



# Commercial Design 2



## Commercial Design 2 206 Notes including

Sound discussion / Case Study Sound

STC Ratings using sectional wall assemblies

Specification sheet sample

Bar information from Commercial 1

Bed sizes

Workstations

## Soundproofing Basics

If you are considering a soundproofing project from a 30 story hotel to a bedroom in your home, chances are that you have done some research and are feeling a bit overwhelmed and confused about what really works and how many options you have.

This article is intended to give a clear and concise understanding behind the science of soundproofing coupled with the most popular and cost effective sound deadening solutions. We will keep it short and to the point - if you would like more in depth information just browse our soundproofing articles on the sidebar. We suggest that you read through the entire article once before clicking any links.

## How To Stop Sound

*Sound is a form of energy that travels as a wave* - when that wave hits a barrier as in a sheet of drywall, that barrier will vibrate and cause the air on the other side to vibrate, thus transferring the sound through the wall. There is no one-shot soundproofing technique that will stop noise in its tracks, rather we try to employ a combination of solutions to achieve solid performance.

## The four most important elements of soundproofing are:

1. Absorption

2. Damping
3. Decoupling
4. Mass



**Absorption** can be achieved by installing fiberglass of R-11 in 2x4 walls and R-19 in 2x6 walls and ceilings. Although fiberglass is not a major player, only adding 3-4 points, it is still a step that should be done in any serious soundproofing project. [Read more on insulation soundproofing].

**Damping** is the process of turning your barriers (drywall, sub floors) into dead panels that do not vibrate, thus preventing sound from passing through them. Damping is achieved by applying a damping compound in between two constrained layers.

**Decoupling** is meant to separate the attachment of walls from the studs, thereby breaking the direct path of sound, which can be done using resilient channel, and more importantly - with resilient sound clips. This decoupling technique actually adds another component called "resilience" to the walls. [Click here for an in depth explanation to decoupling ].

**Mass** simply means creating a heavier wall by using more (another layer) and/or thicker material.

## Which Soundproofing Materials To Use

A *damping compound* is a must on every soundproofing project. The highest performing damping compound is Green Glue Noiseproofing Compound, which can reduce up to 90% of your noise issues alone, and it's performance at low frequency ranges (below STC testing) is remarkable. There are 3 major players in the resilient sound clip market. Whisper Clip outperforms it's competition by 2-3 points, costs less and is easier to install, saving costs on labor. At Trademark Soundproofing, we have installed and sold thousands of square feet of sound proofing material. We can confidently tell you that aside from the third party test results, our actual field installation and consumer feedback has shown that Green Glue products outperform any similar products by far.

## Creating The Sound Proof Wall, Ceiling and Floor

**Walls and Ceilings:** The best performing walls and ceilings should be done by installing Fiberglass, WhisperClips, Hat Channel with 2 layers of 5/8" drywall damped with Green Glue in between. Excellent results can still be achieved on **Walls** by just using the fiberglass insulation and 2 layers of drywall with Green Glue on both sides of the wall. This should be given special attention in hotels and multi-family projects, where a double layer of drywall is already in place due to fire rating of the walls. Therefore, it is extremely cost effective to just add a layer of damping compound and achieve solid sound deadening performance.



**Floors:** For excellent performance, floors should be done in the following order. Floor Joists, Insulation, Gasket Tape, Sub Floor, Sound Board (fiber board), Green Glue and a 2nd Sub Floor.

**The Ceiling** underneath should be done as described above, if possible.

**Existing Walls and Ceilings:** Additionally, you can install another layer of drywall with Green Glue in between, on existing walls and ceilings. For better results, it can be done twice (double up). This is really one of the only options available when dealing with existing walls. *One important soundproofing tip* to remember is to always seal your perimeters and electrical boxes, etc. with a high quality acoustical caulk.

**Doors:** Doors and windows are weak links in any sound proofing project, fortunately you can still have a decent door at an affordable price. Use a solid wood door, if looks are not an issue install a layer of drywall or wood over the door with Green Glue in between (try getting a flat door). Use proper Door Gasketing and a Door Bottom to seal the door completely. As doors have gaps on the sides and bottom sealing is very important when dealing with doors. Before you put your molding up stuff the gap between the door and wall with foam or sound proof rubber.

## What To Avoid

Do not place resilient sound clips and/or channels over existing walls, as this will cause what is known as the triple leaf effect.

Factory damped drywall is very expensive, more difficult to hang and does not perform as well as the Green Glue damping compound. The reason for that is simply because Green Glue is a better compound and is installed in a heavier wall.

Soundboard and/or resilient channel in walls and ceilings do not perform up to par, as anyone who has installed them can attest to. You will get just as much or more by installing another layer of drywall.

Expensive floor underlayments are also a source of post customer complaints, avoid them and use cheap sound board for better results, get the most out of your floors by adding Green Glue in between, as stated above.

## Case Study

Location: Newspaper office building Area of concern: Space between CEO office and boardroom Additional information: Noise usually travels through spaces at several different points. Controlling only one point is like trying to save a sinking boat by patching only one hole when 10 holes exist. You must be thorough to ensure effective results. Questions to ask client:

- Please describe the problem.
- Does the wall go all the way up to the deck and is it sealed airtight? Does it just go up to the dropped ceiling? Are there any penetrations through the wall?
- Are there any penetrations through the wall?
- Could the noise be going around the wall? Are there any air gaps? Under the door? At the perimeter of the wall? At the window mullion? Etc?
- What materials are used in the space(s)?
- What are your confidentiality needs?

### Client feedback:

- The CEO is distracted by noise from the boardroom when there are meetings in progress. There are also confidentiality issues.

- The wall does not go up to the deck, it ends at the dropped ceiling.
- There are no penetrations other than the door.
- The noise could be going around the wall by means of the door.
- The materials used in this space are carpet, painted drywall and acoustic tile on the ceiling. There are two return air ducts about two feet apart, separated only by the wall.
- Confidentiality is an issue to some degree, but not a security problem.

**Evaluation:** In this particular project, there was a door and a window between the two spaces and the ceiling did not go up to the deck. To improve the acoustics, an upgraded sealer was added to the doors and a flexible, vinyl barrier was placed on top of the ceiling above the two spaces (since the wall could not be extended to the deck). Creating a completely confidential space is very difficult and extremely expensive. Since confidentiality was an issue, but not a security matter, this improvement proved successful. If further improvements were needed, the next step would be to install a sound masking system. Further comments: In another office space, where complete confidentiality was essential, a very expensive door was installed. This door had an STC rating of 65, but the surrounding walls had an STC rating of 50. In this case, the walls served as the weakest point, rather than the door. It's important to note that the isolation quality of an assembly is dictated by the weakest element of the assembly.

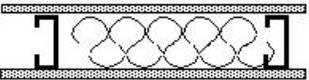
# STC RATINGS FOR VARIOUS WALL ASSEMBLIES

Following are the STC ratings of various wall assemblies, each presented to help illustrate concepts, improvements and rules of thumb. The estimated ratings are based on laboratory test results from various compendiums of STC ratings. It is recommended to consult a professional acoustician for more detailed information or to analyze the specifics of your project/assembly. To view different wall assemblies, click on each point below that may apply to your project.

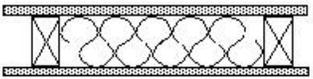
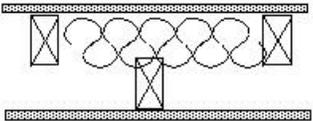
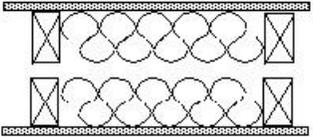
1. Insulation will noticeably improve the STC rating of an assembly.
2. Staggered or double stud walls are higher rated than single stud walls.
3. Metal stud walls perform better than wood stud walls.
4. Resilient channel can improve the STC rating of an assembly.
5. Adding additional layers of drywall can improve the STC rating of an assembly.
6. Drywall between double studs can dramatically reduce the STC rating of an assembly.

## 1. Insulation will noticeably improve the STC rating of an assembly.

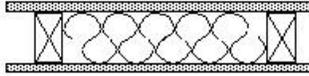
### STC Ratings for Various Wall Assemblies Reference Guide

Description	Estimated STC Rating	Wall Assembly
3 5/8" metal studs, 5/8" gyp (2 layers total), No in-	38 - 40	
3 5/8" metal studs, 5/8" gyp (2 layers total), Batt	43 - 44	

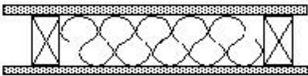
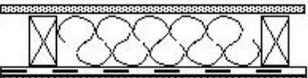
## 2. Staggered or double stud walls are higher rated than single stud walls.

Description	Estimated STC Rating	Wall Assembly
2x4 stud, 5/8" gyp (2 layers total), Batt insulation	34 - 39	
Staggered studs, 5/8" gyp (2 layers total), Batt insulation	46 - 47	
2x4 studs, 5/8" gyp (2 layers total), Batt insulation	56 - 59	

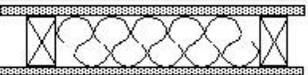
### 3. Metal stud walls perform better than wood stud walls.

Description	Estimated STC Rating	Wall Assembly
2x4 stud, 5/8" gyp (2 layers total), Batt insulation	34 - 39	
3 5/8" metal studs, 5/8" gyp (2 layers total), Batt insulation	43 - 44	

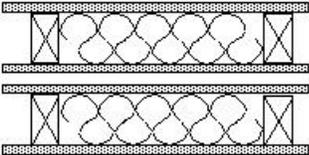
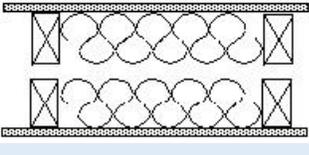
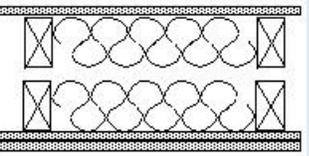
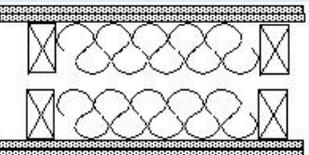
### 4. Resilient channel can improve the STC rating of an assembly.

Description	Estimated STC Rating	Wall Assembly
2x4 stud, 5/8" gyp (2 layers total), Batt insulation	34 - 39	
2x4 stud, 5/8" gyp (2 layers) Resilient chan.w/batt	45 - 52	

### 5. Adding additional layers of drywall can improve the STC rating of an assembly.

Description	Estimated STC Rating	Wall Assembly
2x4 stud, 5/8" gyp (2 layers total), Batt insulation	34 - 39	
3 5/8" metal studs, 5/8" gyp (3 layers total), Batt insulation	39 - 40	
2x4 stud, 5/8" gyp (4 layers total), Batt insulation	43 - 45	

**6. Drywall between double studs can dramatically reduce the STC rating of an assembly.**

Description	Estimated STC Rating	Wall Assembly
2x4 studs, 5/8" gyp (4 layers total), Batt insulation	44 - 45	
2x4 studs, 5/8" gyp (2 layers total), Batt insulation	56 - 59	
2x4 studs, 5/8" gyp (3 layers total), Batt insulation	59 - 60	
2x4 studs, 5/8" gyp (4 layers total), Batt insulation	58 - 63	

# Spaceplanning/Dimensions

## Seating

Dining chair: 18" x 18"

Banquette (booth) depth: 24" min.

Minimum width for a person to eat at a dining room table: 24"

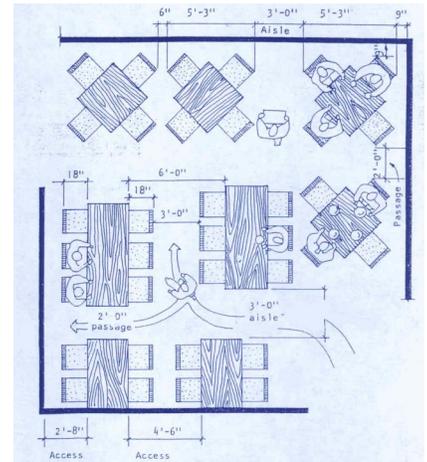
Minimum width for a person to eat at a banquette/booth: 24"

Economical (Banquet) seating requires how many square feet per person: 10

Intermediate (Cafeteria) seating requires how many square feet per person: 12

Luxury (Dining) seating requires how many square feet per person: 14

Bar stool seating requires how much space between patrons (on-center width from head to head): 24"



## Traffic Patterns-Commercial spaces

Service aisle min. (one person): 24"

Circulation aisle for two people to pass (must always have circulation aisle from front to back of restaurant): 36"

Main circulation aisle for more than two people to pass: 60"

## Furniture Heights

Seat height of a chair: 19"

Dining table height: 29/30"

Standard commercial counter/bar height: 42"H uses 30-31" bar stool seat height

Residential kitchen counter: 36"H uses 26-27" bar stool seat height

Standing counter/ bar height: 46"H

## Commercial Bar Dimensions

Front counter depth: 24"

Back counter depth: 24"

Depth of spill space: 6"

Space between front counter and back counter for one bartender: 36"

Space between front counter and back counter for two or more bartenders: 48"

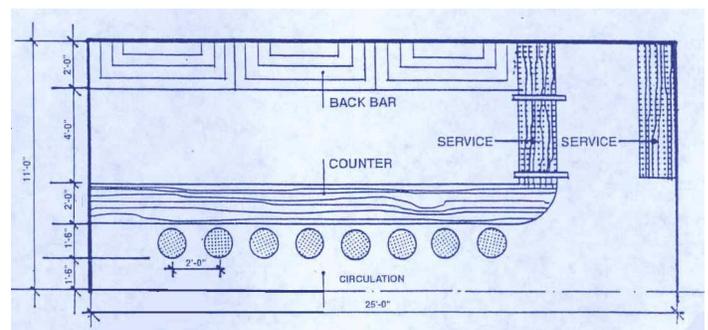
Min. width needed for bartender to exit bar: 24" (30-36" is desirable)

One bartender needed to 1-12 patrons or bar stools.

Two bartenders needed for over 13 patrons

Service station areas sizes: 24"D x 36"W (min.)

Counter area (min) for ADA: 48"W



## Spaceplanning continued:

### Mattress Sizes (illustration courtesy of Casper Sleep)



### Work Stations (the famous cubicle)

Several major producers from Herman Miller to Steelcase manufacture “share” style workstations. Generally these are to be considered as giant Lego systems with many different colored blocks. Frequently forgotten, one of the reasons to purchase is the flexibility. So, consider mom asking you to put your Lego creation away for the evening, in a box or toy bin. In the morning, create something more fantastic than the day before.

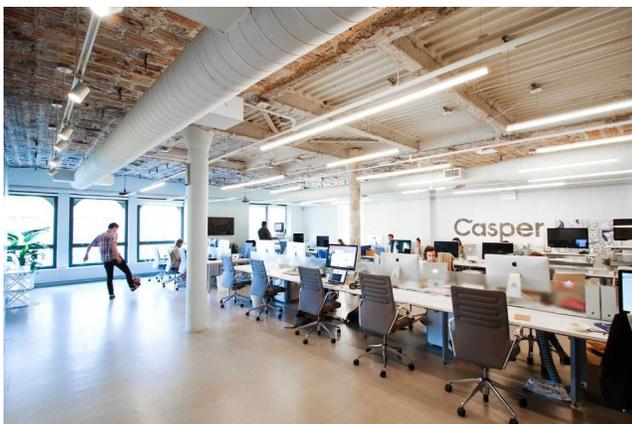
Workstations come down. We want to share. We do NOT want traditional walls blocking our views of each other. Yes, there is a manager. Yes there is staff. No one gets a private space. Just the way it is. Steelcase Share It:

Links: <https://www.steelcase.com/eu-en/products/cupboards-cabinets/share-it-collection/>



[https://www.youtube.com/watch?v=TheQu\\_F66YE](https://www.youtube.com/watch?v=TheQu_F66YE)

Casper Sleep NYC



And Herman Miller Canvas

[https://www.hermanmiller.com/products/workspaces/workstations/canvas-office-landscape/product-images/canvas-office-landscape-dock-based-with-embody-chairs/df75a00c-4318-](https://www.hermanmiller.com/products/workspaces/workstations/canvas-office-landscape/product-images/canvas-office-landscape-dock-based-with-embody-chairs/df75a00c-4318-44c7-8e0c-036ef86647bf/)

44c7-8e0c-036ef86647bf/

# Systems Furniture Specification

Project Name: **Hipster Hoteliers**

Project # AA 3009.17

Location: Offices

Purchase Order#

Item: Workstation Type 1 12 5900

Reference Number

ID1.1

**Manufacturer** Steelcase  
(800) 516 3454

**Source** Tangram  
(562) 365 5000

e-mail: @tangraminteriors.com

e-mail

1375 Dove

Suite 300

Newport Beach, CA 92660

**WS 3**

**SAMPLE**

Contact:

Contact:

Model/Style 120 Style Name Typical 2R

Color Name

Fabric Content: 100% Nylon

Cleaning code: S

ASTM-E 84 Class I (A)

FFP Ref Sheet: A1.1

Budget Quotation

Net

List

Shipping

Crate/Carton

Delivery

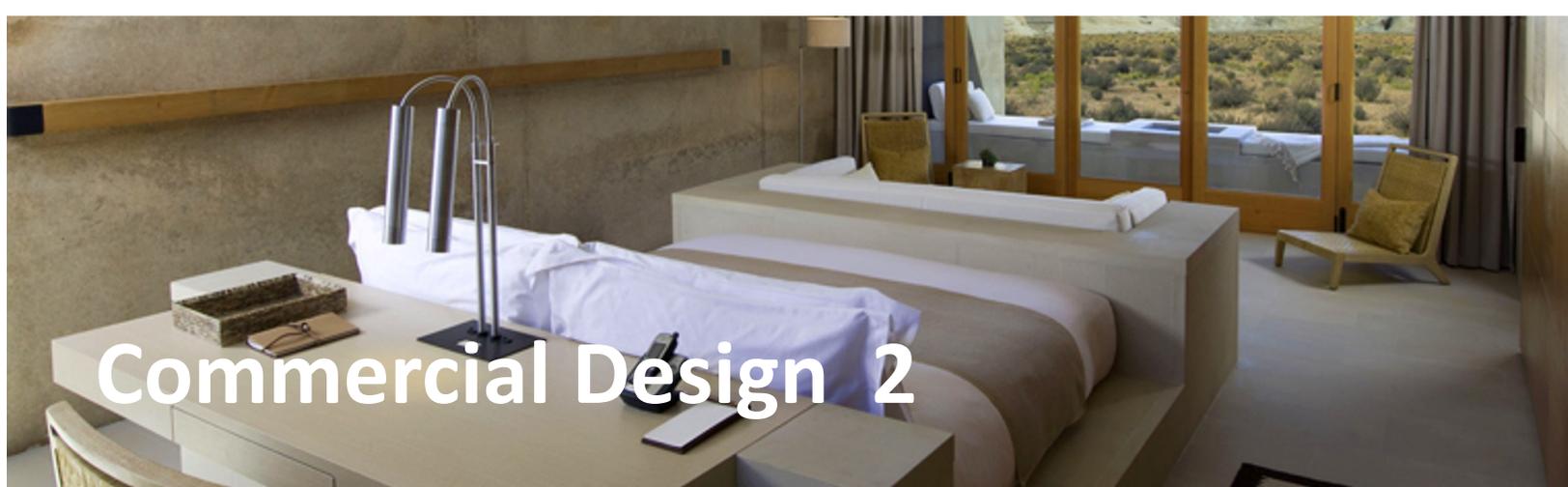


Orig. Selection Date:

Revision 1 Date

Revision 2 Date

Authorized Purchase Agent Signature \_\_\_\_\_ Division 12 5900



# Commercial Design 2

## Construction Documents (CDs) & Presentation Board Checklist

### CONSTRUCTION DOCUMENTS

- **C Cover/Title** with Index of Drawings, Project Information, Consulting Firms, Drawing Symbols, Abbreviations, and a Vicinity Map

Refer to your CAD1 Class Docs - School M (Main) Drive

- **A1.1 First Level Furniture Floor Plan** with wall types by poché and detail callout **TAG**
- **A1.2 Second Level Furniture Floor Plan** with wall types by poché and detail callout **TAG**
- **A2.1 First Level Reflected Ceiling Plan** with ceiling materials and fixtures specification
- **A2.2 Second Level Reflected Ceiling Plan** with ceiling materials and fixtures specification
- **AD1.1 Details** More sheets added as required **SHEET A5 – Lighting Plan – 1st Floor**

### BOARD REQUIREMENTS

A portfolio board presentation on two (2) white foam-core boards (24" x 36") Both LANDSCAPE or both PORTRAIT.

A verbal presentation, speak it, don't read it. No emails on this one. Be on time, Class start time is when due, not later in the day.

#### To be included on board:

- location of and name of hotel
- demographic research
- concept statement

- digital sketches plus AMAZING hand sketches (see below)
- diagramming-
- 1st and 2nd floor COLORIZED spaceplans NTS
- RCP both floors NTS
- Furniture, art work, lighting specified Key decorative elements ONLY. Don't need every ash tray.
- RENDERINGS This is what actually sells the project. Most interesting to most clients at presentation engagement. First is a digital rendering (**mandatory**) reception area, ADA transaction counter as viewed from Lobby inclusive of soffit, any lighting and the four (4) requested wall clocks.

All these elements should be readily available in your notebook

### **Craftsmanship/Presentation Quality of Project.**

- create grid-format (See Vignelli Canon free PDF download page 5) and develop as a logical progression to your oral presentation: should flow rather than jump from board to board (annoying). Alignments count. Composition counts. Light, neutral background (no metals, no photos, no black unless prior, written approval from instructor) Photos to be high resolution (bad pixilation is a direct reflection on your design skills: you don't appear to care about details)
- Should be visible from 30' away (back of the room). This includes the floorplans, especially vulnerable