hr	U411	
PGD-01-20-042	64	2 Hr	V464	
PGD-01-20-048	58	2 Hr	U420	
PGD-01-20-054	60	2 Hr	V464	
PGD-01-20-055	62	2 Hr	W466	
PGD-01-20-061	45	2 Hr	U425	
PGD-01-20-064	59	2 Hr	U420	
PGD-01-20-065	43	2 Hr	U425	
PGD-01-20-075	40	2 Hr	U425	
PGD-02-00-010	80	Non-Rated	Non-Rated	
PGD-02-00-020	75	Non-Rated	Non-Rated	
PGD-02-00-030	60	1 Hr	U305	
PGD-02-00-040	52	Non-Rated	Non-Rated	
PGD-02-00-050	49	Non-Rated	Non-Rated	
PGD-02-00-060	47	Non-Rated	Non-Rated	
PGD-02-00-070	60	1 Hr	U340; W304	
PGD-02-10-012	55	1 Hr	U340; W304	GA WP-3113
PGD-02-10-014	51	1 Hr	U340	

DESIGN NUMBER	STC	FIRE-RATING	UL #	GA FILE #
PGD-02-10-022	47	1 Hr	U340; W304	
PGD-02-10-030	74	1 Hr	U341	
PGD-02-10-040	66	1 Hr	U341	
PGD-02-10-045	62	1 Hr	U341	GA WP-3011
PGD-02-10-055	56	1 Hr	U341	
PGD-02-10-070	57	1 Hr	U309	
PGD-02-10-080	57	1 Hr	U305	
PGD-02-10-090	54	1 Hr	U305	
PGD-02-10-100	54	1 Hr	U309	
PGD-02-10-105	53	1 Hr	U309	
PGD-02-10-110	52	1 Hr	U309	
PGD-02-10-120	51	1 Hr	U305	
PGD-02-10-145	49	1 Hr	U305	GA WP-3373
PGD-02-10-151	57	1 Hr	U305	
PGD-02-10-155	53	1 Hr	U305	GA WP-3264
PGD-02-10-162	40	2 Hr	U305	GA WP-4136
PGD-08-20-010	69	2 Hr	U347	GA ASW-0985

Walls & Interior Partitions

Single Steel Frame

ASSEMBLY COMPONENTS AND PICTOGRAMS

The assemblies in this guide have been divided into sections by framing material type and ordered by design file number. The assembly details are listed in order starting from the outermost layer (attachment); working from top to bottom and ending with the stud or insulation. Pictograms have been added to each assembly detail to provide visual separation of the individual assembly components.

Attachment: identifies screw/nail type, placement, and spacing for attachment of the face layer



Face Layer: Identifies the PABCO Gypsum product that may be used as a base layer (if applicable)



Attachment: identifies screw/nail type, placement, and spacing for attachment of the face layer



Base Layer: Identifies the PABCO Gypsum product that may be used as a base layer (if applicable)



Framing: Identifies stud framing material, size, thickness, spacing and/or unique framing methods



Insulation: Identifies insulation type, size used to fill assembly cavity (if applicable)



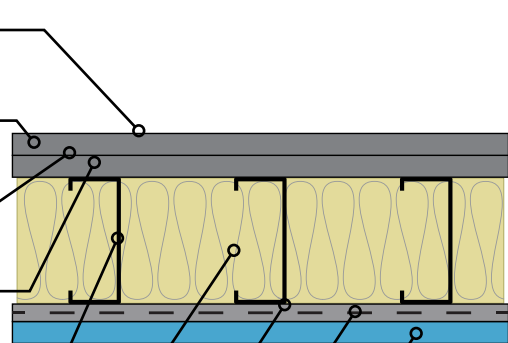
Decoupling: Resilient channel (if applicable)

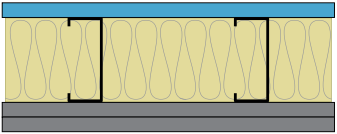








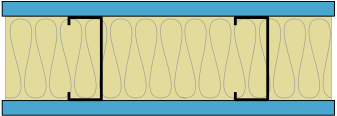








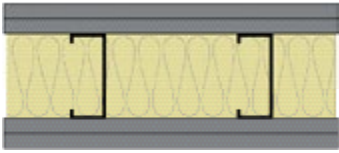










Attachment: Identifies screw type, placement, and spacing for attaching the Resilient Channel

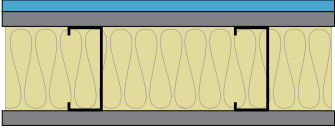










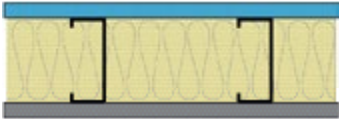






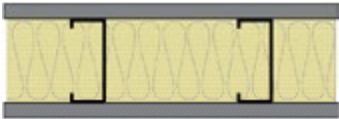






Face Layer: Identifies the QuietRock product use as a face layer

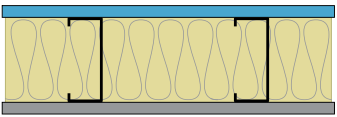








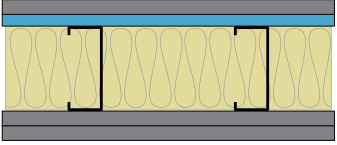










Design Details	Description	Acoustical	Fire
<p>PGD-01-10-011</p> 	<ul style="list-style-type: none">  1" Type S screws (for fire minimum 1-1/4" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 15 mil (25 ga. EQ) steel studs, 24" o.c.  3-1/2" glass fiber insulation in stud space.  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S screws (for fire minimum 1-1/4" Type S screws) spaced 16" o.c.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S screws (for fire minimum 1-7/8" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 58 NOAL 17-0435</p>	<p>1 Hour UL V464 GA WP-0975</p>
<p>5-1/2" Thick, 7.5 lb/ft², Non-Load Bearing. Vertical joints staggered on opposite sides.</p>			
<p>PGD-01-10-021</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws 12" o.c. (for fire minimum 1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field).  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically or horizontally (for fire panels applied vertically).  3-5/8" 15 mil (25 ga. EQ) steel studs, 24" o.c.  3-1/2" glass fiber insulation in stud space.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied horizontally.  1-1/4" Type S drywall screws 12" o.c. (for fire minimum 1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field). 	<p>STC 55 NOAL 18-0517</p>	<p>1 Hour UL V464 (WFCi 15067), GA WP-0977</p>
<p>4-7/8" Thick, 5.7 lb/ft², Non-Load Bearing. Vertical joints staggered on opposite sides. Horizontal Joints do not need to be staggered or backed.</p>			

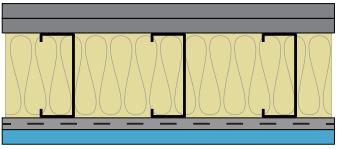










Design Details	Description	Acoustical	Fire
<p>PGD-01-20-011</p> 	<ul style="list-style-type: none">  1-5/8" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field (for fire 1-5/8" type S screws spaced 16" o.c. in the field and along the vertical edges and 12" o.c. along top and bottom runners.).  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field (for fire minimum 1" Type S screws spaced 16" o.c.)  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 15 mil (25 ga. EQ) steel studs, 24" o.c.  3-1/2" glass fiber insulation in stud space.  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field (for fire minimum 1" Type S screws spaced 16" o.c.)  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field (for fire 1-5/8" type S screws spaced 16" o.c. in the field and along the vertical edges and 12" o.c. along top and bottom runners.). 	<p>STC 55 NOAL 17-0434</p>	<p>2 Hour UL U411</p>
<p>6-1/8" Thick, 9 lb/ft², Non-Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

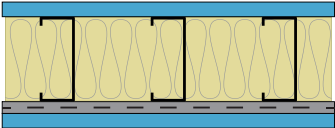








Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 396 380">PGD-01-10-060</p> 	<ul style="list-style-type: none"> <li data-bbox="529 384 1027 426">  2-1/2 in. Type S drywall screws spaced 16" o.c. <li data-bbox="529 489 1060 531">  Face layer: 1/2" QuietRock® 510 applied vertically. <li data-bbox="529 594 1073 657">  1-5/8" Type S drywall screws 16" o.c. (for fire 1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field). <li data-bbox="529 699 1065 751">  Base layer: 5/8" type X (FLAME CURB® or PABCO® Glass Sheathing) gypsum panel applied vertically. <li data-bbox="529 804 1003 846">  3-5/8" 15 mil (25 ga. EQ) steel studs, 24" o.c. <li data-bbox="529 909 987 951">  3-1/2" glass fiber insulation in stud space. <li data-bbox="529 1014 1065 1066">  Face layer: 5/8" type X (FLAME CURB® or PABCO® Glass Sheathing) gypsum panel applied vertically. <li data-bbox="529 1119 1073 1182">  1-5/8" Type S drywall screws 16" o.c. (for fire 1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field). 	<p data-bbox="1133 747 1268 804" style="text-align: center;">STC 54 RAL-TL07-030</p>	<p data-bbox="1373 747 1458 804" style="text-align: center;">1 Hour UL U465</p>
<p data-bbox="110 1203 496 1230">5-3/8" Thick, 6.8 lb/ft², Non-Load Bearing.</p>	<p data-bbox="521 1203 927 1230">Vertical joints staggered on opposite sides.</p>		

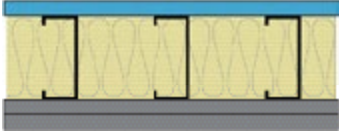








Design Details	Description	Acoustical	Fire
<p>PGD-01-10-061</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 15 mil (25 ga. EQ) steel studs, 24" o.c.  3-1/2" glass fiber insulation in stud space.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 52 NOAL 18-0519</p>	<p>1 Hour UL V464</p>
<p>4-7/8" Thick, 5.2 lb/ft², Non-Load Bearing.</p>		<p>Vertical joints staggered on opposite sides.</p>	
<p>PGD-01-00-020</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 15 mil (25 ga. EQ) steel studs, 24" o.c.  3-1/2" glass fiber insulation in stud space.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 48 NOAL 18-0520</p>	<p>Non-Rated</p>
<p>4-7/8" Thick, 4.7 lb/ft², Non-Load Bearing.</p>		<p>Vertical joints staggered 16" on opposite sides.</p>	

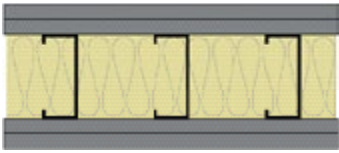










Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-00-010</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 935 422"> 1-1/4" Type S drywall screws 12" o.c. <li data-bbox="532 485 1027 537"> One Layer 1/2" QuietRock® 510 gypsum panel applied vertically. <li data-bbox="532 590 1003 632"> 3-5/8" 15 mil (25 ga. EQ) steel studs, 24" o.c. <li data-bbox="532 695 987 737"> 3-1/2" glass fiber insulation in stud space. <li data-bbox="532 800 1044 852"> One Layer 1/2" PABCO Regular or FLAME CURB® Super C gypsum panel applied vertically. <li data-bbox="532 915 935 957"> 1-1/4" Type S drywall screws 12" o.c. 	<p data-bbox="1146 642 1255 699">STC 50 OL-12-0515</p>	<p data-bbox="1360 657 1471 678">Non-Rated</p>
<p data-bbox="118 993 500 1014">4-5/8" Thick, 4.3 lb/ft², Non-Load Bearing.</p>		<p data-bbox="524 993 927 1014">Vertical joints staggered on opposite sides.</p>	

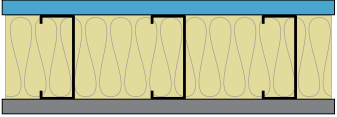













Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-030</p> 	<ul style="list-style-type: none"> <li data-bbox="532 384 1040 447">  2-1/2 in. Type S drywall screws 16" o.c. (for fire minimum 1-1/2" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field). <li data-bbox="532 506 1078 552">  Face layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically. <li data-bbox="532 611 1029 657">  1-5/8" Type S drywall screws 16" o.c. (for fire 1" minimum Type S drywall screws). <li data-bbox="532 716 1062 762">  Base layer: 1/2" QuietRock® 510 applied vertically. <li data-bbox="532 821 1003 867">  3-5/8" 15 mil (25 ga. EQ) steel studs, 24" o.c. <li data-bbox="532 926 987 972">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 1031 1078 1077">  Base layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically. <li data-bbox="532 1136 1094 1182">  1-5/8" Type S drywall screws 16" o.c. (for fire 1" Type S drywall screws) <li data-bbox="532 1241 1078 1287">  Face layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically. <li data-bbox="532 1346 1052 1392">  2-1/2 in. Type S drywall screws at 16" o.c. (for fire minimum 1-5/8" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field). 	<p data-bbox="1133 856 1268 915" style="text-align: center;">STC 56 RAL TL-07-031</p>	<p data-bbox="1377 856 1458 915" style="text-align: center;">1 Hour UL U465</p>
<p data-bbox="131 1430 475 1453">6" Thick, 8.9 lb/ft², Non-Load Bearing.</p>	<p data-bbox="521 1430 927 1453">Vertical joints staggered on opposite sides.</p>		

Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 391 380">PGD-01-10-101</p> 	<ul style="list-style-type: none"> <li data-bbox="529 373 1073 436">  1-5/8" Type S screws (for fire minimum 1-7/8" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="529 478 1073 562">  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 604 1073 667">  1" Type S screws (for fire minimum 1-1/4" Type S screws) spaced 16" o.c. <li data-bbox="529 709 1073 793">  Base layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 835 1073 867">  3-5/8" 15 mil (25 ga. EQ) steel studs, 16" o.c. <li data-bbox="529 930 1073 961">  3-1/2" glass fiber insulation in stud space. <li data-bbox="529 1035 1073 1066">  Resilient channel applied at right-angle, 24" o.c. <li data-bbox="529 1140 1073 1182">  1/2" #8 Type S pan head screw attaching Resilient Channel to stud flange at alternate intersections. <li data-bbox="529 1224 1073 1276">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="529 1318 1073 1360">  1" Type S drywall screws at 12" o.c. 	<p data-bbox="1133 842 1271 898" style="text-align: center;">STC 58 NOAL 18-0846</p>	<p data-bbox="1377 842 1458 898" style="text-align: center;">1 Hour UL V464</p>
<p data-bbox="126 1392 480 1419">6" Thick, 7.65lb/ft², Non-Load Bearing.</p>	<p data-bbox="521 1392 927 1419">Vertical joints staggered on opposite sides.</p>		

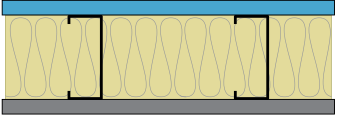






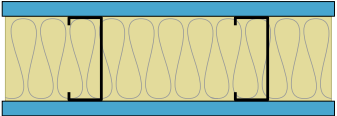






Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-121</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1057 436">  1" Type S screws (for fire minimum 1-14" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 485 1073 541">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 590 1003 646">  3-5/8" 15 mil (25 ga. EQ) steel studs, 16" o.c. <li data-bbox="532 695 987 751">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 800 1040 856">  Resilient channel applied at right-angle, 24" o.c. <li data-bbox="532 905 1089 961">  1/2" Type S screws attaching resilient channel to stud at each intersection. <li data-bbox="532 1010 1073 1066">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 1115 922 1171">  1" Type S drywall screws at 12" o.c. 	<p data-bbox="1133 737 1271 793" style="text-align: center;">STC 54 NOAL 18-0844</p>	<p data-bbox="1377 737 1458 793" style="text-align: center;">1 Hour UL V464</p>
<p data-bbox="121 1186 488 1209">5-3/8" Thick, 6 lb/ft², Non-Load Bearing.</p>	<p data-bbox="521 1186 927 1209">Vertical joints staggered on opposite sides.</p>		

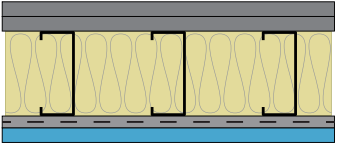










Design Details	Description	Acoustical	Fire
<p>PGD-01-10-131</p> 	<ul style="list-style-type: none">  1" Type S screws (for fire minimum 1-1/4" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 15 mil (25 ga. EQ) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S screws (for fire minimum 1-1/4" Type S screws) spaced 16" o.c.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S screws (for fire minimum 1-7/8" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 53 NOAL 17-0453</p>	<p>1 Hour UL V464</p>
<p>5-1/2" Thick, 7.4 lb/ft², Non-Load Bearing.</p>		<p>Vertical joints staggered on opposite sides.</p>	

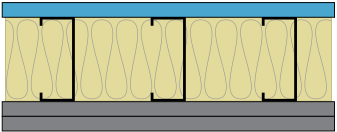








Design Details	Description	Acoustical	Fire
<p>PGD-01-20-025</p> 	<ul style="list-style-type: none">  1-5/8" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field (for fire 1-5/8" type S screws spaced 16" o.c. in the field and along the vertical edges and 12" o.c. along top and bottom runners.).  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field (for fire minimum 1" Type S screws spaced 16" o.c.)  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 15 mil (25 ga. EQ) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field (for fire minimum 1" Type S screws spaced 16" o.c.)  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field (for fire 1-5/8" type S screws spaced 16" o.c. in the field and along the vertical edges and 12" o.c. along top and bottom runners.). 	<p>STC 50 NOAL 17-0452</p>	<p>2 Hour UL U411, GA WP-1533</p>
<p>6-1/8" Thick, 8.9 lb/ft², Non-Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

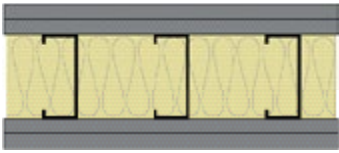










Design Details	Description	Acoustical	Fire
<p>PGD-01-10-111</p> 	<ul style="list-style-type: none">  1" Type S screws (for fire minimum 1-14" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 15 mil (25 ga. EQ) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S screws (for fire minimum 1-14" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 47 NOAL 17-0454</p>	<p>1 Hour UL V464</p>
4-7/8" Thick, 5.3 lb/ft ² , Non-Load Bearing.		Vertical joints staggered on opposite sides.	
<p>PGD-01-00-030</p> 	<ul style="list-style-type: none">  1" Type S screws (for fire minimum 1-14" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 15 mil (25 ga. EQ) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S screws (for fire minimum 1-14" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 43 NOAL 18-0850</p>	<p>Non-Rated</p>
4-7/8" Thick, 4.9 lb/ft ² , Non-Load Bearing.		Vertical joints staggered on opposite sides.	

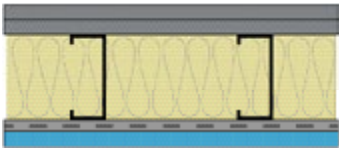










QuietRock Assemblies 18 mil (25 ga.) Single Steel

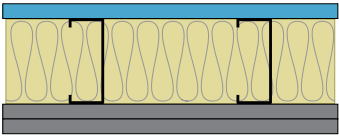








Design Details	Description	Acoustical	Fire
<p>PGD-01-10-041</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 25 18 mil (25 ga.) steel studs, 24" o.c.  3-1/2" glass fiber insulation in stud space.  One layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 52 NOAL 18-0522</p>	<p>1 Hour UL U465, V464, GA WP-1027</p>
<p>4-7/8" Thick, 5.2 lb/ft², Non-Load Bearing. Vertical joints staggered on opposite sides.</p>			
<p>PGD-01-10-045</p> 	<ul style="list-style-type: none">  Minimum 1-1/4" Type S drywall screws 8" at edges and 12" in the field.  One Layer 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically.  3-5/8" 18 mil. (25 ga.) steel studs, 24" o.c.  3-1/2" glass fiber insulation in stud space.  One Layer 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically.  Minimum 1-1/4" Type S drywall screws 8" at edges and 12" in the field. 	<p>STC 55 NRC-TLA-05-050</p>	<p>1 Hour UL V464</p>
<p>4-7/8" Thick, 6.2 lb/ft², Non-Load Bearing. Vertical joints staggered on opposite sides.</p>			

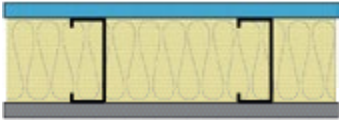













Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-055</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 1081 426">  1-5/8" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="529 485 1081 531">  Face layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically. <li data-bbox="529 590 1081 636">  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field <li data-bbox="529 695 1081 741">  Base layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically. <li data-bbox="529 800 1081 846">  3-5/8" 18 mil (25 ga.) steel studs, 16" o.c. <li data-bbox="529 905 1081 951">  3-1/2" glass fiber insulation in stud space. <li data-bbox="529 1010 1081 1056">  Resilient channel applied at right-angle, 24" o.c. <li data-bbox="529 1115 1081 1161">  1/2" Type S screws attaching resilient channel to stud at each intersection. <li data-bbox="529 1220 1081 1266">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="529 1325 1081 1371">  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field 	<p data-bbox="1166 852 1235 873">STC 58</p> <p data-bbox="1133 884 1268 905">NOAL 18-0855</p>	<p data-bbox="1382 852 1451 873">1 Hour</p> <p data-bbox="1373 884 1459 905">UL U465</p>
<p data-bbox="131 1415 475 1436">6" Thick, 7.7 lb/ft², Non-Load Bearing.</p>	<p data-bbox="521 1415 927 1436">Vertical joints staggered on opposite sides.</p>		

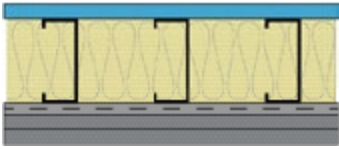










Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-065</p> 	<ul style="list-style-type: none"> <li data-bbox="532 390 1078 436">  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 478 1078 525">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 567 1078 613">  3-5/8" 18 mil (25 ga.) steel studs, 16" o.c. <li data-bbox="532 655 1078 701">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 743 1078 827">  Base layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically. <li data-bbox="532 869 1078 915">  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 957 1078 1041">  Face layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically. <li data-bbox="532 1083 1078 1129">  1-5/8" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 730 1235 758">STC 52</p> <p data-bbox="1133 764 1268 791">NOAL 18-0860</p>	<p data-bbox="1382 730 1451 758">1 Hour</p> <p data-bbox="1377 764 1456 791">UL U465</p>
<p data-bbox="105 1167 500 1194">5-1/2" Thick, 7.53 lb/ft², Non-Load Bearing.</p>	<p data-bbox="524 1167 927 1194">Vertical joints staggered on opposite sides.</p>		

Design Details	Description	Acoustical	Fire
<p>PGD-01-20-035</p> 	<ul style="list-style-type: none">  1-5/8" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field (for fire 1-5/8" type S screws spaced 16" o.c. in the field and along the vertical edges and 12" o.c. along top and bottom runners.).  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field (for fire minimum 1" Type S screws) spaced 16" o.c.)  Base layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically.  3-5/8" 18 mil (25 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field (for fire minimum 1" Type S screws) spaced 16" o.c.)  Face layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically.  1-5/8" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field (for fire 1-5/8" type S screws spaced 16" o.c. in the field and along the vertical edges and 12" o.c. along top and bottom runners.). 	<p>STC 45 NOAL 18-0528</p>	<p>2 Hour UL U411</p>
<p>6-1/8" Thick, 8.9 lb/ft², Non-Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-075</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 1081 426">  1-5/8" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="529 472 1081 518">  Face layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically. <li data-bbox="529 564 1081 611">  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="529 657 1081 703">  Base layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically. <li data-bbox="529 749 1081 795">  3-5/8" 19 mil (20 ga. EQ) steel studs, 24" o.c. <li data-bbox="529 842 1081 888">  3-1/2" glass fiber insulation in stud space. <li data-bbox="529 934 1081 980">  Resilient channel applied at right-angle, 24" o.c. <li data-bbox="529 1026 1081 1073">  1/2" Type S screws attaching resilient channel to stud at each intersection. <li data-bbox="529 1119 1081 1165">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="529 1211 1081 1257">  1" Type S screws spaced 12" o.c. 	<p data-bbox="1166 821 1235 846">STC 60</p> <p data-bbox="1133 852 1268 877">NOAL 17-0530</p>	<p data-bbox="1382 804 1451 829">1 Hour</p> <p data-bbox="1373 835 1459 861">UL U465</p> <p data-bbox="1357 867 1476 892">GA WP-0951</p>
<p data-bbox="131 1356 475 1381">6" Thick, 7.8 lb/ft², Non-Load Bearing.</p>	<p data-bbox="521 1356 927 1381">Vertical joints staggered on opposite sides.</p>		

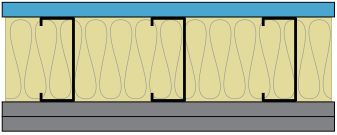








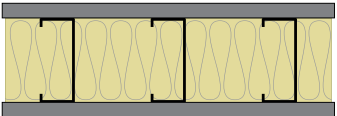






Design Details	Description	Acoustical	Fire
<p>PGD-01-10-196</p> 	<ul style="list-style-type: none">  1" Type S screws (for fire design V464 minimum 1-1/4" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 19 mil (20 ga. EQ) steel studs, 24" o.c.  3-1/2" glass fiber insulation in stud space.  Base layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied horizontally.  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied horizontally.  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 57 NOAL 17-0539</p>	<p>1 Hour UL U465, V464</p>
<p>5-1/2" Thick, 7.6 lb/ft², Non-Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

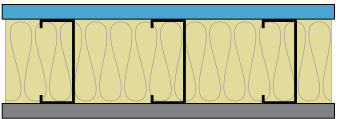






Design Details	Description	Acoustical	Fire
<p>PGD-01-10-085</p> 	<ul style="list-style-type: none">  1" Type S screws (for fire design V464 minimum 1-1/4" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 19 mil (20 ga. EQ.) steel studs, 24" o.c.  3-1/2" glass fiber insulation in stud space.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S screws (for fire design V464 minimum 1-1/4" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 51 NOAL 17-0538</p>	<p>1 Hour UL U465, V464</p>
<p>4-7/8" Thick, 5.5 lb/ft², Non-Load Bearing.</p>		<p>Vertical joints staggered on opposite sides.</p>	
<p>PGD-01-10-091</p> 	<ul style="list-style-type: none">  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 19 mil (20 ga. EQ.) steel studs, 24" o.c.  3-1/2" glass fiber insulation in stud space.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 48 NOAL 17-0523</p>	<p>1 Hour UL U465</p>
<p>4-7/8" Thick, 4.9 lb/ft², Non-Load Bearing.</p>		<p>Vertical joints staggered on opposite sides.</p>	

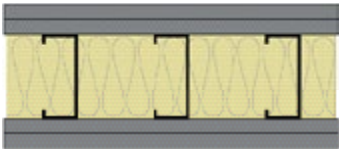










Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-105</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 1081 426"> 1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="529 457 1081 504"> One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="529 535 1081 581"> 3-5/8" 19 mil (20 ga. EQ) steel studs, 16" o.c. <li data-bbox="529 613 1081 659"> 3-1/2" glass fiber insulation in stud space. <li data-bbox="529 690 1081 737"> Resilient channel applied at right-angle, 24" o.c. <li data-bbox="529 768 1081 814"> Type S-12 screw attaching Resilient Channel to stud at each intersection. <li data-bbox="529 846 1081 892"> Base layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically. <li data-bbox="529 924 1081 970"> 1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="529 1001 1081 1047"> Base layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically. <li data-bbox="529 1079 1081 1125"> 1-5/8" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 827 1235 848">STC 58</p> <p data-bbox="1133 858 1268 879">NOAL 17-0509</p>	<p data-bbox="1382 827 1451 848">1 Hour</p> <p data-bbox="1373 858 1459 879">UL U465</p>
<p data-bbox="131 1367 477 1388">6" Thick, 7.8 lb/ft², Non-Load Bearing.</p>	<p data-bbox="521 1367 927 1388">Vertical joints staggered on opposite sides.</p>		

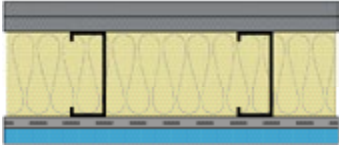










QuietRock Assemblies 19 mil (20 ga.) Single Steel



Design Details	Description	Acoustical	Fire
<p>PGD-01-10-213</p> 	<ul style="list-style-type: none">  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 19 mil (20 ga. EQ) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied horizontally.  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied horizontally.  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 50 NOAL 17-0459</p>	<p>1 Hour U465, V464</p>
<p>5-1/2" Thick, 7.7 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		
<p>PGD-01-10-211</p> 	<ul style="list-style-type: none">  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field.  One layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically.  3-5/8" 19 mil (20 ga. EQ) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  One layer 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied vertically.  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 43 NOAL 17-0465</p>	<p>1 Hour UL U465</p>
<p>4-7/8" Thick, 4.9 lb/ft², Non-Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

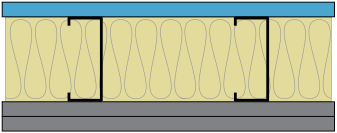








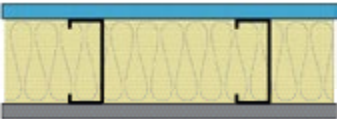






Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-221</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 1081 428">  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="529 491 1081 539">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="529 602 1081 651">  3-5/8" 19 mil (20 ga. EQ) steel studs, 16" o.c. <li data-bbox="529 714 1081 762">  3-1/2" glass fiber insulation in stud space. <li data-bbox="529 825 1081 873">  One 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied horizontally. <li data-bbox="529 936 1081 984">  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 642 1235 663">STC 43</p> <p data-bbox="1133 674 1268 695">NOAL 17-0460</p>	<p data-bbox="1382 642 1451 663">1 Hour</p> <p data-bbox="1390 674 1443 695">U465</p>
<p data-bbox="110 993 496 1014">4-7/8" Thick, 5.5 lb/ft², Non-Load Bearing.</p>		<p data-bbox="521 993 927 1014">Vertical joints staggered on opposite sides.</p>	








Design Details	Description	Acoustical	Fire
<p>PGD-01-20-015</p> 	<ul style="list-style-type: none">  1-5/8" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 19 mil (20 ga. EQ.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 45 NOAL 17-0458</p>	<p>2 Hour UL U411</p>
<p>6-1/8" Thick, 9.1 lb/ft², Non-Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		













Design Details	Description	Acoustical	Fire
<p>PGD-01-10-135</p> 	<ul style="list-style-type: none">  1-5/8" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 33 mil (20 ga.) steel studs, 24" o.c.  3-1/2" glass fiber insulation in stud space.  Resilient channel applied at right-angle, 24" o.c.  1/2" Type S screws attaching resilient channel to stud at each intersection.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  1" Type S screws spaced 12" o.c. in the field. 	<p>STC 58 NOAL 18-0841</p>	<p>1 Hour UL U425</p>
<p>6" Thick, 8.2 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		















QuietRock Assemblies 33 mil (20 ga.) Single Steel

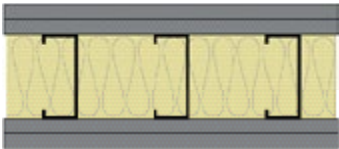












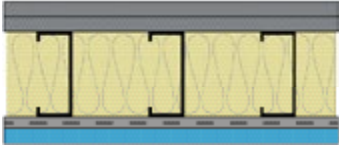










Design Details	Description	Acoustical	Fire
<p>PGD-01-10-191</p> 	<ul style="list-style-type: none">  1" Type S drywall screws spaced 8" at edges and 12" in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 33 mil (20 ga.) steel studs, 24" o.c.  3-1/2" glass fiber insulation in stud space.  OPPOSITE SIDE: Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied horizontally.  1" Type S drywall screws spaced 8" at edges and 12" in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied horizontally.  2" Type S drywall screws (for fire 1-5/8" Type S drywall screws) spaced 12" in the field. 	<p>STC 54 NOAL 18-0205</p>	<p>1 Hour UL U465</p>
<p>5-1/2" Thick, 7.75 lb/ft², Non-Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		
<p>PGD-01-10-201</p> 	<ul style="list-style-type: none">  1" Type S drywall screws spaced 8" at edges and 12" in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 33 mil (20 ga.) steel studs, 24" o.c.  3-1/2" glass fiber insulation in stud space.  One 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S drywall screws spaced 8" at edges and 12" in the field. 	<p>STC 51 NOAL 18-0510</p>	<p>1 Hour UL U425</p>
<p>4-7/8" Thick, 5.6 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

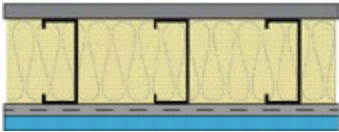








Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 391 380">PGD-01-10-141</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 1081 422">  1" Type S drywall screws spaced 8" at edges and 12" in the field. <li data-bbox="529 464 1081 548">  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 579 1081 621">  3-5/8" 33 mil (20 ga.) steel studs, 24" o.c. <li data-bbox="529 684 1081 726">  3-1/2" glass fiber insulation in stud space. <li data-bbox="529 768 1081 852">  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 884 1081 926">  1" Type S drywall screws spaced 8" at edges and 12" in the field. 	<p data-bbox="1166 632 1235 653">STC 46</p> <p data-bbox="1133 663 1268 684">NOAL 18-0206</p>	<p data-bbox="1382 632 1451 653">1 Hour</p> <p data-bbox="1373 663 1459 684">UL U425</p>
<p data-bbox="142 968 464 989">4-7/8" Thick, 5 lb/ft², Load Bearing.</p>	<p data-bbox="521 968 927 989">Vertical joints staggered on opposite sides.</p>		

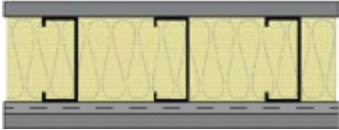















Design Details	Description	Acoustical	Fire
<p>PGD-01-20-055</p>	<ul style="list-style-type: none">  1-7/8" Type S drywall screws (for fire 2" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 1-3/8" QuietRock® 545 type X gypsum panel applied vertically.  3-5/8" 33 mil (20 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  One Layer 1-3/8" QuietRock® 545 type X gypsum panel applied vertically.  1-7/8" Type S drywall screws (for fire 2" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 62 NOAL 18-0903</p>	<p>2 Hour UL W466</p>
<p>6-3/8" Thick, 13.4 lb/ft², Non-Load Bearing.</p>		<p>Vertical joints staggered on opposite sides.</p>	
<p>PGD-01-10-225</p>	<ul style="list-style-type: none">  1" Type S drywall screws spaced 8" at edges and 12" in the field.  One Layer 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically.  3-5/8" 33 mil (20 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  One Layer 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically.  1" Type S drywall screws spaced 8" at edges and 12" in the field. 	<p>STC 54 NOAL 18-0902</p>	<p>1 Hour UL U425</p>
<p>4-7/8" Thick, 6.3 lb/ft², Load Bearing.</p>		<p>Vertical joints staggered on opposite sides.</p>	

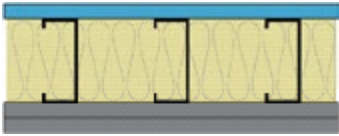








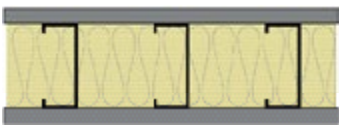






Design Details	Description	Acoustical	Fire
<p>PGD-01-10-231</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 33 mil (20 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 45 NOAL 18-0750</p>	<p>1 Hour UL U425</p>
4-7/8" Thick, 6lb/ft ² , Load Bearing.		Vertical joints staggered on opposite sides.	
<p>PGD-01-10-235</p> 	<ul style="list-style-type: none">  1-1/4" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field.  One 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied horizontally.  3-5/8" 33 mil (20 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  One 5/8" type X (FLAME CURB®, PABCO® Glass Sheathing) gypsum panel applied horizontally.  1-1/4" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 41 NOAL 18-0901</p>	<p>1 Hour UL U465</p>
4-7/8" Thick, 5.4 lb/ft ² , Load Bearing.		Vertical joints staggered on opposite sides.	

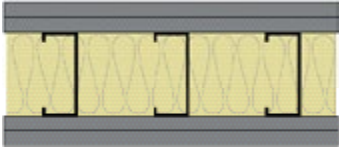










Design Details	Description	Acoustical	Fire
<p>PGD-01-20-061</p> 	<ul style="list-style-type: none">  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 33 mil (20 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 45 NOAL 18-0753</p>	<p>2 Hour UL U425</p>
<p>6-1/8" Thick, 9.7 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

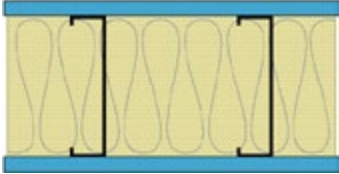






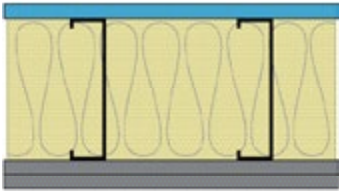








Design Details	Description	Acoustical	Fire
<p>PGD-01-10-205</p> 	<ul style="list-style-type: none">  1-5/8" #6 Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws (for fire 1" Type S drywall screws) 8" o.c. at edges and 12" o.c. in the field.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 43 mil (18 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Resilient channel applied at right-angle, 24" o.c.  1/2" Type S screws attaching resilient channel to stud at each intersection.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  1" #6 Type S drywall screws spaced 12" o.c. in the field. 	<p>STC 57 NOAL 18-0748</p>	<p>1 Hour UL U425</p>
<p>6" Thick, 8.5 lb/ft², Non-Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

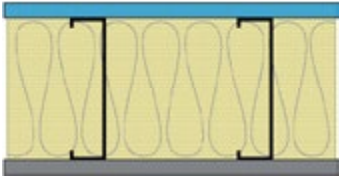






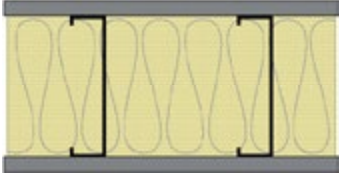






Design Details	Description	Acoustical	Fire
<p>PGD-01-10-215</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws (for fire 1" Type S drywall screws) 8" o.c. at edges and 12" o.c. in the field.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 43 mil (18 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Resilient channel applied at right-angle, 24" o.c.  1/2" Type S screws attaching resilient channel to stud at each intersection.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  1" #6 Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 51 NOAL 18-0747</p>	<p>1 Hour UL U425</p>
<p>5-3/8" Thick, 6.4 lb/ft², Non-Load Bearing.</p>		<p>Vertical joints staggered on opposite sides.</p>	

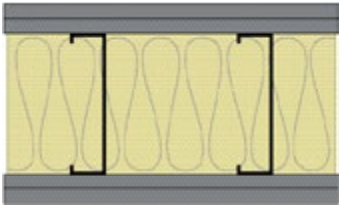










Design Details	Description	Acoustical	Fire
<p>PGD-01-10-145</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws (for fire 1" Type S drywall screws) 8" o.c. at edges and 12" o.c. in the field.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 43 mil (18 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Resilient channel applied at right-angle, 24" o.c.  1/2" Type S screws attaching resilient channel to stud at each intersection.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" #6 Type S drywall screws spaced 12" o.c. 	<p>STC 47 NOAL 18-0740</p>	<p>1 Hour UL U425</p>
<p>5-3/8" Thick, 5.8 lb/ft², Non-Load Bearing. Vertical joints staggered on opposite sides.</p>			
<p>PGD-01-10-212</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws (for fire minimum 1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field).  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 43 mil (18 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws (for fire minimum 1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field). 	<p>STC 38 NOAL 18-0739</p>	<p>1 Hour UL U425</p>
<p>4-7/8" Thick, 5.7 lb/ft², Load Bearing. Vertical joints staggered on opposite sides.</p>			

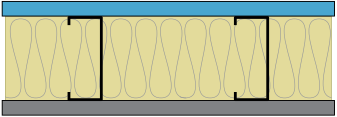






Design Details	Description	Acoustical	Fire
<p>PGD-01-10-151</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws (for fire 1" Type S drywall screws) spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 43 mil (18 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Base layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws (for fire 1" Type S drywall screws) spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 45 NOAL 18-0735</p>	<p>1 Hour UL U425</p>
<p>5-1/2" Thick, 8.3 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		
<p>PGD-01-10-212</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws (for fire minimum 1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field).  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 43 mil (18 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws (for fire minimum 1" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field). 	<p>STC 38 NOAL 18-0739</p>	<p>1 Hour UL U425</p>
<p>4-7/8" Thick, 5.7 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

Design Details	Description	Acoustical	Fire
<p>PGD-01-20-021</p> 	<ul style="list-style-type: none">  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws (for fire 1" Type S drywall screws) spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 43 mil (18 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws (for fire 1" Type S drywall screws) spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 42 NOAL 18-0737</p>	<p>2 Hour UL U425</p>
<p>6-1/8" Thick, 9.9 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

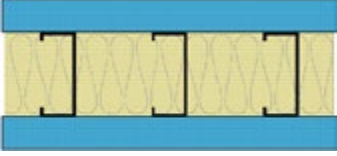













Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-155</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1008 415">  1" Type S drywall screws 12" o.c. in the field. <li data-bbox="532 485 1081 531">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 590 935 625">  6" 43 mil (18 ga.) steel studs, 24" o.c. <li data-bbox="532 695 987 730">  6-1/2" glass fiber insulation in stud space. <li data-bbox="532 800 1081 846">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 905 1008 940">  1" Type S drywall screws 12" o.c. in the field. 	<p data-bbox="1166 636 1235 657">STC 55</p> <p data-bbox="1133 667 1268 688">NOAL 18-1024</p>	<p data-bbox="1382 636 1451 657">1 Hour</p> <p data-bbox="1377 667 1456 688">UL U425</p>
<p data-bbox="136 982 472 1003">7-1/4" Thick, 6.8 lb/ft², Load Bearing.</p>	<p data-bbox="521 982 927 1003">Vertical joints staggered on opposite sides.</p>		
<p data-bbox="212 1066 394 1094">PGD-01-10-161</p> 	<ul style="list-style-type: none"> <li data-bbox="532 1094 1008 1129">  1" Type S drywall screws 12" o.c. in the field. <li data-bbox="532 1199 1081 1245">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 1304 935 1339">  6" 43 mil (18 ga.) steel studs, 24" o.c. <li data-bbox="532 1409 987 1444">  6-1/2" glass fiber insulation in stud space. <li data-bbox="532 1493 1057 1581">  5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1619 1008 1654">  1" Type S drywall screws 12" o.c. in the field. <li data-bbox="532 1703 1057 1791">  5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1829 1045 1864">  1-5/8" Type S drywall screws 12" o.c. in the field. 	<p data-bbox="1166 1455 1235 1476">STC 54</p> <p data-bbox="1133 1486 1268 1507">NOAL 18-1025</p>	<p data-bbox="1382 1455 1451 1476">1 Hour</p> <p data-bbox="1377 1486 1456 1507">UL U425</p>
<p data-bbox="136 1906 472 1927">7-7/8" Thick, 8.4 lb/ft², Load Bearing.</p>	<p data-bbox="521 1906 927 1927">Vertical joints staggered on opposite sides.</p>		

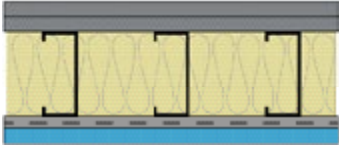










Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-165</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1003 415">  1" Type S drywall screws 12" o.c. in the field. <li data-bbox="532 485 1081 531">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 590 935 625">  6" 43 mil (18 ga.) steel studs, 24" o.c. <li data-bbox="532 695 987 730">  6-1/2" glass fiber insulation in stud space. <li data-bbox="532 779 1057 867">  5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 905 1003 940">  1" Type S drywall screws 12" o.c. in the field. 	<p data-bbox="1133 636 1271 695" style="text-align: center;">STC 50 NOAL 18-1023</p>	<p data-bbox="1377 636 1458 695" style="text-align: center;">1 Hour UL U425</p>
<p data-bbox="131 982 480 1010">7-1/4" Thick, 6.25 lb/ft², Load Bearing.</p>		<p data-bbox="521 982 927 1010">Vertical joints staggered on opposite sides.</p>	
<p data-bbox="212 1071 394 1098">PGD-01-10-171</p> 	<ul style="list-style-type: none"> <li data-bbox="532 1098 1003 1134">  1" Type S drywall screws 12" o.c. in the field. <li data-bbox="532 1182 1057 1270">  5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1308 935 1344">  6" 43 mil (18 ga.) steel studs, 24" o.c. <li data-bbox="532 1413 987 1449">  6-1/2" glass fiber insulation in stud space. <li data-bbox="532 1497 1057 1585">  5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1623 1003 1659">  1" Type S drywall screws 12" o.c. in the field. 	<p data-bbox="1133 1354 1271 1413" style="text-align: center;">STC 44 NOAL 18-1031</p>	<p data-bbox="1377 1354 1458 1413" style="text-align: center;">1 Hour UL U425</p>
<p data-bbox="131 1701 480 1728">7-1/4" Thick, 5.7 lb/ft², Load Bearing.</p>		<p data-bbox="521 1701 927 1728">Vertical joints staggered on opposite sides.</p>	

Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 391 380">PGD-01-10-181</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 1040 422">  1-5/8" Type S drywall screws 12" o.c. in the field. <li data-bbox="529 464 1081 548">  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 590 1000 632">  1" Type S drywall screws 12" o.c. in the field. <li data-bbox="529 674 1081 758">  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 800 935 842">  6" 43 mil (18 ga.) steel studs, 24" o.c. <li data-bbox="529 884 984 926">  6-1/2" glass fiber insulation in stud space. <li data-bbox="529 968 1081 1052">  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 1094 1000 1136">  1" Type S drywall screws 12" o.c. in the field. <li data-bbox="529 1178 1081 1262">  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 1304 1040 1346">  1-5/8" Type S drywall screws 12" o.c. in the field. 	<p data-bbox="1166 835 1235 856">STC 50</p> <p data-bbox="1133 867 1268 888">NOAL 18-1028</p>	<p data-bbox="1382 835 1451 856">1 Hour</p> <p data-bbox="1373 867 1459 888">UL U425</p>
<p data-bbox="136 1377 472 1398">8-1/2" Thick, 9.9 lb/ft², Load Bearing.</p>	<p data-bbox="521 1377 927 1398">Vertical joints staggered on opposite sides.</p>		








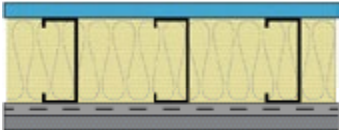








Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-260</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 1089 426">  1-1/8" Type S drywall screws 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="529 485 1089 531">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR Type X gypsum panel applied vertically. <li data-bbox="529 590 1089 636">  3-5/8" 54 mil (16 ga.) steel studs, 24" o.c. <li data-bbox="529 695 1089 741">  3-1/2" glass fiber insulation in stud space. <li data-bbox="529 800 1089 867">  5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 905 1089 951">  1-1/8" Type S drywall screws 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 625 1235 653">STC 49</p> <p data-bbox="1122 659 1279 705">WEAL TL 10-395 5/7/10</p>	<p data-bbox="1382 625 1451 653">1 Hour</p> <p data-bbox="1354 659 1479 705">UL U425 GA WP-1088</p>
<p data-bbox="142 982 477 1010">4-7/8" Thick, 6.4 lb/ft², Load Bearing.</p>	<p data-bbox="521 982 927 1010">Vertical joints staggered on opposite sides.</p>		

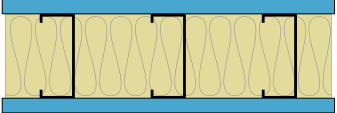






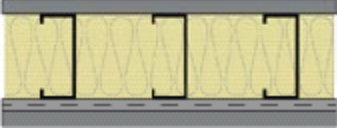








QuietRock Assemblies 54 mil (16 ga.) Single Steel

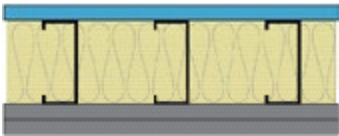








Design Details	Description	Acoustical	Fire
<p>PGD-01-20-031</p> 	<ul style="list-style-type: none">  1-7/8" Type S drywall screws (for fire 2" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field.  Single 1-3/8" QuietRock® 545 gypsum panel applied vertically.  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Single 1-3/8" QuietRock® 545 gypsum panel applied vertically.  1-7/8" Type S drywall screws (for fire 2" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 60 NOAL 18-0910</p>	<p>2 Hour UL W466, U425</p>
<p>6-3/8" Thick, 13.4 lb/ft², Load Bearing.</p>		<p>Vertical joints staggered on opposite sides.</p>	
<p>PGD-01-10-251</p> 	<ul style="list-style-type: none">  1-7/8" Type S drywall screws (for fire 2" Type S screws) spaced 8" o.c. at edges and 12" o.c. in the field).  Single 1-3/8" QuietRock® 545 gypsum panel applied vertically.  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 52 NOAL 18-0909</p>	<p>1 Hour UL 425</p>
<p>5-5/8" Thick, 9.6 lb/ft², Load Bearing.</p>		<p>Vertical joints staggered on opposite sides.</p>	

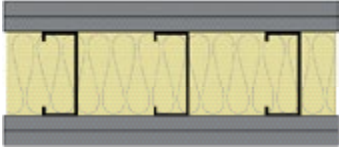










Design Details	Description	Acoustical	Fire
<p>PGD-01-10-255</p> 	<ul style="list-style-type: none">  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4 Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Base layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Resilient channel applied at right-angle, 24" o.c.  1/2" Type S screws attaching resilient channel to stud at each intersection.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  1" Type S drywall screws spaced and 12" o.c. 	<p>STC 54 NOAL 18-0640</p>	<p>1 Hour UL U425</p>
<p>6" Thick, 8.6 b/ft², Non-Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		








QuietRock Assemblies 54 mil (16 ga.) Single Steel

Design Details	Description	Acoustical	Fire
<p>PGD-01-10-261</p> 	<ul style="list-style-type: none">  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® 530 type X gypsum panel applied vertically.  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  One Layer 5/8" QuietRock® 530 type X gypsum panel applied vertically.  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 51 NOAL 18-0911</p>	<p>1 Hour UL U425</p>
<p>4-7/8" Thick, 7.3 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		
<p>PGD-01-10-265</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Resilient channel applied at right-angle, 24" o.c.  1/2" Type S screws attaching resilient channel to stud at each intersection.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S drywall screws spaced and 12" o.c. 	<p>STC 50 NOAL 18-0637</p>	<p>1 Hour UL U425</p>
<p>5-3/8" Thick, 6.6 lb/ft², Non-Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

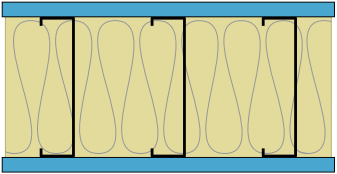






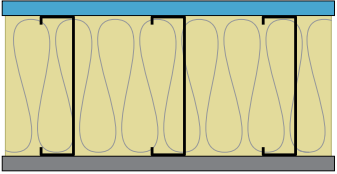






Design Details	Description	Acoustical	Fire
<p>PGD-01-10-270</p> 	<ul style="list-style-type: none">  1-1/8" Type S drywall screws 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR Type X gypsum panel applied vertically.  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  1-1/8" Type S drywall screws 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 48 WEAL-TL-10-394</p>	<p>1 Hour UL U425</p>
<p>4-7/8" Thick, 7.2 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered 16" on opposite sides.</p>		
<p>PGD-01-10-280</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Resilient channel applied at right-angle, 24" o.c.  1/2" Type S screws attaching resilient channel to stud at each intersection.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S drywall screws spaced 12" o.c. in the field. 	<p>STC 46 NOAL 18-0632</p>	<p>1 Hour UL U425</p>
<p>5-3/8" Thick, 6 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered 16" on opposite sides.</p>		

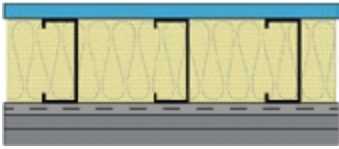










Design Details	Description	Acoustical	Fire
<p>PGD-01-10-271</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S drywall screws 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 45 NOAL 18-0626</p>	<p>1 Hour UL U425</p>
<p>5-1/2" Thick, 8.5 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

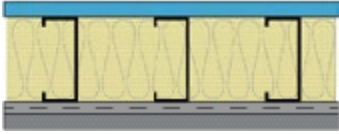








Design Details	Description	Acoustical	Fire
<p>PGD-01-20-041</p> 	<ul style="list-style-type: none">  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 44 NOAL 18-0514</p>	<p>2 Hour UL U411</p>
<p>6-1/8" Thick, 10 lb/ft², Non-Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

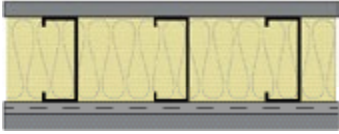








Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-281</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 1084 426">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="529 464 1084 548">  One layer 5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 585 1084 632">  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c. <li data-bbox="529 690 1084 737">  3-1/2" glass fiber insulation in stud space. <li data-bbox="529 774 1084 858">  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 896 1084 942">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 638 1235 665">STC 37</p> <p data-bbox="1133 674 1268 701">NOAL 18-0913</p>	<p data-bbox="1382 638 1451 665">1 Hour</p> <p data-bbox="1377 674 1456 701">UL U425</p>
<p data-bbox="142 982 477 1010">4-7/8" Thick, 5.9 lb/ft², Load Bearing.</p>	<p data-bbox="521 982 927 1010">Vertical joints staggered on opposite sides.</p>		

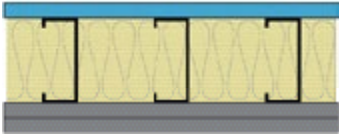








QuietRock Assemblies 54 mil (16 ga.) Single Steel

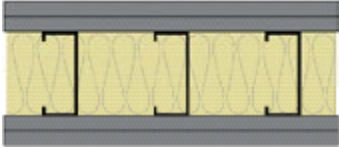










Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-240</p> 	<ul style="list-style-type: none"> <li data-bbox="532 373 1081 426">  1-1/8" Type drywall screws (for fire 1" Type S drywall screws) 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 478 1081 531">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 583 1081 625">  6" 54 mil (16 ga.) steel studs, 16" o.c. <li data-bbox="532 688 1081 730">  6" glass fiber insulation in stud space. <li data-bbox="532 793 1081 846">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 898 1081 951">  1-1/8" Type drywall screws (for fire 1" Type S drywall screws) 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1122 632 1279 688">STC 53 WEAL-TL-10-399</p>	<p data-bbox="1357 621 1474 705">1 Hour UL U425, GA WP-1359</p>
<p data-bbox="134 978 472 1003">7-1/4" Thick, 7.6 lb/ft², Load Bearing.</p>	<p data-bbox="521 978 927 1003">Vertical joints staggered on opposite sides.</p>		
<p data-bbox="212 1066 394 1094">PGD-01-10-250</p> 	<ul style="list-style-type: none"> <li data-bbox="532 1087 1081 1140">  1-1/8" Type drywall screws (for fire 1" Type S drywall screws) 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 1192 1081 1245">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 1297 1081 1339">  6" 54 mil (16 ga.) steel studs, 16" o.c. <li data-bbox="532 1402 1081 1444">  6" glass fiber insulation in stud space. <li data-bbox="532 1486 1081 1581">  5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1612 1081 1665">  1-1/8" Type drywall screws (for fire 1" Type S drywall screws) 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1122 1346 1279 1402">STC 49 WEAL-TL-10-398</p>	<p data-bbox="1357 1335 1474 1419">1 Hour UL U425, GA WP-1086</p>
<p data-bbox="134 1692 472 1717">7-1/4" Thick, 7.2 lb/ft², Load Bearing.</p>	<p data-bbox="521 1692 927 1717">Vertical joints staggered on opposite sides.</p>		










Design Details	Description	Acoustical	Fire
<p>PGD-01-10-290</p> 	<ul style="list-style-type: none">  1-1/4" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 68 mil (14 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Resilient channel applied at right-angle, 24" o.c.  1/2" Type S screws attaching resilient channel to stud at each intersection.  Base layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S drywall screws at 12" o.c. 	<p style="text-align: center;">STC 56 NOAL 18-0612</p>	<p style="text-align: center;">1 Hour UL U425</p>
<p>6" Thick, 9 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

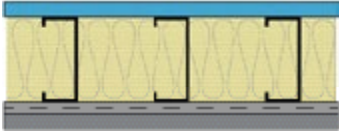








Design Details	Description	Acoustical	Fire
<p>PGD-01-10-310</p> 	<ul style="list-style-type: none">  1-1/4" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 68 mil (14 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Resilient channel applied at right-angle, 24" o.c.  1/2" Type S screws attaching resilient channel to stud at each intersection.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 50 NOAL 18-0611</p>	<p>1 Hour UL U425</p>
<p>5-3/8" Thick, 6.9 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

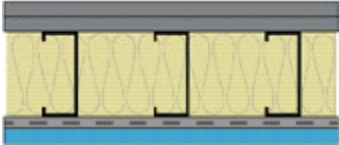










Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-314</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1078 426">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 464 1078 548">  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 585 1078 627">  3-5/8" 68 mil (14 ga.) steel studs, 16" o.c. <li data-bbox="532 686 1078 728">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 787 1078 829">  Resilient channel applied at right-angle, 24" o.c. <li data-bbox="532 888 1078 930">  1/2" Type S screws attaching resilient channel to stud at each intersection. <li data-bbox="532 989 1078 1073">  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1110 1078 1152">  1" Type S drywall screws spaced 12" o.c. 	<p data-bbox="1166 743 1235 764">STC 46</p> <p data-bbox="1133 774 1268 795">NOAL 18-0616</p>	<p data-bbox="1382 743 1451 764">1 Hour</p> <p data-bbox="1373 774 1459 795">UL U425</p>
<p data-bbox="131 1192 475 1220">5-3/8" Thick, 6.3 lb/ft², Load Bearing.</p>	<p data-bbox="524 1192 927 1220">Vertical joints staggered on opposite sides.</p>		

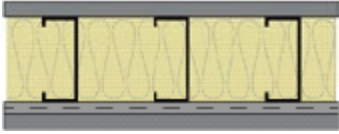








Design Details	Description	Acoustical	Fire
<p>PGD-01-10-315</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 68 mil (14 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Base layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 45 NOAL 18-0608</p>	<p>1 Hour UL U425</p>
<p>5.1/2" Thick, 8.8 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

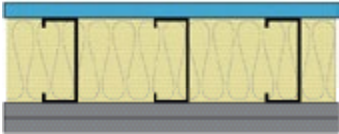








Design Details	Description	Acoustical	Fire
<p>PGD-01-20-065</p> 	<ul style="list-style-type: none">  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws 16" o.c. (for fire minimum 1-5/8" Type S screws spaced 8" o.c. at edges and 12" o.c. in the field).  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 68 mil (14 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 43 NOAL 18-0620</p>	<p>2 Hour UL U425</p>
<p>6-1/8" Thick, 10.3 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

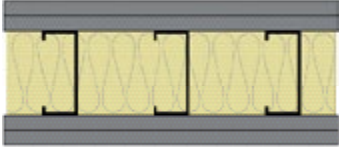










Design Details	Description	Acoustical	Fire
<p>PGD-01-10-320</p> 	<ul style="list-style-type: none">  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" #6 Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 68 mil (14 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 38 NOAL 18-0623</p>	<p>1 Hour UL U425</p>
<p>4-7/8" Thick, 6.2 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		








Design Details	Description	Acoustical	Fire
<p>PGD-01-10-345</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 97 mil (12 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Resilient channel applied at right-angle, 24" o.c.  1/2" Type S screws attaching resilient channel to stud at each intersection.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S drywall screws spaced 12" o.c. 	<p>STC 50 NOAL 18-0729</p>	<p>1 Hour UL U425</p>
<p>5-3/8" Thick, 7.7 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

Design Details	Description	Acoustical	Fire
<p>PGD-01-10-340</p> 	<ul style="list-style-type: none">  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Base layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 97 mil (12 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Resilient channel applied at right-angle, 24" o.c.  1/2" Type S screws attaching resilient channel to stud at each intersection.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  1" Type S drywall screws spaced 12" o.c. 	<p>STC 56 NOAL 18-0732</p>	<p>1 Hour UL U425</p>
<p>6" Thick, 9.9 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-350</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 1081 426">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="529 464 1081 548">  Base layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 585 1081 632">  3-5/8" 97 mil (12 ga.) steel studs, 16" o.c. <li data-bbox="529 690 1081 737">  3-1/2" glass fiber insulation in stud space. <li data-bbox="529 795 1081 842">  Resilient channel applied at right-angle, 24" o.c. <li data-bbox="529 900 1081 947">  1/2" Type S screws attaching resilient channel to stud at each intersection. <li data-bbox="529 1005 1081 1089">  Single layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 1127 1081 1173">  1" Type S drywall screws spaced 12" o.c. 	<p data-bbox="1130 743 1271 800">STC 47 NOAL 18-0724</p>	<p data-bbox="1373 743 1458 800">1 Hour UL U425</p>
<p data-bbox="131 1199 475 1222">5-3/8" Thick, 7.2 lb/ft², Load Bearing.</p>	<p data-bbox="521 1199 927 1222">Vertical joints staggered on opposite sides.</p>		

Design Details	Description	Acoustical	Fire
<p>PGD-01-10-355</p> 	<ul style="list-style-type: none">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  3-5/8" 97 mil (12 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Base layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 43 NOAL 18-0721</p>	<p>1 Hour UL U425</p>
<p>5.1/2" Thick, 9.7 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

Design Details	Description	Acoustical	Fire
<p>PGD-01-20-075</p> 	<ul style="list-style-type: none">  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-5/8" 97 mil (12 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 40 NOAL 18-0605</p>	<p>2Hour UL U425</p>
<p>6-1/8" Thick, 11.1 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-360</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 1081 426">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="529 464 1081 548">  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 585 1081 611">  3-5/8" 97 mil (12 ga.) steel studs, 16" o.c. <li data-bbox="529 690 1081 716">  3-1/2" glass fiber insulation in stud space. <li data-bbox="529 774 1081 858">  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 896 1081 942">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 632 1235 657">STC 38</p> <p data-bbox="1133 663 1268 688">NOAL 18-0603</p>	<p data-bbox="1382 632 1451 657">1 Hour</p> <p data-bbox="1373 663 1459 688">UL U425</p>
<p data-bbox="142 968 464 993">4-7/8" Thick, 7 lb/ft², Load Bearing.</p>	<p data-bbox="521 968 927 993">Vertical joints staggered on opposite sides.</p>		

Walls & Interior Partitions

Staggered Steel Frame

ASSEMBLY COMPONENTS AND PICTOGRAMS

The assemblies in this guide have been divided into sections by framing material type and ordered by design file number. The assembly details are listed in order starting from the outermost layer (attachment); working from top to bottom and ending with the stud or insulation. Pictograms have been added to each assembly detail to provide visual separation of the individual assembly components.

Attachment: identifies screw/nail type, placement, and spacing for attachment of the face layer



QuietRock Layer: identifies the QuietRock product use as a face layer



Framing: Identifies stud framing material, size, thickness, spacing and/or unique framing methods



Insulation: Identifies insulation type, size used to fill assembly cavity (if applicable)



Base Layer: Identifies the PABCO Gypsum product that may be used



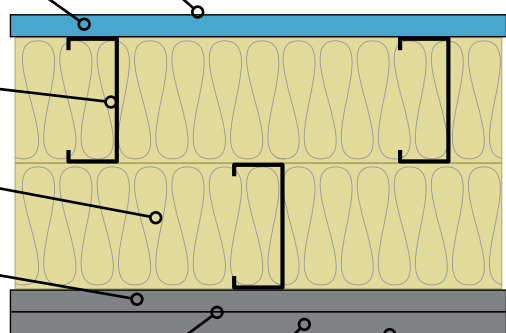
Attachment: identifies screw/nail type, placement, and spacing for attachment of the face layer

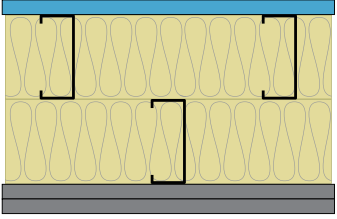










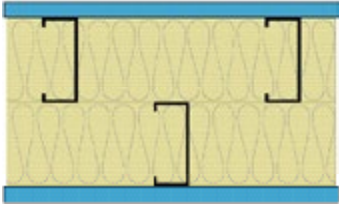






Face Layer: Identifies the PABCO Gypsum product that may be used

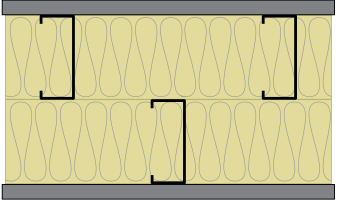








Attachment: identifies screw/nail type, placement, and spacing for attachment of the face layer



Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-003</p> 	<ul style="list-style-type: none"> <li data-bbox="532 390 1081 436">  1" type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 506 1081 552">  Face Layer: 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 621 1081 667">  Staggered-double row 3-5/8" 15 mil (25 ga. EQ) steel studs, 16" o.c. <li data-bbox="532 737 1081 762">  6-1/4" glass fiber insulation in stud space. <li data-bbox="532 831 1081 905">  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 936 1081 982">  1" type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 1031 1081 1104">  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1157 1081 1203">  1-5/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 764 1235 785">STC 65</p> <p data-bbox="1133 800 1268 821">NOAL 17-0914</p>	<p data-bbox="1382 764 1451 785">1 Hour</p> <p data-bbox="1377 800 1456 821">UL V464</p>
<p data-bbox="110 1241 496 1262">9-1/8" Thick, 8.1 lb/ft², Non-Load Bearing.</p>	<p data-bbox="524 1241 927 1262">Vertical joints staggered on opposite sides.</p>		

Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-017</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 1081 426">  1" type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="529 485 1081 531">  Face layer: 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="529 600 1081 646">  Staggered-double row 3-5/8" 15 mil (25 ga. EQ) steel studs, 16" o.c. <li data-bbox="529 705 1081 751">  6-1/4" glass fiber insulation in stud space. <li data-bbox="529 810 1081 856">  Face layer: 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="529 915 1081 961">  1" type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 642 1235 669">STC 63</p> <p data-bbox="1133 674 1268 701">NOAL 17-0912</p>	<p data-bbox="1382 642 1451 669">1 Hour</p> <p data-bbox="1377 674 1456 701">UL V464</p>
<p data-bbox="110 995 496 1022">8-1/2" Thick, 6.7 lb/ft², Non-Load Bearing.</p>		<p data-bbox="521 995 927 1022">Vertical joints staggered on opposite sides.</p>	

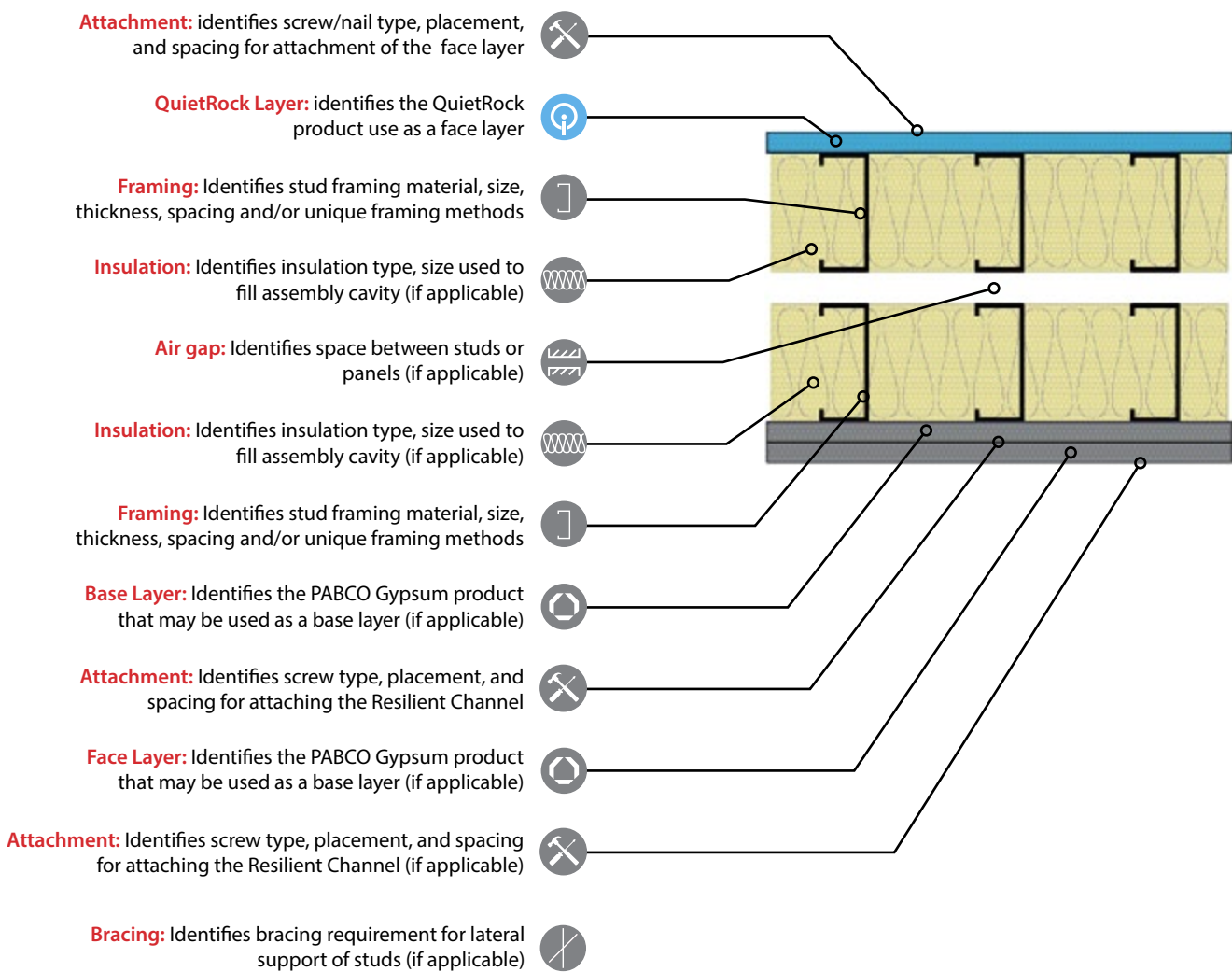
Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-023</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 1081 426">  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="529 464 1081 548">  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 579 1081 625">  Staggered-double row (no air space) 3-5/8" 15 mil (25 ga. EQ) steel studs, 16" o.c. <li data-bbox="529 684 1081 730">  6-1/4" glass fiber insulation in stud space. <li data-bbox="529 768 1081 852">  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 884 1081 930">  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 632 1235 653">STC 56</p> <p data-bbox="1133 663 1268 684">NOAL 17-0917</p>	<p data-bbox="1360 642 1471 663">Non-Rated</p>
<p data-bbox="110 968 496 989">8-1/2" Thick, 5.2 lb/ft², Non-Load Bearing.</p>	<p data-bbox="521 968 927 989">Vertical joints staggered on opposite sides.</p>		

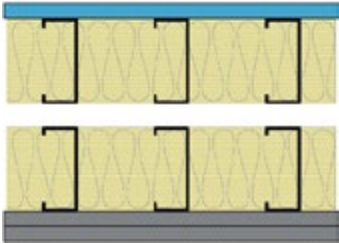











Walls & Interior Partitions

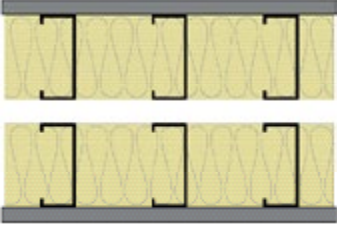









Double Steel Frame

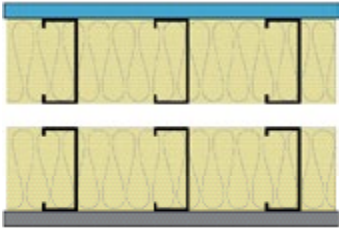









ASSEMBLY COMPONENTS AND PICTOGRAMS

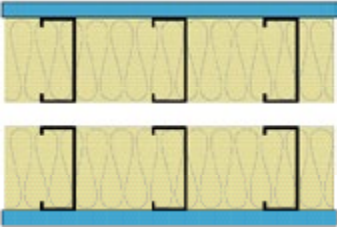









The assemblies in this guide have been divided into sections by framing material type and ordered by design file number. The assembly details are listed in order starting from the outermost layer (attachment); working from top to bottom and ending with the stud or insulation. Pictograms have been added to each assembly detail to provide visual separation of the individual assembly components.

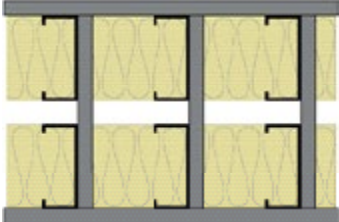





















Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 396 380">PGD-01-00-012</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1081 426">  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 478 1081 525">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 577 1081 623">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 676 1081 722">  3-5/8" 15 mil (25 ga. EQ) steel studs, 16" o.c. <li data-bbox="532 774 1081 821">  1" air gap. <li data-bbox="532 873 1081 919">  3-5/8" 15 mil (25 ga. EQ) steel studs, 16" o.c. <li data-bbox="532 972 1081 1018">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 1071 1081 1180">  Base layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1211 1081 1257">  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 1289 1081 1398">  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1409 1081 1455">  2" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 894 1235 921">STC 66</p> <p data-bbox="1133 926 1268 953">NOAL 17-0926</p>	<p data-bbox="1360 894 1471 921">Non-Rated</p>
<p data-bbox="107 1497 500 1524">10-1/8" Thick, 8.1 lb/ft², Non-Load Bearing.</p>	<p data-bbox="524 1497 927 1524">Vertical joints staggered on opposite sides.</p>		

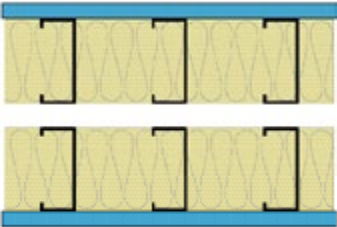









Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-00-016</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1081 426">  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 464 1081 552">  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 590 1081 625">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 684 1081 730">  3-5/8" 15 mil (25 ga. EQ) steel studs, 16" o.c. <li data-bbox="532 789 1081 835">  1" air gap. <li data-bbox="532 894 1081 940">  3-5/8" 15 mil (25 ga. EQ) steel studs, 16" o.c. <li data-bbox="532 999 1081 1045">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 1083 1081 1171">  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1209 1081 1255">  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 789 1235 816">STC 58</p> <p data-bbox="1133 825 1268 852">NOAL 17-0929</p>	<p data-bbox="1360 806 1471 833">Non-Rated</p>
<p data-bbox="110 1293 496 1320">9-1/2" Thick, 5.3 lb/ft², Non-Load Bearing.</p>	<p data-bbox="524 1293 927 1320">Vertical joints staggered on opposite sides.</p>		

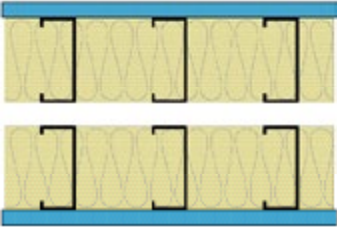









Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-00-018</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1081 426">  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 478 1081 525">  One Layer: 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 577 1081 623">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 676 1081 722">  3-5/8" 15 mil (25 ga. EQ) steel studs, 16" o.c. <li data-bbox="532 774 1081 821">  1" air gap. <li data-bbox="532 873 1081 919">  3-5/8" 15 mil (.0155" 25 ga. EQ) steel studs, 16" o.c. <li data-bbox="532 972 1081 1018">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 1071 1081 1180">  One layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1211 1081 1257">  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 789 1235 816">STC 61</p> <p data-bbox="1133 823 1268 850">NOAL 17-0925</p>	<p data-bbox="1360 806 1471 833">Non-Rated</p>
<p data-bbox="110 1293 496 1320">9-1/2" Thick, 5.9 lb/ft², Non-Load Bearing.</p>	<p data-bbox="524 1293 927 1320">Vertical joints staggered on opposite sides.</p>		

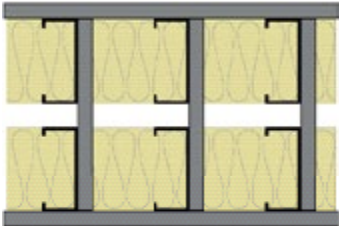










Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-10-142</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1078 426">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 478 1078 525">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 577 1078 623">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 676 1078 722">  3-5/8" 33 mil (20 ga.) steel studs, 16" o.c. <li data-bbox="532 774 1078 821">  1" air gap. <li data-bbox="532 873 1078 919">  3-5/8" 33 mil (20 ga.) steel studs, 16" o.c. <li data-bbox="532 972 1078 1018">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 1071 1078 1117">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 1169 1078 1215">  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 789 1235 816">STC 64</p> <p data-bbox="1133 823 1268 850">NOAL 18-1004</p>	<p data-bbox="1382 789 1451 816">1 Hour</p> <p data-bbox="1377 823 1456 850">UL V464</p>
<p data-bbox="110 1289 496 1316">9-1/2" Thick, 7.6 lb/ft², Non-Load Bearing.</p>	<p data-bbox="524 1289 927 1316">Vertical joints staggered on opposite sides.</p>		

Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-20-064</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1081 426">  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 464 1081 552">  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 590 1081 625">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 684 1081 730">  3-5/8" 33 mil (20 ga.) steel studs, 16" o.c. <li data-bbox="532 768 1081 951">  Bracing required for Fire: 4-1/4" long cut from the steel runners, fastened to the studs with two #8 1/2" self-drilling, self-tapping steel screws in each stud. Alternate method: cut from the gypsum wallboard, 9-1/2" long by 12" wide (maximum cavity depth of 9-1/2"), fastened to the studs with three Type S wallboard screws in each stud. Spacing of bracing not to exceed 48" o.c. <li data-bbox="532 989 1081 1035">  1" air gap. <li data-bbox="532 1094 1081 1140">  3-5/8" 33 mil (20 ga.) steel studs, 16" o.c. <li data-bbox="532 1199 1081 1234">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 1293 1081 1381">  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1419 1081 1465">  1" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 888 1235 909">STC 59</p> <p data-bbox="1133 919 1268 940">NOAL 18-1001</p>	<p data-bbox="1382 888 1451 909">1 Hour</p> <p data-bbox="1377 919 1456 940">UL U420</p>
<p data-bbox="110 1486 496 1507">9-1/2" Thick, 6.5 lb/ft², Non-Load Bearing.</p>	<p data-bbox="524 1486 927 1507">Vertical joints staggered on opposite sides.</p>		

Design Details	Description	Acoustical	Fire
<p>PGD-01-00-022</p>	<ul style="list-style-type: none">  1-7/8" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Single 1-5/16" QuietRock® 545 gypsum panel applied vertically.  3-1/2" glass fiber insulation in stud space.  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c.  1" air gap.  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  One layer 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-1/4" Type S drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 65 NOAL 18-0917</p>	<p>Non-Rated</p>
<p>10-3/16" Thick, 11.3 lb/ft², Non-Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 396 380">PGD-01-20-042</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1078 426">  1-1/4" Type S-12 drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 478 1078 525">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 577 1078 623">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 676 1078 722">  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c. <li data-bbox="532 774 1078 821">  1" air gap. <li data-bbox="532 873 1078 919">  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c. <li data-bbox="532 972 1078 1018">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 1071 1078 1117">  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 1169 1078 1215">  1-1/4" Type S-12 drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 789 1235 816">STC 64</p> <p data-bbox="1133 823 1268 850">NOAL 18-0920</p>	<p data-bbox="1382 789 1451 816">1 Hour</p> <p data-bbox="1377 823 1456 850">UL V464</p>
<p data-bbox="110 1289 496 1316">9-1/2" Thick, 8.8 lb/ft², Non-Load Bearing.</p>	<p data-bbox="526 1289 927 1316">Vertical joints staggered on opposite sides.</p>		

Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-01-20-054</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1073 426">  1" Type S-12 drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="532 485 1073 531">  One Layer 5/8" QuietRock® 530 type X gypsum panel applied vertically. <li data-bbox="532 590 1073 636">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 695 1073 741">  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c. <li data-bbox="532 800 1073 846">  1" air gap. <li data-bbox="532 905 1073 951">  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c. <li data-bbox="532 1010 1073 1056">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 1115 1073 1161">  One Layer 5/8" QuietRock® 530 type X gypsum panel applied vertically. <li data-bbox="532 1220 1073 1266">  1" Type S-12 drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p data-bbox="1166 789 1235 816">STC 60</p> <p data-bbox="1133 823 1268 850">NOAL 18-0919</p>	<p data-bbox="1382 789 1451 816">1 Hour</p> <p data-bbox="1377 823 1456 850">UL V464</p>
<p data-bbox="110 1289 496 1316">9-1/2" Thick, 8.9 lb/ft², Non-Load Bearing.</p>	<p data-bbox="524 1289 927 1316">Vertical joints staggered on opposite sides.</p>		

Design Details	Description	Acoustical	Fire
<p>PGD-01-20-048</p> 	<ul style="list-style-type: none">  1" Type S-12 drywall screws spaced 8" o.c. at edges and 12" o.c. in the field.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  3-1/2" glass fiber insulation in stud space.  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c.  Bracing required for Fire: 4-1/4" long cut from the steel runners, fastened to the studs with two, #8 1/2" self-drilling or self-tapping steel screws in each stud. Alternate method: cut from the gypsum wallboard, 9-1/2" long by 12" wide (maximum cavity depth of 9-1/2"), fastened to the studs with three Type S wallboard screws in each stud. Spacing of bracing not to exceed 48" o.c.  1" air gap.  3-5/8" 54 mil (16 ga.) steel studs, 16" o.c.  3-1/2" glass fiber insulation in stud space.  Face layer: 5/8" type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1" Type S-12 drywall screws spaced 8" o.c. at edges and 12" o.c. in the field. 	<p>STC 58 NOAL 18-0914</p>	<p>1 Hour UL U420</p>
<p>9-1/2" Thick, 7.6 lb/ft², Non-Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

Walls & Interior Partitions

Single Wood Frame

ASSEMBLY COMPONENTS AND PICTOGRAMS

The assemblies in this guide have been divided into sections by framing material type and ordered by design file number. The assembly details are listed in order starting from the outermost layer (attachment); working from top to bottom and ending with the stud or insulation. Pictograms have been added to each assembly detail to provide visual separation of the individual assembly components.

Attachment: identifies screw/nail type, placement, and spacing for attachment of the face layer



Face Layer: identifies the QuietRock product use as a face layer



Attachment: identifies screw/nail type, placement, and spacing for attachment of the face layer



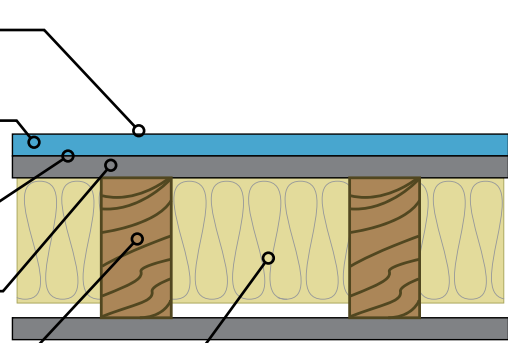
Base Layer: Identifies the PABCO Gypsum product that may be used as a base layer (if applicable)



Framing: Identifies stud framing material, size, spacing and/or unique framing methods

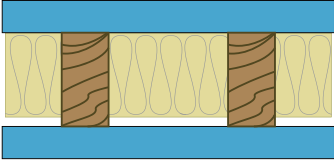






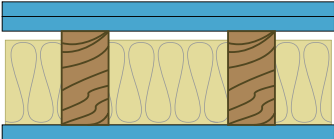










Insulation: Identifies insulation type, size used to fill assembly cavity (if applicable)

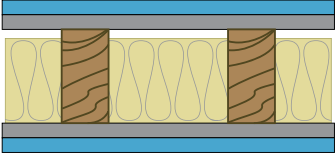












QuietRock Assemblies 2x4 Single Wood



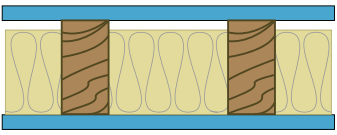






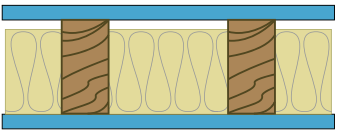






Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-02-10-035</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1081 426">  2-1/4" Type S or W drywall screws 16" o.c. (for fire 2" screws spaced 12" o.c.). <li data-bbox="532 485 1081 531">  One Layer 1-3/8" QuietRock® 545 applied vertically or horizontally. <li data-bbox="532 590 1081 636">  2 x 4 wood studs 24" o.c. <li data-bbox="532 695 1081 741">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 800 1081 846">  One Layer 1-3/8" QuietRock® 545 applied vertically or horizontally. <li data-bbox="532 905 1081 951">  2-1/4" Type S or W drywall screws 16" o.c. (for fire 2" screws spaced 8" o.c. in the perimeter and 12" o.c. in the field). 	<p data-bbox="1117 636 1284 695" style="text-align: center;">STC 60 NRCC TLA-05-048</p>	<p data-bbox="1377 636 1458 695" style="text-align: center;">1 Hour UL U305</p>
<p data-bbox="142 982 477 1010">6-1/4" Thick, 15.1 lb/ft², Load Bering.</p>	<p data-bbox="521 982 927 1010">Vertical joints staggered on opposite sides.</p>		
<p data-bbox="212 1066 394 1094">PGD-02-10-070</p> 	<ul style="list-style-type: none"> <li data-bbox="532 1083 1081 1150">  2" Type S drywall screws spaced 16" o.c. (for fire 1-5/8" screws spaced 12" o.c. in the perimeter and 8" o.c. in the field). <li data-bbox="532 1199 1081 1245">  Face layer: 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically. <li data-bbox="532 1293 1081 1360">  2" Type S drywall screws spaced 16" o.c. (for fire 1-5/8" screws spaced 12" o.c. in the perimeter and 8" o.c. in the field). <li data-bbox="532 1409 1081 1455">  Base layer: 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically. <li data-bbox="532 1514 1081 1560">  2 x 4 wood studs 24" o.c. <li data-bbox="532 1619 1081 1665">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 1713 1081 1780">  Opposite side one layer: 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically. <li data-bbox="532 1829 1081 1896">  2" Type S drywall screws spaced 16" o.c. (for fire 1-5/8" screws spaced 12" o.c. in the perimeter and 8" o.c. in the field). 	<p data-bbox="1117 1455 1284 1514" style="text-align: center;">STC 57 NRCC TLA-04-035</p>	<p data-bbox="1377 1455 1458 1514" style="text-align: center;">1 Hour UL U309</p>
<p data-bbox="159 1913 461 1940">6" Thick, 9.7 lb/ft², Load Bearing.</p>	<p data-bbox="521 1913 1057 1940">Vertical joints staggered all layers, and on opposite sides.</p>		



Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 396 380">PGD-02-10-080</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1073 426">  1-5/8" Type S screws spaced 16" o.c. (for fire 1-5/8" drywall screws spaced 8" o.c.). <li data-bbox="532 485 1094 531">  Face layer: 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically. <li data-bbox="532 590 1073 636">  1-5/8" Type S screws spaced 16" o.c. (for fire 1-7/8" Type S drywall screws spaced 7" o.c.). <li data-bbox="532 695 1073 741">  Base layer: 5/8" PABCO Flame Curb® type C gypsum panel applied vertically. <li data-bbox="532 800 829 846">  2 x 4 wood studs 24" o.c. <li data-bbox="532 905 987 951">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 1010 1073 1056">  Base layer: 5/8" PABCO Frame Curb® type C gypsum panel applied vertically. <li data-bbox="532 1115 1073 1161">  1-5/8" Type S screws spaced 16" o.c. (for fire 1-7/8" Type S drywall screws spaced 7" o.c.). <li data-bbox="532 1220 1094 1266">  Face layer: 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically. <li data-bbox="532 1325 1073 1371">  1-5/8" Type S screws spaced 16" o.c. (for fire 1-5/8" drywall screws spaced 8" o.c.). 	<p data-bbox="1166 850 1235 871">STC 56</p> <p data-bbox="1117 884 1284 905">NRCC TLA-04-052</p>	<p data-bbox="1382 850 1451 871">1 Hour</p> <p data-bbox="1377 884 1456 905">UL U305</p>
<p data-bbox="154 1413 464 1434">6" Thick, 11.4 lb/ft², Load Bearing.</p>	<p data-bbox="524 1413 1057 1434">Vertical joints staggered all layers, and on opposite sides.</p>		

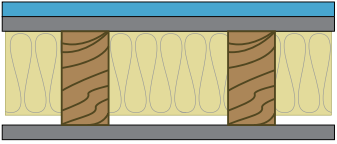








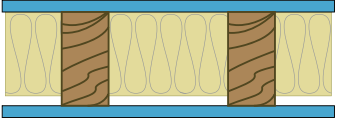






QuietRock Assemblies 2x4 Single Wood



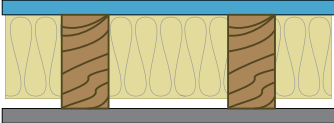






Design Details	Description	Acoustical	Fire
<p>PGD-02-10-090</p> 	<ul style="list-style-type: none">  1-5/8" Type S drywall screws 16" o.c. (for fire 1-7/8" Type W drywall screws 7" o.c.).  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  2 x 4 wood studs 24" o.c.  3-1/2" glass fiber insulation in stud space.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically.  1-5/8" Type S drywall screws 16" o.c. (for fire 1-7/8" Type W drywall screws 7" o.c.). 	<p>STC 54 OL-TL-11-0320</p>	<p>1 Hour UL U305</p>
<p>4-3/4" Thick, 6.5 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		
<p>PGD-02-10-100</p> 	<ul style="list-style-type: none">  1-5/8" Type S drywall screws 16" o.c. (for fire screws spaced 12" o.c. along the perimeter and 8" o.c. in the field).  One Layer 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically.  2 x 4 wood studs 24" o.c.  3-1/2" glass fiber insulation in stud space.  One Layer 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically.  1-5/8" Type S drywall screws 16" o.c. (for fire screws spaced 12" o.c. along the perimeter and 8" o.c. in the field). 	<p>STC 54 NRCC TLA-04-036</p>	<p>1 Hour UL U309</p>
<p>4-3/4" Thick, 6.6 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		

QuietRock Assemblies 2x4 Single Wood

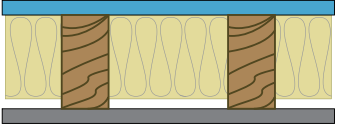








Design Details	Description	Acoustical	Fire
<p>PGD-02-10-105</p> 	<ul style="list-style-type: none">  2-1/4" Type S or W drywall screws 16" o.c. (for fire screws spaced 8" o.c. along the perimeter and 12" o.c. in the field).  Face layer: 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically.  1-5/8" Type S or W drywall screws 16" o.c. (for fire 1-7/8" screws spaced 7" o.c.).  Base layer: 5/8" PABCO Flame Curb® type C gypsum panel applied vertically.  2 x 4 wood studs 24" o.c.  3-1/2" glass fiber insulation in stud space.  5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically.  1-5/8" Type S or W drywall screws 16" o.c. (for fire 1-7/8" screws spaced 7" o.c.). 	<p>STC 53 NRCC TLA-04-051</p>	<p>1 Hour UL U309</p>
<p>5-3/8" Thick, 8.3 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered all layers, and on opposite sides. Horizontal joints of vertically applied panels need not be or backed by studs.</p>		
<p>PGD-02-00-040</p> 	<ul style="list-style-type: none">  1-5/8" type S or W drywall screws 16" o.c.  One layer 1/2" QuietRock® 510 gypsum panel applied vertically.  2 x 4 wood studs 24" o.c.  3-1/2" glass fiber insulation in stud space.  One layer 1/2" QuietRock® 510 gypsum panel applied vertically.  1-5/8" type S or W drywall screws 16" o.c. 	<p>STC 52 RAL-TL-07-022</p>	<p>Non-Rated</p>
<p>4-1/2" Thick, 5.4 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered on opposite sides.</p>		



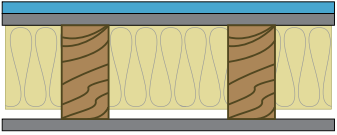








Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-02-10-110</p> 	<ul style="list-style-type: none"> <li data-bbox="529 373 1084 436">  1-5/8" Type S drywall screws 16" o.c. (for fire screws spaced 12" o.c. along the perimeter and 8" o.c. in the field). <li data-bbox="529 485 1084 533">  One layer 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically. <li data-bbox="529 583 829 632">  2 x 4 wood studs 24" o.c. <li data-bbox="529 682 987 730">  3-1/2" glass fiber insulation in stud space. <li data-bbox="529 781 1057 844">  One layer 5/8" Flame Curb® type C gypsum panel applied vertically. <li data-bbox="529 894 1052 957">  1-5/8" Type S or W drywall screws 16" o.c. (for fire 1-7/8" screws spaced 7" o.c.). 	<p data-bbox="1166 636 1235 659">STC 52</p> <p data-bbox="1117 667 1284 693">NRCC TLA-04-050</p>	<p data-bbox="1382 636 1451 659">1 Hour</p> <p data-bbox="1377 667 1456 693">UL U309</p>
<p data-bbox="142 995 464 1020">4-3/4" Thick, 6 lb/ft², Load Bearing.</p>		<p data-bbox="521 984 1474 1031">Vertical joints staggered all layers, and on opposite sides. Horizontal joints of vertically applied panels need not be or backed by studs.</p>	



Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-02-10-120</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1057 426">  1-5/8" Type S or W drywall screws 12" o.c. (for fire 1-7/8" drywall screws 7" o.c.). <li data-bbox="532 485 1057 531">  One layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 590 829 636">  2 x 4 wood studs 24" o.c. <li data-bbox="532 695 964 741">  3.5" glass fiber insulation in stud space. <li data-bbox="532 779 1081 867">  One Layer 5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 905 1057 951">  1-5/8" Type S or W drywall screws 12" o.c. (for fire 1-7/8" drywall screws 7" o.c.). 	<p data-bbox="1166 638 1235 659">STC 51</p> <p data-bbox="1133 674 1268 695">OL-TL-11-0319</p>	<p data-bbox="1382 638 1451 659">1 Hour</p> <p data-bbox="1377 674 1456 695">UL U305</p>
<p data-bbox="142 989 477 1010">4-3/4" Thick, 5.9 lb/ft², Load Bearing.</p>	<p data-bbox="524 989 927 1010">Vertical joints staggered on opposite sides.</p>		

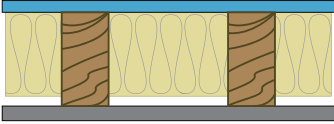






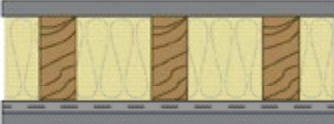








QuietRock Assemblies 2x4 Single Wood



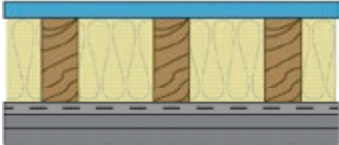










Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-02-00-060</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 1089 426">  2" Type S or W screws 8" o.c. along the perimeter and 12" o.c. in the field. <li data-bbox="529 485 1089 531">  Face layer: 1/2" QuietRock® 510 gypsum panel applied vertically. <li data-bbox="529 590 1089 636">  1-1/4" Type S or W screws 8" o.c. at edges and 12" o.c. in the field. <li data-bbox="529 695 1089 741">  Base layer: 1/2" PABCO® Regular gypsum panel applied vertically. <li data-bbox="529 800 1089 846">  2 x 4 wood studs 24" o.c. <li data-bbox="529 905 1089 951">  3-1/2" glass fiber insulation in stud space. <li data-bbox="529 1010 1089 1056">  OPPOSITE SIDE: One layer 1/2" PABCO® Regular gypsum panel applied vertically. <li data-bbox="529 1115 1089 1161">  2" Type S or W screws 8" o.c. along the perimeter and 12" o.c. in the field. 	<p data-bbox="1122 743 1279 800">STC 47 WEAL-TL-06-133</p>	<p data-bbox="1360 758 1469 785">Non-Rated</p>
<p data-bbox="168 1199 451 1226">5" Thick, 7 lb/ft², Load Bearing.</p>	<p data-bbox="548 1199 1036 1226">Vertical joints staggered all layers on opposite sides.</p>		

QuietRock Assemblies 2x4 Single Wood



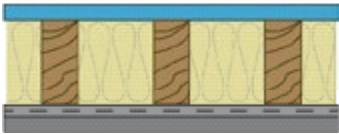








Design Details	Description	Acoustical	Fire
<p data-bbox="212 359 394 384">PGD-02-00-050</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 980 415">  1-5/8" type S or W drywall screws 16" o.c. <li data-bbox="529 485 1023 531">  One layer 1/2" QuietRock® 510 gypsum panel applied vertically. <li data-bbox="529 590 829 625">  2 x 4 wood studs 24" o.c. <li data-bbox="529 695 987 730">  3-1/2" glass fiber insulation in stud space. <li data-bbox="529 779 1057 867">  5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 905 980 940">  1-5/8" Type S or W drywall screws 16" o.c. 	<p data-bbox="1133 638 1268 695" style="text-align: center;">STC 49 RAL-TL-07-021</p>	<p data-bbox="1360 653 1471 678" style="text-align: center;">Non-Rated</p>
<p data-bbox="142 982 477 1008">4-5/8" Thick, 5.3 lb/ft², Load Bearing.</p> <p data-bbox="521 982 927 1008">Vertical joints staggered on opposite sides.</p>			
<p data-bbox="212 1073 394 1098">PGD-02-10-145</p> 	<ul style="list-style-type: none"> <li data-bbox="529 1094 967 1129">  1-7/8" Type S or W screws spaced 7" o.c. <li data-bbox="529 1178 1081 1266">  One layer type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied horizontally. <li data-bbox="529 1304 829 1339">  2 x 4 wood studs 16" o.c. <li data-bbox="529 1409 987 1444">  3-1/2" glass fiber insulation in stud space. <li data-bbox="529 1514 1044 1549">  Resilient channel applied at right-angle, 24" o.c. <li data-bbox="529 1619 1044 1665">  1/2" Type W pan head screw attaching Resilient Channel to studs. <li data-bbox="529 1703 1081 1791">  One layer type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied horizontally. <li data-bbox="529 1829 886 1864">  1" Type S drywall screws 8" o.c. 	<p data-bbox="1133 1457 1268 1514" style="text-align: center;">STC 49 NOAL 17-0739</p>	<p data-bbox="1360 1442 1471 1530" style="text-align: center;">1 Hour UL U305 GA WP-3373</p>
<p data-bbox="142 1911 477 1936">5-1/4" Thick, 4.2 lb/ft², Load Bearing.</p> <p data-bbox="521 1911 927 1936">Vertical joints staggered on opposite sides.</p>			



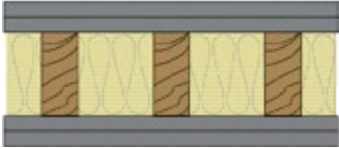










Design Details	Description	Acoustical	Fire
<p>PGD-02-10-151</p> 	<ul style="list-style-type: none">  1-7/8" Type W drywall screws spaced 7" o.c.  One Layer 5/8" QuietRock® ES or QuietRock® ES MR Type X gypsum panel applied vertically.  2 x 4 wood studs 16" o.c.  3-1/2" glass fiber insulation in stud space.  Resilient channel applied at right-angle, 24" o.c.  1-1/4 Type W pan head screw attaching Resilient Channel to studs.  Base layer: type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied horizontally.  1" Type S drywall screws 12" o.c.  Face layer: type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied horizontally.  1-5/8" Type W drywall screws spaced 12" o.c. 	<p>STC 57 NOAL 17-0745</p>	<p>1 Hour UL U305</p>
<p>5-7/8" Thick, 7.2 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered all layers, and on opposite sides</p>		

QuietRock Assemblies 2x4 Single Wood



Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-02-10-155</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 935 422"> 1-7/8" Type W drywall screws 7" o.c. <li data-bbox="529 485 1073 527"> One Layer 5/8" QuietRock® ES or QuietRock® ES MR Type X gypsum panel applied vertically. <li data-bbox="529 590 829 632"> 2 x 4 wood studs 16" o.c. <li data-bbox="529 695 984 737"> 3-1/2" glass fiber insulation in stud space. <li data-bbox="529 800 1040 842"> Resilient channel applied at right-angle, 24" o.c. <li data-bbox="529 905 1049 947"> 1-1/4 Type W pan head screw attaching Resilient Channel to studs. <li data-bbox="529 989 1081 1073"> One layer type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied horizontally. <li data-bbox="529 1115 886 1157"> 1" Type S drywall screws 8" o.c. 	<p data-bbox="1130 741 1268 800" style="text-align: center;">STC 53 NOAL 17-0747</p>	<p data-bbox="1357 726 1471 816" style="text-align: center;">1 Hour UL U305 GA WP-3264</p>
<p data-bbox="147 1192 472 1220">5-1/4" Thick, 5 lb/ft², Load Bearing.</p>	<p data-bbox="521 1192 1057 1220">Vertical joints staggered all layers, and on opposite sides.</p>		



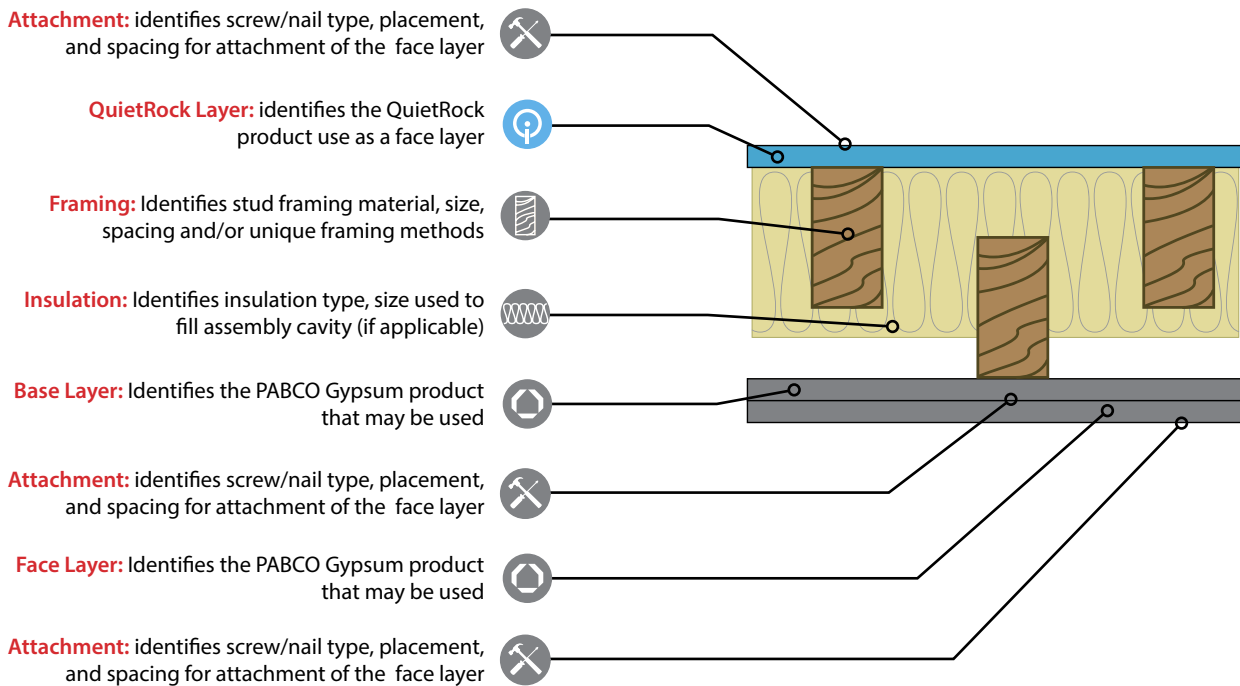
Design Details	Description	Acoustical	Fire
<p>PGD-02-10-162</p> 	<ul style="list-style-type: none">  1-1/4" Type S or W drywall screws 12" o.c.  Face layer: type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied horizontally.  1-7/8" Type S or W drywall screws 12" o.c.  Base layer: type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied horizontally.  2 x 4 wood studs 16" o.c.  3-1/2" glass fiber insulation in stud space.  Base layer: type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied horizontally.  1-7/8" Type S or W drywall screws 12" o.c.  Face layer: type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied horizontally.  1-1/4" Type S or W drywall screws 12" o.c. 	<p>STC 40 NOAL 17-0733</p>	<p>2 Hour UL U305, GA WP-4136 SWRI 01-5920-614</p>
<p>6" Thick, 12 lb/ft², Load Bearing.</p>	<p>Vertical joints staggered all layers, and on opposite sides.</p>		

Walls & Interior Partitions

Staggered Wood Frame

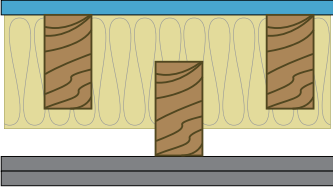








ASSEMBLY COMPONENTS AND PICTOGRAMS

The assemblies in this guide have been divided into sections by framing material type and ordered by design file number. The assembly details are listed in order starting from the outermost layer (attachment); working from top to bottom and ending with the stud or insulation. Pictograms have been added to each assembly detail to provide visual separation of the individual assembly components.










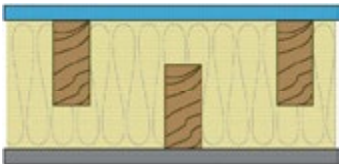






QuietRock Assemblies 2x4 Staggered Wood



Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-02-00-070</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1073 426">  1-5/8" Type W drywall screws 12" o.c. (for fire 1-7/8" drywall screws 7" o.c.). <li data-bbox="532 485 1073 531">  One layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 590 1073 636">  2 x 4 wood studs 16" o.c. staggered 8" o.c. on 2x6 plates. <li data-bbox="532 695 1073 741">  6-1/4" glass fiber insulation in stud space. <li data-bbox="532 800 1073 867">  Base layer: 5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 905 1073 951">  1-5/8" Type W bugle head drywall screws 12" o.c. (for fire 1-7/8" drywall screws 6" o.c.). <li data-bbox="532 1010 1073 1077">  Face layer: 5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1115 1073 1161">  2" Type W bugle head drywall screws 12" o.c. (for fire 2-3/8" drywall screws 8" o.c.). 	<p data-bbox="1138 741 1265 800" style="text-align: center;">STC 60 RAL TL-10-121</p>	<p data-bbox="1373 726 1459 816" style="text-align: center;">1 Hour UL U340, W304</p>
<p data-bbox="139 1209 472 1236">7-3/8" Thick, 9.6 lb/ft², Load Bearing.</p>	<p data-bbox="524 1199 1479 1245">Vertical joints staggered all layers, and on opposite sides. Horizontal joints of vertically applied panels need not be or backed by studs.</p>		

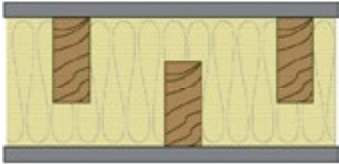






QuietRock Assemblies 2x4 Staggered Wood



Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-02-10-012</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 1040 415">  1-7/8" Type W bugle head drywall screws 7" o.c. <li data-bbox="529 485 1068 531">  One layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="529 583 1052 630">  2 x 4 wood studs 16" o.c. staggered 8" o.c. on 2x6 plates. <li data-bbox="529 682 946 728">  6" glass fiber insulation in stud space. <li data-bbox="529 781 1068 827">  One layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="529 879 1040 915">  1-7/8" Type W bugle head drywall screws 7" o.c. 	<p data-bbox="1133 600 1271 653">STC 55 NOAL 17-0942</p>	<p data-bbox="1357 600 1474 709">1 Hour UL U340, W304, GA WP-3113</p>
<p data-bbox="136 974 472 1001">6-3/4" Thick, 8.1 lb/ft², Load Bearing.</p> <p data-bbox="521 966 1490 1010">Vertical joints staggered on opposite sides. Horizontal joints of vertically applied panels need not be or backed by studs.</p>			
<p data-bbox="212 1073 394 1100">PGD-02-10-014</p> 	<ul style="list-style-type: none"> <li data-bbox="529 1100 1081 1136">  1-7/8" Type S or W bugle head drywall screws 7" o.c. <li data-bbox="529 1205 1068 1251">  One layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="529 1304 1052 1350">  2 x 4 wood studs 16" o.c. staggered 8" o.c. on 2x6 plates. <li data-bbox="529 1407 946 1453">  6" glass fiber insulation in stud space. <li data-bbox="529 1505 1081 1587">  One Layer 5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 1619 1081 1654">  1-7/8" Type S or W bugle head drywall screws 7" o.c. 	<p data-bbox="1133 1356 1271 1409">STC 51 NOAL 17-0940</p>	<p data-bbox="1373 1356 1458 1409">1 Hour UL U340</p>
<p data-bbox="136 1703 472 1730">6-3/4" Thick, 7.4 lb/ft², Load Bearing.</p> <p data-bbox="521 1703 930 1730">Vertical joints staggered on opposite sides.</p>			

QuietRock Assemblies 2x4 Staggered Wood



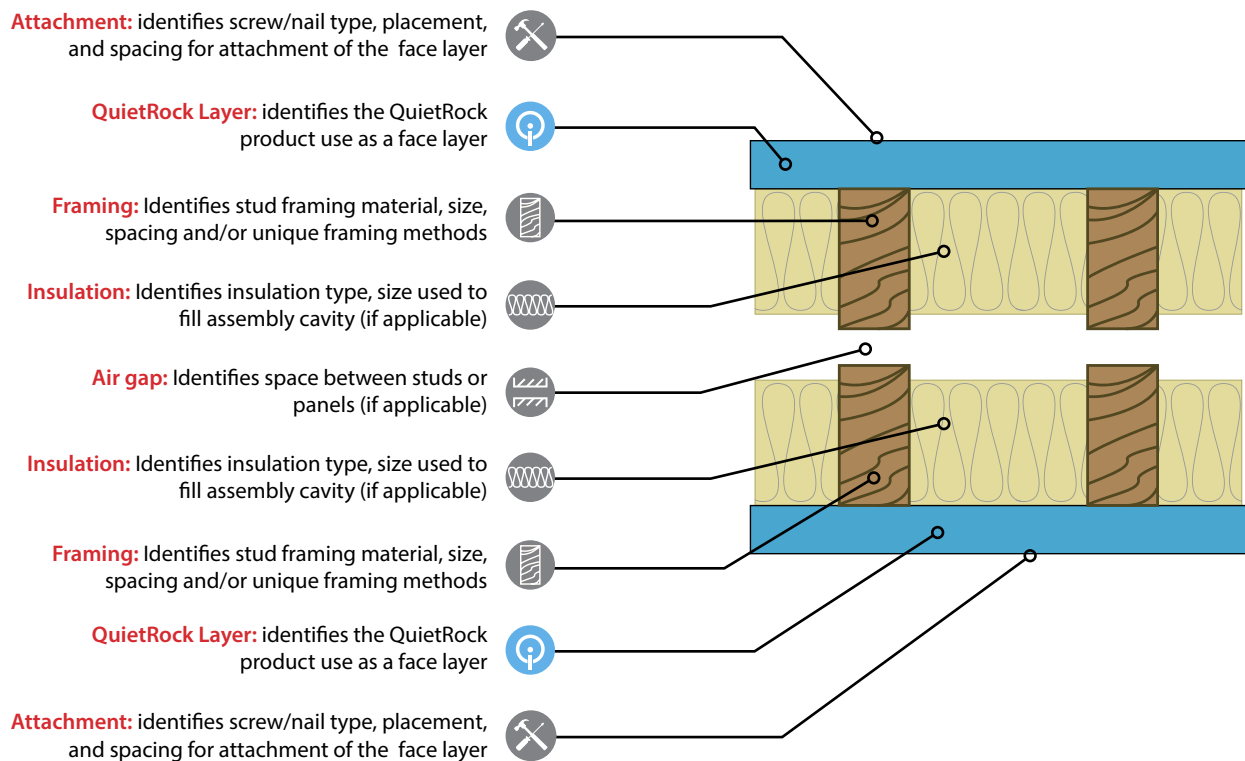
Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-02-10-022</p> 	<ul style="list-style-type: none"> <li data-bbox="529 380 1003 415">  2" Type W bugle head drywall screws 7" o.c. <li data-bbox="529 457 1081 548">  One layer: 5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 583 1057 632">  2 x 4 wood studs 16" o.c. staggered 8" o.c. on 2x6 plates. <li data-bbox="529 688 948 724">  6" glass fiber insulation in stud space. <li data-bbox="529 772 1081 863">  One layer: 5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="529 905 1003 940">  2" Type W bugle head drywall screws 7" o.c. 	<p data-bbox="1133 636 1273 695" style="text-align: center;">STC 47 NOAL 17-0936</p>	<p data-bbox="1373 632 1458 695" style="text-align: center;">1 Hour UL U340, W304</p>
<p data-bbox="142 982 477 1010">6-3/4" Thick, 6.7 lb/ft², Load Bearing.</p>	<p data-bbox="521 982 927 1010">Vertical joints staggered on opposite sides.</p>		

Walls & Interior Partitions

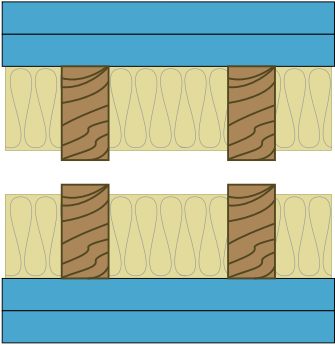













Double Wood Frame

ASSEMBLY COMPONENTS AND PICTOGRAMS

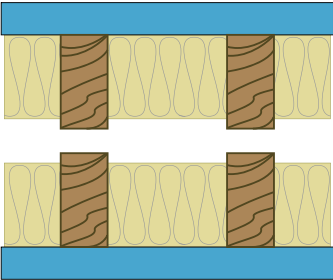









The assemblies in this guide have been divided into sections by framing material type and ordered by design file number. The assembly details are listed in order starting from the outermost layer (attachment); working from top to bottom and ending with the stud or insulation. Pictograms have been added to each assembly detail to provide visual separation of the individual assembly components.



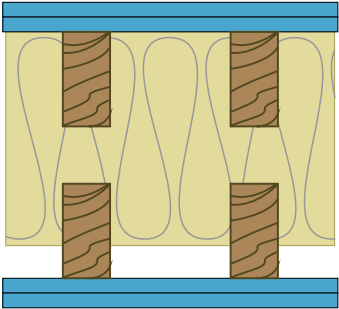














Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 396 380">PGD-02-00-010</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 980 422"> 3-1/2" Type S or W drywall screws 16" o.c. <li data-bbox="532 489 1073 531"> Face layer: 1-3/8" QuietRock® 545 applied vertically <li data-bbox="532 598 969 640"> 2-1/4" Type S or W drywall screws 16" o.c. <li data-bbox="532 707 1081 749"> Base layer: 1-3/8" QuietRock® 545 applied vertically. <li data-bbox="532 816 829 858"> 2 x 4 wood studs 24" o.c. <li data-bbox="532 926 985 968"> 3-1/2" glass fiber insulation in stud space. <li data-bbox="532 1035 691 1077"> 3" air gap. <li data-bbox="532 1144 985 1186"> 3-1/2" glass fiber insulation in stud space. <li data-bbox="532 1253 829 1295"> 2 x 4 wood studs 24" o.c. <li data-bbox="532 1362 1081 1404"> Base layer: 1-3/8" QuietRock® 545 applied vertically. <li data-bbox="532 1472 980 1514"> 2-1/4" Type S or W drywall screws 16" o.c. <li data-bbox="532 1581 1073 1623"> Face layer: 1-3/8" QuietRock® 545 applied vertically. <li data-bbox="532 1690 980 1732"> 3-1/2" Type S or W drywall screws 16" o.c. 	<p data-bbox="1166 1010 1235 1037">STC 80</p> <p data-bbox="1117 1043 1284 1071">NRCC TLA-05-043</p>	<p data-bbox="1360 1026 1471 1054">Non-Rated</p>
<p data-bbox="126 1734 483 1761">15-1/2" Thick, 27.7 lb/ft², Load Bearing.</p>	<p data-bbox="516 1734 1162 1761">Stagger joints in all layers, vertical joints staggered on opposite sides.</p>		

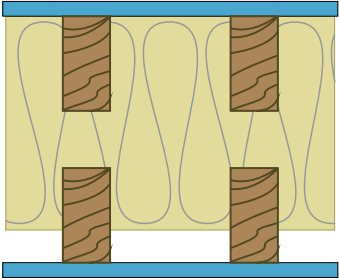










Design Details	Description	Acoustical	Fire
<p data-bbox="212 359 396 384">PGD-02-00-020</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 956 422"> 2-1/4" Type S W drywall screws 16" o.c. <li data-bbox="532 491 1076 533"> One Layer 1-3/8" QuietRock® 545 applied vertically. <li data-bbox="532 590 829 632"> 2 x 4 wood studs 24" o.c. <li data-bbox="532 701 987 743"> 3-1/2" glass fiber insulation in stud space. <li data-bbox="532 800 695 842"> 3" air gap. <li data-bbox="532 911 987 953"> 3-1/2" glass fiber insulation in stud space. <li data-bbox="532 1010 829 1052"> 2 x 4 wood studs 24" o.c. <li data-bbox="532 1121 1076 1163"> One Layer 1-3/8" QuietRock® 545 applied vertically. <li data-bbox="532 1220 935 1262"> 2-1/4" Type S drywall screws 16" o.c. 	<p data-bbox="1117 800 1284 856">STC 75 NRCC TLA-05-040</p>	<p data-bbox="1360 814 1471 842">Non-Rated</p>
<p data-bbox="131 1314 477 1341">12-3/4" Thick, 15 lb/ft², Load Bearing.</p>	<p data-bbox="516 1314 919 1341">Vertical joints staggered on opposite sides.</p>		

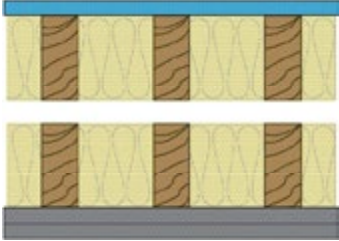













Design Details	Description	Acoustical	Fire
<p data-bbox="212 359 396 384">PGD-02-10-030</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1073 426">  2" Type S or W drywall screws 16" o.c. (for fire 8" o.c. at edges 12" o.c. in the field). <li data-bbox="532 485 1094 531">  Face layer: 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically. <li data-bbox="532 590 932 636">  1-7/8" Type S drywall screws 24" o.c. <li data-bbox="532 695 1094 741">  Base layer: 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically. <li data-bbox="532 800 829 846">  2 x 4 wood studs 24" o.c. <li data-bbox="532 905 954 951">  3" air gap (for fire minimum 1" air gap). <li data-bbox="532 1010 987 1056">  9-1/2" glass fiber insulation in stud space. <li data-bbox="532 1115 829 1161">  2 x 4 wood studs 24" o.c. <li data-bbox="532 1220 1094 1266">  Base layer: 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically. <li data-bbox="532 1325 1089 1371">  1-7/8" Type S drywall screws 24" o.c. (for fire 8" o.c. at edges and 12" in the field). <li data-bbox="532 1430 1094 1476">  Face layer: 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically. <li data-bbox="532 1535 1073 1581">  2" Type S or W drywall screws 16" o.c. (for fire 8" o.c. at edges 12" o.c. in the field). 	<p data-bbox="1166 957 1235 982">STC 74</p> <p data-bbox="1117 989 1284 1014">NRCC TLA-04-034</p>	<p data-bbox="1382 957 1451 982">1 Hour</p> <p data-bbox="1377 989 1456 1014">UL U341</p>
<p data-bbox="126 1633 483 1659">12-1/2" Thick, 22.4 lb/ft², Load Bearing.</p>	<p data-bbox="516 1623 1518 1669">Vertical joints staggered all layers, and on opposite sides. Horizontal joints of vertically applied panels need not be or backed by studs.</p>		



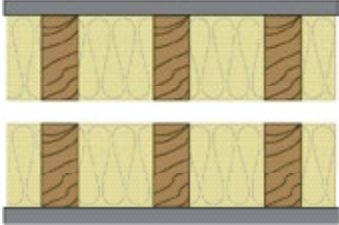








Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-02-10-040</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1078 426">  1-7/8" Type S or W drywall screws 16" o.c. (for fire 8" o.c. at edges 12" o.c. in the field). <li data-bbox="532 485 1078 531">  One layer 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically. <li data-bbox="532 590 829 636">  2 x 4 wood studs 24" o.c. <li data-bbox="532 695 954 741">  3" air gap (for fire minimum 1" air gap). <li data-bbox="532 800 987 846">  9-1/2" glass fiber insulation in stud space. <li data-bbox="532 905 829 951">  2 x 4 wood studs 24" o.c. <li data-bbox="532 1010 1078 1056">  One layer 5/8" QuietRock® 530 or QuietRock® 530 RF type X gypsum panel applied vertically. <li data-bbox="532 1115 1078 1161">  1-7/8" Type S or W drywall screws 16" o.c. (for fire 8" o.c. at edges 12" o.c. in the field). 	<p data-bbox="1117 743 1286 800">STC 66 NRCC TLA-04-033</p>	<p data-bbox="1377 743 1455 800">1 Hour UL U341</p>
<p data-bbox="126 1213 483 1241">11-1/4" Thick, 11.2 lb/ft², Load Bearing.</p>	<p data-bbox="516 1203 1479 1245">Vertical joints staggered on opposite sides. Horizontal joints of vertically applied panels need not be or backed by studs.</p>		



Design Details	Description	Acoustical	Fire
<p data-bbox="212 359 394 384">PGD-02-10-045</p> 	<ul style="list-style-type: none"> <li data-bbox="532 384 922 426"> 1-7/8" Type S drywall screws 8" o.c. <li data-bbox="532 489 1068 531"> One layer 5/8" QuietRock® ES or QuietRock® ES MR type X gypsum panel applied vertically. <li data-bbox="532 594 829 636"> 2 x 4 wood studs 16" o.c. <li data-bbox="532 699 987 741"> 3-1/2" glass fiber insulation in stud space. <li data-bbox="532 804 695 846"> 1" air gap. <li data-bbox="532 909 987 951"> 3-1/2" glass fiber insulation in stud space. <li data-bbox="532 1014 829 1056"> 2 x 4 wood studs 16" o.c. <li data-bbox="532 1098 1084 1182"> Base layer: 5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1224 1040 1266"> 1-7/8" Type W bugle head drywall screws 7" o.c. <li data-bbox="532 1308 1084 1392"> Face layer: 5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1434 1003 1476"> 2" Type W bugle head drywall screws 8" o.c. 	<p data-bbox="1166 888 1235 909">STC 62</p> <p data-bbox="1133 926 1268 947">NOAL 17-1111</p>	<p data-bbox="1382 888 1451 909">1 Hour</p> <p data-bbox="1360 926 1472 978">UL U341, GA WP-3011</p>
<p data-bbox="136 1524 472 1545">9-7/8" Thick, 10 lb/ft², Load Bearing.</p>	<p data-bbox="516 1524 1166 1545">Stagger joints in all layers, vertical joints staggered on opposite sides.</p>		

QuietRock Assemblies 2x4 Double Wood



Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-02-10-055</p> 	<ul style="list-style-type: none"> <li data-bbox="532 380 1040 422">  1-7/8" Type W bugle head drywall screws 7" o.c. <li data-bbox="532 464 1057 548">  5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 590 829 632">  2 x 4 wood studs 16" o.c. <li data-bbox="532 695 987 737">  3-1/2" glass fiber insulation in stud space. <li data-bbox="532 800 695 842">  1" air gap. <li data-bbox="532 905 829 947">  2 x 4 wood studs 16" o.c. <li data-bbox="532 1010 1057 1094">  5/8" Type X (FLAME CURB®, MOLD CURB® Plus, ABUSE CURB®, PABCO® Impact Resistant, PABCO® Glass Sheathing or PABCO® Gypsum Sheathing) gypsum panel applied vertically. <li data-bbox="532 1136 1040 1178">  1-7/8" Type W bugle head drywall screws 7" o.c. 	<p data-bbox="1166 747 1235 768">STC 56</p> <p data-bbox="1133 779 1268 800">NOAL 17-1107</p>	<p data-bbox="1382 747 1451 768">1 Hour</p> <p data-bbox="1373 779 1459 800">UL U341</p>
<p data-bbox="136 1209 472 1230">9-1/4" Thick, 8.6 lb/ft², Load Bearing</p>	<p data-bbox="516 1209 919 1230">Vertical joints staggered on opposite sides.</p>		

Introduction to The QuietRock® Area Separation Wall System (QR ASW)

The unique design of multifamily, multi-storied townhouses and condominiums requires special methods of construction that will provide fire resistance and acoustical separation between dwelling units. The **QuietRock** H-Stud Area Separation Wall System (**QR ASW**) has been developed to meet these critical design criteria.

Weighing no more than nine pounds per square foot when erected, the QR ASW provides a code compliant, efficient, **light-weight** and **low-cost** solution for separating **townhouses**, **condos** and other **multi-family** dwelling units by eliminating the necessity of costly footers and foundation modifications. An important benefit of the QR ASW is that it may be easily erected directly onto a poured concrete slab by the contractor already on site. Carpenters can **easily install** the QR ASW modular system progressively once the framing for one residence is completed and prior to the construction of the adjacent unit. The popularity of the non-load bearing gypsum board QR ASW has grown as contractors and architects discover the efficiency, simplicity and cost effectiveness of the system.

The QR ASW is a two-hour fire resistance rated assembly specifically designed to protect the occupants in attached multi-unit residences. Extending continuously from the foundation to, or through the roof, the QR ASW provides sufficient structural stability under fire conditions to allow collapse of construction on either side without the collapse of the wall.

The key benefit of utilizing ½" QuietRock® 510 as the face layers of the assembly increases the **acoustical performance** to a tested and confirmed STC 69 - one of the **thinnest**, **lightest** and highest acoustically tested Area Separation Wall Assemblies designed.

Other components of the QR ASW is a continuous double layer of 1-inch thick, type X, non-combustible PABCORE® Shaftliner or PABCO GLASS® Shaftliner panels installed in a continuous assembly from the foundation to the roof, and from the front to the back wall. This construction restricts the spread of fire while maintaining sufficient structural stability under fire conditions to allow collapse of construction on either side without the collapse of the QR ASW or compromising structural integrity. Structural support is provided by steel C-Runners and H-Studs. Horizontal structural support is provided by L-Shaped "breakaway" aluminum slips, as described in the following section. Depending upon the application, the QR ASW may be extended beyond the roof to form a parapet, or may terminate at the roof level. Shaftliner panels and metal components are easily stacked to allow progressive construction of the QR ASW during the framing stages of the building.

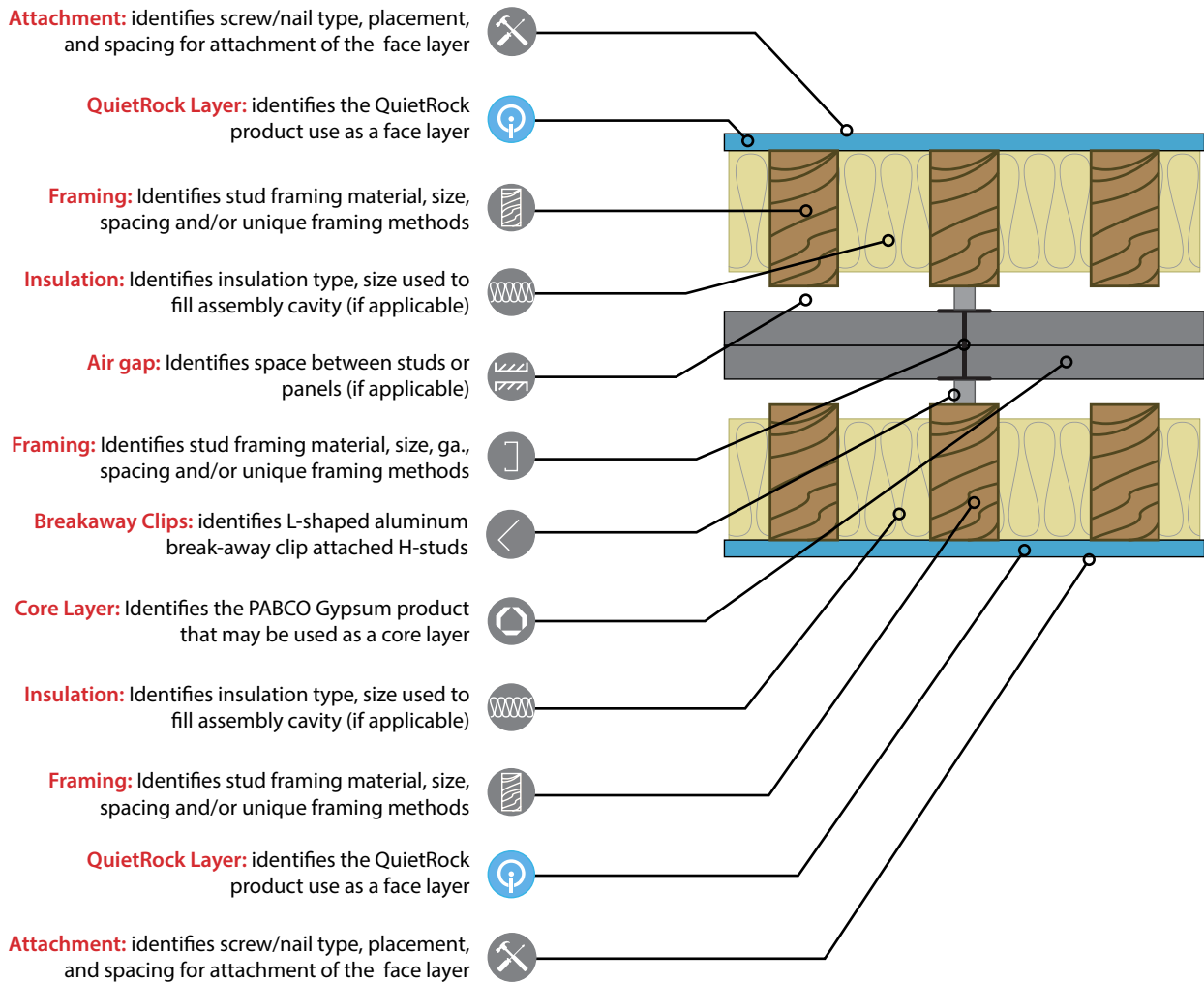
ALUMINUM BREAKAWAY CLIPS allow for the collapse of the structure on the fire-exposed side without collapse of the entire wall or compromising its structural integrity. The QR ASW assembly is attached to each unit's structural framework using L-Shaped aluminum "breakaway" clips fastened to each side of the QR ASW's steel H-Studs and to the structure of each unit. The L-Shaped aluminum clips connect each H-Stud on both sides at the adjacent floors and roof/ceiling intersections to keep the area separation in place between the two structures. The L-Shaped aluminum clips are designed to soften and yield to the heat of the fire at approximately 1,100°F. When one side is exposed to fire, the clips on the exposed fire side soften and breakaway allowing the structure on the exposed fire side to collapse. Because temperatures on the unexposed side of the QR ASW will be far below the point at which the clip will soften, the aluminum clips will remain intact allowing the QR ASW to remain intact and in place, thus protecting the adjacent townhouse.

Walls & Interior Partitions

Area Separation Walls

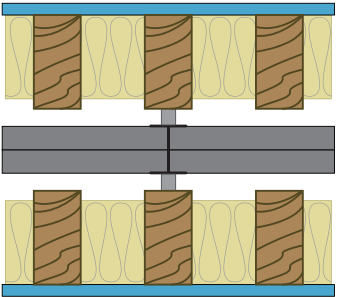













ASSEMBLY COMPONENTS AND PICTOGRAMS

The assemblies in this guide have been divided into sections by framing material type and ordered by design file number. The assembly details are listed in order starting from the outermost layer (attachment); working from top to bottom and ending with the stud or insulation. Pictograms have been added to each assembly detail to provide visual separation of the individual assembly components.



QuietRock Assemblies Area Separation Wall

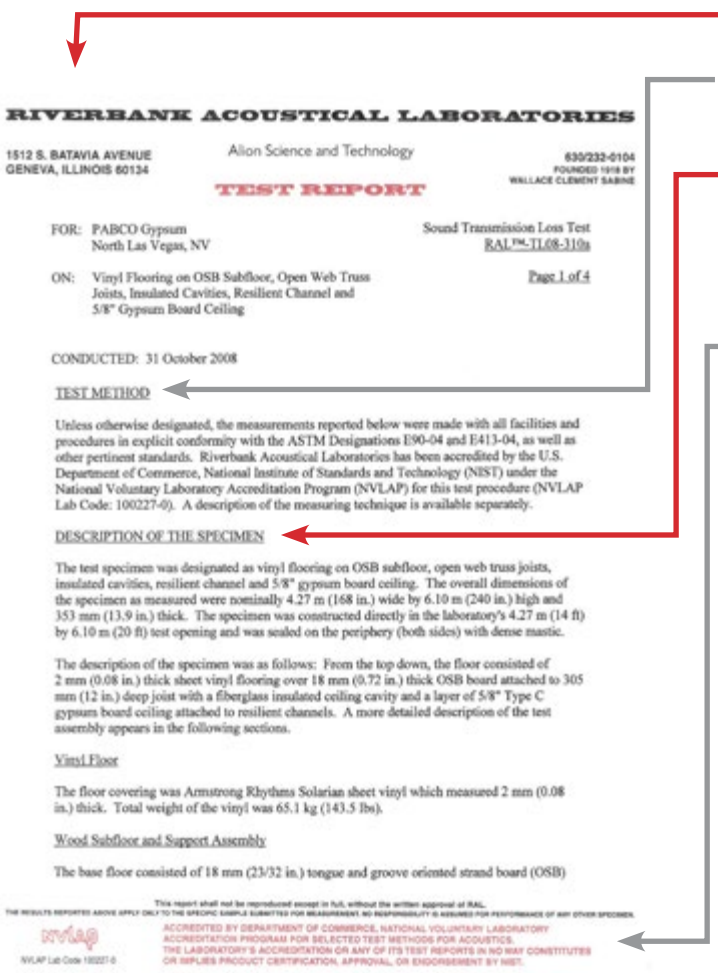


Design Details	Description	Acoustical	Fire
<p data-bbox="212 352 394 380">PGD-08-20-010</p> 	<ul style="list-style-type: none"> <li data-bbox="532 384 1057 422"> 1-5/8" Type S or W drywall screws spaced 16" o.c. <li data-bbox="532 489 1084 527"> One layer 1/2" QuietRock® 510 gypsum panel applied vertically. <li data-bbox="532 594 773 632"> 2 x 4 studs 16" o.c. <li data-bbox="532 699 987 737"> 3-1/2" glass fiber insulation in stud space. <li data-bbox="532 804 829 842"> 3/4" minimum air space. <li data-bbox="532 909 1084 947"> Two layers 1" x 24" PABCORE® Gypsum Shaftliner, or PABCO® Glass Shaftliner Type X. <li data-bbox="532 1014 1089 1052"> Inserted between 2" 25ga C Track floor and ceiling runners with 2" steel H studs between adjacent pairs of gypsum panels. <li data-bbox="532 1119 1089 1199"> L-shaped aluminum break-away clips are attached to each side of every H-stud (two per stud) with two (2) 1/2" Type S pan head screw through the short leg of the clip. Secure the long leg of the clip to wood framing with one 1-1/4" Type W screw. <li data-bbox="532 1245 829 1283"> 3/4" minimum air space. <li data-bbox="532 1350 773 1388"> 2 x 4 studs 16" o.c. <li data-bbox="532 1455 987 1493"> 3-1/2" glass fiber insulation in stud space. <li data-bbox="532 1560 1084 1598"> One layer 1/2" QuietRock® 510 gypsum panel applied vertically. <li data-bbox="532 1665 1057 1703"> 1-5/8" Type S or W drywall screws spaced 16" o.c. 	<p data-bbox="1138 1020 1271 1073">STC 69 RAL-TL-07-119</p>	<p data-bbox="1349 1003 1482 1094">2 Hours UL U347, GA ASW-0985</p>
<p data-bbox="110 1755 500 1782">11-1/2" Thick, 12 lb/ft², Non-Load Bearing.</p>			
<p data-bbox="110 1797 1446 1845">QuietRock 510 - applied vertically. Panels attached to wood studs with 1-5/8 in. long steel drywall screws spaced 16" o.c. Vertical joints located over studs.</p>			

Understanding Acoustic Test Reports

A brief walk-through

Testing for Sound Transmission Loss (STL) is important both for the validation of assembly designs for use in building projects but also for the comparison of different building materials in a laboratory environment that is designed to minimize variability and bias. It is important, then, to understand the different pieces of an STL test report so that an appropriate analysis and conclusion can be reached regarding the efficacy of any particular building material for use as an acoustic treatment.



Lab Name and Date/Report information: identifies the name of the laboratory, the date of the test measurement and the report number

Test Method section: for sound transmission loss testing look here to ensure that the ASTM International Standards E90 and E413 were adhered to during testing.

Description of test Specimen: it is important to look thoroughly through the test specimen details to ensure that the assembly in question was built with the framing type, gauge, spacing, insulation type, panel configuration, and screw spacing were installed according to the desired partition type. The weights of assembly components is also provided for reference and comparison between tested materials.

Accreditation footnote: there are several laboratory accreditation organizations, such as NVLAP and IEC, available for accreditation. Accreditation ensures that the laboratory adheres to current and thorough measurement and test reporting guidelines and standards and that quality control is in place for test procedures.

TEST RESULTS

Sound transmission loss values are tabulated at the eighteen standard frequencies. A graphic presentation of the data and additional information appear on the following pages. The precision of the TL test data is within the limits set by the ASTM Standard E90-04.

FREQ.	T.L.	C.L.	DEF.	FREQ.	T.L.	C.L.	DEF.
100	23	0.57		800	54	0.23	1
125	33	0.78	4	1000	58	0.20	
160	36	0.72	4	1250	61	0.15	
200	40	0.42	3	1600	63	0.14	
250	43	0.47	3	2000	62	0.13	
315	44	0.52	5	2500	63	0.10	
400	48	0.42	4	3150	69	0.07	
500	51	0.29	2	4000	77	0.07	
630	53	0.29	1	5000	83	0.08	

STC-53

Test results (above): can be a bit confusing.

Freq. is the part of the table or column where the tested and reported frequencies (see glossary) are listed.

TL is the sound transmission loss (see glossary) data measured and calculated over the report frequency range.

CL is the reported confidence limit of the measurement data. It is an indication of the statistical accuracy of the measurements at each test frequency.

Def or Deficiencies are the values, in dB, of the portion of the TL curve that lies below the STC contour curve (see section on STC) at each measurement frequency.

The graph of test results, along with the STC contour are provided as well. At times a drawing or photograph of the test assembly is also attached as part of the report.

Contemporary Testing

The importance of using current data

THE IMPORTANCE OF CURRENT DATA

The construction industry, as a whole, creates many “handbooks” designed to navigate and execute the correct assembly for specific fire requirements and include STC ranges, when available. Although many assemblies found in current handbooks are sound tested and are often easy to specify and build, the bulk of acoustic testing performed dates back to the 1960’s - a commonly overlooked detail that can impact the actual acoustic performance of the wall.

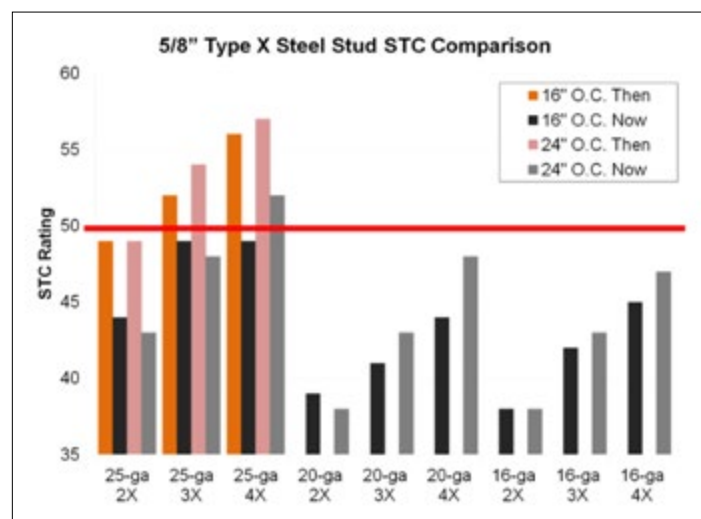
Sound isolation measurements and testing standards have been continuously revised since their inception decades ago. Yet old tests using these outdated methodologies are considered “useable”. The way the Sound Transmission Loss (STL) of a partition was measured and the resulting Sound Transmission Class (STC) calculated, say from the 1960s will likely be different if tested using today’s standards. The ASTM standard for measuring laboratory STL changed the type of frequency range over the years. Another cause of a result difference can be attributed to the evolution of building materials over the past 40 years; for example, a type X drywall panel today is lighter than one produced when some of these tests were conducted. Any assembly tested before any of these changes were implemented could result in relying on inflated expectations and could be misleading.

Simply put, if a standard wall assembly achieved an STC 51 rating in 1968 and were sent back to laboratories for testing today, it would not achieve an STC rating above 46. So what may have been acceptable by the building code in the 1960s may not meet code today even though these assemblies are still presented in current industry handbooks.

What adds to the confusion is the fact that building partition materials such as studs, insulation, and gypsum wallboard have undergone changes in form and formula over the last 50 years. Steel studs, for example, have undergone major changes over time. Studs with “equivalent” stud gauge are now available as well as studs with varying hole shapes, lengths, and sizes over the length of the stud. All of these changes can affect the STL of building partitions to some degree or another. Choosing a specific resilient channel from the selection available today can result in drastically different STL results as well depending on the application.

How is a test report from 1963 going to account for all these factors? Due to a rising need for relevant and accurate data, organizations such as the International Code Council (ICC), have published guidelines for sound isolation in buildings that address the need for current data. According to the ICC G2-2010 Guideline for Acoustics, for example, a test report older than 20 years does not provide adequate validation for a design.

Further evidence of the need for current data is clear when comparing older traditionally-referenced STL test reports to current test reports of same assemblies, such as in the graph below.



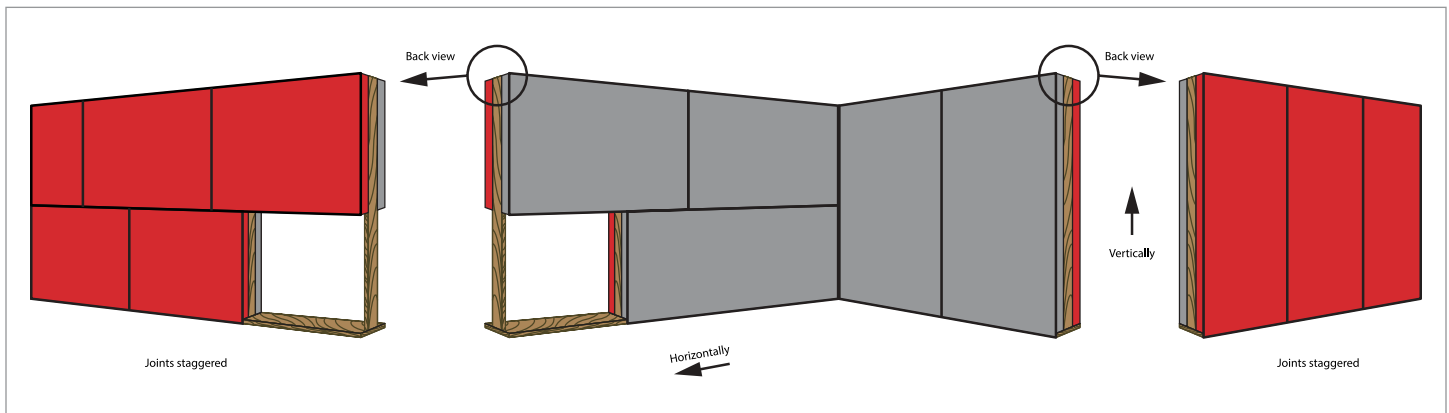
Gypsum Panel Orientation

Horizontal vs Vertical vs Railroaded Installation

HORIZONTAL AND VERTICAL INSTALLATION

Most often gypsum panels are installed in a vertical orientation, meaning the board length runs from floor to ceiling. This is best practice for both sound and fire since there is usually no horizontal joint (butt joint) through the wall.

There are instances when builders prefer to “railroad” panels in corridors (Chase Walls) so that ductwork penetrations in the plenum spaces can be addressed more efficiently or in healthcare facilities to accommodate wiring, plumbing and other devices into headwall fixtures.



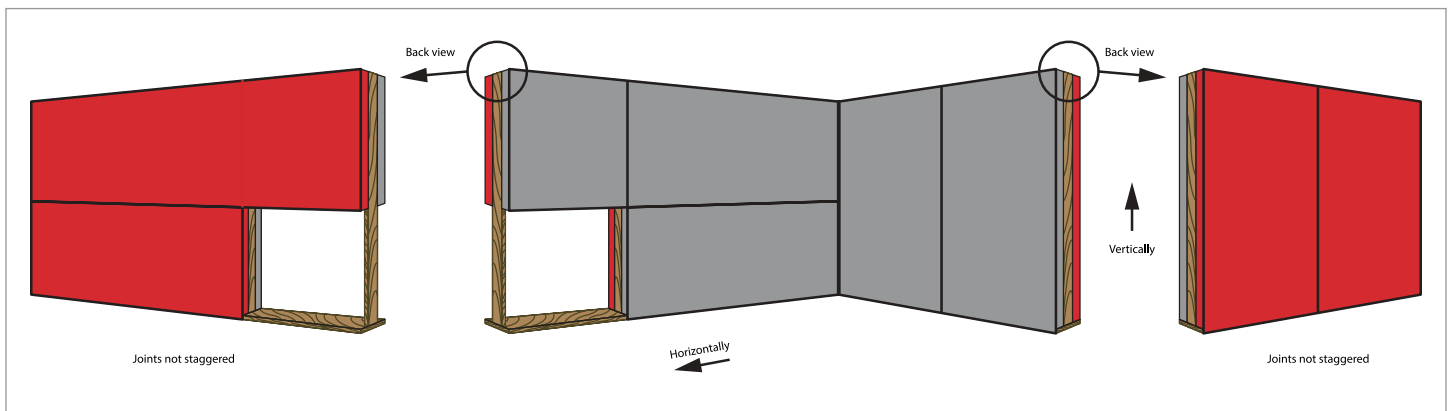
RAILROAD INSTALLATION

Installing gypsum panels horizontally in a “railroad” fashion is becoming a more common practice as builders look for creative ways to manage cost on the job. This technique of lining up panels horizontally on either side of the studs is believed to cut labor costs and decrease production time tables.

A railroad install is one in which the panels are installed horizontally – the length of the board goes across the wall, creating horizontal joint not

backed by a stud and vertical butt joints if the boards do not span the entire length of the wall. In addition to the horizontal orientation, the board joints are not staggered on opposite sides of the wall. Although this practice is not considered best practice, it is an acceptable application method when the assembly is fully fire tested for this application.

Not all gypsum products are approved for this type of an installation. **QuietRock® ES is currently the only internally damped panel that has passed full fire and hose stream tests required for a railroad installation.**



Alternate Fasteners

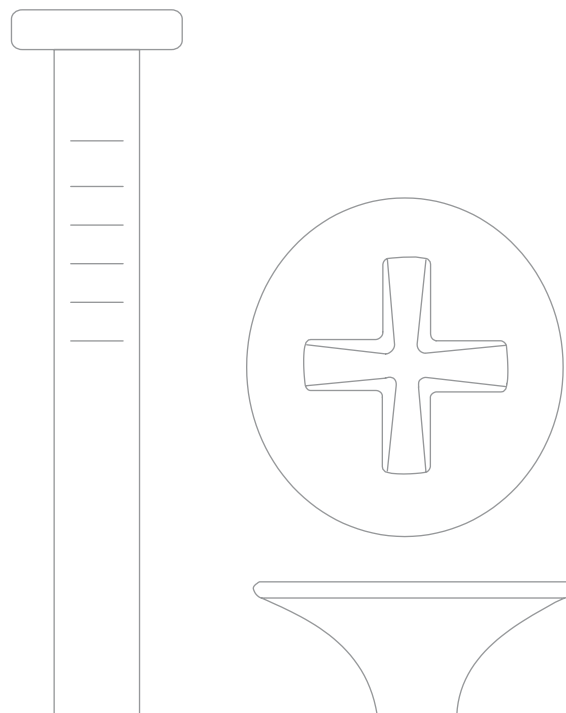
Substituting Screws for Nails



So what do you do when you discover that the fire test was done with nails and the sound test was done with screws?

The International Code Council (ICC) has issued an Evaluation Report (ESR-1338, Section 4.2.3.2 Alternate Gypsum Board Fasteners) that allow the substitution of screws for nails in fire rates assemblies provided that the screws meet the following criteria:

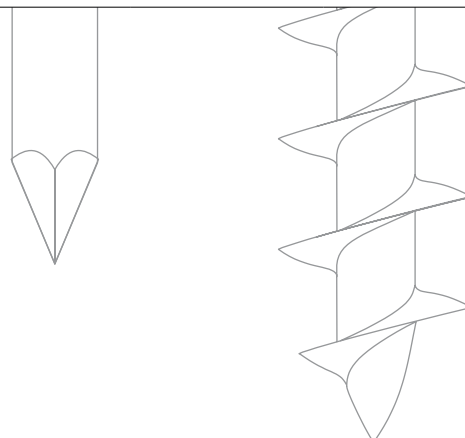
1. The screw penetration into the framing member is equivalent to the nail penetration
2. The screw spacing is the same as the nail spacing
3. The cross-sectional area of the screws is equal to that of the specified nails.

Based on information supplied by nail manufacturer, and drywall screw Manufacturer data supplied below, the 6D nail can be substituted for a #8 type W drywall screw.



Nail 					Screw 			
Size	Gauge	Shank Diameter	Shaft Length	Head Diameter	Size	Body Diameter	Length	Head Diameter
3D	14	0.083"	1-1/4"	1/4"	#6	0.103-0.108"	1-1/4"	0.315-0.335"
4D	12	0.109"	1-1/2"	1/4"	#7	0.112-0.117"	1-1/2"	0.315-0.335"
5D	12	0.109"	1-3/4"	1/4"	#7	0.112-0.117"	1-3/4"	0.315-0.335"
6D	11	0.12"	2"	17/64"	#8	0.121-0.126"	2"	0.315-0.335"

Individual manufacturer specifications may vary, please verify your selection based on the known products available in your area.



Appendix

Fire protection

FIRE RESISTIVE PROPERTIES OF GYPSUM:

Gypsum is approximately 21 percent by weight chemically combined water which greatly contributes to its effectiveness as a fire resistive barrier. When gypsum board or gypsum plaster is exposed to fire, the water is slowly released as steam, effectively retarding heat transmission. It can, in a sense, be compared to what happens when a blowtorch is turned on a block of ice. Although the ice is being melted, one can hold a hand on the opposite side without being burned. Even though the ice gets very thin it effectively blocks the transfer of the intense heat and one's hand would not be burned until the ice is melted.

When gypsum-protected wood or steel structural members are exposed to a fire, the chemically combined water (being released as steam) acts as a thermal barrier until this slow process, known as calcination, is completed. The temperature directly behind the plane of calcination is only slightly higher than that of boiling water (212°F), which is significantly lower than the temperature at which steel begins losing strength or wood ignites. Once calcination is complete, the in-place calcined gypsum continues to act as a barrier protecting the underlying structural members from direct exposure to flames.

TYPE X GYPSUM BOARD

ASTM C1396 describes two types of gypsum board - regular and type X - each providing a different degree of fire resistance. Where fire-resistance rated systems are specified, type X gypsum board is typically required to achieve the rating. Type X gypsum board is defined in ASTM C1396 as gypsum board that provides not less than one-hour fire resistance for boards 5/8 inch thick or not less than 3/4-hour fire-resistance rating for boards 1/2 inch thick, applied parallel with and on each side of load bearing 2x4 wood studs spaced 16 inches on center with 6d coated nails, 17/8 inch long, 0.095 inch diameter shank, 1/4 inch diameter heads, spaced 7 inches on center with gypsum board joints staggered 16 inches on each side of the partition and tested in accordance with the requirements of ASTM E119.

In order to qualify for use in this Guide the Gypsum Association requires that 1/2 inch type X gypsum board shall achieve a one-hour fire-resistance rating when applied to a floor-ceiling system as described by GA File Number FC5410.

We incorporate herein by reference all notes and instructions contained in the GA-600 Fire Design Guide.

FIRE RESISTANCE TESTS

All fire-resistance classifications described in this Guide are derived from full-scale fire tests conducted in accordance with the requirements of ASTM E119 or CAN/ULC-S101 (as amended and in effect on the date of the test) by recognized independent laboratories.

Fire-resistance classifications are the results of tests conducted on systems made up of specific materials put together in a specified manner. There are a number of nationally recognized laboratories capable of conducting tests to establish fire-resistance classifications according to the procedures outlined in ASTM E119 or CAN/ULC-S101. The conditions under which tests are conducted are thoroughly detailed and the fire-resistance classification is established as the time at which there is excessive temperature rise, passage of flame, or structural collapse. In addition, failure may result because of penetration by the pressurized hose stream required in the fire test procedure for walls.

With reference to all tested systems, ASTM E119 states:

It is the intent that classifications shall register performance during the period of exposure and shall not be construed as having determined suitability for use after fire exposure.

Comprehensive research by fire protection experts has determined the average combustible content normally present within any given occupancy. In addition, evacuation times, the time required for the contents to be consumed by fire, and the resulting temperature rise have been quantified. Fire-resistance requirements are established accordingly in building codes and similar regulations.

In ASTM E119 fire tests, wall, ceiling, column, and beam systems are exposed in a furnace which reaches the indicated average temperatures at the time stated in the standard time-temperature curve (Figure 1) and Appendix X1 of ASTM E119. The unexposed surface of all systems refers to the surface away from the fire during a test. The exposed surface refers to the surface facing the fire.

WALL AND PARTITION SYSTEMS

All walls and partitions tested and classified are required to be at least 100 square feet in area with no edge dimension less than nine feet. Surface temperatures on the unexposed side of the test specimen are measured at a minimum of nine locations.

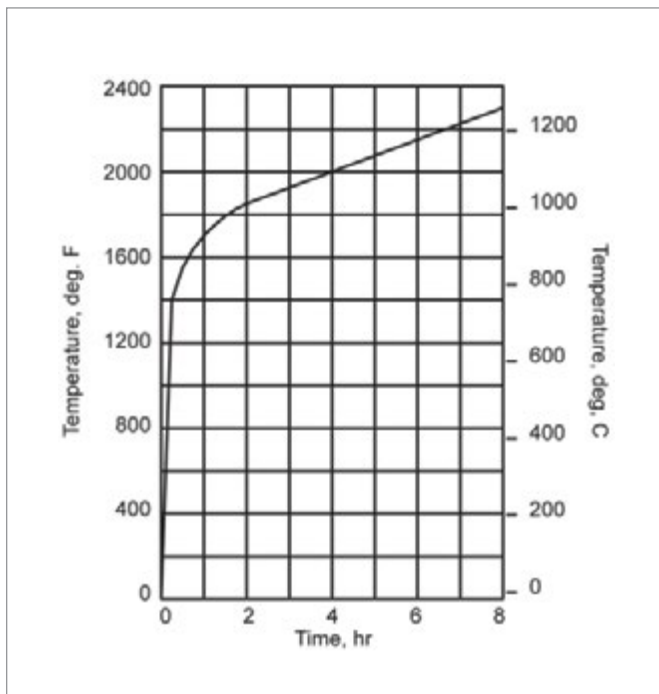
When load-bearing walls and partitions are tested, the applied load is required to simulate the working stresses of the design. Walls and partitions are required to stop flame or hot gases capable of igniting cotton waste. The average temperature of the unexposed surface is not permitted to increase more than 250°F above ambient nor is any individual thermocouple permitted to rise more than 325°F above ambient. A duplicate of the system (rated for one-hour fire resistance or more) is fire tested for one-half the specified fire-resistance period, but no longer than one-hour, after which it is required to withstand the impact, erosion, and cooling effect of a hose stream.

Openings in walls for fire door frames and fire window frames shall be coordinated between the architect, the general contractor, the drywall



contractor, and the frame supplier to ensure that installation details for the wall and the frame are considered. The installation instructions supplied with frames vary and shall be followed to comply with local code requirements. All fire door and fire window assemblies are required to be installed in accordance with ANSI/NFPA 80 and subject also to the conditions, limitations, and/or allowances of their certification label and listing.

Figure 1 - Standard Time-Temperature Curve (ASTM E119)

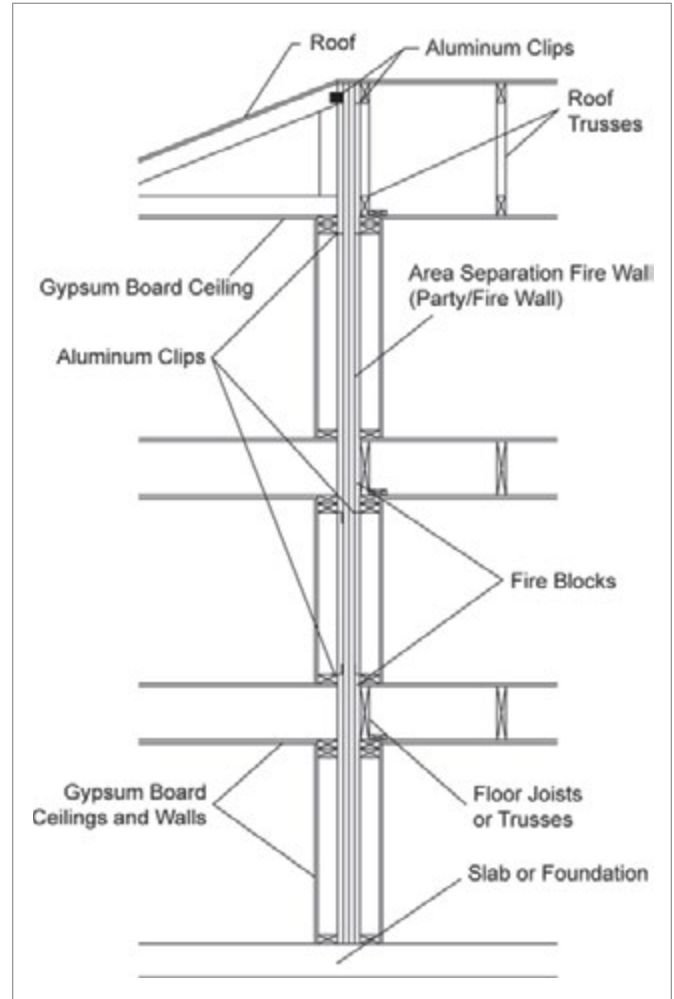


AREA SEPARATION FIRE WALLS (PARTY/FIRE WALLS)

Fire-resistance rated gypsum board systems (solid and cavity types) can serve as area separation fire walls (also known as party walls or fire walls) between adjacent wood frame and steel frame dwelling units such as townhouses, condominiums, and apartments; and in commercial and institutional buildings. These walls are erected one floor at a time, beginning at the foundation and continuing up to or through the roof. At intermediate floors metal floor/ceiling track shall be installed back-to-back to secure the top of the lower section of the partition to the bottom of the next section being installed.

At intermediate floors and other specified locations the area separation fire walls shall be attached to adjacent wood or steel framing on each side with aluminum clips that soften when exposed to fire (Figure 2). If one side of the structure becomes involved in a fire, the clips on the fire side allow collapse of the structure on that side. The clips on the other side support the area separation fire wall keeping it in place, thereby protecting the adjacent structure. Consult PABCO® Gypsum Technical Services and the PABCO® Gypsum Area Separations Wall Guide for clip detail, placement, and height limitations. Openings and through penetrations, including protected openings and penetrations, are not permitted in the area separation fire walls contained in this Guide.

Figure 2 - Typical Gypsum Board Area Separation Fire Wall Construction



CEILING OPENINGS

Many fire-resistance rated floor-ceiling systems have been tested with openings through the ceiling membrane for air ducts, electrical outlets, and lighting fixtures.

Building codes permit air duct openings in most ceiling systems when the air duct openings are protected with approved ceiling dampers. Building codes also permit membrane penetrations in maximum two-hour fire-resistance-rated horizontal systems by steel outlet boxes that do not exceed 16 square inches in area provided the aggregate area of such penetrations does not exceed 100 square inches in any 100 square feet of ceiling area and the annular space between the ceiling membrane and the box does not exceed 1/8 inch.

Many approved recessed lighting fixtures require special protection. Consult the fire test report or listing for the specific system for protection details and the opening area limitation.



SMOKE BARRIERS

Building codes require certain designated wall and ceiling systems to function as “smoke barriers” which are defined in the codes as continuous membranes that resist the passage of smoke. Fire-resistive gypsum systems with perimeters and penetrations sealed to achieve listed STCs also function to resist the passage of smoke.

Minimum one-hour fire-resistance rated gypsum board systems with joints finished in accordance with Level 1 as specified in GA-214 and perimeters, openings, and penetrations sealed as required by the applicable building code satisfy building code requirements for a smoke barrier.

SURFACE BURNING CHARACTERISTICS

The test method used to establish surface burning characteristics is ASTM E84 or CAN/ULC-S102, commonly referred to as the Tunnel Test. This test measures the relative flame spread and relative amount of smoke generated by the material being tested when compared to inorganic reinforced cement board and red oak flooring. The table below lists typical surface burning characteristics for gypsum products as well as the standard materials referenced in the test method.

Surface burning characteristics are intended to be used as a guide in the selection and use of interior finish materials and are obtained under controlled laboratory conditions for requirements.

SURFACE BURNING CHARACTERISTICS		
Material	Flame Spread	Smoke Developed
Inorganic Reinforced Cement Board	0	0
Gypsum Plaster Glass Mat Gypsum Substrate for Use as Sheathing	0	0
Fiber Reinforced Gypsum Panels	5	0
Gypsum Lath	10	0
Exterior Gypsum Soffit Board	15	0
Gypsum Wallboard Gypsum Sheathing	15	0
Water-Resistant Gypsum Backing Board	15	0
Red Oak	100	100

Refer to the GA-600 for a more in depth discussion on fire controlled systems.

Glossary

Common Terminology & Definitions

ABSORPTION

Energy dissipation in materials wherein the energy is transferred into rather than reflected from or transmitted through the material. When a sound wave comes in contact with a surface, part of the acoustic energy is “absorbed” into the material and transferred into very small amounts of heat. The amount of absorbed sound energy is proportional to the amount of energy reflected back from the surface. This is not to be confused with **sound transmission**, which only characterizes the amount of sound energy transmitted through the surface.

In general, soft or porous materials absorb more sound energy than smooth, rigid materials. The absorption of specific materials is characterized by the absorption coefficient. The amount of sound absorption within a room can be quantified by the absorption area of the room surfaces, or the total absorption area. Absorption area is calculated from the room dimensions and the absorption coefficients of each of the room surfaces, and is particularly useful in the design of concert halls and recording studios.

ACOUSTICS

1. Physics. The category of physical phenomena associated with sound and sound waves.
2. The characteristics, measurements, and metrics applied to building structures that determine the audibility, fidelity, intelligibility, and comfort levels of the sound within.

ACOUSTICAL SEALANT

Any material (caulking, putty, or liquid) designed for application to a surface or fissure in order to form a resilient (non-hardening) barrier, thereby reducing the risk of sound leakage through penetrations or gaps in assembly partitions.

COINCIDENCE FREQUENCY

The frequency at which the acoustic wave number of the incident sound wave matches the structural wave number of the surface (panel, plate, beam, or string). It can usually be observed in STC reports where there is sudden drop in a sound transmission loss (STL) curve—normally at high frequencies—that would have otherwise followed a relatively linear path.

CONSTRAINED-LAYER DAMPING (CLD)

A vibration isolation technique that employs the application of materials that are viscoelastic—materials that can deform easily when stressed and then return back into their original form—between rigid plates or panels. The resulting composite panel uses shear-loading and vibration decay to reduce noise by 10 dB or more versus traditional treatments. **QuietRock** is an example of a constrained-layer damping (CLD) panel.

DAMPING

Any mechanism that causes dissipation, or loss, in energy.

Damping is not to be confused with dampening, which means “to make wet”.

DECIBEL (dB)

A base-ten logarithmic— \log_{10} , thus the “deci” in the unit name—ratio that is normally calculated as the ratio between measured energy and a reference energy value. For most building noise control measurements the decibel is calculated as 20 times the base-ten logarithm of the ratio between the measured sound pressure and a reference sound pressure (20 μ Pa). Decibels are logarithmic, not linear. Therefore, decibel levels of two different sound sources cannot be added linearly (2+2=4). For example, 80 dB + 80 dB = 83 dB.

DECOUPLING

The separation of mechanically- or structurally-coupled systems so that they may operate—or in regard to acoustics, vibrate—independently. Decoupling common to the building noise control industry involves mechanically isolating the gypsum wallboard from the structural members via materials such as resilient channels or sound isolation clips.

EXTENSIONAL DAMPING

Extensional damping is achieved by applying a surface damping compound, such as QuietCoat® to a nonporous metal or plastic substrate.

FIELD MEASUREMENT

Measurements made on-site in rooms or buildings instead of a laboratory. Some examples of field building noise measurements include:

ISPL – Impact Sound Pressure Level is a measurement of the impact noise transmitted from one floor to another

RTNISPL – Reverberation Time Normalized Impact Sound Pressure Level is a measurement of the impact sound pressure level that is normalized based on a reverberation time of 0.5 seconds.

ANISPL – Absorption Normalized Impact Sound Pressure Level is a measurement of the impact sound pressure level that is normalized based on the average absorption area of the test room.

NR – Noise Reduction is a measurement of the sound transmission loss through partitions without accounting for reverberation time, absorption, and flanking paths

NNR – Normalized Noise Reduction is a measurement of the sound transmission loss through partitions that is normalized based on a reverberation times of 0.5 seconds

ATL – Apparent Transmission Loss is a measurement of the sound transmission loss through partitions that is normalized based on the average absorption area of the test room



FTL – Field Transmission loss is a measurement of the sound transmission loss through partitions wherein all possible flanking paths and sound leakage points are treated before measurement and wherein the measurement is normalized based on average absorption area of the test room

FIELD METRICS

Calculations from measured data that normally result in a single-number rating used for characterizing materials, structures, and other physical phenomena. Field building noise control metrics attempt to characterize the performance of an installed building partition. Field metrics are not calculated based on the data measured in laboratories. Examples of field metrics used to characterize building noise control include:

ISR – Impact Sound Reduction is calculated from the ISPL measurement by fitting the ISR contour curve to the ISPL measurement data

NISR – Normalized Impact Sound Reduction is calculated from the RTNISPL measurement by fitting the NISR contour curve to the RTNISPL measurement data

AIIC – Apparent Impact Insulation Class is calculated from the ANISPL measurement by fitting the AIIC contour curve to the ANISPL measurement data

NIC – Noise Isolation Class is calculated from the NR measurement by fitting the NIC contour curve to the NR measurement data

NNIC – Normalized Noise Isolation Class is calculated from the NNR measurement by fitting the NNIC contour curve to the NNR measurement data

ASTC – Apparent Sound Isolation Class is calculated from the ATL measurement by fitting the ASTC contour curve to the ATL measurement data

FSTC – Field Sound Transmission Class is calculated from the FTL measurement by fitting the FSTC contour curve to the FTL measurement data

FLANKING

Passing around. As with sound, a flanking path is the indirect transmission of sound around a partition of interest, frequently through building elements such as adjacent wall partitions, open plenum ceilings, window mullions, and HVAC ducts.

FREE-LAYER DAMPING

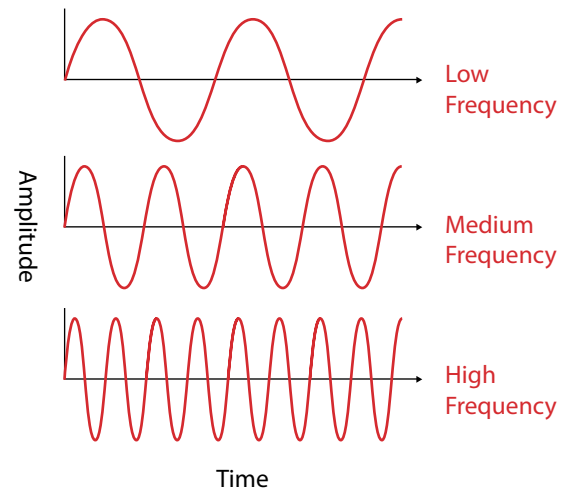
See **Extensional Damping**.

FREQUENCY

Frequency is measured as the number of wave oscillations per second. The unit for frequency is Hertz (Hz). A 1 Hz wave oscillates only once per second. Frequency is the property of a sound wave related to its pitch. The audible frequency range for humans is 20 Hz to 20,000 Hz (20 kHz).

GAUGE

A unit of measure of sheet metal or wire. For sheet metal, the scale is retrogressive (higher gauge means lower thickness) and starts with 10-gauge representing a thickness of 0.1345 inches. As the gauge number increases the thickness decreases by 10%.



LAB METRICS

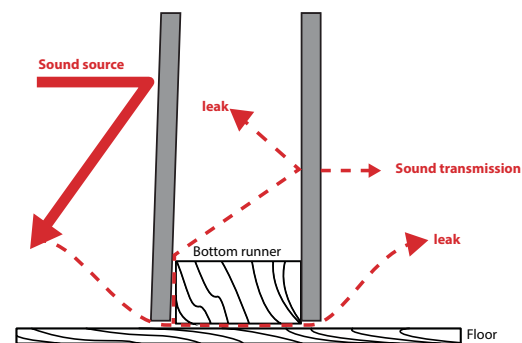
Similar to Field Metrics except that the data is collected in a controlled laboratory environment and not in the field. Examples of laboratory metrics used to characterize materials and assemblies for building noise control include:

IIC – Impact Insulation Class is calculated from the Normalized Impact Sound Pressure Level (NISPL), the impact sound pressure level measured in a laboratory and normalized based on the absorption of a standard room, by fitting the NISPL data to the IIC contour curve

STC – Sound Transmission Class is calculated from the STL by fitting the STL data to the STC contour curve

LEAKAGE

The loss of all or part of a useful agent. In the case of sound leakage, it is the flow of sound through an insulator or assembly component, typically via a crack or untreated segment of a wall, a wall penetration or through a flanking path. Sound leakage can most often be eliminated with acoustic caulking, or putty around perimeters, joints or other penetrations.

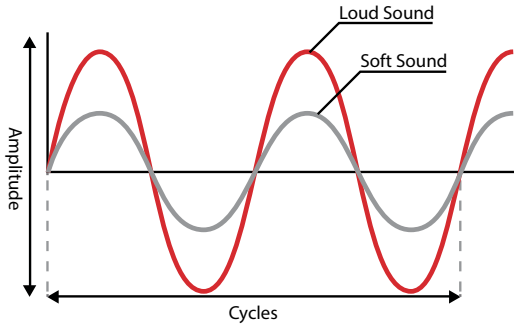


LOUDNESS

How we perceive fluctuations in the amplitude of sound pressure waves, measured in phons or sones. Loudness levels do not directly result from microphone **sound pressure level (SPL)** measurements themselves. Instead, the SPL at each distinct frequency is matched to an equal-loudness contour. Equal-loudness contours are data curves spanning the audible frequency range. Each curve varies according to the known



perceived loudness of the human ear at each frequency and is given a phon value. The phons can then be used to calculate the more linear sone value.



LOUDSPEAKER

A transducer that converts an electrical source signal into sound with the combination of an electro-magnetic device coupled with a diaphragm, similar to the design of a microphone, only a loudspeaker radiates acoustic energy rather than receiving it. Loudspeakers are most commonly used to reproduce speech and music. Field and laboratory sound testing often requires the use of loudspeakers to generate noise.

MASS

The property of an object, measured in grams, that is determined by its resistance to acceleration by a given force. Mass is not the same as weight.

MICROPHONE

A transducer or sensor that converts incoming sound waves into an electrical signal. Sound waves incident on the microphone diaphragm are converted into equivalent fluctuations in an electric signal that is transmitted to a measurement device or audio converter.

NOISE CRITERIA (NC)

A single-number metric that is used to rate the interior noise levels in enclosed spaces. The NC is calculated by fitting the interior Sound Pressure Level (SPL) measurement data to a set of predefined NC curves over a specified frequency range: from 63 Hz to 8,000 Hz. The value of the lowest NC curve that the SPL measurement data does not exceed is reported as the NC value of the enclosure.

NOISE

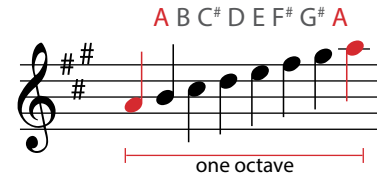
Unwanted sound. Noise is caused by numerous sound sources such as air handling equipment, construction equipment and machinery, and even computers and electric lighting. It has been known to cause increases in heart rate and stress levels, especially in the work place. "Noise pollution" is a term and is becoming common, as population density and industry rises.

NOISE REDUCTION COEFFICIENT (NRC)

A single-number rating that is related to the sound absorption of materials and surfaces. NRC values approaching zero characterize highly reflective surfaces and NRC values approaching or exceeding one characterize highly absorptive surfaces.

OCTAVE

The interval between two frequencies, based on a power of two. In music, the most common note used for tuning an orchestra is an A at 440 Hz. The A-note one octave higher is found at 880 Hz, twice the value of A at 440 Hz, while the A-note that is one octave lower will be found at 220 Hz. A major scale is typically written using eight notes with the interval between the first and last notes as one octave, or twice the frequency value.



1/3 OCTAVE

Similar to an octave-band measurement, but with two additional measured frequencies per octave. Whereas an octave-band measurement will be made at frequencies such as 125, 250, 500, and 1,000 Hz, the same measurement frequency range in one-third octave bands will have data at 125, 160, 200, 250, 315, 400, 500, 630, 800, and 1,000 Hz. For example, one-third points would approximate:

Note	Note Frequency (Hz)	Testing Frequency (Hz)
G2	98.0	100
B2	123.5	125
D#3	155.6	160
G3	196.0	200

OUTDOOR-INDOOR TRANSMISSION CLASS (OITC)

A laboratory and field metric that is used to characterize and rate the transmission of sound through exterior building facades and other elements. The OITC is measured and calculated from an A-weighted Sound Pressure Level (SPL) measurement of the sound source outside the building facade and the Sound Transmission Loss (STL), Outdoor-Indoor Transmission Loss (OITL), or Apparent Outdoor-Indoor Transmission Loss (AOITL).

REFLECTION

The physical phenomena that occurs when energy incident upon any surface or barrier is propagated back in the opposite direction of the incident energy. For sound in buildings, reflection is the propagation of a sound wave back into the enclosed space, resulting in **reverberation**.

REVERBERATION

The echo-effect in enclosures or acoustically reflective environments wherein sound is reflected from rigid or semi-rigid surfaces such as interior building partitions and concrete barriers. Reverberation Time (T60) is measured in seconds and, for building noise control measurements, is the amount of time it takes for the Sound Pressure Level (SPL) at each frequency to drop by 60 dB.



SHEAR

The deformation of solid objects such as beams, panels, and plates that occurs when one side of the material is forced in one direction and a parallel side simultaneously experiences an equal force that causes it to remain rigid. For example, when a foam pad is rigidly glued to a plywood sub-floor and a child attempts to slide across the floor on the foam, the foam will undergo a shear deformation wherein the side of the foam that is glued to the sub-floor remains rigid and the surface of the foam where the child is sliding will move in the same direction as the child. Gypsum wallboard panels that are rigidly attached to assembly partition framing experience shear deformation in the presence of sound waves.

SHORT CIRCUIT

The unintended contact of mechanical or electrical components that results in the transfer of energy directly through electrical circuitry or mechanically coupled structures.

In the case of building noise control, short-circuiting through resilient channels (RC) or other isolating components results in a partial or even full (if extreme) failure of the assembly to effectively isolate sound between rooms.

SOUND

The audible result of a pressure wave that is transmitted through a medium such as air or water; caused by the vibration of solid materials or turbulent fluctuations in air and other gases.

SOUND PRESSURE LEVEL (SPL)

Measurement of radiated sound pressure, in dB, usually by a microphone.

SOUND TRANSMISSION LEVEL (STL)

A laboratory measurement, in dB, of the transmitted Sound Pressure Level (SPL) through a partition dividing two spaces.

SOUNDPROOF

A commonly-used term that usually implies an intent to provide additional sound isolation to a partition, room, barrier, or building. Technically, the word "soundproof" is indicative of the absence of all sound, including ambient noise: a completely unattainable goal.

Building partitions can, however, be built with an acceptable degree of sound isolation.

SPEECH PRIVACY CLASS (SPC)

A laboratory or field metric that is calculated based on a measurement of the sound transmission loss between two enclosed rooms as well as the background noise.

For laboratory measurements, the SPC is calculated by arithmetically averaging the Sound Transmission Loss (STL) of the laboratory assembly partition from 160 Hz to 5,000 Hz and assuming an average background noise level based on either project-related background noise data for the partition in concern or on a standard background level cited in current research documents.

The average STL is then added to the average background noise level, plus one, for the Speech Privacy Class (SPC) result.

In the field, the SPC calculation is based on the measurement of the STL between two enclosed spaces for multiple noise source (loudspeaker) locations and at multiple locations within the receiving room, or the room

on the other side of the partition from the source room. The background noise level is then measured at each of the microphone locations. The STL and background noise levels are averaged between all loudspeaker and microphone locations and then, similar to the laboratory calculation, the SPC is calculated as the sum of the arithmetically-averaged STL and background noise level from 160 Hz to 5,000 Hz.

TRANSMISSION

The transfer of energy from point to another through a barrier. Transmitted sound in buildings is primarily caused by:

Airborne noise - human speech, television, home theater systems, and the like cause sound pressure waves in the air that transmit through partitions.

Impact noise - high heel noise, closing cupboards, machinery, and other collision- or contact-based noise sources result in structural vibration that transmits through partitions via framing and other rigid connections.

Flanking noise - any airborne or impact noise transmitted from one space to another indirectly (not directly through the partition itself) such as through continuous sub-floors, window mullions, and open plenum ceilings.

METRIC CONVERSIONS

Gypsum Panel Product Thickness

1/4 inch - 6.4 mm
3/8 inch - 9.5 mm
1/2 inch - 12.7 mm
5/8 inch - 15.9 mm
3/4 inch - 19.0 mm
1 inch - 25.4 mm

Framing Spacing

8 inch - 203 mm
12 inch - 305 mm
16 inch - 406 mm
24 inch - 610 mm

Fastener Spacing

2 inch - 51 mm
2-1/2 inch - 64 mm
7 inch - 178 mm
8 inch - 203 mm
12 inch - 305 mm
16 inch - 406 mm
24 inch - 610 mm

Temperature

40°F - 5°C
50°F - 10°C
125°F - 52°C

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