

Acoustical Assembly Guide



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Acoustical Assembly Guide



These gypsum wallboard system details are intended solely as technical support incident to the sale and use of National Gypsum Company products. They may be used as a reference by architects, engineers, other design professionals, contractors, building code officials, or other competent construction industry trade personnel considering the selection, specification and use of National Gypsum Company products in these systems.

Architects, engineers, designers or contractors involved should review these details with the governing code or inspection official at the time of the job submittal to determine if there are any discrepancies with local code or regulatory requirements. In any event, they must NOT be used without a complete evaluation by the owner's design professional to verify the suitability of the system for a given application.

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These system performance details are the result of tests conducted in accordance with ASTM E90 under controlled laboratory conditions. Actual sound transmission loss of systems constructed in the field may vary from these performance details based upon many factors such as the actual field conditions, specific components used, and installation methods.

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Acoustical Terms and Concepts

Transmission of Airborne Sound

Airborne sound is acoustical energy generated by a source and transmitted by vibration through the air. The vibrations create sound pressure fluctuations that are detected by a receiver. Sound is characterized by its frequency, which determines the pitch of the sound, and by the intensity of the pressure fluctuations, which determines how loud the sound is perceived to be.

Sound Transmission		
Energy Generated by a Source	Transmitted Through a Medium	Detected by a Receiver
Drumstick strikes drumhead creating vibrations	Vibrations transmitted through the air as pressure fluctuations	Ear receives pressure fluctuations and perceives them as sound

The frequency of sound refers to the number of sound pressure fluctuations or cycles that occur at a fixed point in one second. The unit of measure for frequency is the hertz (Hz), which is one cycle per second. The human auditory system is capable of detecting sound frequencies between 20 Hz and 20,000 Hz, but humans are typically most sensitive to sounds within the range of 500 Hz and 4,000 Hz. Sound frequency is perceived by humans as pitch. The lowest note on a piano has a frequency of 27.5 Hz, while the highest note on the piano is 4,186 Hz.

The intensity of sound, or loudness, is measured in decibels (dB). A quiet whisper might register at 20 dB, compared to about 60 dB for normal conversation, and 75 dB for loud singing. The decibel scale is logarithmic, not linear. A sound level change of 1 to 2 dB will be difficult to perceive while a change of 5 dB will be clearly noticeable. Sound is perceived to double in intensity for every 10 dB increase and quadruple for every 20 dB increase.

Human Se	nsitivity to Changes in Sound Intensity Levels
1 dB	Generally not perceptible
3 dB	Just perceptible
5 dB	Clearly noticeable
10 dB	Twice as loud
20 dB	Four times as loud

Rating	Activity	Sound Level (dB)
Painful	Jet Engine	120+
Very Loud	Industrial Machinery	100
Loud	Stock Trading Floor	
Moderate	Normal Speech	65
Quiet	Suburban Home	45
Very Quiet	Barely Audible	25

Sound Transmission Class

The Sound Transmission Class (STC) is a single number rating of the effectiveness of a material or construction assembly to retard the transmission of airborne sound. The STC provides an indication of how loud transmitted sound is perceived to be by the listener. Partitions with higher STC values are more effective at reducing sound transmission.

STC values are derived by conducting a test in accordance with ASTM E90, Standard Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions. The test data collected is analyzed using ASTM E413, Classification for Rating Sound Insulation, and results in a single-number The rating assesses the airborne sound acoustical rating. transmission performance at a range of frequencies from 125 Hz to 4000 Hz, which is consistent with the frequency range of the human ear. An STC rating of 50 has been designated as the minimum allowable design rating for unit-to-unit multifamily construction in the International Building Code.

Design Considerations for Acoustical Partitions

The goal of a high STC rated Damping partition is to decrease the amount of sound transmission dissipate through the partition. The following five variables can have an impact on the ability of the partition to retard the partition. sound transmission.

Mass

Increasing the mass of a cavity of the partition can partition increases the amount of material airborne sound waves must penetrate to reach the adjoining room and can be accomplished by installing multiple layers of gypsum board.

Stiffness

partition will increase the amount of sound transmission loss. For this reason metal studs outperform wood studs, and framing that is 24" o.c. outperforms framing that is 16" 0.C.

Damping, or the ability to the vibrational energy produced by sound waves, reduces the amount of energy to pass through the

Cavity Depth

Increasing the depth of the increase the amount of sound transmission loss, especially when the cavity is filled with acoustical insulation.

Cavity Absorption

Increasing the thickness of sound-absorbing material such as fiberglass or mineral fiber Decreasing the stiffness of a insulation in the cavity of a partition will increase the amount of sound transmission loss The thickness of the insulation has a greater effect on sound transmission loss than the density.

Acoustical Terms and Concepts

Guidelines for Optimum Performance and Sound Reduction

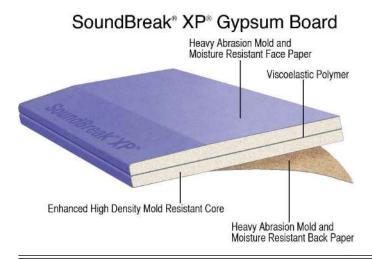
- Stagger gypsum board joints from one side of the partition to the other.
- Allow a 1/4" gap along all wall perimeter edges and completely seal 1/4" gap with acoustical sealant.
- Refrain from wall penetrations when possible.
- Limit necessary wall penetrations to one per stud cavity.
- Seal all penetrations with acoustical sealant or putty pads.



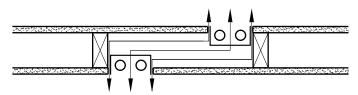
A new approach in noise reduction is represented by a new kind of acoustically enhanced gypsum board introduced by National Gypsum. Gold Bond BRAND SoundBreak XP Gypsum Board incorporates a sound-damping viscoelastic polymer sandwiched between two layers of high-density gypsum board. The polymer absorbs and dissipates noise-producing vibrational energy by converting it into negligible heat.

SoundBreak XP gypsum board can be used alone or in conjunction with other sound reduction strategies for higher STC ratings. As it can be installed and finished just like traditional gypsum board, requiring no additional labor or materials, it can be a cost-effective solution for reducing sound transmission.

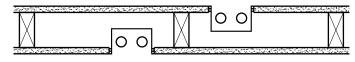
5/8" SoundBreak XP gypsum board features a fire-resistant Type X core and is UL classified. SoundBreak XP resists the growth of mold when tested in accordance with ASTM D3273 with a score of 10, the best possible score. Heavy abrasion resistant paper and a denser core provide greater resistance to surface abuse and indentation when tested in accordance with ASTM C1629. SoundBreak XP gypsum board can be installed as the base layer or the face layer in multi-layer systems without affecting the STC.



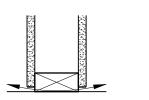
Sound Isolation Construction



Arrows denote flanking paths for sound.

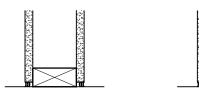


Electrical boxes offset one stud cavity and annular spaces sealed.

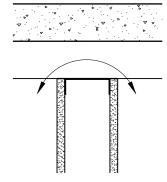




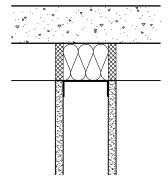
Arrows denote flanking paths for sound.



Perimeter of partition sealed.



Arrows denote flanking paths for sound.



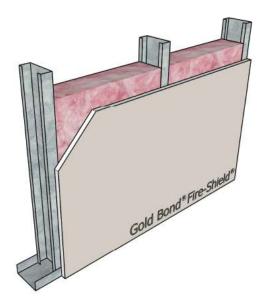
Flutes of metal deck insulated and sealed.





Figure 2

Figure 1

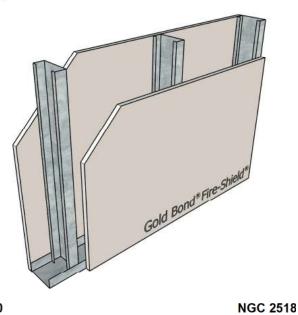


STC-34

Framing:	3-5/8" steel studs, 20 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	None
Side 2:	5/8" Fire-Shield Gypsum Board

UL Design: Not Rated

Figure 3



STC-40

Framing:	3-5/8" steel studs, 25 gauge, 16" o.c.
Insulation:	None
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board

UL Design: V438, U465 - 1 hour

STC-38

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NGC 2013013

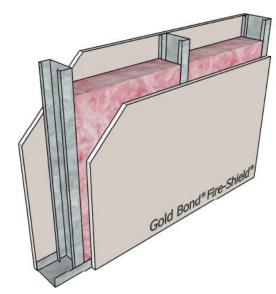
Gold Bond[®] Fire-sh

Framing:	3-5/8" steel studs, 20 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	None
Side 2:	2 layers 5/8" Fire-Shield Gypsum Board

UL Design: V497 - 1 hour

Figure 4

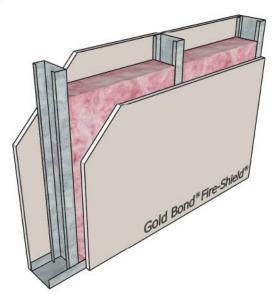
STC-44



3-5/8" steel studs, 25 gauge, 16" o.c.
2-1/2" glass fiber
5/8" Fire-Shield Gypsum Board
5/8" Fire-Shield Gypsum Board

UL Design: V438, U465 - 1 hour

Figure 5



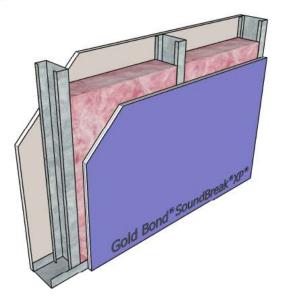
STC-40

NGC 2013004

Framing: 3-5/8" steel studs, 20 gauge, 16" o.c. Insulation: 3-1/2" glass fiber Side 1: 5/8" Fire-Shield Gypsum Board 5/8" Fire-Shield Gypsum Board Side 2:

UL Design: V438, U465 - 1 hour

Figure 7



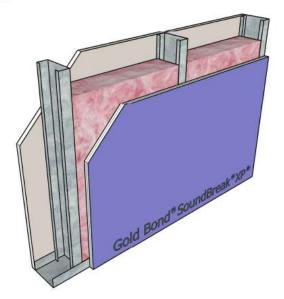
STC-45

NGC 2013005

Framing:	3-5/8" steel studs, 20 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board

UL Design: V438, U465 - 1 hour

Figure 6



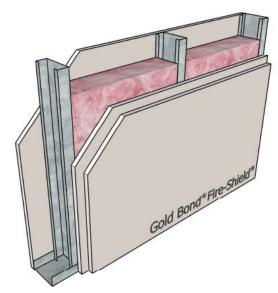
STC-49

NGC 2009058

Framing:	3-5/8" steel studs, 25 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board

UL Design: V438, U465 - 1 hour

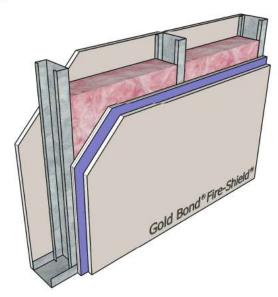
Figure 8



STC-49	NGC 2515
Framing: Insulation: Side 1: Side 2:	3-5/8" steel studs, 25 gauge, 16" o.c. 2-1/2" glass fiber 5/8" Fire-Shield Gypsum Board 2 layers 5/8" Fire-Shield Gypsum Board

UL Design: V438, U465 - 1 hour

Figure 9

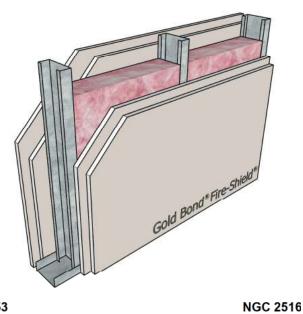


STC-52

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Framing:	3-5/8" steel studs, 25 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on
	5/8" SoundBreak XP Gypsum Board
UL Design:	V438, U465 - 1 hour

Figure 11

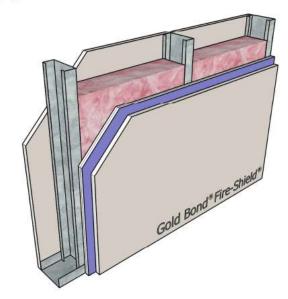


STC-53

Framing:	3-5/8" steel studs, 25 gauge, 16" o.c.
Insulation:	2-1/2" glass fiber
Side 1:	2 layers 5/8" Fire-Shield Gypsum Board
Side 2:	2 layers 5/8" Fire-Shield Gypsum Board

UL Design: V438, U411 - 2 hour

Figure 10



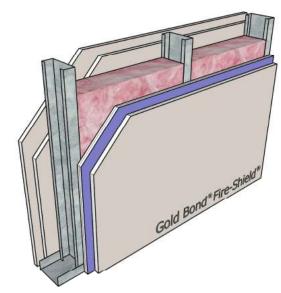
STC-46

NGC 2013006

Framing:	3-5/8" steel studs, 20 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on
	5/8" SoundBreak XP Gypsum Board
UL Design:	V438, U465 - 1 hour
100	

Figure 12

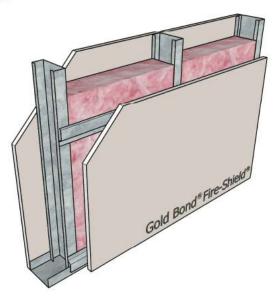
STC-50



Framing:	3-5/8" steel studs, 20 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	2 layers 5/8" Fire-Shield Gypsum Boar

- ield Gypsum Board Side 2: 5/8" Fire-Shield Gypsum Board on
 - 5/8" SoundBreak XP Gypsum Board
- UL Design: V438, U411 2 hour

Figure 13

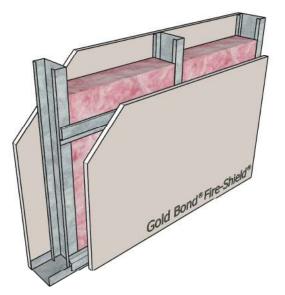


STC-48

NGC 2009059

- Framing: 3-5/8" steel studs, 25 gauge, 16" o.c. Insulation: 3-1/2" glass fiber
- Side 1: 5/8" Fire-Shield Gypsum Board
- 5/8" Fire-Shield Gypsum Board on RC-1 Side 2:
- UL Design: V438, U465 1 hour

Figure 15



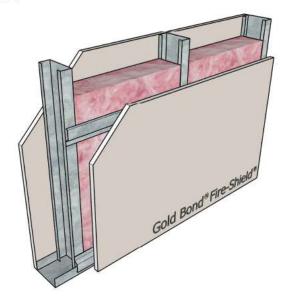
STC-47

STC-47	NGC 2014086
Framing:	3-5/8" steel studs, 16 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
0.11	

5/8" Fire-Shield Gypsum Board on RC-1 Side 2:

UL Design: V438, U465 - 1 hour

Figure 14



STC-49

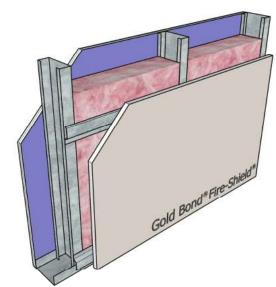
NGC 2013008

2013009

Framing:	3-5/8" steel studs, 20 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on RC-1

UL Design: V438, U465 - 1 hour

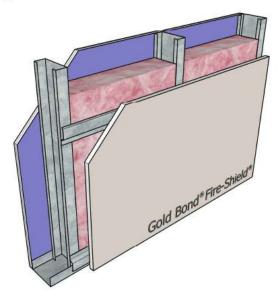
Figure 16



STC-52	NGC 2
Framing:	3-5/8" steel studs, 20 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" SoundBreak XP Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on RC-1

UL Design: V438, U465 - 1 hour

Figure 17

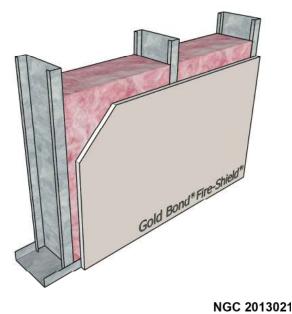


STC-51

NGC 2014085

- Framing: 3-5/8" steel studs, **16 gauge**, 16" o.c. Insulation: 3-1/2" glass fiber Side 1: 5/8" SoundBreak XP Gypsum Board
- Side 2: 5/8" Fire-Shield Gypsum Board on RC-1
- UL Design: V438, U465 1 hour

Figure 19

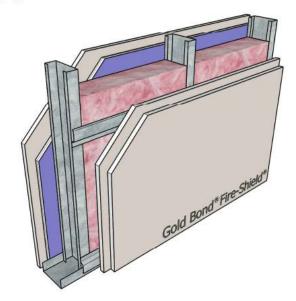


STC-37

Framing:	6" steel studs, 20 gauge, 16" o.c.
Insulation:	6" glass fiber
Side 1:	None
Side 2:	5/8" Fire-Shield Gypsum Board

UL Design: Not Rated

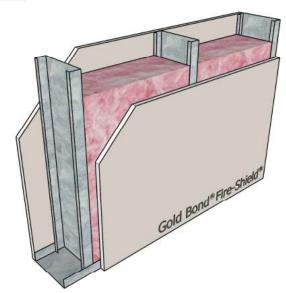
Figure 18



STC-59NGC 2014084Framing:3-5/8" steel studs, 16 gauge, 16" o.c.Insulation:3-1/2" glass fiberSide 1:5/8" Fire-Shield Gypsum Board on
5/8" SoundBreak XP Gypsum BoardSide 2:2 layers 5/8" Fire-Shield Gypsum Board on RC-1UL Design:V438 - 2 hour

Figure 20

STC-40

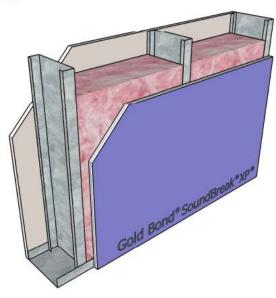


Framing:	6" steel studs, 20 gauge, 16" o.c.
Insulation:	6" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board

Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board

UL Design: V438, U465 - 1 hour

Figure 21



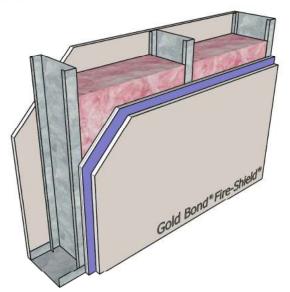
STC-45

NGC 2013023

Framing:	6" steel studs, 20 gauge , 16" o.c.
Insulation:	6" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board

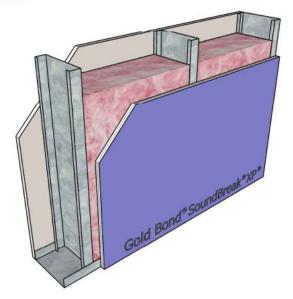
UL Design: V438, U465 - 1 hour

Figure 23



STC-49	NGC 2013024
Framing:	6" steel studs, 20 gauge, 16" o.c.
Insulation:	6" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on
	5/8" SoundBreak XP Gypsum Board
UL Design:	V438, U465 - 1 hour

Figure 22



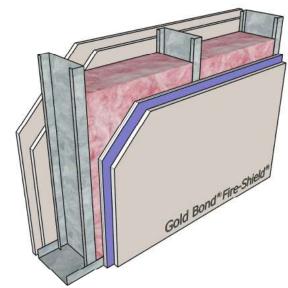
STC-49

NGC 2015007

Framing:	6" steel studs, 16 gauge, 16" o.c.
Insulation:	6" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board

UL Design: V438, U465 - 1 hour

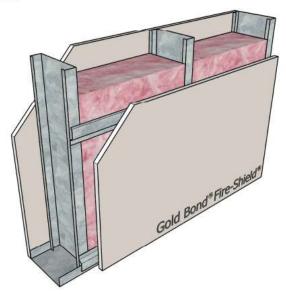
Figure 24



STC-51	NGC 2013025
Framing:	6" steel studs, 20 gauge, 16" o.c.
Insulation:	6" glass fiber
Side 1:	2 layers 5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on
	5/8" SoundBreak XP Gypsum Board
UL Design:	V438, U411 - 2 hour

Figure 26

Figure 25



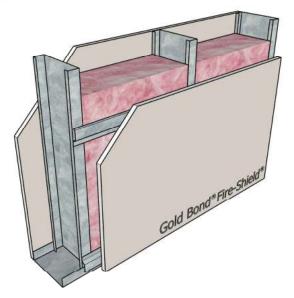
STC-53

NGC 2013026

NGC 2015001

- Framing: 6" steel studs, 20 gauge, 16" o.c.
- Insulation: 6" glass fiber
- Side 1: 5/8" Fire-Shield Gypsum Board
- Side 2: 5/8" Fire-Shield Gypsum Board on RC-1
- UL Design: V438, U465 1 hour

Figure 27



STC-50

0.000	
Framing:	6" steel studs, 16 gauge, 16" o.c.
Insulation:	6" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on RC-1

UL Design: V438, U465 - 1 hour

STC-57

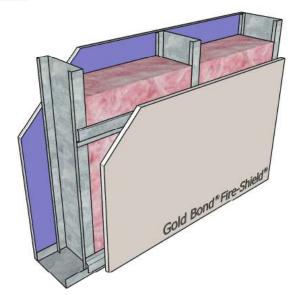


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Gold Bond" Fire-Shk

- Framing:6" steel studs, **20 gauge**, 16" o.c.Insulation:3-1/2" glass fiberSide 1:5/8" SoundBreak XP Gypsum BoardSide 2:5/8" Fire-Shield Gypsum Board on RC-1
- UL Design: V438, U465 1 hour

Figure 28



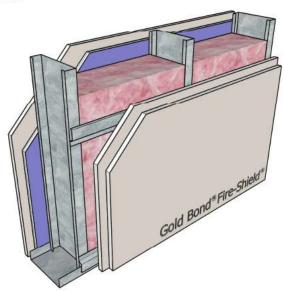
STC-55

NGC 2015002

Framing:	6" steel studs, 16 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" SoundBreak XP Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on RC-1

UL Design: V438, U465 - 1 hour

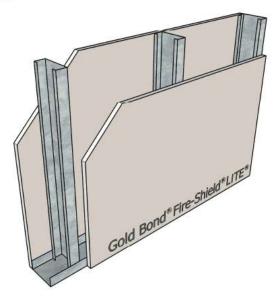
Figure 29



STC-61

Framing:	6" steel studs, 16 gauge, 16" o.c.
Insulation:	6" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board on
	5/8" SoundBreak XP Gypsum Board
Side 2:	2 layers 5/8" Fire-Shield Gypsum Board on RC-1
UL Design:	V438 - 2 hour

Figure 30



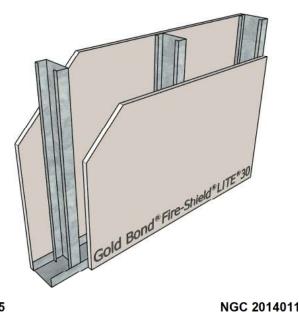
STC-38

1	NG	С	20	14	01	9

Framing:	3-5/8" steel studs, 25 gauge, 16" o.c.
Insulation:	None
Side 1:	5/8" Fire-Shield LITE Gypsum Board
Side 2:	5/8" Fire-Shield LITE Gypsum Board

UL Design: V438, U465 - 1 hour

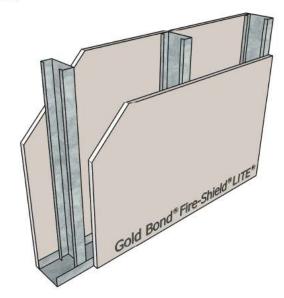
Figure 32



STC-35	NGC
Framing:	3-5/8" steel studs, 20 gauge, 16" o.c.
Insulation:	None
Side 1:	5/8" Fire-Shield LITE 30 Gypsum Board
Side 2:	5/8" Fire-Shield LITE 30 Gypsum Board

UL Design: W411 - 1/2 hour

Figure 31



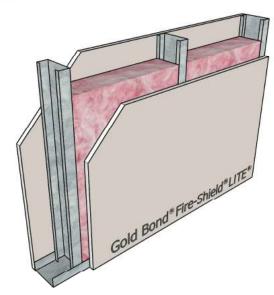
STC-37

NGC 2014023

Framing:	3-5/8" steel studs, 20 gauge, 16" o.c.
Insulation:	None
Side 1:	5/8" Fire-Shield LITE Gypsum Board
Side 2:	5/8" Fire-Shield LITE Gypsum Board

UL Design: V438, U465 - 1 hour

Figure 33



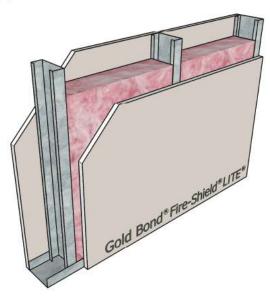
SIC-41

NGC 2014018

Framing:	3-5/8" steel studs, 25 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield LITE Gypsum Board
Side 2:	5/8" Fire-Shield LITE Gypsum Board

UL Design: V438, U465 - 1 hour

Figure 34



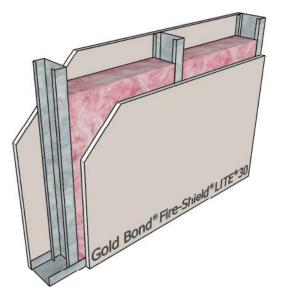
STC-41

NGC 2014022

Framing:	3-5/8" steel studs, 20 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield LITE Gypsum Board
Side 2:	5/8" Fire-Shield LITE Gypsum Board

UL Design: V438, U465 - 1 hour

Figure 36

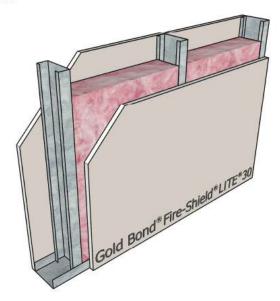


STC-39

STC-39	NGC 2014010
Framing:	3-5/8" steel studs, 20 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield LITE 30 Gypsum Board
Side 2:	5/8" Fire-Shield LITE 30 Gypsum Board

UL Design: W411 - 1/2 hour

Figure 35



STC-38

NGC 2014009

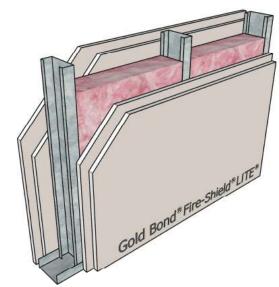
NGC 2014021

Framing:	3-5/8" steel studs, 25 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield LITE 30 Gypsum Board
Side 2:	5/8" Fire-Shield LITE 30 Gypsum Board

UL Design: W411 - 1/2 hour

Figure 37

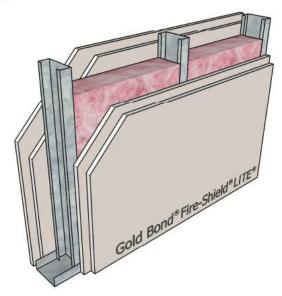
STC-50



Framing:	3-5/8" steel studs, 25 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	2 layers 5/8" Fire-Shield LITE Gypsum Board
Side 2:	2 layers 5/8" Fire-Shield LITE Gypsum Board

UL Design: V438, U411 - 2 hour

Figure 38



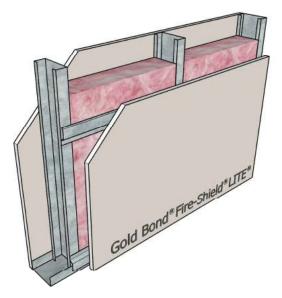
STC-52

NGC 2014025

Framing:	3-5/8" steel studs, 20 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	2 layers 5/8" Fire-Shield LITE Gypsum Board
Side 2:	2 layers 5/8" Fire-Shield LITE Gypsum Board

UL Design: V438, U411 - 2 hour

Figure 40



STC-49 Framing:

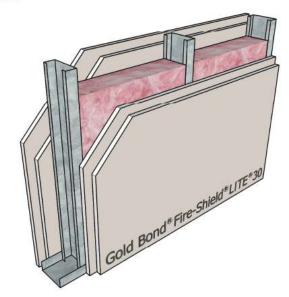
0	-4	9		

	NGC 2014020
3-5/8" steel studs, 25 gauge, 16" o	D.C.
3-1/2" glass fiber	

- Insulation: 3-1/2" gl Side 1: 5/8" Fire-Shield LITE Gypsum Board
- Side 2: 5/8" Fire-Shield LITE Gypsum Board on RC-1

UL Design: V438, U465 - 1 hour

Figure 39

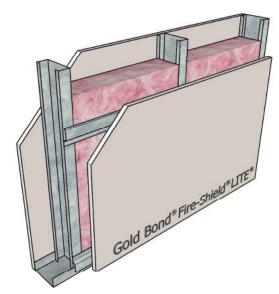


510-44	NGC 2014013
Framing:	3-5/8" steel studs, 20 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	2 layers 5/8" Fire-Shield LITE 30 Gypsum Board
Side 2:	2 layers 5/8" Fire-Shield LITE 30 Gypsum Board

UL Design: W411 - 1 hour

Figure 41

STC-49



Framing:	3-5/8" steel studs, 20 gauge,
Insulation:	3-1/2" glass fiber
Olda 1	E/OIL Fire Objected LITE Oursey

Side 1:	5/8" Fire-Shield LITE Gypsum Board
Side 2:	5/8" Fire-Shield LITE Gypsum Board on RC-1

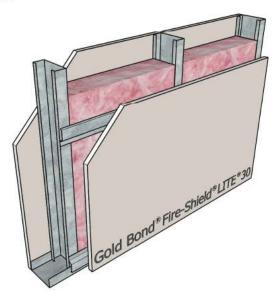
UL Design: V438, U465 - 1 hour

15

NGC 2014024

16" o.c.

Figure 42



STC-45

NGC 2014012

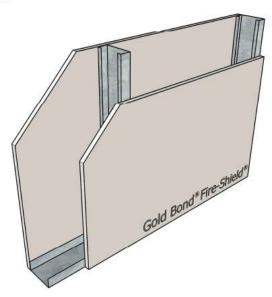
Framing:	3-5/8" steel studs, 20 gauge, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield LITE 30 Gypsum Board
Side 2:	5/8" Fire-Shield LITE 30 Gypsum Board on RC-1

UL Design: W411 - 1/2 hour





Figure 43



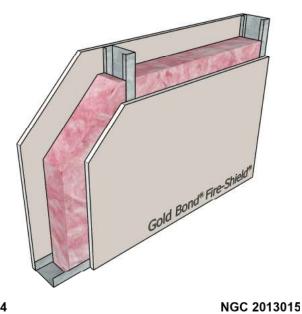
STC-42

NG	C 2	385

Framing:	3-5/8" steel studs, 25 gauge, 24" o.c.
Insulation:	None
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board

UL Design: V438, U465 - 1 hour

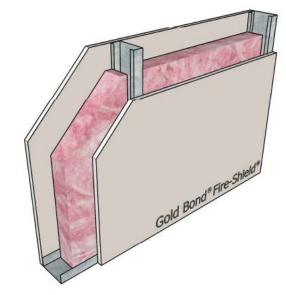
Figure 45



STC-44	NG
Framing:	3-5/8" steel studs, 20 gauge, 24" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board

UL Design: V438, U465 - 1 hour

Figure 44



STC-47

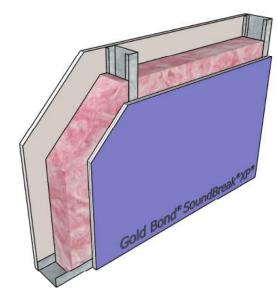
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	00	20	00

Framing:	3-5/8" steel studs, 25 gauge, 24" o.c.	
Insulation:	2-1/2" glass fiber	
Side 1:	5/8" Fire-Shield Gypsum Board	
Side 2:	5/8" Fire-Shield Gypsum Board	

UL Design: V438, U465 - 1 hour

Figure 46

STC-55

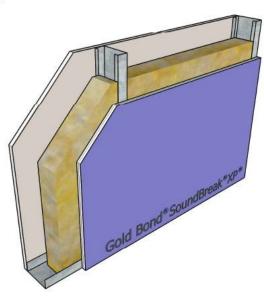


Framing:	3-5/8" steel studs, 20 gauge, 24" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board

UL Design: V438, U465 - 1 hour

OL14-0404

Figure 47



STC-54

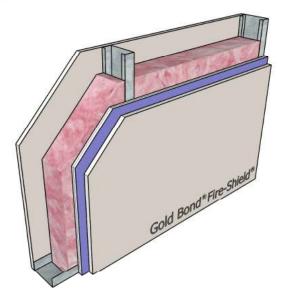
RAL-TL07-389

Framing:	3-5/8" steel studs, 25 gauge, 24" o.c.
Insulation:	3" mineral wool
Side 1:	5/8" Fire-Shield Gypsum Board

Side 2: 5/8" SoundBreak XP Gypsum Board

UL Design: V438, U465 - 1 hour

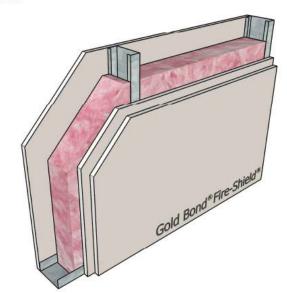
Figure 49



STC-57

STC-57	RAL-TL06-334
Framing:	3-5/8" steel studs, 25 gauge, 24" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on
	1/2" SoundBreak XP Gypsum Board
UL Design:	V438, U465 - 1 hour

Figure 48



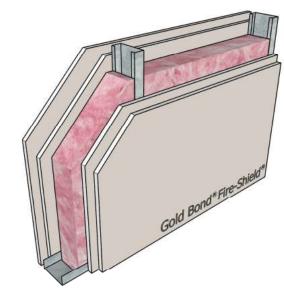
STC-49

NGC 2392

Framing:	3-5/8" steel studs, 25 gauge, 24" o.c.
Insulation:	2-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	2 layers 5/8" Fire-Shield Gypsum Board

UL Design: V438, U465 - 1 hour

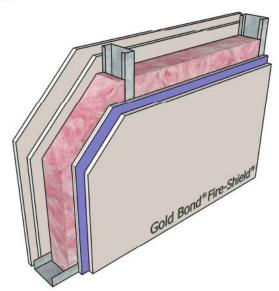
Figure 50



STC-56	NGC 3022
Framing:	3-5/8" steel studs, 25 gauge, 24" o.c.
Insulation:	3" glass fiber
Side 1:	2 layers 5/8" Fire-Shield Gypsum Board
Side 2:	2 layers 5/8" Fire-Shield Gypsum Board

UL Design: V438, U411 - 2 hour

Figure 51

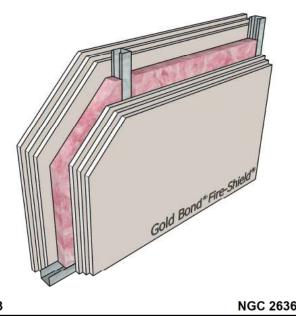


STC-60

RA	L-TL	.07	168

Framing:	3-5/8" steel studs, 25 gauge, 24" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	2 layers 5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on
	5/8" SoundBreak XP Gypsum Board
UL Design:	V438, U411 - 2 hour

Figure 53

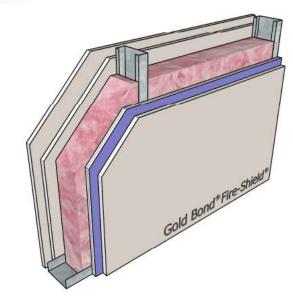


STC-53

Framing:	1-5/8" steel studs, 25 gauge, 24" o.c.
Insulation:	1-1/2" glass fiber
Side 1:	3 layers 5/8" Fire-Shield Gypsum Board
Side 2:	3 layers 5/8" Fire-Shield Gypsum Board

UL Design: U435, V438 - 3 hour

Figure 52

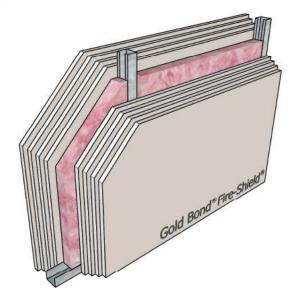


STC-56

UL Design:	V438, U411 - 2 hour
	5/8" SoundBreak XP Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on
Side 1:	2 layers 5/8" Fire-Shield Gypsum Board
Insulation:	3-1/2" glass fiber
Framing:	3-5/8" steel studs, 20 gauge, 24" o.c.

Figure 54

STC-55

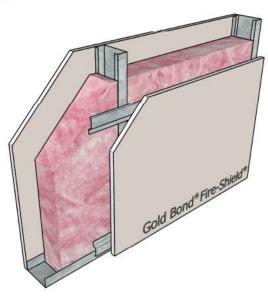


Framing:	1-5/8" steel studs, 25 gauge, 24" o.c.
Insulation:	1-1/2" glass fiber
Side 1:	4 layers 5/8" Fire-Shield Gypsum Board
Side 2:	4 layers 5/8" Fire-Shield Gypsum Board

UL Design: U435, V438 - 4 hour

NGC 2634

Figure 55



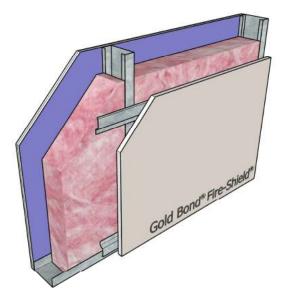
STC-49

NGC 2007008

- Framing: 3-5/8" steel studs, 25 gauge, 24" o.c.
- Insulation: 3-1/2" glass fiber
- Side 1: 5/8" Fire-Shield Gypsum Board
- 5/8" Fire-Shield Gypsum Board on RC-1 Side 2:

UL Design: V438, U465 - 1 hour

Figure 57



STC-54

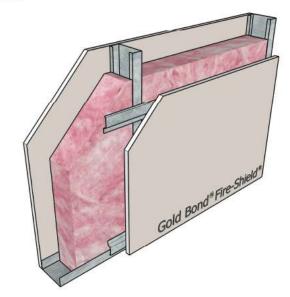
NGC 2013020

Framing:	3-5/8" steel studs, 20 gauge, 24" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" SoundBreak XP Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on RC-1

У

UL Design: V438, U465 - 1 hour

Figure 56



STC-50

NGC 2013019

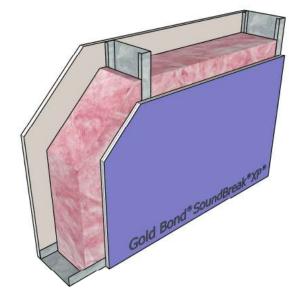
NGC 2013028

Framing:	3-5/8" steel studs, 20 gauge , 24" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on RC-1

UL Design: V438, U465 - 1 hour

Figure 58

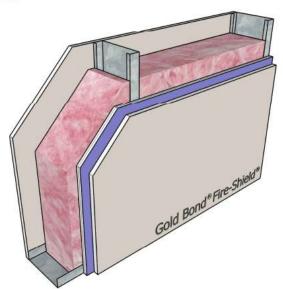
STC-56



Framing:	6" steel studs, 20 gauge , 24" o.c.
Insulation:	6" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board

UL Design: V438, U465 - 1 hour

Figure 59

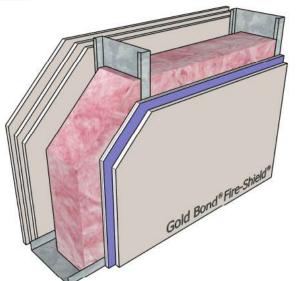


STC-57

NRCC B-3456.1

Framing:	6" steel studs, 25 gauge, 24" o.c.
Insulation:	6" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on
	5/8" SoundBreak XP Gypsum Board
UL Design:	V438, U465 - 1 hour

Figure 61



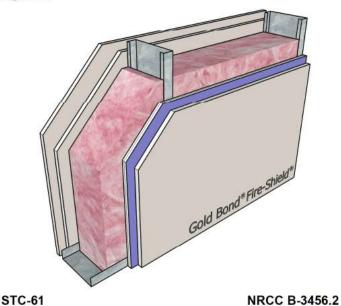
STC-57

NGC 2009035

Framing:	8" steel studs, 18 gauge, 24" o.c.	
Insulation:	6-1/4" glass fiber	
Side 1:	3 layers Fire-Shield Gypsum Board	
Side 2:	5/8" Fire-Shield Gypsum Board on	
	5/8" SoundBreak XP Gypsum Board	

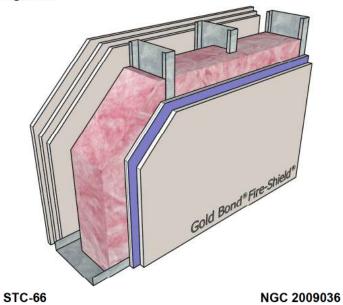
UL Design: U411 - 2 hour

Figure 60



510-01	NRCC B-3450
Framing:	6" steel studs, 25 gauge, 24" o.c.
Insulation:	6" glass fiber
Side 1:	2 layers 5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on
	5/8" SoundBreak XP Gypsum Board
UL Design:	V438, U411 - 2 hour

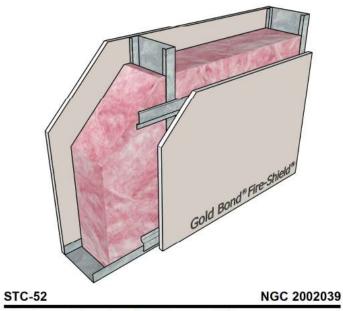
Figure 62



Framing:	6" steel studs, 18 gauge, 24" o.c., staggered in
	8" track
Insulation:	6-1/4" glass fiber
Side 1:	3 layers Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on
	5/8" SoundBreak XP Gypsum Board
UL Design:	U411 - 2 hour
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Figure 63

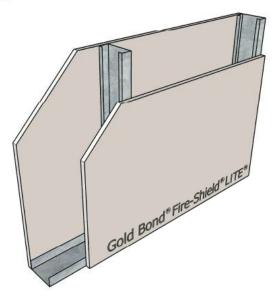


Framing:	6" steel studs, 25 gauge, 24" o.c.	
Insulation:	6" glass fiber	
Side 1:	5/8" Fire-Shield C Gypsum Board	
<u></u>		-

Side 2: 5/8" Fire-Shield C Gypsum Board on RC-1

UL Design: V438, U465 - 1 hour

Figure 64

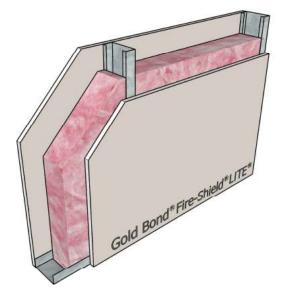


STC-38

STC-38	NGC 2014015
Framing:	3-5/8" steel studs, 25 gauge, 24" o.c.
Insulation:	None
Side 1:	5/8" Fire-Shield LITE Gypsum Board
Side 2:	5/8" Fire-Shield LITE Gypsum Board

UL Design: V438, U465 - 1 hour

Figure 66



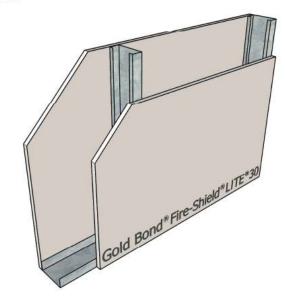
510-44	sт	C.	-44	
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NGC	2014014

Framing:	3-5/8" steel studs, 25 gauge, 24" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield LITE Gypsum Board
Side 2:	5/8" Fire-Shield LITE Gypsum Board

UL Design: V438, U465 - 1 hour

Figure 65



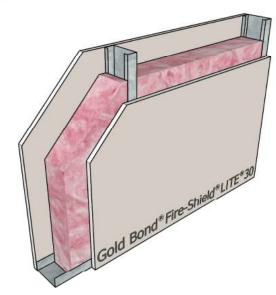
STC-36

NGC 2014006

Framing:	3-5/8" steel studs, 25 gauge, 24" o.c.
Insulation:	None
Side 1:	5/8" Fire-Shield LITE 30 Gypsum Board
Side 2:	5/8" Fire-Shield LITE 30 Gypsum Board

UL Design: W411 - 1/2 hour

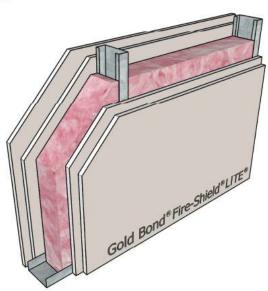
Figure 67



STC-46	NGC 2014005
Framing:	3-5/8" steel studs, 25 gauge, 24" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield LITE 30 Gypsum Board
Side 2:	5/8" Fire-Shield LITE 30 Gypsum Board

UL Design: W411 - 1/2 hour

Figure 68



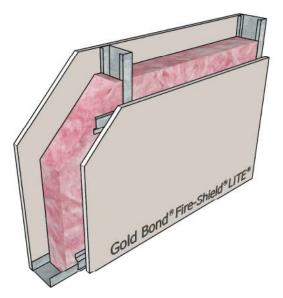
STC-54

NGC 2014017

- Framing:3-5/8" steel studs, 25 gauge, 24" o.c.Insulation:3-1/2" glass fiberSide 1:2 layers 5/8" Fire-Shield LITE Gypsum Board
- Side 2: 2 layers 5/8" Fire-Shield LITE Gypsum Board

UL Design: V438, U411 - 2 hour

Figure 70



STC-50

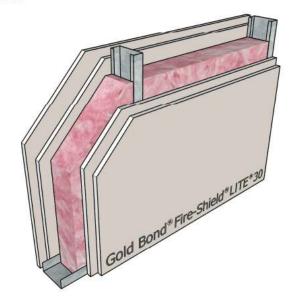
NGC 2014016

Framing:	3-5/8" steel studs, 25 gauge, 24" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield LITE Gypsum Board
Side 2 [.]	5/8" Fire-Shield LITE Gypsum Board on F

Side 2: 5/8" Fire-Shield LITE Gypsum Board on RC-1

UL Design: V438, U465 - 1 hour

Figure 69

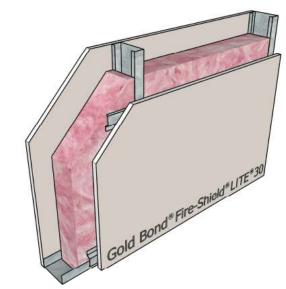


STC-54NGC 2014008Framing:3-5/8" steel studs, 25 gauge, 24" o.c.Insulation:3-1/2" glass fiberSide 1:2 layers 5/8" Fire-Shield LITE 30 Gypsum BoardSide 2:2 layers 5/8" Fire-Shield LITE 30 Gypsum Board

UL Design: W411 - 1 hour

Figure 71

STC-49



Framing:	3-5/8" steel studs, 25 gauge, 24" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield LITE 30 Gypsum Board
Side 2:	5/8" Fire-Shield LITE 30 Gypsum Board on RC-1

NGC 2014007

UL Design: W411 - 1/2 hour

26



Steel Stud Chase Walls



Steel Stud Chase Walls

Figure 73

Figure 72

Gold Bond "Fire-Shield"

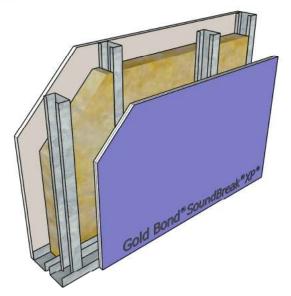
STC-52

RAL-TL76-155

NGC 2008036

Framing:	Double row 1-5/8" steel studs, 25 gauge,
	24" o.c., braced with gypsum board gussets
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board
UL Design:	U420 - 1 hour

Figure 74



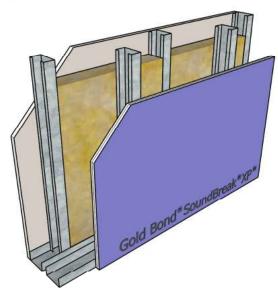
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Framing:	Double row 2-1/2" steel studs, 25 gauge,
	24" o.c. staggered
Insulation:	3" mineral wool
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board
UL Design:	V488 - 1 hour

Gold Bond* Fire-Shield*

STC-57RAL-TL76-156Framing:Double row 1-5/8" steel studs, 25 gauge,
24" o.c., braced with gypsum board gussetsInsulation:3-1/2" glass fiberSide 1:2 layers 5/8" Fire-Shield Gypsum BoardSide 2:2 layers 5/8" Fire-Shield Gypsum BoardUL Design:U420 - 2 hour

Figure 75



STC-57	NGC 2008035
Framing:	Double row 2-1/2" steel studs, 25 gauge,
	16" o.c. staggered
Insulation:	3" mineral wool
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board
UL Design:	V488 - 1 hour







Figure 77

Figure 76

Gold Bond* Fire

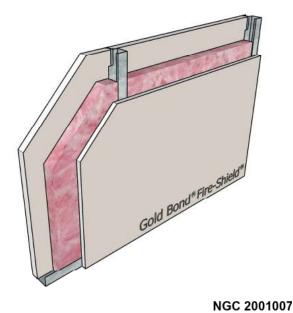
STC-34

NGC 2001001

Framing:	2-1/2" steel CT studs, 25 gauge, 24" o.c.
Insulation:	None
Side 1:	1" Fire-Shield Shaftliner
Side 2:	5/8" Fire-Shield Gypsum Board

UL Design: U499, W419 - 1 hour

Figure 78



S	ТС	-39	

Framing:	2-1/2" steel CT studs, 25 gauge, 24" o.c.
Insulation:	1-1/2" glass fiber
Side 1:	1" Fire-Shield Shaftliner

Side 2: 5/8" Fire-Shield Gypsum Board

UL Design: U499, W419 - 1 hour

STC-37

NGC 2001003

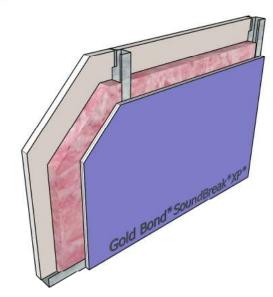
Gold Bond*Fire-sh

Framing: 2-1/2" steel CH studs, 25 gauge, 24" o.c. Insulation: None Side 1: 1" Fire-Shield Shaftliner Side 2: 5/8" Fire-Shield Gypsum Board

UL Design: U499, W419 - 1 hour

Figure 79

STC-44



Framing:	2-1/2" steel CT studs, 25 gauge, 24" o.c.
Insulation:	1-1/2" glass fiber
Side 1:	1" Fire-Shield Shaftliner
Side 2:	5/8" SoundBreak XP Gypsum Board

UL Design: U499, W419 - 1 hour

Figure 81

Figure 80

Gold Bond* Fires

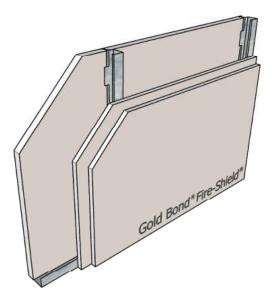
STC-40

NGC 2001005

- Framing: 2-1/2" steel CH studs, 25 gauge, 24" o.c. Insulation: 1-1/2" glass fiber
- Side 1: 1" Fire-Shield Shaftliner
- Side 2: 5/8" Fire-Shield Gypsum Board

UL Design: U499, W419 - 1 hour

Figure 82



STC-40

NGC 2001004

Framing: 2-1/2" steel CT studs, 25 gauge, 24" o.c. Insulation: None Side 1: 1" Fire-Shield Shaftliner

- Side 2: 2 layers 5/8" Fire-Shield Gypsum Board

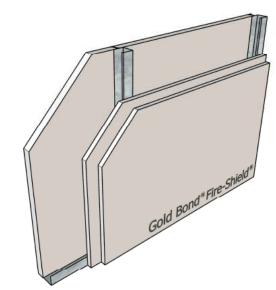
UL Design: U497, W419 - 2 hour

NGC 2542

Framing: 2-1/2" steel I-studs, 25 gauge, 24" o.c. 1-1/2" glass fiber Insulation: Side 1: 1" Fire-Shield Shaftliner 5/8" Fire-Shield Gypsum Board Side 2:

UL Design: U499, W419 - 1 hour

Figure 83



STC-39	NGC 2001002
Framing:	2-1/2" steel CH studs, 25 gauge, 24" o.c.
Insulation:	None
Side 1:	1" Fire-Shield Shaftliner
Side 2:	2 layers 5/8" Fire-Shield Gypsum Board

UL Design: U497, W419 - 2 hour

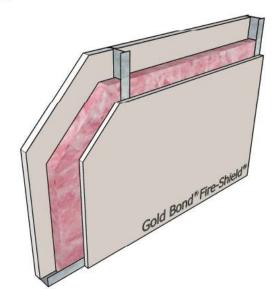


Figure 85

Figure 84

Gold Bond* Fire Shield*

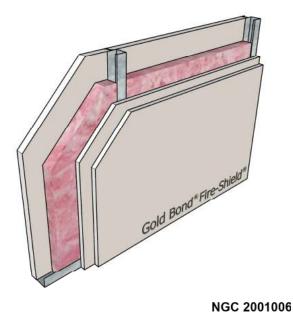
STC-45

NGC 2001008

-	
Framing:	2-1/2" steel CT studs, 25 gauge, 24" o.c.
Insulation:	1-1/2" glass fiber
Side 1:	1" Fire-Shield Shaftliner
Side 2:	2 layers 5/8" Fire-Shield Gypsum Board

UL Design: U497, W419 - 2 hour

Figure 86



STC-46

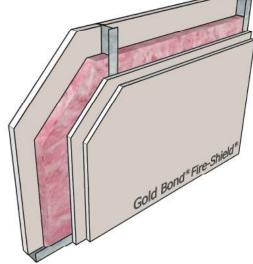
Framing:	2-1/2" steel CH studs, 25 gauge, 24" o.c.
Insulation:	1-1/2" glass fiber
Side 1:	1" Fire-Shield Shaftliner
Side 2 [·]	2 lavers 5/8" Fire-Shield Gynsum Board

Side 2: 2 layers 5/8" Fire-Shield Gypsum Board

UL Design: U497, W419 - 2 hour

STC-51

Framing: 2-1/2" steel CT studs, 25 gauge, 24" o.c. Insulation: 1-1/2" glass fiber Side 1: 1" Fire-Shield Shaftliner Side 2: 5/8" Fire-Shield Gypsum Board on 5/8" SoundBreak XP Gypsum Board UL Design: U497, W419 - 2 hour Figure 87



Framing:	2-1/2" steel I-studs, 25 gauge, 24" o.c.
Insulation:	1-1/2" glass fiber
Side 1:	1" Fire-Shield Shaftliner
Side 2:	2 layers 5/8" Fire-Shield Gypsum Board

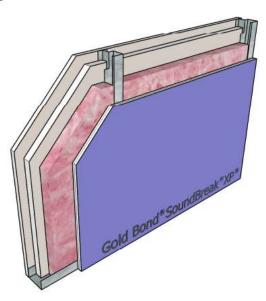
UL Design: U497, W419 - 2 hour

STC-48

NGC 2015037

Gold Bond" Fire-

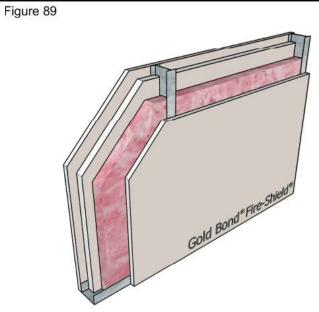
Figure 88



STC-53

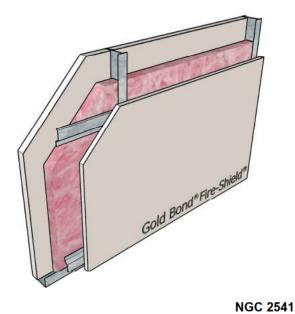
NGC 2015036

Framing:	2-1/2" steel CT studs, 25 gauge, 24" o.c.
Insulation:	1-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board on
	1" Fire-Shield Shaftliner
Side 2:	5/8" SoundBreak XP Gypsum Board
UL Design:	U498, W419 - 2 hour



STC-48	NGC 2534
Framing:	2-1/2" steel I-studs, 25 gauge, 24" o.c.
Insulation:	1-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board on
	1" Fire-Shield Shaftliner
Side 2:	5/8" Fire-Shield Gypsum Board
UL Design:	U498, W419 - 2 hour
Figure 91	

Figure 90

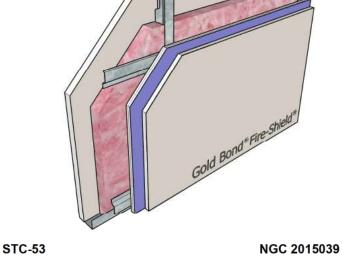


STC-48

Framing: 2-1/2" steel I-studs, 25 gauge, 24" o.c. Insulation: 1-1/2" glass fiber

- Side 1: 1" Fire-Shield Shaftliner
- Side 2: 5/8" Fire-Shield Gypsum Board on RC-1

UL Design: U499, W419 - 1 hour



Framing:	2-1/2" steel CT studs, 25 gauge, 24" o.c.
Insulation:	1-1/2" glass fiber
Side 1:	1" Fire-Shield Shaftliner
Side 2:	5/8" Fire-Shield Gypsum Board on
	5/8" SoundBreak XP Gypsum Board on RC-1
UL Design:	U497, W419 - 2 hour

Shaftwall Partitions

Figure 93

Figure 92

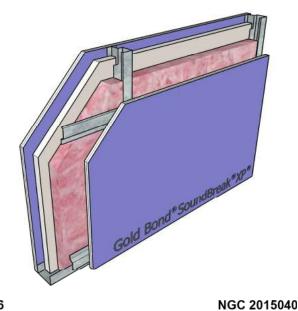
Gold Bond* Fire

STC-51

NGC 2540

- Framing: 2-1/2" steel I-studs, 25 gauge, 24" o.c.
- Insulation: 1-1/2" glass fiber
- Side 1: 1" Fire-Shield Shaftliner
- 2 layers 5/8" Fire-Shield Gypsum Board on RC-1 Side 2:
- UL Design: U497, W419 2 hour

Figure 94



SI	C-	56
•	-	

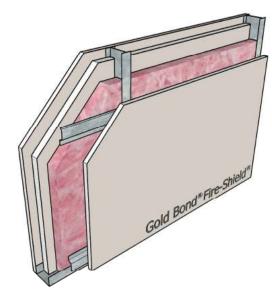
010-00	1100 20100
Framing:	2-1/2" steel CT studs, 25 gauge, 24" o.c.
Insulation:	1-1/2" glass fiber
Side 1:	5/8" SoundBreak XP Gypsum Board on
	1" Fire-Shield Shaftliner
Side 2:	5/8" SoundBreak XP Gypsum Board on RC-1
UL Design:	U498, W419 - 2 hour

Gold Bond* Fire-

STC-55 Framing: 2-1/2" steel CT studs, 25 gauge, 24" o.c. Insulation: 1-1/2" glass fiber Side 1: 5/8" SoundBreak XP Gypsum Board on 1" Fire-Shield Shaftliner Side 2: 5/8" Fire-Shield Gypsum Board on RC-1 UL Design: U498, W419 - 2 hour

Figure 95

STC-52



Framing:	2-1/2" steel I-studs, 25 gauge, 24" o.c.
Insulation:	1-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board on
	1" Fire-Shield Shaftliner
Side 2:	5/8" Fire-Shield Gypsum Board on RC-1
UL Design:	U498, W419 - 2 hour

NGC 2015041

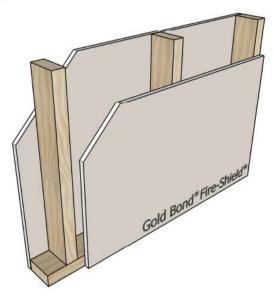
NGC 2538

Figure 96	Shaftwall	Partitions Figure 97	
	Gold Bond® Fre-Shield®		Gold Bond" Fire Shield"
STC-47	NGC 2015044	STC-51	NGC 2015047
	4" steel CH studs, 25 gauge, 24" o.c.		CH studs, 25 gauge, 24" o.c.
	3" glass fiber	Insulation: 3" glass f	
	1" Fire-Shield Shaftliner		hield Shaftliner
Side 2:	5/8" Fire-Shield Gypsum Board	Side 2: 5/8" Fire-	Shield Gypsum Board on RC-1
	U499, W419 - 1 hour	UL Design: U499, W	





Figure 98



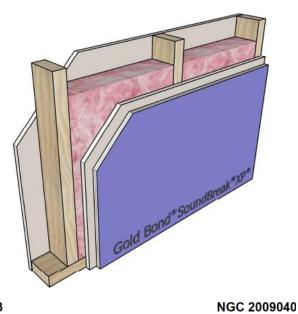
STC-34

NGC 21	61
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Framing:	2x4 wood studs, 16" o.c.
Insulation:	None
Side 1:	1/2" Fire-Shield C Gypsum Board
Side 2:	1/2" Fire-Shield C Gypsum Board

UL Design: U317 - 45 minutes

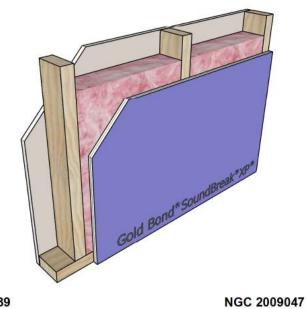
Figure 100



STC-43

Framing:	2x4 wood studs, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	1/2" Gold Bond Gypsum Board
Side 2:	1/2" SoundBreak XP Gypsum Board on
	1/2" Gold Bond Gypsum Board
UL Design:	Not Rated

Figure 99

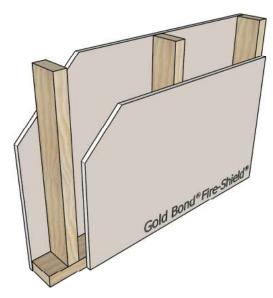


STC-39

Framing:	2x4 wood studs, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	1/2" Gold Bond Gypsum Board
Side 2:	1/2" SoundBreak XP Gypsum Board

UL Design: Not Rated

Figure 101



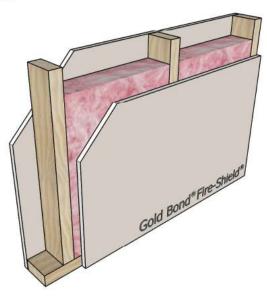
Framing:	2x4 wood studs, 16" o.c.
Insulation:	None
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board

UL Design: U305 - 1 hour

STC-35

NGC 2403

Figure 102



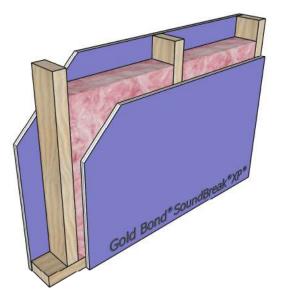
STC-36

NGC 2008029

Framing:	2x4 wood studs, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board

UL Design: U305 - 1 hour

Figure 104

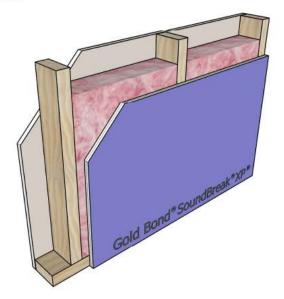


STC-45

STC-45	NGC 2009019
Framing:	2x4 wood studs, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" SoundBreak XP Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board

UL Design: U305 - 1 hour

Figure 103



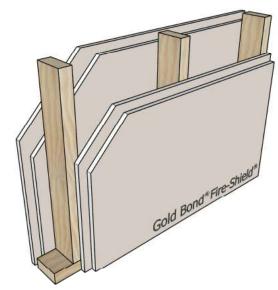
STC-42

NGC 2009020

Framing:	2x4 wood studs, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board

UL Design: U305 - 1 hour

Figure 105

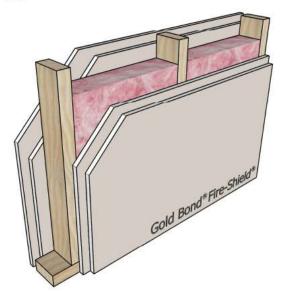


STC-40	NGC 2363
Framing: Insulation: Side 1: Side 2:	2x4 wood studs, 16" o.c. None 2 layers 5/8" Fire-Shield Gypsum Board 2 layers 5/8" Fire-Shield Gypsum Board

UL Design: U301 - 2 hour

Figure 107

Figure 106



STC-41

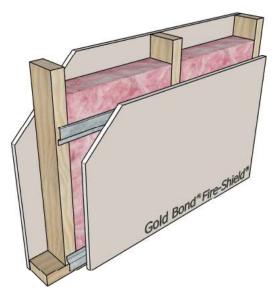
NGC 2364

NGC 2011071

Framing:	2x4 wood studs, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	2 layers 5/8" Fire-Shield Gypsum Board
Side 2:	2 layers 5/8" Fire-Shield Gypsum Board

UL Design: U301 - 2 hour

Figure 108



STC-51

Framing:	2x4 wood studs, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on RC-1

UL Design: U305 - 1 hour

STC-45

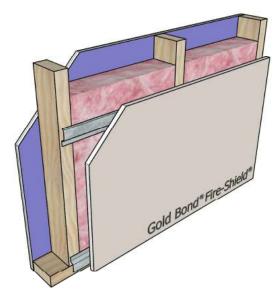
NGC 200901	7	01	90	0	20	IGC	N	
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Gold Bond® Fire-Sh

Framing:	2x4 wood studs, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield on 5/8" SoundBreak XP
Side 2:	5/8" Fire-Shield on 5/8" SoundBreak XP

UL Design: U301 - 2 hour

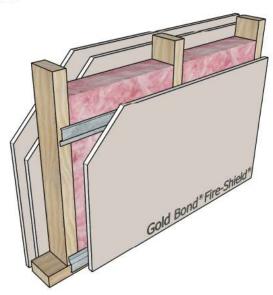
Figure 109



STC-54	NGC 2011066
-	2x4 wood studs, 16" o.c. 3-1/2" glass fiber 5/8" SoundBreak XP Gypsum Board 5/8" Fire-Shield Gypsum Board on RC-1

UL Design: U305 - 1 hour

Figure 110



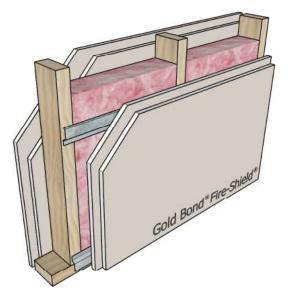
STC-55

NGC 2011070

Framing:	2x4 wood studs, 16" o.c.
Insulation:	3-1/2" fiber glass
Side 1:	2 layers 5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on RC-1

UL Design: U305 - 1 hour

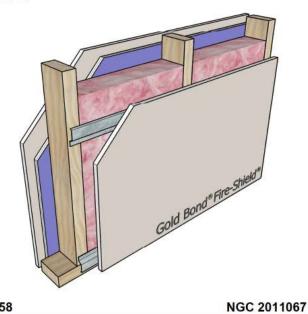
Figure 112



STC-58	NGC 2011069
Framing:	2x4 wood studs, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	2 layers 5/8" Fire-Shield Gypsum Board
Side 2:	2 layers 5/8" Fire-Shield Gypsum Board on RC-1

UL Design: U301 - 2 hours

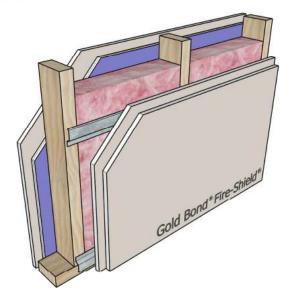
Figure 111



STC-58

Framing: 2x4 wood studs, 16" o.c. Insulation: 3-1/2" glass fiber Side 1: 5/8" Fire-Shield Gypsum Board on 5/8" SoundBreak XP Gypsum Board 5/8" Fire-Shield Gypsum Board on RC-1 Side 2:

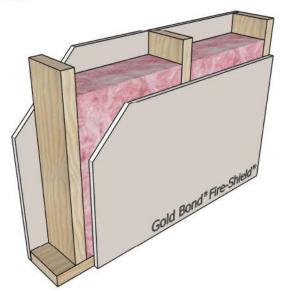
UL Design: U305 - 1 hour



STC-61	NGC 2011068
Framing:	2x4 wood studs, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board on
	5/8" SoundBreak XP Gypsum Board
Side 2:	2 layers 5/8" Fire-Shield Gypsum Board on RC-1
UL Design:	U301 - 2 hours

Figure 115

Figure 114



STC-38

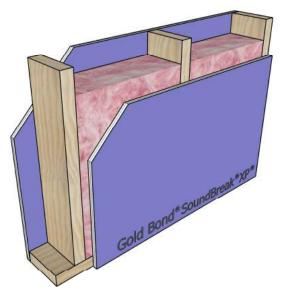
NGC 2008032

NGC 2009012

Framing:	2x6 wood studs, 16" o.c.
Insulation:	5-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board

UL Design: U305 - 1 hour

Figure 116



STC-44

Framing:	2x6 wood studs, 16" o.c.
Insulation:	5-1/2" glass fiber
Side 1:	5/8" SoundBreak XP Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board

UL Design: U305 - 1 hour

STC-42

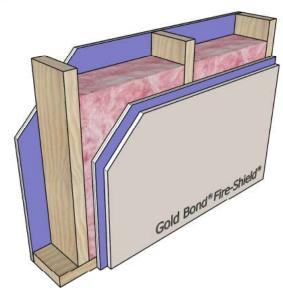
NGC 2009008

Framing:	2x6 wood studs, 16" o.c.
Insulation:	5-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board
Side 1:	5/8" Fire-Shield Gypsum Board

Bond* Sound

UL Design: U305 - 1 hour

Figure 117



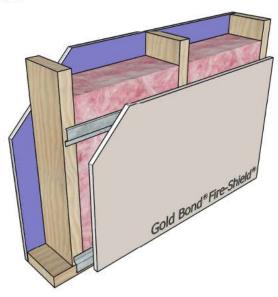
STC-46	NG
Framing:	2x6 wood studs, 16" o.c.
Insulation:	5-1/2" glass fiber
Side 1:	5/8" SoundBreak XP Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on
	5/8" SoundBreak XP Gypsum Board

UL Design: U305 - 1 hour

NGC 2009010

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Figure 118



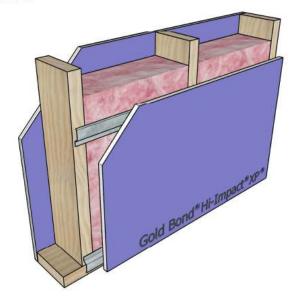
STC-57

NGC 2010081

Framing:	2x6 wood studs, 16" o.c.
Insulation:	5-1/2" glass fiber
Side 1:	5/8" SoundBreak XP Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on RC-1

UL Design: U305 - 1 hour

Figure 119

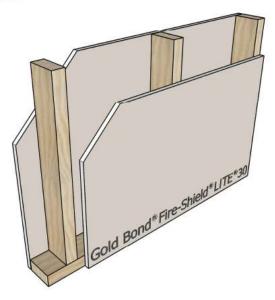


STC-58	NGC 2010080
0	2x6 wood studs, 16" o.c. 5-1/2" glass fiber 5/8" SoundBreak XP Gypsum Board 5/8" Hi-Impact XP Gypsum Board on RC-1

UL Design: U305 - 1 hour

Figure 121

Figure 120



STC-33

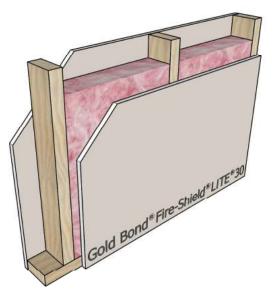
NG	C	20	140	46
	-	_		

NGC 2014045

Framing:	2x4 wood studs, 16" o.c.
Insulation:	None
Side 1:	5/8" Fire-Shield LITE 30 Gypsum Board
Side 2:	5/8" Fire-Shield LITE 30 Gypsum Board

UL Design: W411 - 1/2 hour

Figure 122



STC-34

Framing:	2x4 wood studs, 16" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield LITE 30 Gypsum Board
Side 2:	5/8" Fire-Shield LITE 30 Gypsum Board

UL Design: W411 - 1/2 hour

STC-35

C-35		

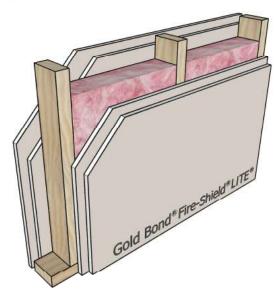
Framing:	2x4 wood studs, 16" o.c.
Insulation:	3 1/2" glass fiber
Side 1:	5/8" Fire-Shield LITE Gypsum Board
Side 2:	5/8" Fire-Shield LITE Gypsum Board

Gold Bond* Fire-Shield*L1

NGC 2014041

UL Design: U305 - 1 hour

Figure 123



STC-38	
Framing:	2x4 wood studs, 16" o.c.
Insulation:	3-1/2" glass fiber

moulation.	
Side 1:	2 layers 5/8" Fire-Shield LITE Gypsum Board
Side 2:	2 layers 5/8" Fire-Shield LITE Gypsum Board

UL Design: U301 - 2 hour

47

NGC 2014042

Figure 124

Gold Bond® Fire-Shield® LITE®

STC-48

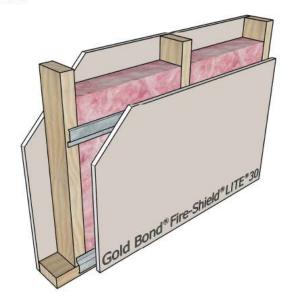
NGC 2014043

Framing:	2x4 wood studs, 16" o.c.
Insulation:	3 1/2" glass fiber
Side 1:	5/8" Fire-Shield LITE Gypsum Board
	CIOU Eles Objetate TE O

Side 2: 5/8" Fire-Shield LITE Gypsum Board on RC-1

UL Design: U305 - 1 hour

Fic	ure	125
	ule	120



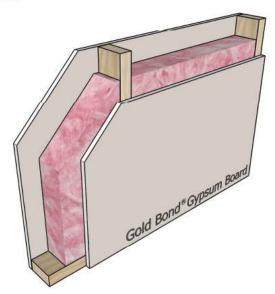
STC-45	NGC 2014044
Framing:	2x4 wood studs, 16" o.c.
Insulation:	3 1/2" glass fiber
Side 1:	5/8" Fire-Shield LITE 30 Gypsum Board
Side 2:	5/8" Fire-Shield LITE 30 Gypsum Board on RC-1
UL Design:	W411 - 1/2 hour





Figure 127

Figure 126



STC-42

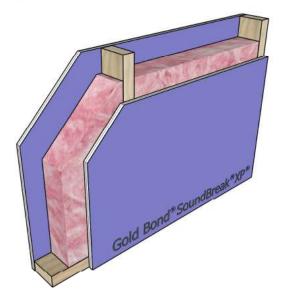
NGC 2012065

NGC 2009029

Framing:	2x4 wood studs, 24" o.c.
Insulation:	3-1/2" glass fiber
Side 1:	1/2" Gold Bond Gypsum Board
Side 2:	1/2" Gold Bond Gypsum Board

UL Design: Not Rated

Figure 128



STC-51

Framing:	2x4 wood studs, 24" o.c.
Insulation:	3 1/2" glass fiber
Side 1:	1/2" SoundBreak XP Gypsum Board
Side 2:	1/2" SoundBreak XP Gypsum Board

UL Design: Not Rated

- --- ---

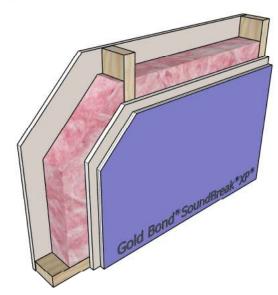
S	Т	C-49	
-			

2x4 wood studs, 24" o.c.
3 1/2" glass fiber
1/2" Gold Bond Gypsum Board
1/2" SoundBreak XP Gypsum Board

UL Design: Not Rated

Figure 129

STC-51

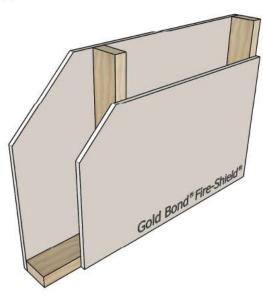


Bond® Soun

Framing:	2x4 wood studs, 24" o.c.
	3-1/2" fiber glass
Side 1:	1/2" Gold Bond Gypsum Board
Side 2:	1/2" SoundBreak XP Gypsum Board on
	1/2" Gold Bond Gypsum Board
UL Design:	Not Rated

NGC 2009028

Figure 130



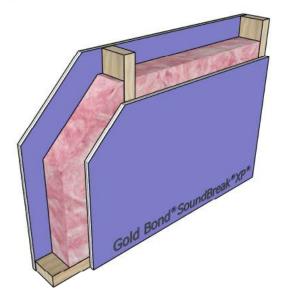
STC-38

NGC	2404
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Framing:	2x4 wood studs, 24" o.c.
Insulation:	None
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board

UL Design: U309 - 1 hour

Figure 132

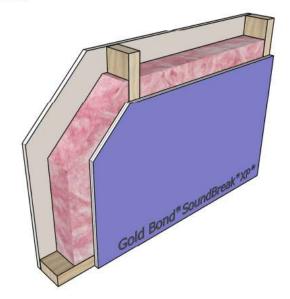


STC-53

STC-53	RAL-TL07-145
Framing:	2x4 wood studs, 24" o.c.
Side 1:	3 1/2" glass fiber 5/8" SoundBreak XP Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board

UL Design: U309 - 1 hour

Figure 131



STC-50

NGC 2009015

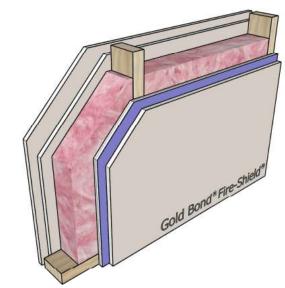
NGC 2009016

Framing:	2x4 wood studs, 24" o.c.
Insulation:	3 1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board

UL Design: U309 - 1 hour

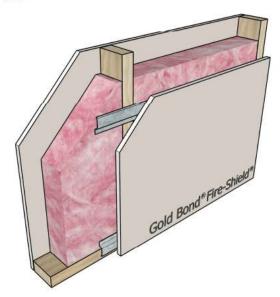
Figure 133

STC-54



Framing:	2x4 wood studs, 24" o.c.
Insulation:	None
Side 1:	2 layers 5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on
	5/8" SoundBreak XP Gypsum Board
GA File:	WP 4135 - 2 hour

Figure 134



STC-50

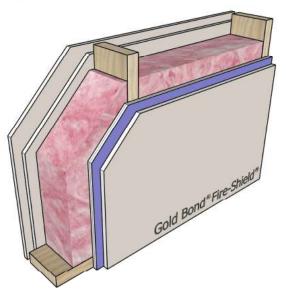
NRCC TL-93-196

Framing:	2x4 wood studs, 24" o.c.	
Insulation:	3-1/2" glass fiber	
Side 1:	5/8" Fire-Shield C Gypsum Board	
<u>.</u>		

Side 2: 5/8" Fire-Shield C Gypsum Board on RC-1

UL Design: U309 - 1 hour

Figure 136

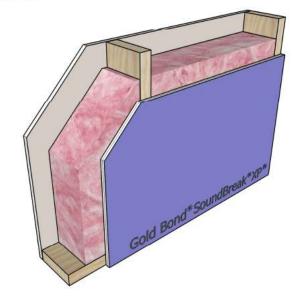


STC-53

NGC 2009014

Framing:	2x6 wood studs, 24" o.c.
Insulation:	5-1/2" glass fiber
Side 1:	2 layers 5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board on
	5/8" SoundBreak XP Gypsum Board
GA File:	WP 4135 - 2 hour

Figure 135



STC-50

NGC 2	puud	013

Framing:	2x6 wood studs, 24" o.c.
Insulation:	5-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board

UL Design: U309 - 1 hour

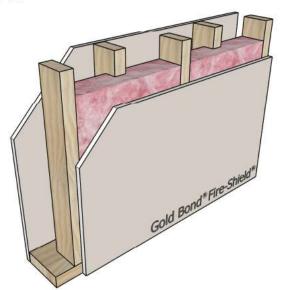


Wood Stud Chase Walls



Wood Stud Chase Walls

Figure 137

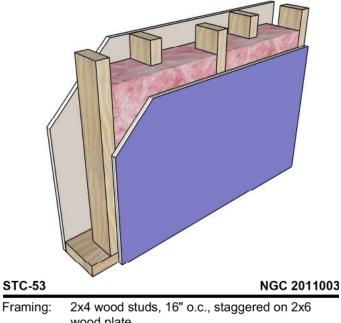


STC-45

NGC 2375

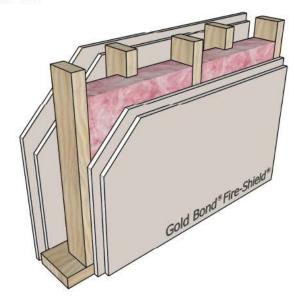
Framing:	2x4 wood studs, 16" o.c., staggered on 2x6 wood plate
Insulation:	3-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" Fire-Shield Gypsum Board
GA File:	WP 5515 - 1 hour

Figure 139

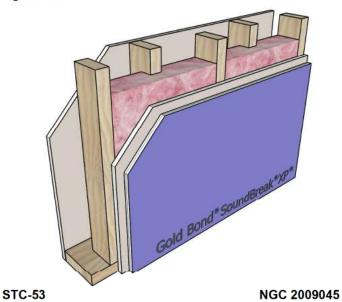


Framing:	2x4 wood studs, 16" o.c., staggered on 2x6 wood plate
Insulation:	5-1/2" glass fiber
Side 1:	5/8" Fire-Shield Gypsum Board
Side 2:	5/8" SoundBreak XP Gypsum Board
GA File:	WP 5515 - 1 hour

Figure 138



STC-53NGC 2376Framing:2x4 wood studs, 16" o.c., staggered on 2x6
wood plateInsulation:3-1/2" glass fiberSide 1:2 layers 5/8" Fire-Shield Gypsum BoardSide 2:2 layers 5/8" Fire-Shield Gypsum BoardGA File:WP 5530 - 2 hour



Framing:	2x4 wood studs, 16" o.c., staggered on 2x6 wood plate
Insulation:	•
Side 1:	1/2" Gold Bond Gypsum Board
Side 2:	1/2" SoundBreak XP Gypsum Board on
	1/2" Gold Bond Gypsum Board
UL Design:	

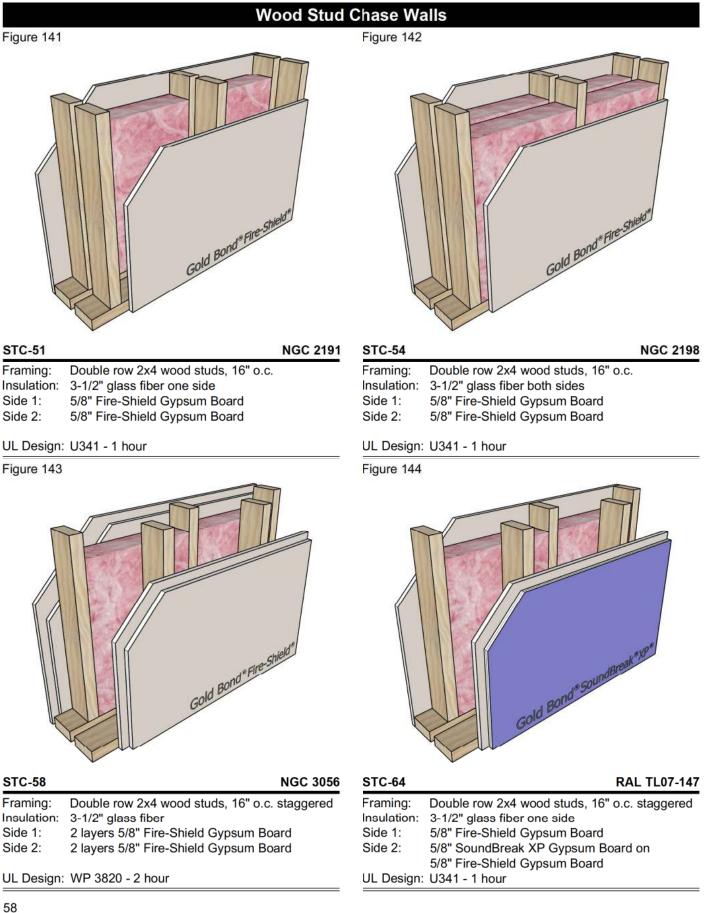
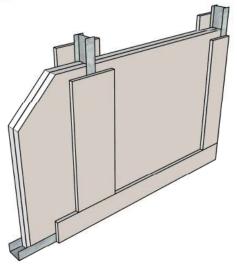






Figure 145

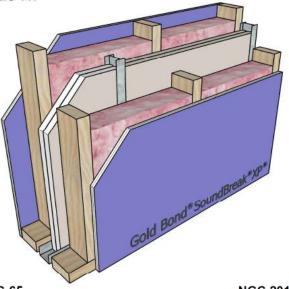


STC-35

NGC 2827

2" H-studs, 24" o.c. with 2 layers 1" Fire-Shield Shaftliner between studs
None
None
6" wide 1/2" Fire-Shield C gypsum board battens
6" wide 1/2" Fire-Shield C gypsum board battens
U347 - 2 hour

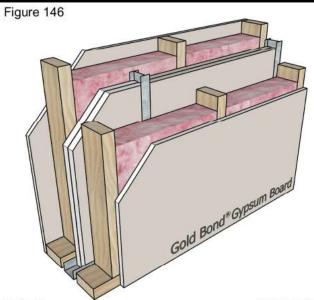




STC-65	
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NGC 2012081

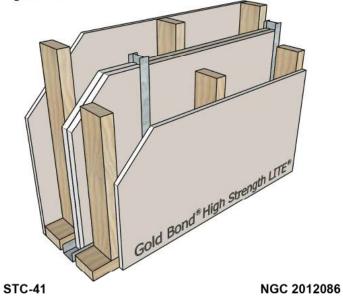
Fire Wall:	2" H-studs, 24" o.c. with 2 layers 1" Fire-Shield
	Shaftliner between studs; 3/4" air space
Framing:	2x4 wood studs, 16" o.c. each side
Insulation:	3-1/2" glass fiber each side
Side 1:	1/2" SoundBreak XP Gypsum Board
Side 2:	1/2" SoundBreak XP Gypsum Board
UL Design:	U347 - 2 hour
or besign.	



STC-61

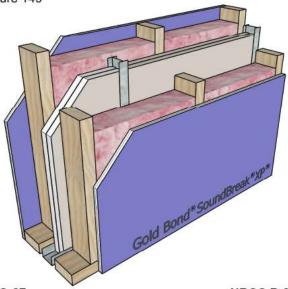
RAL-TL05-199

Fire Wall:	2" H-studs, 24" o.c. with 2 layers 1" Fire-Shield	
	Shaftliner between studs; 3/4" air space	
Framing:	2x4 wood studs, 16" o.c. each side	
Insulation:	3-1/2" glass fiber each side	
Side 1:	1/2" Gold Bond Gypsum Board	
Side 2:	1/2" Gold Bond Gypsum Board	
UL Design:	U347 - 2 hour	



Fire Wall:	2" H-studs, 24" o.c. with 2 layers 1" Fire-Shield
	Shaftliner between studs; 3/4" air space
Framing:	2x4 wood studs, 16" o.c. each side
Insulation:	None
Side 1:	1/2" High Strength LITE Gypsum Board
Side 2:	1/2" High Strength LITE Gypsum Board
UL Design:	U347 - 2 hour

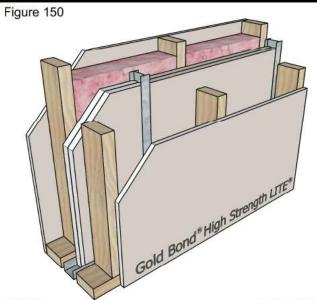
Figure 149



STC-67

NRCC B-3451.1

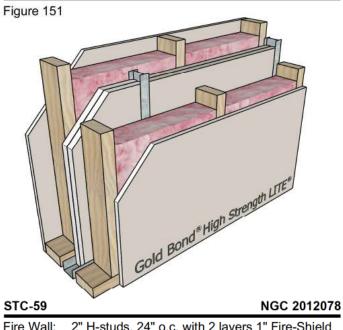
Fire Wall:	2" H-studs, 24" o.c. with 2 layers 1" Fire-Shield	
	Shaftliner between studs; 3/4" air space	
Framing:	2x4 wood studs, 16" o.c. each side	
Insulation:	3-1/2" glass fiber each side	
Side 1:	5/8" SoundBreak XP Gypsum Board	
Side 2:	5/8" SoundBreak XP Gypsum Board	
UL Design:	U347 - 2 hour	



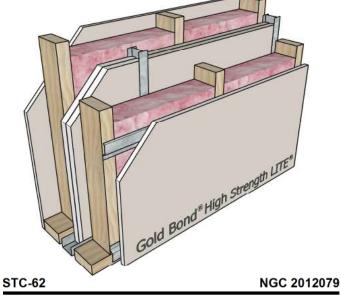
STC-54 Fire Wall: 2" H-

NGC 2012087

Fire Wall:	2" H-studs, 24" o.c. with 2 layers 1" Fire-Shield
	Shaftliner between studs; 3/4" air space
Framing:	2x4 wood studs, 16" o.c. each side
Insulation:	3-1/2" glass fiber one side
Side 1:	1/2" High Strength LITE Gypsum Board
Side 2:	1/2" High Strength LITE Gypsum Board
UL Design:	U347 - 2 hour



2" H-studs, 24" o.c. with 2 layers 1" Fire-Shield	
Shaftliner between studs; 3/4" air space	
2x4 wood studs, 16" o.c. each side	
3-1/2" glass fiber each side	
1/2" High Strength LITE Gypsum Board	
1/2" High Strength LITE Gypsum Board	
U347 - 2 hour	



Fire Wall:	2" H-studs, 24" o.c. with 2 layers 1" Fire-Shield	
	Shaftliner between studs; 3/4" air space	
Framing:	2x4 wood studs, 16" o.c. each side	
Insulation:	None	
Side 1:	1/2" High Strength LITE Gypsum Board	
Side 2:	1/2" High Strength LITE Gypsum Board on RC-1	
UL Design:	U347 - 2 hour	



Gold Bond[®] Fire-Shield[®] Litte STC-57 NGC 2012083

Figure 154 Gold Bond* High Strength LITE STC-44 NGC 2012088 2" H-studs, 24" o.c. with 2 layers 1" Fire-Shield Fire Wall:

Fire Wall:	2" H-studs, 24" o.c. with 2 layers 1" Fire-Shield	
	Shaftliner between studs; 3/4" air space	
Framing:	2x4 wood studs, 16" o.c. each side	
Insulation:	3-1/2" glass fiber each side	
Side 1:	5/8" Fire-Shield LITE 30 Gypsum Board	
Side 2:	5/8" Fire-Shield LITE 30 Gypsum Board	
UL Design:	U347 - 2 hour	

	Shaftliner between studs; 3/4" air space
Framing:	2x4 wood studs, 24" o.c. each side
Insulation:	None
Side 1:	1/2" High Strength LITE Gypsum Board
Side 2:	1/2" High Strength LITE Gypsum Board
UL Design:	U347 - 2 hour



Floor-Ceiling Assemblies



Floor-Ceiling Assemblies

Figure 155

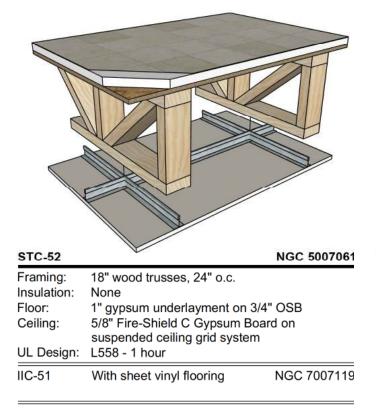
Figure 156

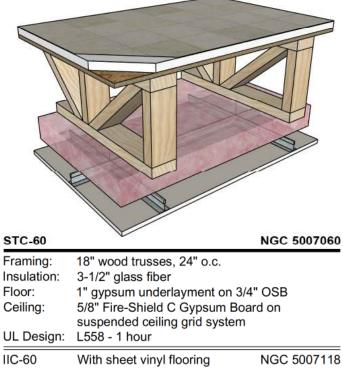




STC-37		NGC 4024
Framing:	2x10 wood joists, 16" o.c.	
Insulation:	None	
Floor:	19/32" wood structural panels on	
	15/32" plywood or 7/16" OSB	
Ceiling:	1/2" Fire-Shield C Gypsum Board	
UL Design:	L522 - 1 hour	
IIC - 32	Unfinished	NGC 5032
IIC - 66	With Carpet and Pad	NGC 5033
Figure 157		

STC-45		NGC 4107	
Framing:	2x10 wood joists, 16" o.c.		
Insulation:	None		
Floor:	19/32" wood structural panels on		
	15/32" plywood or 7/16" OSB		
Ceiling:	1/2" Fire-Shield C Gypsum Board on RC-1		
UL Design:			
IIC - 39	Unfinished	NGC 5161	
IIC - 63	With Carpet and Pad	NGC 5165	

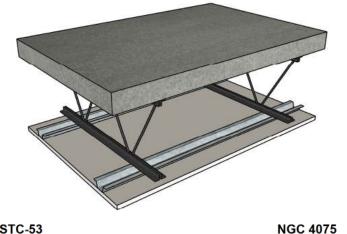




Floor-Ceiling Assemblies

Figure 159





STC-58		NGC 5007054	
Framing:	18" wood trusses, 24" o.c.		
Insulation:	None		
Floor:	3/4" gypsum underlayment on 0.18" rubber underlayment on 3/4" OSB		
Ceiling:	5/8" SoundBreak XP Gypsum Board on 5/8" Fire-Shield C Gypsum Board on RC-1		
UL Design:	L558 - 1 hour		
IIC-49	Unfinished	NGC 7007109	
IIC-51	With sheet vinyl flooring	NGC 7007110	

STC-53		NGC 4075
Framing: Insulation: Floor: Ceiling:	10J2 bar joists, 24" o.c. None 2-1/2" concrete on 3/8" rib lath or steel deck 1/2" Fire-Shield C Gypsum Board on 7/8" steel furring channel	
UL Design:	G514 - 2 hour	
IIC - 21	Unfinished	NGC 5121
IIC - 67	With Carpet and Pad	NGC 5122



Ceiling Attenuation Class of Gridstone Ceiling Assemblies

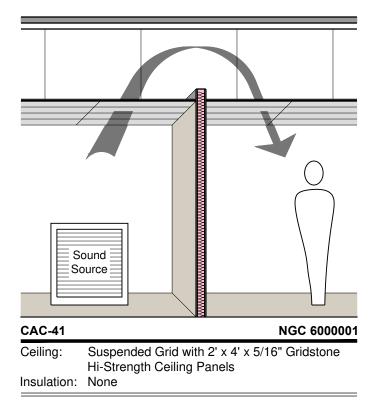


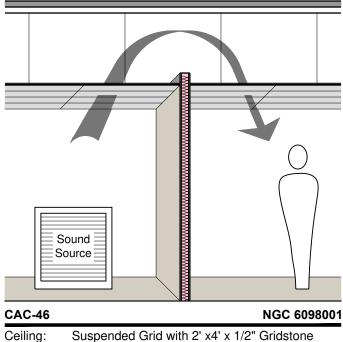
Ceiling Attenuation Class for Gridstone Ceiling Assemblies

Figure 72

Figure 72

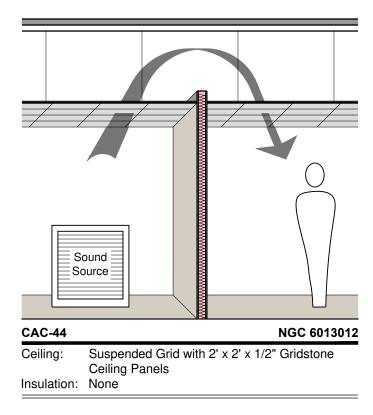
Figure 72

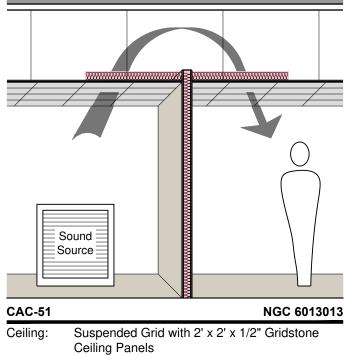




Ceiling:	Suspended Grid with 2' x4' x 1/2" Gridstone Ceiling Panels
Insulation:	None

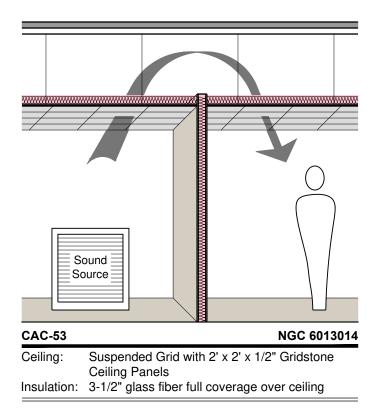
Figure 72





Insulation: 3 1/2" glass fiber 48" on each side of partition

Ceiling Attenuation Class for Gridstone Ceiling Assemblies





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