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440 SENIOR STUDIO

Course Supplement
Professor: Rick Fox, Architect



Schröder House, Utrecht Netherlands, circa 1924
Architect: Gerrit Rietveld

UNESCO World Heritage Site

1. Marketing & Branding

An incomplete manifesto for growth

— BRUCE MAU

1. **Allow events to change you.** You have to be willing to grow. Growth is different from something that happens to you. You produce it. You live it. The prerequisites for growth: the openness to experience events and the willingness to be changed by them.
2. **Forget about good.** Good is a known quantity. Good is what we all agree on. Growth is not necessarily good. Growth is an exploration of unlit recesses that may or may not yield to our research. As long as you stick to good you'll never have real growth.
3. **Process is more important than outcome.** When the outcome drives the process we will only ever go to where we've already been. If process drives outcome we may not know where we're going, but we will know we want to be there.
4. **Love your experiments (as you would an ugly child).** Joy is the engine of growth. Exploit the liberty in casting your work as beautiful experiments, iterations, attempts, trials, and errors. Take the long view and allow yourself the fun of failure every day.
5. **Go deep.** The deeper you go the more likely you will discover something of value.
6. **Capture accidents.** The wrong answer is the right answer in search of a different question. Collect wrong answers as part of the process. Ask different questions.
7. **Study.** A studio is a place of study. Use the necessity of production as an excuse to study. Everyone will benefit.
8. **Drift.** Allow yourself to wander aimlessly. Explore adjacencies. Lack judgment. Postpone criticism.
9. **Begin anywhere.** John Cage tells us that not knowing where to begin is a common form of paralysis. His advice: begin anywhere.
10. **Everyone is a leader.** Growth happens. Whenever it does, allow it to emerge. Learn to follow when it makes sense. Let anyone lead.
11. **Harvest ideas.** Edit applications. Ideas need a dynamic, fluid, generous environment to sustain life. Applications, on the other hand, benefit from critical rigor. Produce a high ratio of ideas to applications.
12. **Keep moving.** The market and its operations have a tendency to reinforce success. Resist it. Allow failure and migration to be part of your practice.
13. **Slow down.** Desynchronize from standard time frames and surprising opportunities may present themselves.
14. **Don't be cool.** Cool is conservative fear dressed in black. Free yourself from limits of this sort.
15. **Ask stupid questions.** Growth is fueled by desire and innocence. Assess the answer, not the question. Imagine learning throughout your life at the rate of an infant.
16. **Collaborate.** The space between people working together is filled with conflict, friction, strife, exhilaration, delight, and vast creative potential.
17. _____, Intentionally left blank. Allow space for the ideas you haven't had yet, and for the ideas of others.
18. **Stay up late.** Strange things happen when you've gone too far, been up too long, worked too hard, and you're separated from the rest of the world.
19. **Work the metaphor.** Every object has the capacity to stand for something other than what is apparent. Work on what it stands for.
20. **Be careful to take risks.** Time is genetic. Today is the child of yesterday and the parent of tomorrow. The work you produce today will create your future.
21. **Repeat yourself.** If you like it, do it again. If you don't like it, do it again.
22. **Make your own tools.** Hybridize your tools in order to build unique things. Even simple tools that are your own can yield entirely new avenues of exploration. Remember, tools amplify our capacities, so even a small tool can make a big difference.
23. **Stand on someone's shoulders.** You can travel farther carried on the accomplishments of those who came before you. And the view is so much better.
24. **Avoid software.** The problem with software is that everyone has it.
25. **Don't clean your desk.** You might find something in the morning that you can't see tonight.
26. **Don't enter awards competitions. Just don't.** It's not good for you.
27. **Read only left-hand pages.** Marshall McLuhan did this. By decreasing the amount of information, we leave room for what he called our "noodle."
28. **Make new words.** Expand the lexicon. The new conditions demand a new way of thinking. The thinking demands new forms of expression. The expression generates new conditions.
29. **Think with your mind.** Forget technology. Creativity is not device-dependent.
30. **Organization = Liberty.** Real innovation in design, or any other field, happens in context. That context is usually some form of cooperatively managed enterprise. Frank Gehry, for instance, is only able to realize Bilbao because his studio can deliver it on budget. The myth of a split between "creatives" and "suits" is what Leonard Cohen calls a 'charming artifact of the past.'
31. **Don't borrow money.** Once again, Frank Gehry's advice. By maintaining financial control, we maintain creative control. It's not exactly rocket science, but it's surprising how hard it is to maintain this discipline, and how many have failed.
32. **Listen carefully.** Every collaborator who enters our orbit brings with him or her a world more strange and complex than any we could ever hope to imagine. By listening to the details and the subtlety of their needs, desires, or ambitions, we fold their world onto our own. Neither party will ever be the same.
33. **Take field trips.** The bandwidth of the world is greater than that of your TV set, or the Internet, or even a totally immersive, interactive, dynamically rendered, object-oriented, real-time, computer graphic-simulated environment.
34. **Make mistakes faster.** This isn't my idea — I borrowed it. I think it belongs to Andy Grove.
35. **Imitate.** Don't be shy about it. Try to get as close as you can. You'll never get all the way, and the separation might be truly remarkable. We have only to look to Richard Hamilton and his version of Marcel Duchamp's large glass to see how rich, discredited, and underused imitation is as a technique.
36. **Scat.** When you forget the words, do what Ella did: make up something else ... but not words.
37. **Break it, stretch it, bend it, crush it, crack it, fold it.**
38. **Explore the other edge.** Great liberty exists when we avoid trying to run with the technological pack. We can't find the leading edge because it's trampled underfoot. Try using old-tech equipment made obsolete by an economic cycle but still rich with potential.
39. **Coffee breaks, cab rides, green rooms.** Real growth often happens outside of where we intend it to, in the interstitial spaces — what Dr. Seuss calls "the waiting place." Hans Ulrich Obrist once organized a science and art conference with all of the infrastructure of a conference — the parties, chats, lunches, airport arrivals — but with no actual conference. Apparently it was hugely successful and spawned many ongoing collaborations.
40. **Avoid fields. Jump fences.** Disciplinary boundaries and regulatory regimes are attempts to control the wilding of creative life. They are often understandable efforts to order what are manifold, complex, evolutionary processes. Our job is to jump the fences and cross the fields.
41. **Laugh.** People visiting the studio often comment on how much we laugh. Since I've become aware of this, I use it as a barometer of how comfortably we are expressing ourselves.
42. **Remember.** Growth is only possible as a product of history. Without memory, innovation is merely novelty. History gives growth a direction. But a memory is never perfect. Every memory is a degraded or composite image of a previous moment or event. That's what makes us aware of its quality as a past and not a present. It means that every memory is new, a partial construct different from its source, and, as such, a potential for growth itself.
43. **Power to the people.** Play can only happen when people feel they have control over their lives. We can't be free agents if we're not free.

May 11, 2016
Rick Fox

Interior Designers Institute
BA Program
Senior Studio 440

Reading Notes: Godin, Seth. All Marketers Tell Stories New York: Portfolio/Penguin, 2012.

WORLDVIEW

1. Focus on what people believe, then tell stories that augment their *worldview*.

What Godin means by *worldview*:

P39. "Worldview is the term I use to refer to the rules, values, beliefs and biases that an individual consumer brings to a situation."

P44. "A worldview is not who you are. It's what you believe. It's your biases. A world view is not forever. It's what the consumer believes right now."

P65. "A worldview is the lens used to look at every decision a person is asked to make."

Advise on how to treat consumer's worldviews:

P41. "Don't try to change someone's worldview... instead, identify a population with a certain worldview, frame your story in terms of that worldview and you win."

P43. "our opportunity lies in finding a neglected worldview, framing your story in a way that this audience will focus on and going from there."

P54. "It's not enough to find a niche that shares a worldview. That niche has to be ready and able to influence a large group of their friends."

P60. "People don't want to change their worldview. They like it, they embrace it and they want it to be reinforced."

STORIES

2. P2. "Stories make it easier to understand the world."
Stories spread ideas.
We all tell ourselves stories.
3. P7. People don't buy facts; they buy stories.
Stories spread person-to-person.
4. People believe compelling stories.
5. Great stories make a promise: e.g. safety, wealth, fame, fun, shortcut
6. Great stories match the worldview of a specific audience.
7. P19. "Successful marketers are just the providers of stories that consumers choose to believe."
8. P23. "...spreading ideas is the single most important output of our civilization."
9. P74. Frame your story in terms of your audience's worldview, and it will be heard.

BELIEF

10. P27. There is a gap between ... reality ←---&----→ what we believe.
11. Audiences are selective; they pick and choose what to believe.
12. P33. “The actions of our competitors change what’s going to work in the future.”
13. P67. Communities share (some) worldviews.
14. P69. People like being in sync with their peers.
15. P78. Most people tend to ignore data contrary to what they already believe.
16. P89. “In order to survive the onslaught of choices, consumers make snap judgments.
17. P91. “The reason authenticity matters is that we don’t know which inputs the consumer will use to invent the story he tells himself.”
18. P103. “It’s the story, not the good or the service you actually sell, that pleases the consumer.”
19. P110. “Expectations are the engine of our perceptions.”

STRATEGY

20. P124. “The only robust, predictable strategy is a simple one, to be authentic. To do what you say you’re going to do.”

Reprinted From **Fast Company**

- 09.16.09

This Five-Letter Word Is Key to Marketing Success: B-R-A-N-D

While the concept of **personal branding** has taken off, corporate branding seems to go in and out of favor. Economic cycles may have a lot to do with that. With the growth of the Internet and social technology tools, personal branding opportunities and activity have exploded. On the other hand, in some ways, the arc of Web 1.0 to 2.0+ (not to mention this current economy) has seduced many marketers into being focused on tactics at the expense of strategy including branding.

By Kevin Randall

While the concept of **personal branding** has taken off, corporate branding seems to go in and out of favor. Economic cycles may have a lot to do with that. With the growth of the Internet and social technology tools, personal branding opportunities and activity have exploded. On the other hand, in some ways, the arc of Web 1.0 to 2.0+ (not to mention this current economy) has seduced many marketers into being focused on tactics at the expense of strategy including branding. Hot media tactics often substitute for the “strategy.”

If you are skeptical that brands still matter in the age of 1-1, millennials and social media, or if you are just trying to run a business and make numbers and don't have the patience for brand consultant-speak or theories, here is a quick, simple refresher on good old-fashioned branding that works today, that can help you frame your marketing and operational tactics...to drive business results.

Your

business enterprise and marketing programs will be more successful if they are guided by a cohesive strategy that meets the B.R.A.N.D. criteria.

Your brand strategy must be:

B–Believable (about Belief & Behavior too)

Your brand positioning needs to be credible both with your customers and employees. Would a Volvo strategy around the idea of “sporty” be believable? (they seem to own “safety” for life). In addition, your organization's belief in a brand vision and values and execution on that is critical. Many marketers and even some of my clients all too often equate the brand strategy with a logo. The brand is so much bigger. The brand strategy is about what your business stands for. It should be championed by the CEO, internalized by all employees and behaved and delivered, employee-to-employee, employee-to-customer. Just ask Zappos. And building this brand foundation internally has to take place before an external launch (ads, trade shows, Web site, social media...), otherwise you risk doing more harm to the brand (if your company is not prepared deliver on its promise).

R–Relevant

You and your colleagues should be close enough to your customers to develop products and services that truly meet their needs including interacting with them in a meaningful way, through the most relevant media.

A–Adaptable

While your brand strategy should be relevant for today and for specific markets, it also needs to be flexible, broad and viable over the long haul. GE’s “trust in good things” (1970s-80s) and “imagination & innovation” (this decade) brand positionings are enduring platforms from which diverse, effective concepts, campaigns and media strategies develop.

N–Numerically based

How you arrive at the brand strategy as well as measure your business’ alignment with it and marketing effectiveness must be based on objective data and customer and market inputs versus gut. In addition, your brand opportunity should map to business objectives such as market share and profits (numbers!). If a niche positioning results in being a second tier player it is likely not viable.

D–Differentiated

One of the toughest challenges is to create a brand strategy that is truly unique. Solutions? Quality? Laundry list of commodity features? ZZZZZZZ. Apple’s brand positioning around playful, innovative simplicity has not been duplicated and is seamlessly expressed across media too numerous to name.

So even if you think the B-word is a bad word, and the SM-word (Social Media) is a good word, you might agree that tying your SM programs to an organizing principle, anchoring tactics in an underlying organizational and market strategy (or B-R-A-N-D strategy) is a good thing.

By the way, the Five-Letter Word can also guide your personal branding efforts.

45 Rules for Creating a Great Logo Design

1. Do not use more than three colors.
2. Get rid of everything that is not absolutely necessary.
3. Type must be easy enough for your grandma to read.
4. The logo must be recognizable.
5. Create a unique shape or layout for the logo.
6. Completely ignore what your parents and/or spouse think about the design.
7. Confirm that the logo looks appealing to more than just three (3) individuals.
8. Do not combine elements from popular logos and claim it as original work.
9. Do not use clipart under any circumstances.
10. The logo should look good in black and white.
11. Make sure that the logo is recognizable when inverted.
12. Make sure that the logo is recognizable when resized.
13. If the logo contains an icon or symbol, as well as text, place each so that they compliment one another.
14. Avoid recent logo design trends. Instead, make the logo look timeless.
15. Do not use special effects (including, but not limited to: gradients, drop shadows, reflections, and light bursts).
16. Fit the logo into a square layout if possible, avoid obscure layouts.
17. Avoid intricate details.
18. Consider the different places and ways that the logo will be presented.
19. Invoke feelings of being bold and confident, never dull and weak.
20. Realize that you will not create a perfect logo.
21. Use sharp lines for sharp businesses, smooth lines for smooth businesses.
22. The logo must have some connection to what it is representing.
23. A photo does not make a logo.
24. You must surprise customers with presentation.
25. Do not use more than two fonts.
26. Each element of the logo needs to be aligned. Left, center, right, top, or bottom.
27. The logo should look solid, with no trailing elements.
28. Know who is going to be looking at the logo before you think of ideas for it.
29. Always choose function over innovation.
30. If the brand name is memorable, the brand name should be the logo.
31. The logo should be recognizable when mirrored.
32. Even large companies need small logos.
33. Everyone should like the logo design, not just the business that will use it.
34. Create variations. The more variations, the more you are to get it right.
35. The logo must look consistent across multiple platforms.
36. The logo must be easy to describe.
37. Do not use taglines in the logo.
38. Sketch out ideas using paper and pencil before working on a computer.
39. Keep the design simple.
40. Do not use any "swoosh" or "globe" symbols.
41. The logo should not be distracting.
42. It should be honest in its representation.
43. The logo should be balanced visually.
44. Avoid bright, neon colors and dark, dull colors.
45. The logo must not break any of the above rules.

idi - Reaction Paper

Student Name: _____ Date: _____

What did you learn about this presentation and/or field trip? How can this information be applied to your project(s)?



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440 SENIOR STUDIO

(25 points)

MARKET STUDY

1.0 Objectives:

The objectives for this assignment are as follows:

- 1.1 To develop and strengthen the brand identity of your own Contours prototype, by identifying and understanding the personal history and motivation of your client, and addressing the needs and expectations of the end-user / target-market. Focus on how your prototype addresses emerging trends in the industry. Also, focus on the geographic, demographic, and cultural aspects of your chosen location that are relevant to developing a unique brand.
- 1.2 Focus on branding elements such as the place's "tag-line" ("mantra") and logo that help establish a memorable image of the place in the mind of the users and the general public. Develop several adjectives that you think capture the overall spirit of the brand. Identify sources and images of inspiration that will guide the development of the brand.
- 1.3 Identify general elements and components of the physical setting that are the most important for the project's identity / brand. Focus on the "big-picture" stuff that captures the *architectural character* of major interior spaces, such as spatial organization, basic geometric vocabulary, and other general elements of the physical setting relevant to the project concept.

2.0 Guidelines & Format:

The following guidelines should be followed for this exercise:

- 2.1 Present all findings and analysis using the 11" x 17" landscape format. This assignment is the first of several that will be incorporated into the final project book at the end of the quarter.
- 2.2 A good response is to develop the following pages:
 - A Cover Page;
 - (2-3) pages on the location you've selected;
 - (1-2) pages on your client, who they are, their personal history, what they value, and why they are into health and wellness;
 - (2-3) pages on your target demographic, who they are, their lifestyle, etc.;
 - (1-2) pages showing the general inspiration for the look-and-feel of your place, including a preliminary list or description of services and activities of your Contours prototype.

INTERIOR DESIGNERS INSTITUTE
440 Senior Studio

Market Research Study

25 points

Name: _____

Project Name: _____

Location: _____

Concept: _____

1. Vision (5 points)

- _____ Thematic clarity
- _____ Thematic coherence & consistency
- _____ Compatibility with design criteria

2. Functionality (5 points)

- _____ Response to functional requirements
- _____ Consistency with vision & brand identity
- _____ Appropriate elements of physical setting (materials, lighting, furnishings)

3. Human Impact (5 points)

- _____ Promotes positive human experience
- _____ Response to user demographics
- _____ Human Factors (ergonomics, proxemics)

4. Innovation (5 points)

- _____ Originality & ingenuity
- _____ Use of design principles & concepts
- _____ Attention to detail

5. Professional-grade Presentation (5 points)

- _____ Organization & clarity of expression
- _____ Overall graphic quality of presentation

Comments: _____

2. Field Research

Table 1.2

Evidence-Based Design (Research within Programming)

No.	Programming Categories	Fact Finding	Research Literature for Evidence to Inform the Design
1.	User needs and characteristics	<p>Collect organizational profiles, communication modes, and information about individual user and their needs.</p> <p>Conduct an FF&E inventory.</p> <p>Conduct a site visit and view blueprints.</p>	<p>How will these affect the design (layout—spatial relationships and organization)? Consider present function adjacencies.</p> <p>Examine the literature for similar sites and issues or problems.</p>
2.	Structural and contextual needs	<p>Examine site, structural and contextual needs.</p> <p>Conduct code search.</p>	<p>Is there new evidence to support new ways the site and structure, and/or systems may affect the design?</p> <p>Is there new evidence regarding code affecting the design?</p>
3.	Sustainability needs	<p>Examine environmental concerns such as site, orientation, sustainability, and indoor air quality.</p> <p>Consider the use of LEED to the project.</p>	<p>Research literature for new evidence for ideas or solutions regarding all aspects of socially responsible design.</p> <p>Research literature for ways that other designers have applied such environmental concerns to the design.</p> <p>Research studies conducted on indoor air quality</p> <p>Investigate how the results of other LEED projects affected the overall design.</p>
4.	Human factors	<p>Determine the physiological, anthropometrics, ergonomics, psychological, and sociological needs.</p> <p>Determine the physiological needs.</p> <p>Determine the psychological needs.</p> <p>Determine the ergonomics concerns.</p> <p>Determine the sociological needs.</p> <p>Apply universal design.</p>	<p>Research literature for new ideas or solutions related to human factors.</p> <p>Research studies related to health concerns.</p> <p>Research studies related to satisfaction.</p> <p>Research a specific client base to ergonomics.</p> <p>Research socioeconomic group and a specific type of design.</p> <p>Research literature for ways other designers have created universal design or how it has affected similar designs.</p>

(continued)

Table 1.2
Evidence-Based Design (Research within Programming) *(continued)*

No.	Programming Categories	Fact Finding	Research Literature for Evidence to Inform the Design
5.	Economic needs	Budget and estimate costs. Conduct a life-cycle cost analysis.	Research a design type related to economic issues other designers have experienced (productivity, safety, etc.). Research literature for ways that life-cycle costing can positively affect budget.
6.	Functional needs	Determine function(s) of spaces, number of people to occupy spaces, investigate space requirements per person.	Research literature for new ways to create better functioning spaces.
7.	Appropriate FF&E	Use existing and/or purchase new FF&E.	Research literature for ways that other designers have used existing pieces in new and different ways.
8.	Specific design types	Determine areas of concern.	Research literature for findings applicable to the design type.
9.	Diversity aspects of design	Investigate various diverse design philosophies and their application to the design.	Investigate how a diverse population can be accommodated within a space by the application of a different philosophy.
10.	Precedents in historical design	Examine the literature on past projects (historical design) related to the type of architecture and design.	Research literature for ways other designers applied architecture and past designs into a project.
11.	Develop program requirements	Using data gathered from client, site, research, and so on, program requirements are developed into a program document.	
12.	Use of design theory to analyze and provide feedback	Using design theory such as Gestalt, interior ecosystems theory, or others, the program can be analyzed for its importance and value. These will offer immediate feedback about decisions that may affect the entire project.	

Visual Merchandising + Store Design (VM+SD), Fine Homebuilding, Lighting Dimensions, Walls and Ceilings, Home Furnishings News (HFN), The World of Interiors, InFurniture, Live Design, and Frame Magazine. The Web site www.i-d-i.com provides a list and description of these trade publications as well as other design magazines (www.i-d-d.com/interior_design_magazines/interior_designer_trade_magazines.htm). These publications include articles that describe design projects and may discuss ideas used to create their design as well as provide visuals.

Table 2.1

Design Theory: Application for Client Needs, Specific Issues, Design Types, or Other Individual Purposes

Design Theory	Application Suggestions
Gestalt	Examine parts to whole with focus on aesthetic concepts: <ul style="list-style-type: none"> • Space planning • Design elements and principles • Finish materials, decorative elements, and details • Lighting • Furniture
Functionalism	Examine the following areas relative to functional concerns: purpose, fitness for purpose, useful and satisfactory for user: <ul style="list-style-type: none"> • Space planning • Design elements and principles • Finish materials, decorative elements, and details • Lighting • FF&E
Interior Ecosystems Model	Consideration for all environments to human: <ul style="list-style-type: none"> • Sustainability • Site • Structure materials and systems • Contextual, i.e., HVAC, plumbing, lighting • Interior materials to all environments and human
Person-Environment and Environmental Press	Application for the following design types: <ul style="list-style-type: none"> • Environments for older adults: <ul style="list-style-type: none"> • Long-term care, assisted living, congregate living, aging-in-place • Environment for groups with similar needs, abilities, experiences: <ul style="list-style-type: none"> • Detention centers, prisons, physical or mental challenges, group homes
Symbolic Interaction	Application for individuals, families, organizations with a need to communicate an image and who they are
Change Theory	Examination of change over time: past, present, future: <ul style="list-style-type: none"> • Sociology: globalization, socioeconomics status • Economy • Technology • Resources • Information • Consumer preferences
Meaning of Place	Concept of place is individual: <ul style="list-style-type: none"> • Meaning may be filled with emotions • Decreasing with increase in globalization and use of technology • Research and application must be one or more of the following: place identity, sense of place, place attachment, and third place theory
Place Identity	Connection between individual and larger type of identification: <ul style="list-style-type: none"> • State • Town • Workplace • Sacred place • Other larger types of identification

(continued)

Table 2.1

Design Theory: Application for Client Needs, Specific Issues, Design Types, or Other Individual Purposes *(continued)*

Design Theory	Application Suggestions
Sense of Place	Application relates to a person's level of comfort and sense of safety: <ul style="list-style-type: none"> • Cultural identification • Religious identification • Personal identification: home, childhood memories, etc. • Favorite location: store, school, coffee shop
Place Attachment	Application is individual: <ul style="list-style-type: none"> • Home • Gathering spaces such as in third place theory
Third Place Theory	Application appropriate for gathering spaces: <ul style="list-style-type: none"> • Sacred spaces • Malls • Stores • Coffee shops • Restaurants • Bars • Other public spaces
Other Possible Theories to Research	Educational design: <ul style="list-style-type: none"> • Reggio theory • Kolb's learning style theory • Gardner's multi-intelligence theory • Various design types • Cognitive wayfinding theory • Semiology (study of signs and signs related to behavior)

particularly in consideration of sustainability with all environments. Person-environment theory is useful in designs for space for groups of people who are similar—elderly, mentally challenged, prison inmates, and detention center residents. Symbolic interactionism will help the designer consider what is important to individuals within their personal spaces and what is needed to communicate who they are. It is also important for organizations to communicate their image and who they are to clients, customers, and public. Change theory is particularly important in the workplace with constant changes to organizational structures as well as globalization and technology. Meaning of place may also become personal to individuals, but when designing spaces that are “third place,” these spaces must be inviting and comfortable to become an important third place.

Though various theories and applications were presented, the list of theories is too lengthy for this chapter. To name only a few, there are many learning theories that may be investigated and can affect educational design: Kolb's learning style theory, Gardner's multi-intelligence theory, and Reggio theory. Others may be applicable to various design types: cognitive wayfinding theory and semiology. Investigation of other theories through suggested sources may provide basis for analysis.

3-ALEX ANDER
K3 24/11/24

Case Study 4.1

The Role of Historic Precedents in Contemporary Design

By Lily Robinson, RA, ASID, IDEC

Shortly after the success of his breakthrough polio vaccine in 1955, Dr. Jonas Salk set out to build a research facility where top scientists from around the world could live, work, and meet in a sort of monastic environment (Carter, 1966). The Salk Institute for Biological Studies represents a unique collaborative effort between a forward-thinking scientist and a top architect, Louis Kahn. The program of areas for the institute was not dictated by the client, but rather grew out of research; particularly, research of historic precedents (Ronner & Jhaveri, 1987). Kahn collected data through informal interviews and observations. However, to develop form, he searched images of historic precedents.

In interviews from a previous project, Kahn learned that the scientists were so dedicated to their work that at lunchtime they moved test tubes from benches to sit and eat and disregarded the noise around them. Kahn realized that the wants of the scientists did not necessarily match their needs. “I realized that there should be ‘a clean air and stainless steel’ area, and ‘a rug and oak table’ area. From this realization, form became” (Ronner et al. 1987, p. 138). The data informed Kahn that spaces needed to be separated by function—(1) experimentation, (2) private contemplation, and (3) social interaction—in order to accomplish the goal of moving knowledge forward. Kahn also included a new type of space, the “unnamed space,” which was not ascribed to any one function, but would accommodate unknown uses, allow for inspiration and, as Kahn stated “for the glory of the fuller environment” (Ronner et al. 1987, p. 131).

With an innovative program of areas in place, Kahn scoured for ideas for form from historic pre-

cedents, imagery, readings of the site, and personal observations. These were essential to develop the physical aspects—size and shape of spaces. In fact, Kahn was so inspired by historic monuments that he would often “leave illustrated architectural books on the employees’ drafting tables” for their inspiration (Wiseman, 2007, p. 104). Kahn often looked to historic precedents in search of classical, iconographic forms on which to base new uses and modernistic principles.

For the main concept of the facility, Kahn derived form from the monastery, St. Francis of Assisi—a historic precedent. Kahn and Salk had visited this historic place at different times: Kahn in 1928 and Salk in 1954. Salk was influenced by the life of the monks, their dedication to something higher than their own lives. Kahn saw a perfect building type that matched the function and needs of a research facility; particularly, the specialized spaces for silent contemplation, and the social plaza and an arcade for circulation. Kahn was also attracted to the quality of light produced by the interaction of the columns of the arcade and the openness of the plaza. Figure Case Study 4.1.1 illustrates the plaza of St. Francis of Assisi.

One of the controversies, or mysteries, that surrounds the Salk Institute is the source for the inspiration for the water feature dividing the plaza. From one historical account, a design by Luis Barragan inspired the open plaza between the two mirror image lab buildings. Another source of inspiration may have been the Mughal gardens in India and Pakistan. However, a Kahn employee and supervisor of Salk Institute construction, Jack McAllister stated in an interview that the Alham-



Figure Case Study 4.1.1 The St. Francis of Assisi monastery influenced Salk and inspired architect Louis Kahn in the design of the Salk Center. For Salk, it was the monks' dedication to a higher power. For Kahn, it was the combination of functions into one building. (*iStockPhoto*)

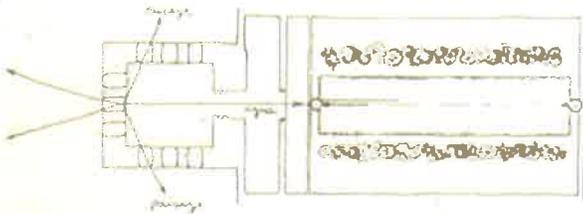


Figure Case Study 4.1.2 To provide an understanding of the Alhambra water feature, Kahn created this sketch of the Alhambra.

bra, a Moorish landmark, might have inspired the water feature (Wiseman, 2007). Figures Case Study 4.1.2 and 4.1.3 illustrate the water feature at the Alhambra in a sketch and photograph, respectively.

A look at Kahn's sketches (Figure Case Study 4.1.4) and early models indicate not only research of historic precedents but also site research and analysis that included climate, land formations, the site's proximity to the ocean, personal observation of the ocean view, the path of the sun, and solar orientation of the buildings. Site maps were all researched and analyzed in sketches and model form. Kahn used the similar climates to draw a parallel between La Jolla and the Greco-Roman world and the Middle East, further supporting his use of formal historical references to ancient monuments, plazas,



Figure Case Study 4.1.3 A photograph illustrates the Alhambra water feature that inspired Kahn's design. (© David Sutherland/Getty Images)

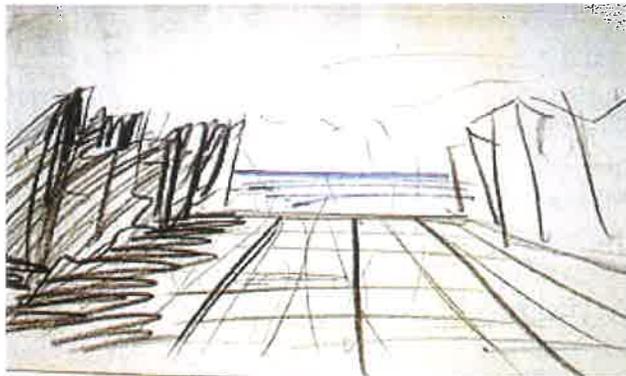


Figure Case Study 4.1.4 Having been inspired by the Alhambra water feature, Kahn sketched his concept for the Salk Institute with the ocean as a focal point. Kahn's sketches indicate research of historic precedents and site analysis.



Figure Case Study 4.1.5 The completed building at the Salk Institute reflects the inspiration from the Alhambra with the view of the ocean from the plaza. (Photo by Lily Robinson)



Figure Case Study 4.1.7 Photographs of the study areas near the plaza allow natural light and a view of the ocean into the space. (Photo by Lily Robinson)

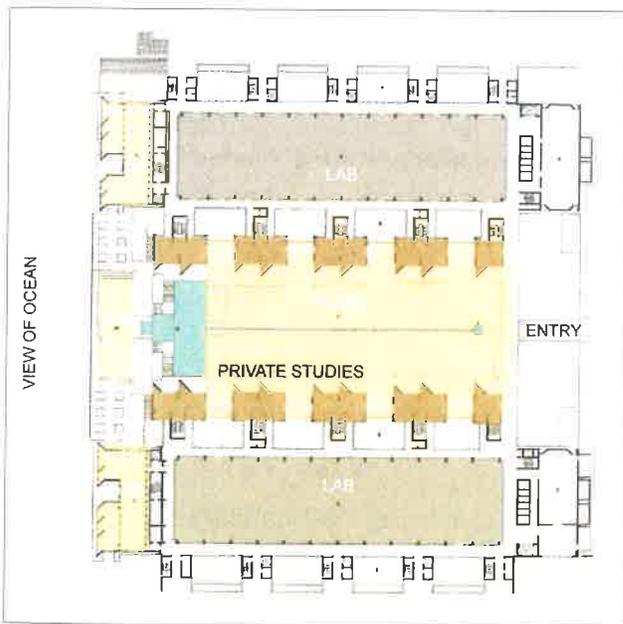


Figure Case Study 4.1.6 The diagrammatic plan of the Salk Institute identifies the various functions of the building. (Photo by Lily Robinson)

and water features. Figure Case Study 4.1.5 shows the concepts from water feature at the Alhambra, the plaza at St. Francis of Assisi monastery, and the connection to the ocean and natural light. As is illustrated in Figure Case Study 4.1.6, the labs—areas of experimentation are in the center of each building section, whereas the study areas are near the plaza. Natural light and view—are allowed into the study area (see Figure Case Study 4.1.7). The plaza, on the other hand, is the social area that provides the necessary connection between people and nature—the ocean view. Clearly, this case study illustrates a successful use of historic precedents, seamlessly incorporating specific architectural concepts from antiquity into contemporary design.

The Spa
AT
PELICAN HILL®



WHERE THE HAND
DOES NOT WORK WITH THE SPIRIT,
THERE IS NO ART.

— LEONARDO DA VINCI



WHERE THE HAND
DOES NOT WORK WITH THE SPIRIT,
THERE IS NO ART.

— LEONARDO DA VINCI



YOU INSPIRE US.

In every moment, with every touch, our hands work in concert with your spirit, your intention. And it is from this union that a creative, highly personal spa experience is crafted.

It all begins with an imagined end. Well before your arrival, we introduce ourselves and help discern your goals.

Do you seek Replenishment—to rejuvenate, restore balance and detoxify?
Do you seek Invigoration—to strengthen, energize and boost immunity?
Or simply Relaxation—to relieve tension, stress and to unwind?

Your intention is the path that leads to our door, and beyond it.



M O V I N G T O W A R D M I N D F U L N E S S .

Here you are greeted with simple, sacred acts.

Breathe deeply, as signature aromatherapy blends and flowing walls of water mark a sensory moment in time. Slip on a perfectly sized robe and slippers. Sip your choice of custom, pre-treatment teas.

These rituals are beyond pampering. They help to slow down the frantic pace of the outside world to a more natural, focused and mindful rhythm.

As you enter the Spa, so too you enter the spa within, a state of being that promotes healing and reconnection to the mind, body and spirit.

Here, your intention is realized.



3 INTENTIONS

RELAX REPLENISH INVIGORATE

MASSAGE THERAPY COLLECTION



PRONTO MASSAGE30 minutes

Decompress with an express upper body massage, targeting the neck, back and shoulders with Swedish techniques.



AMBER GOLD SIGNATURE MASSAGE 50 minutes, 80 minutes

Dry brushing exfoliation and enhanced oils amplify Swedish massage techniques for an integration of mind and body that improves circulation and relieves stress.



TRAMONTO [SUNSET] MASSAGE 50 minutes, 80 minutes

Performed in the superb surroundings of your Villa or Bungalow, as the sun slips into the Pacific at day's end, this inspiring, deeply relaxing, multisensory experience heightens your sense of place and pace.



AROMA INTENTIONS MASSAGE 50 minutes, 80 minutes

Featuring intention-specific blends designed to calm, stimulate or replenish the body, mind and spirit, this experience combines gentle massage techniques with beautiful essential oils sourced from all over the world.



TERRA STONE MASSAGE 80 minutes

Enhanced by essential oils and their therapeutic application, heat and massage improves circulation and healing of tissue, while basalt stones engraved with a specific intention provide a reconnection with the earth.

-  DEEP TISSUE MASSAGE *50 minutes, 80 minutes*
 Designed to relieve pain, improve performance and increase mobility, this vigorous and refreshing treatment incorporates sports massage techniques, such as stretching, friction across muscle fibers and deep pressure to sore points.

-  REFLEXOLOGY *50 minutes*
 Inspired by the Ancient Egyptians, this gentle, but highly effective, massage technique stimulates reflexes on the feet and hands that benefit the entire body. Therapeutic and energetic, this experience is designed to relieve sore, tired feet and hands. Loose, comfortable clothing may be worn.

-  GLOBAL TRADITIONS MASSAGE *80 minutes*
 Applying techniques adapted from healing traditions around the world, this massage combines herbs, massage, pressure points and heat. A foot ritual sets the pace of this universally celebrated treatment, while a release of trigger points initiates the relaxation response and opens energy pathways. Herbs induce relaxation, soothe muscles and relieve strains, stiffness and inflammation.

-  PAIO MASSAGE *50 minutes*
 Two therapists working in perfect synchronization create a hypnotic, therapeutic, immersive and luxurious experience that exponentially increases well-being and relaxation, beyond a traditional massage.

 DESERVING MOTHERS' MASSAGE..... *50 minutes, 80 minutes*
A soothing treatment for pregnancy during any trimester or postpartum, this massage improves circulation and provides a gentle, soothing touch for expectant and new mothers.

   DUET MASSAGE *50 minutes, 80 minutes*
In a beautiful couple's suite, discover your intention together with your massage therapy treatments of choice. Relax with an Amber Gold Signature Massage or Global Traditions Massage. Invigorate with a Deep Tissue Massage or Reflexology. Or, simply replenish with an Aroma Intentions Massage or Terra Stone Massage.



Body Therapy Collection



PRONTO BODY BUFF 30 minutes

Pacific sea salts and herbal extracts provide a granular body buff to smooth, stimulate and deeply condition the skin, while minimizing free radicals.



CALIFORNIA SUGAR GLOW 50 minutes

This deliciously pampering, antioxidant treatment leaves skin satiny smooth and radiant with a completely natural body polish of pure sugar cane, followed by a wonderful skin-quenching lotion.



COASTAL RENEWAL 80 minutes

Relax the body with warm oils that provide vital nutrients and release toxins. Ocean algae and Mediterranean herbs envelope you in this scrub, wrap and massage combination that detoxifies and re-mineralizes the body, improves lymphatic activity and results in glowing skin. Renew your senses with an intoxicating hot oil scalp massage, cool gemstone facial and hydrating body butter application.



CRYSTAL C THERAPY 80 minutes

A vitamin boost for the whole body featuring green tea and rose hip oil, this regenerative and highly antioxidant vitamin C body wrap pairs with massage techniques to improve elasticity, enhance hydration levels, stimulate collagen and counter sun damage.



MARINE WRAPSODY 80 minutes

Featuring a detoxifying body cocktail with mineral mud from the Dead Sea, this luxurious experience includes a scalp, neck and foot massage to restore body minerals, remove toxins and optimize cellular function.

 BODY GELATO 50 minutes
Fresh seasonal ingredients, such as fig for summer, pomegranate for autumn, honey for winter and lavender for spring, are added to pure botanicals to create a scrub, moisturizing wrap and deep hydration. Antioxidant ingredients assist in combating the signs of aging, while exfoliation leaves skin supremely smooth, hydrated and supple. This experience concludes with a gelato treat in the season's flavor.

   COCONUT NEROLI BODY POLISH 80 minutes
Escape completely with the sweet scent of orange neroli blossom and a warm coconut and kukui oil massage. A light dusting of powdered orange peel and hibiscus flowers delivers a rich, gently astringent body buff to polish, tone and refresh the skin. While hands and feet relish in a conditioning coconut mask, relax with a head, shoulder and neck massage. Paired with the uplifting fragrance of neroli floral water, a deeply hydrating neroli and shea butter cream finishes this rejuvenating treatment.

Massage & Body Therapy

COMPANION TREATMENTS

  SCALP MASSAGE 15 minutes
A targeted massage to relax the mind, release tension and encourage circulation.

  FOOT MASSAGE 15 minutes
A rejuvenating massage, from toe to ankle, to ease pressure, strain and stress.



3 INTENTIONS

RELAX REPLENISH INVIGORATE

Specialty Bath Collection

*Available exclusively as an addition to the Duet Massage,
add a romantic 30-minute bath for two in our private couple's suite.*



MARE

For a refreshing and soothing soak, authentic Dead Sea salts blend with essential oils. Salts provide relief from skin irritation and rheumatic discomfort, while rosemary and mint oils stimulate the adrenal system and awaken the mind.



CRISTALLO

Hand-mined Himalayan salt crystals offer a mineral-rich soak infused with Italian bergamot scent to uplift your mood. Iron-rich salts heal and detoxify, as oils melt stress away.



FIORE

Encouraging deep and restful sleep, arnica and lavender oils combined with magnesium-rich salts induce deep relaxation and relief from aches and discomfort.



3 INTENTIONS

RELAX REPLENISH INVIGORATE

Skincare Collection

CLEANSE/MAINTAIN



PRONTO REFRESH FACIAL *30 minutes*

Renew your skin with an efficient facial, which includes a cleanse, scrub, mask and relaxing massage.



CLASSIC CLEANSING *50 minutes*

Designed to refresh, clear, hydrate and refine skin, this facial increases circulation and prevents damage from daily environmental skin stressors.



MEN'S GROOMING FACIAL *50 minutes*

This deep cleansing treatment includes exfoliation and extractions, a relaxing scalp and facial massage, a skin-conditioning mask and grooming details, such as eyebrow trimming, as needed.

CLARIFY/CORRECT



PH BALANCER *80 minutes*

A calming and healing facial for oily, acneic skin, this treatment combines botanicals that remove impurities, reduce oils, diminish large pores and decrease congestion.



O²XYGEN AWAKENING *50 minutes*

Provide the skin's pores with a deep breath of fresh air through three layers of oxygenation. An advanced-grade peel leaves the skin in prime condition to penetrate a light-as-air formula that releases fresh, native oxygen molecules into the epidermal layer. This treatment re-energizes natural cellular functions and eliminates toxins residing within the skin's pores. To enhance the O²xygen Awakening treatment, add an optional advanced exfoliation featuring specially formulated active enzymes.

REPLENISH/PROTECT

-  ILLUMINA *50 minutes*
Reactivate healthy cellular function, nourish cells with their most basic needs and repair the effects of the aging process, resulting in instantly firmer, glowing skin.

REJUVENATE/REFINE/LIFT

-  PERFECT PEEL *50 minutes*
Obtain advanced results without visible peeling with this professional-grade peel. Safe exfoliation and effective cleansing minimize the appearance of surface lines, smooth out uneven texture in the skin and clear acne, while fading pigmentation.
-  NATURA'S DIAMOND EXPERIENCE *80 minutes*
Formulated with more than 30 active ingredients, including ATP and marine-originating DNA, this energy-producing cocktail combined with three massages provides your skin with a recognizable difference, similar to a cosmetic lift.



3 INTENTIONS

RELAX REPLENISH INVIGORATE

Advanced Aesthetics Collection



REVEAL FACIAL 50 minutes

Resulting in a “total reveal” of vibrant, younger looking skin, this facial pairs future advanced aesthetic techniques with premium skincare products to exfoliate, extract, penetrate, nourish and deeply moisturize skin using a Super Hydrating Masque.



PURE VITAL FACIAL 50 minutes

To bring out luminous, deeply hydrated, firmer skin, this treatment combines advanced techniques and premium skincare products to exfoliate, penetrate and diminish fine lines and deep wrinkles with advanced antioxidants.



LUXURY LIFTING FACIAL 80 minutes

Ideal for dehydrated, aging and environmentally damaged skin, lifting aesthetic techniques and premium skincare products exfoliate, penetrate, cleanse, tone, protect and reveal an immediately lifted appearance.



ULTRA ANTI-AGING FACIAL 80 minutes

An entirely personalized anti-aging treatment tailored for your skin type, this experience harnesses all the benefits of technology and premium skincare products for exfoliation, skin brightening, penetration and circulation.



3 INTENTIONS

RELAX REPLENISH INVIGORATE

Facial Companion Treatments

 BACK IN BEAUTY *30 minutes*

Purifies and cleanses acned skin on the back, clears oily and acned pores and leaves the skin healthy and protected.

  SCALP MASSAGE *15 minutes*

A targeted massage to relax the mind, release tension and encourage circulation.

  FOOT MASSAGE *15 minutes*

A rejuvenating massage, from toe to ankle, to ease pressure, strain and stress.

 DEPILATORY WAXING

A variety of depilatory waxing services are available on request.

 CITRUS ENZYME LIP THERAPY

Completed within a facial treatment, this added option exfoliates and quenches damaged lips with a restorative series of steps to produce a healthy, hydrated, plump lip and a softened full lip area.

 BRIGHT EYES

Completed within a facial treatment, this added option rehydrates the delicate eye area and softens fine lines and dark circles in the orbital area.



Nail Care Collection



PRONTO AGRUME MANICURE 25 minutes

Heal the hands with an olive-based express manicure, infused with specially sourced citrus. Includes cuticle care, nail filing, buffing and nail lacquer, excluding French polish.



PRONTO OLIVO PEDICURE 40 minutes

Revive tired legs and feet with an olive-based express pedicure, including a skin-quenching foot treatment and pampering massage to restore healthy circulation. Includes cuticle care, nail filing, buffing and nail lacquer, excluding French polish.



PRIMO MANICURE 50 minutes

PRIMO PEDICURE 80 minutes

PRIMO MANICURE & PEDICURE 130 minutes

Pamper your tips and toes with a detoxifying treatment that reduces inflammation, exfoliates the skin and revitalizes hands and feet. Begin with a tonic soak, followed by a sugar scrub with Chinese jasmine. Finish with a red clay, lemongrass and organic ginger masque and soothing massage. Also includes cuticle care, nail filing, buffing and nail lacquer, excluding French polish.



GEL MANICURE 50 minutes

Beauty meets durability with a dry manicure and vitamin-infused gel lacquer that results in a long-lasting, chip-free finish. Includes cuticle care, nail filing, buffing and nail lacquer, excluding French polish. For removal of existing gel lacquer, allow additional 20 minutes for moisturizing treatment and warm buckwheat wrap.



3 INTENTIONS

RELAX REPLENISH INVIGORATE

Hand & Foot Companion Treatments

- 

FRENCH POLISH 15 minutes
 A clean and sophisticated style, with a natural pink nail base and white polish applied to the tips.

- 

WARM PARAFFIN HAND OR FOOT MASQUE 15 minutes
 A deeply conditioning hand or foot wrap smoothes and softens hands or feet.

- 

HYDRATE 15 minutes
 A nourishing treatment that hydrates the hands or feet.

- 

SMOOTH..... 15 minutes
 A smoothing treatment for removal of calluses on the feet.

- 

HEAL 15 minutes
 An ideal hand therapy following artificial nail treatments.

Hair Care Collection

SHAMPOO & STYLE

HAIR CUT & STYLE

HAIR TRIM/MEN'S CUT

UPDOS

BRIDAL HAIR STYLING WITH VEIL PLACEMENT

COLOR WORKS

HAIR CONDITIONING WRAP

Available as a complement to any of the hair services listed above, this rosemary lime conditioning treatment and hair brushing stimulates the senses and restores healthy shine.

KERATIN TREATMENT

This intensive professional treatment results in hair that is more manageable, smoother and easier to style than ever before. By reducing frizz and curl, this revolutionary therapy is ideal for all types of hair, including color-treated and chemically processed hair.

MAKE-UP APPLICATION

EVENING ELEGANCE

Make-up application and hair styling.



Wedding & Special Occasion Packages

BEAUTIFUL BRIDE SALON PACKAGE

The Spa's comprehensive bridal salon package includes a Hair Styling Consultation and Trial Session, Wedding Day Hair Styling Session, Make-up Consultation and Trial Session, Wedding Day Make-up Session with lashes included, Pronto Agrume Manicure and Pronto Olivo Pedicure, along with a complimentary glass of Prosecco, Mimosa or Bellini. Optional crudités, canapés or tea sandwiches are also available.

WEDDING DAY HEAD-TO-TOE SALON PACKAGE

Designed specifically for the wedding day, the Spa's bridal salon package includes Wedding Day Hair Styling Session, Wedding Day Make-up Session with lashes included, Pronto Agrume Manicure and Pronto Olivo Pedicure, along with a complimentary glass of Prosecco, Mimosa or Bellini. Optional crudités, canapés or tea sandwiches are also available.

BRIDAL PARTY PRE-WEDDING PACKAGES

Escape to the Spa together before the big day! Select from these intention-inspired pre-wedding celebration experiences with special packaged rates available for groups of 10 or more:

-  Relax: Book an Amber Gold Signature Massage and Pronto Agrume Manicure, followed by a healthy spa lunch.
-  Replenish: Book a Coastal Renewal Scrub, wrap and massage treatment, followed by a Pronto Olivo Pedicure and mindful spa lunch.
-  Invigorate: Book a private group yoga session and guided Crystal Cove Beach Walk, followed by an Aroma Intentions Massage.

BRIDAL PARTY SALON PACKAGE

On the wedding day, the bride's attendants enjoys canapés and sparkling Prosecco, while the salon styles hair and make-up, following manicures and pedicures. Special rates available for groups of 10 or more.

THE BRIDE, PLUS ONE PACKAGE

For the bride and her maid of honor or mother, spend the day before the wedding celebrating together with an 80-minute duet massage and the bride receives a complimentary Pronto Agrume Manicure.

YOUNG LADIES

For young ladies in the wedding party, enjoy tea sandwiches and lemonade, while the salon styles a "princess updo." Receive a complimentary nail polish change with the purchase of a hair styling service.

GALLANT GROOM SALON PACKAGE

The Spa pampers grooms for the wedding day with a 30-minute neck, back and shoulder massage, Hot Lather Shave in the Salon's Barber Lounge and Men's Buffing Manicure. Optional beverages and light snacks available.

THE GROOM'S MEN

Enjoy a hot lather shave and men's buffing manicure, with snacks and celebration beverages. Special rates available for groups of 10 or more.

THE HAPPY COUPLE

For the day before or after the wedding, book a couples massage in a private treatment room and receive a complimentary romantic bath upgrade with two glasses of sparkling Prosecco. Available exclusively to brides and grooms with weddings celebrations booked at The Resort at Pelican Hill®

Spa Details

WHAT WE NEED TO KNOW:

YOUR INTENTIONS

Your visit to The Spa at Pelican Hill® will be carefully crafted, based upon your intention or focus: Replenish (*restoring balance, detoxifying, rejuvenating*); Invigorate (*strengthening, energizing, immune boosting*); or Relax (*de-stressing, unwinding, centering*).

YOUR CONCERNS

Please advise the Spa staff of any medical conditions or concerns that may affect your treatment selections. Some services are not recommended for guests who have hypertension, who are pregnant or who may have other specific conditions.

YOUR SATISFACTION

After your visit to the Spa, we invite you to share the experiences you most enjoyed and the people who most impressed you on our Spa Comment Card.

WHAT YOU NEED TO KNOW:

OUR FACILITIES

Our Spa includes 22 private treatment rooms, a full-service salon with a private treatment room, as well as ample areas for rest and relaxation. Our Acqua Colonnades feature herbal steam rooms, saunas and saltwater soaking tubs and are complimentary to Resort and day guests receiving treatments.

SPA RESERVATIONS

Spa reservations may be made through the Spa or through Resort reservations. We suggest you book your treatments well in advance. Once booked, we will follow up with a reminder if you choose. We request a 24-hour notice to cancel or change a Spa reservation. Changes made within the 24 hours will be charged 50% of the treatment total, and no-shows will be charged in full.

SPA ARRIVAL

We invite you to check in 30 minutes prior to your scheduled services to relax and prepare for your treatment in our Acqua Colonnade, which includes herbal steam rooms, saltwater soaking tubs and saunas. Late arrivals will result in an abbreviated service.

GRATUITIES

Service providers and support staff will receive gratuities through our 22% service charge, which is added to the treatment total.

SPA COURTESIES

The Spa at Pelican Hill® is a place for natural connection, with one's self, or among friends and family. We request you "unplug" during your visit by turning off all mobile phones. Spa lounges are considered quiet areas, so please be mindful of this.

VALUABLES

Please bring minimal belongings.

MINIMUM AGE

Our Spa and fitness facilities are available to teens 16 years of age and older with parental consent.

SPA HOURS

The Spa is open daily from 7 a.m. – 8 p.m. Spa fitness facilities open at 6 a.m. and close at 8 p.m. Salon treatments are available from 9 a.m. – 7 p.m. Spa Boutique hours are 9 a.m. – 8 p.m. Please note that spa hours may vary with the season.

GIVING SPA

Spa gift cards are available in any denomination for the perfect way to treat a loved one and share the spa spirit.

WOMEN'S ACQUA COLONNADE



MEN'S ACQUA COLONNADE





THE RESORT AT
PELICAN HILL[®]
NEWPORT BEACH

PELICANHILL.COM

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DESIGNERS NEWPORT BEACH F. 949.759.0667
INSTITUTE CA 92660 www.idi.edu

440 SENIOR STUDIO

(10 points)

FIELD RESEARCH

Task 1: (Objectives & Behavior)

What do people do here? Gather information using multiple methods, including direct observation, interviews, surveys, etc., to identify: 1) client's marketing/branding objectives; and, 2) project design objectives based on human behavior related to the accessibility, culture and social considerations. Document your findings using photography, quick 3-D sketches, and diagrams.

Task 2: (Physical Setting)

Gather information about the *physical setting* by means of direct observation to identify important existing physical conditions, such as spatial arrangement, circulation paths, wayfinding devices, universal/inclusive design features, finishes, lighting, color palette, furnishings, etc. Document your findings using photography, quick 3-D sketches, and diagrams.

Task 3:

Analyze the relationships (positive or negative; supportive or contrary) between *human behavior* and the *physical setting*, using the data gathered in Tasks #1 & #2. Also, analyze how well the client's marketing/branding objectives were met by the behavior—physical-setting connection.

Task 4:

Present all findings and analysis using the 11" x 17" landscape format.

INTERIOR DESIGNERS INSTITUTE
440 Senior Studio

Field Research 10 points

Name: _____

Project Name: _____

Location: _____

Concept: _____

1. **Task #1 — Gather Information (objectives & behavior)** (2 points)

_____ Methods of gathering information

_____ Value of information obtained

2. **Task #2 — Gather Information (existing conditions)** (2 point)

_____ Methods of gathering information

_____ Consistency with vision & brand identity

3. **Task #3 — Analysis** (4 point)

_____ Analytical rigor

_____ Breadth & Depth of analysis

4. **Task #4 — Presentation** (2 point)

_____ Organization & clarity of expression

_____ Overall graphic quality of presentation

Comments: _____

3. Programming

Interior Designers Institute
440 Senior Studio

Lecture Notes Problem-Seeking, Programming & Information Management for Pre-Design

References

Dickinson, Joan & John P. Marsden, ed. *Informing Design*. New York: Fairchild Books, 2009. See Chapters 1 & 2

Duerk, Donna P. *Architectural Programming: Information Management for Design*. New York: John Wiley and Sons, 1993.

Nussbaumer, Linda L. *Evidence-Based Design for Interior Designers*. New York: Fairchild Books, 2009. See Chapter 1, pp. 7-8

Pena, William M. & Steven A. Parshall. *Problem Seeking: An Architectural Programming Primer, 4th Edition*. New York: John Wiley & Sons, 2001.

Robinson, Lily B. & Alexandra T. Parman. *Research-Inspired Design: A Step-by-Step Guide for Interior Designers*. New York: Fairchild, 2010. See Chapter 10.

1.0 “PROBLEM-SEEKING” vs. PROBLEM SOLVING

- 1.1 Problem-Seeking:
 - 1.1.1 is a process of identifying issues, concerns, themes, facts, values, and other items of information likely to be relevant and useful for a successful resolution’
 - 1.1.2 clearly articulates what “successful resolution” amounts to;
 - 1.1.3 identifies and describes constraints and opportunities;
 - 1.1.4 is a search for things that matter to the problem at hand;
 - 1.1.5 identifies and defines the “problem” to be solved
- 1.2 Problem-Solving:
 - 1.2.1 is a series of coordinated responses to a design problem;
 - 1.2.2 involves methods of analysis & synthesis employed to arrive at a resolution of the relevant constraints and opportunities;
 - 1.2.3 is the offering of potential design solutions.

2.0 PROGRAMMING vs. RESEARCH

- 2.1 Similarities include:
 - 2.1.1 Accurate observation and description;
 - 2.1.2 Systematic fact finding;
 - 2.1.3 Gathering, organizing and interpreting information & data;
 - 2.1.4 Reliance on published research.
- 2.2 Crucial Differences include:
 - 2.2.1 Programming is the systematic *search* for information (Dickinson, 12);
 - .1 Programming is *site-specific*;
 - .2 Programming problems are broad in context but apply to a specific client

(Dickinson, T. 2.1).

- 2.2.2 Research is the systematic pursuit of *new* knowledge (Dickinson, 12);
 - .1 Research is a methodical process of discovery / invention;
 - .2 Research moves the “body of knowledge’ and the profession forward;
 - .3 Research can be generalized to the larger population (Dickinson, 21);
 - .4 Research problems are clearly defined and specific in nature (Dickinson, T. 2.1).

3.0 PROGRAMMING

- 3.1 Some General Comments:
 - 3.1.1 the first phase of professional services
 - 3.1.2 the phase in which the design problem is identified and described
 - 3.1.3 a bridge between research and design excellence (R, 265)
 - 3.1.4 a search for the values that the completed design should embody

- 3.2 Definition(s) of Programming
 - 3.2.1 Robinson cites a definition offered by Edith Cherry in her book *Programming for Design*:
“Programming is the research and decision-making process that defines the problem to be solved by design.” (R, 265):
 - 3.2.1 Pena & Parshall offer the following definition from Webster’s dictionary,
Programming is, “A process leading to the statement of an architectural problem and the requirements to be met in offering a solution.” (Pena, 14 & 100)
 - 3.2.3 Duerk offers this definition:
“Programming is the gathering, organizing, analyzing, interpreting and presenting of information that is relevant to a design project.” (Duerk, 9)
 - 3.2.4 Robinson offers several more definitions. (Robinson, p 15)
 - 3.2.5 Defines the problem to be solved;
 - 3.2.6 Identifies and develops *strategies* for solving the problem.

- 3.3 Frameworks for Programming
 - 3.3.1 Spatially-Based vs. Activity-Based (Robinson’s distinction)
 - 3.3.1.1 Spatially based: Identifies required spaces based upon some notion of what spaces are necessary.
 - 3.3.1.2 Activity based: Identifies necessary activities, behaviors, and functions, then defines spatial requirements.
 - 3.3.2 Other specialized Methods
Nussbaumer, Duerk, and Pena have developed more complex and sophisticated methods.

- 3.4 Program Document
 - 3.4.1 “Problem statements are the bridge between programming and design and are agreed upon by both client and user.” (R, 294)

 - 3.4.2 Presents the work of the programming phase:
 - .1 Summarizes client needs;
 - .2 Information in the program document, “can help the client better understand the reality of the existing conditions.” (R, 274)
 - .3 Should provide a distinct separation for needs from desires, and clearly prioritize both;

- .4 “A good programming document essentially describes how the space should perform based on client needs.” (Dickinson, 17)
- .5 Identifies broader issues relevant to the project.
 - If too limited, it inhibits creative responses
 - If too broad, it fails to inspire relevant responses or serve as a useful evaluative measure
- .6 Functions as an “objective” road map / guide book for design;
- .7 Succinctly and clearly identifies and describes the design problem and focuses the Design effort
- .8 According to Robinson, the program document is a, “...guide that provides all relevant information and necessary guidance for the rest of the project.” (R, 268)
- .9 Programs can and often do morph. Robinson writes, “You can see your program as a living document: inherently flexible, responding to the design, and subject to change with the client’s approval.” (R, 268)
- .10 A good program document should separate the relevant and useful data from the superfluous to avoid “data clog,” analysis-paralysis and overwhelm;
- .11 A good program document enhances the design team’s understanding of relevant Issues forming the context of the design problem;
- .12 “Programming allows the designer to base decisions on facts rather than opinion, assumptions, or experience.” (Dickinson, 16)
- .13 Helps the design team understand the design problem from the multiple viewpoints of all stakeholders [client of record, end-users, potential users, contractors, community groups, governmental agencies, etc]
- .14 Varies in size, complexity and detail depending on the nature and complexity of the project;
- .15 The program document is separable from the design, and should be written assuming that someone other than the programming team will use it;
- .16 Robinson writes, “Remember, you should be able to hand this document to another designer and walk away from the project, leaving behind all the tools and information a designer would need in order to proceed to schematics.” (R, 301)



Fourth Edition

Problem Seeking

An Architectural
Programming Primer

The Primer

Good buildings don't just happen. They are planned to look good and perform well, and come about when good architects and good clients join in thoughtful, cooperative effort. Programming the requirements of a proposed building is the architect's first task, often the most important.

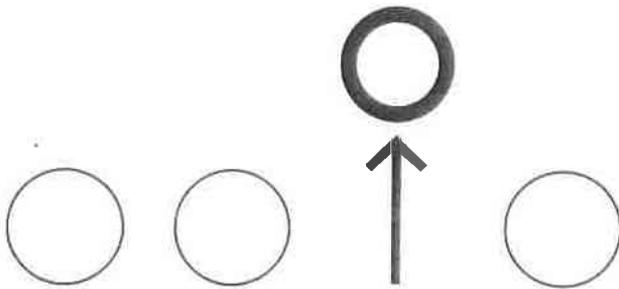
There are a few underlying principles that apply to programming—whether the most complex hospital or a simple house. This book concerns these principles.

Programming concerns five steps:

- 1 Establish **Goals**.
- 2 Collect and analyze **Facts**.
- 3 Uncover and test **Concepts**.
- 4 Determine **Needs**.
- 5 State the **Problem**.

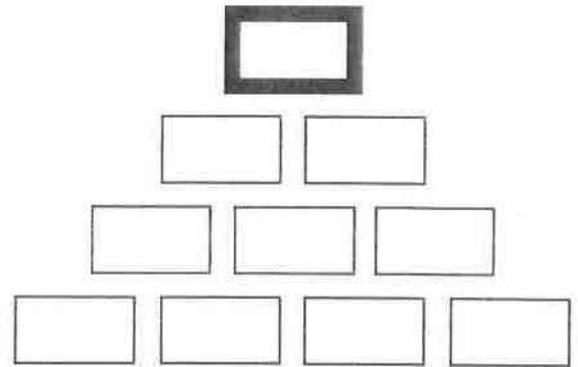
1. Priority

The concept of priority evokes questions regarding **the order of importance**, such as relative position, size, and social value. This concept reflects how to accomplish a goal based on a **ranking of values**. For example, “To place a higher value on pedestrian traffic than on vehicular traffic” may relate to the precedence in traffic flow.



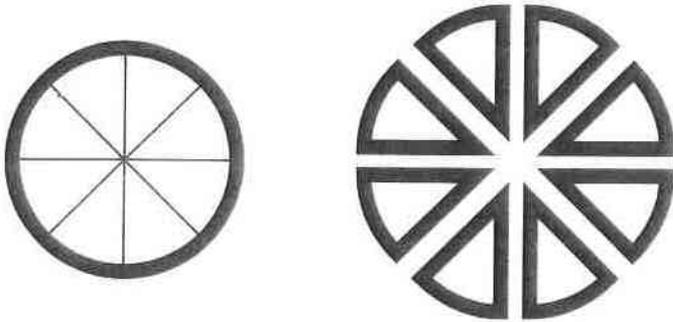
2. Hierarchy

The concept of hierarchy is related to a goal about the exercise of authority and is expressed in symbols of authority. For example, the goal “to maintain the traditional hierarchy of military rank” may be implemented by the concept of a hierarchy of office sizes.



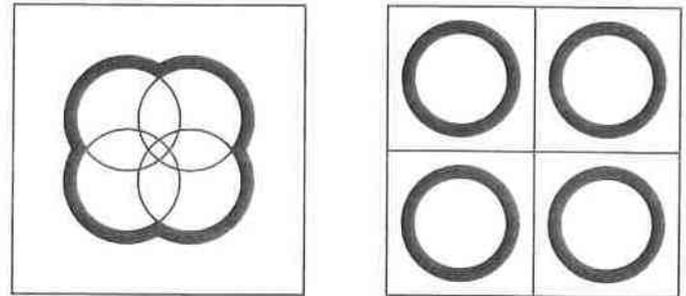
5. Service Grouping

Should services be **centralized** or **decentralized**? Test the many services as being best centralized or best decentralized. Should the heating system be centralized or decentralized? The library? And dining? And storage? And many other services? Evaluate the gains and risks to simulate client decisions. But remember each distinct service will be centralized or decentralized for a definite reason—to implement a specific goal.



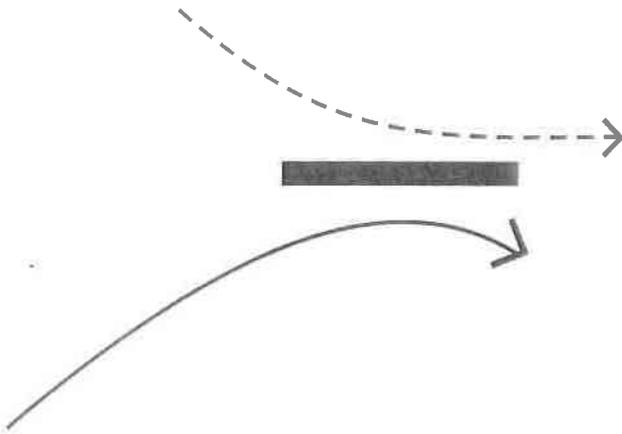
6. Activity Grouping

Should activities be **integrated** or **compartmentalized**? A family of closely related activities would indicate integration to promote interaction, while the need for some kinds and degrees of privacy or security would indicate compartmentalization.



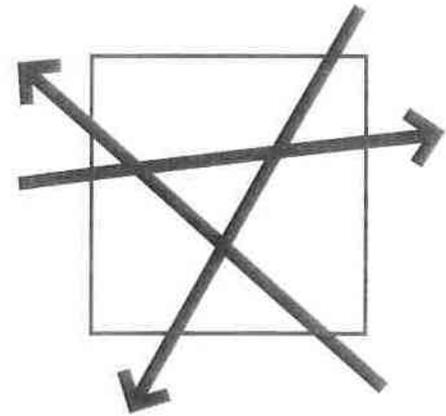
13. Separated Flow

A goal for segregation may relate to people (such as prisoners and public), to automobiles (such as campus traffic and urban traffic), and to people and automobiles (such as pedestrian traffic and automobile traffic). For example, **separate traffic lanes with barriers**, such as walls, separate floors, and space.



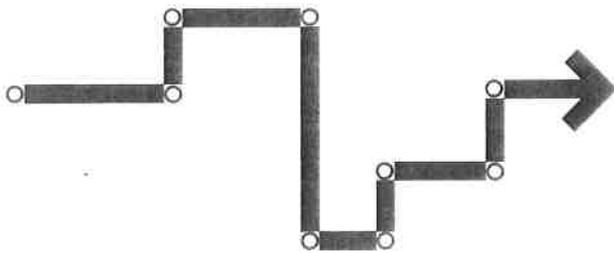
14. Mixed Flow

Common social spaces, such as town squares or building lobbies, are designed for **multidirectional, multi-purpose** traffic—or mixed flow. This concept may be apropos if the goal is to promote chance and planned encounters.



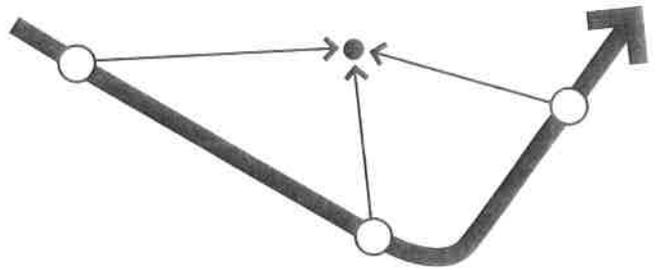
15. Sequential Flow

The **progression of people** (as in a museum) and **things** (as in a factory) must be carefully planned. A flow-chart diagram will communicate this concept of sequential flow much easier than words will.



16. Orientation

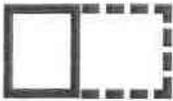
Provide a bearing—a **point of reference** within a building, a campus, or a city. Relating periodically to a space, thing, or structure can prevent a feeling of being lost.



17. Flexibility

The concept of flexibility is quite often misunderstood. To some, it means that the building can accommodate growth through expansion. To others, it means that the building can allow for changes in function through the conversion of spaces. To still others, it means that the building provides the most for the money through multi-function spaces. Actually, flexibility covers all three—**expansibility, convertibility, and versatility.**

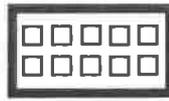
EXPANSIBILITY



CONVERTIBILITY



VERSATILITY



EXTERIOR CHANGES



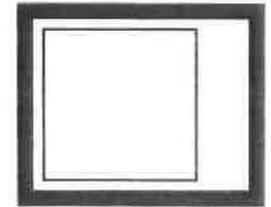
INTERIOR CHANGES



MULTIFUNCTION

18. Tolerance

This concept may well add space to the program. Is a particular space **tailored** precisely for a static activity, or is it provided with a **loose fit** for a dynamic activity—one likely to change?



26 July 2004
Job No: 4013:1

Toshiba
Lobby & Product Demo
2 Musick

Design Objectives

- 1.0 **Entry Lobby & Visitor Waiting**
Enhance overall look & feel of the entry experience, lobby and visitor seating/waiting area.
Create a high impact first impression.
- 2.0 **Space efficiency**
Use space more efficiently – both in terms of allocation of functions and their functional relationships.
Create more efficient circulation – with potential to separate employees/visitors access.
- 3.0 **Dedicated Product Demo Area**
Create a product demo area and sales/presentation conf room sensitive to customer confidentiality issues.
Integrate elements of technology ... plasma screens, gadget boxes, smart boards, thoughtful cable management --- things that reflect an “office of the future”.
- 4.0 **Marketing/Advertising Materials**
Seamless integration w/ architecture, but maximize flexibility for change-out when new ad campaigns emerge.
- 5.0 **Awards/Accolades**
Integrate & showcase awards/accolades & the “Wall of Fame” into the Lobby and Demo Area; Making these achievements more publicly visible.
- 6.0 **Toilet Rooms**
Re-work the toilet room finishes and fixtures for a more upscale appearance consistent with the overall renovation.

Creating a Concept Statement

A Good Concept Statement is:

- 1 to 4 sentence paragraph (concise)
- Addresses the gist of the physical design for the design project
- Specific physical response
- Directs how a program concept can be achieved
- Avoids specific decisions such as theme and FF&E layout

Goals (what the client wants/needs):

A contemporary building
Revitalization of existing structure
Inclusive; warm and inviting
Evocative of city's social heritage

Obstacles:

City is conservative, has many historic buildings
Strict building codes
Powerful historic review board has rigorous control
Unlikely modern building would be accepted

Solutions:

Intimate 19th century architecture, but . . .
Use modern materials that transcend time and place
Building elements that are associated with the South: light, porches, whiteness, shade
Preserve visual connection with the square it faces

Concept Statement

The new wing of the Telfair Academy Museum in Savannah, GA, the oldest public art museum in the South, needed to satisfy the client's desire for a contemporary building that was warm and inviting while meeting strict building codes and passing muster with a rigorous historic review board unlikely to approve a modern design. To accomplish this, the structure intimates 19th century architecture but uses modern materials that are able to transcend time and place. To ensure that the new wing maintained a visual connection with the buildings and public area surrounding it, care was taken to use building elements that were associated with the historic traditions of the South, such as porches, whiteness, and ample light and shade. The end result is a building that evokes Southern hospitality married with a modern sensibility.

Concept Statement developed from article, "Southern Belle," Contract, Nov 2006.



INTERIOR 1061 CAMELBACK RD P. 949.675.4451
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INSTITUTE CA 92660 www.idi.edu

440 SENIOR STUDIO

(30 points)

PROGRAMMING PHASE – PROGRAM DOCUMENT

1.0 Objectives:

The objectives for this assignment are as follows:

Spatially-based Issues & Aspects

- 1.1 To sharpen understanding of the spatial aspects of the “design problem”, by systematically itemizing and describing all of the rooms, areas and spaces of the project.
- 1.2 To ensure that the specific ‘Program Requirements’ outlined in the course syllabus are incorporated into the project.
- 1.3 To ensure a clear understanding of which existing rooms, features and elements of the existing building must remain unaltered, and which ones may be revised.

Behaviorally-based Issues & Aspects

- 1.4 To sharpen understanding of the social and cultural aspects of the target demographic relevant to developing this unique prototype, including expectations for acoustic/visual privacy, anthropometrics/proxemics, and universal/inclusive design.
- 1.5 To sharpen understanding of the behavioral aspects of the “design problem”, by documenting and analyzing the *specific* activities and events occurring inside the facility.

Problem Identification / Design Principles

- 1.6 Identify and document important aspects of the “design problem” that must be solved in your project design solution such as: activity/service grouping, user orientation, overall spatial organization, circulation and wayfinding, spatial definition & spatial enclosure.
- 1.7 To continue strengthening the brand identity of the prototype by means of translating the brand into spatial and architectural elements.

2.0 Guidelines & Format:

The following guidelines should be followed for this exercise:

- 2.1 Present all findings and analysis using the 11” x 17” landscape format.
- 2.2 The Program Document must include the following for BOTH floors:

Spatial Elements

Spatial Inventory – listing all rooms and spaces, quantities and floor areas,
Block Diagrams – scaled graphic depiction of rooms and areas
Criteria Matrices – diagrams highlighting design criteria for all spaces
Adjacency Matrices – listing adjacency requirements between rooms
Relationship Diagrams – 3 diagrams for each floor

Behavioral Elements

Concise summary of relevant cultural and behavioral goals for the project
Images & diagrams depicting specific user needs for major areas of the facility

Design Principles

Diagrams and sketches

INTERIOR DESIGNERS INSTITUTE
440 Senior Studio

Programming 30 points

Name: _____

Project Name: _____

Location: _____

Concept: _____

1. **Spatially-Based Issues** (both floors) (10 points)

- _____ Identifies & inventories spatial needs specific to project (spatial inventory, block diagram)
- _____ Identifies and analyzes detailed features of those spaces (criteria matrices)
- _____ Analyzes spatial adjacencies and relationships (adjacency matrices, relationship diagrams)

2. **Behavior-Based Issues** (both floors) (6 points)

- _____ Identifies & analyzes activities *specific* to project
- _____ Identifies & analyzes relevant social/cultural characteristics of user demographics
- _____ Analyzes human factors (ergonomics, proxemics) relevant for users & activities

3. **Problem Identification / Diagrams** (10 points)

- _____ Clarity & Conciseness of problem identification
- _____ Explores Breath & Depth of issues identified
- _____ Diagrams appropriate to identified issues
- _____ Diagrams information value & graphic quality
- _____ Diagrams usefulness in suggesting potential solutions

5. **Professional-grade Presentation** (4 points)

- _____ Organization & clarity of expression
- _____ Overall graphic quality of presentation

Comments: _____

4. Schematic Design

INTERIOR DESIGNERS INSTITUTE

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Lecture 04 – Wayfinding & Shaping Space

1 Spatial Implementation of a Design Program:

- 1.1 Wayfinding and Cognitive Mapping are ways to be attentive to user's experience.

2 Wayfinding:

- 2.1 =df: a process by which people navigate their physical surroundings to achieve their intended goal; mostly in unfamiliar territory.
- 2.2 Purpose: successfully direct users along a path to their destination(s).
Provide equal access to and enjoyment of spaces and services to ALL users.
Ease of wayfinding enhances enjoyment of the place, unless, the purpose of the place is to dis-orient, confuse, frustrate, and baffle.

3 Ways/Means/Methods by which Design Assists Movement Through Space:

- 3.1 Interior Spatial Organization:
Ching: *Form, Space & Order*: Linear, Centralized, Clustered, Radial | Spiral, Grid
- 3.2 Layout of Circulation Path:
Ching: *Form, Space & Order*: Linear, Radial | Spiral, Grid, Network, Composite
- 3.3 Path Space Relationship:
Ching: *Form, Space & Order*: path beside space; path through space; path terminate in space
- 3.4 Spatial Definition & Degrees of Enclosure:
Ching: *Form, Space & Order*.
- 3.5 Landmarks: important physical object or memorable experience.
atrium, sculpture/art, water feature,
- 3.6 Visual-Sensory Elements to assist: Color & Lighting; Texture & Acoustics
- 3.7 Non-Architectural: Signage / Directories / Maps

4 Cognitive Mapping

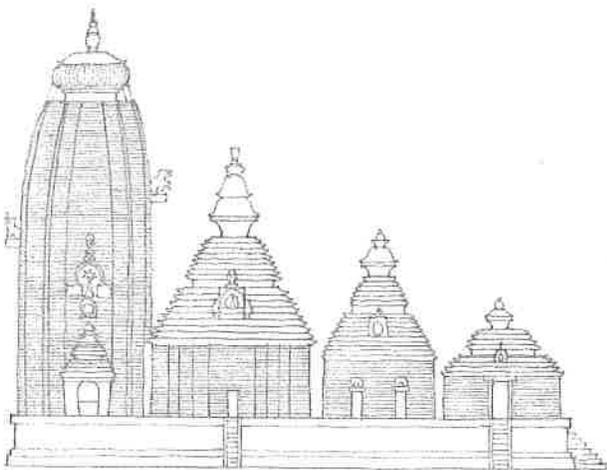
- 4.1 Kevin Lynch: *Image of the City (1960)*.
Coined terms: “imageability” and “wayfinding”
Path, Edge, District, Node, Landmark
- 4.2 Sequential Experience Diagram
“String of Pearls”

5 Shaping Space

- 5.1 Spatial Geometry; spatial connections; ways light enters the space

Additive forms resulting from the accretion of discrete elements can be characterized by their ability to grow and merge with other forms. For us to perceive additive groupings as unified compositions of form—as figures in our visual field—the combining elements must be related to one another in a coherent manner.

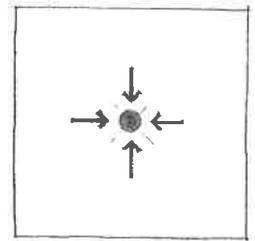
These diagrams categorize additive forms according to the nature of the relationships that exist among the component forms as well as their overall configurations. This outline of formal organizations should be compared with a parallel discussion of spatial organizations in Chapter 4.



Lingaraja Temple, Bhubaneswar, India, c. A.D. 1100

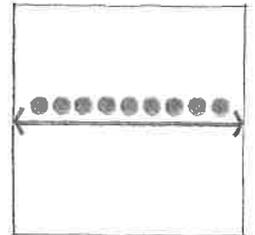
Centralized Form

A number of secondary forms clustered about a dominant, central parent-form



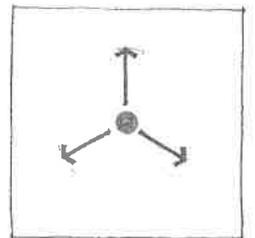
Linear Form

A series of forms arranged sequentially in a row



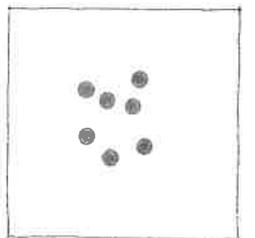
Radial Form

A composition of linear forms extending outward from a central form in a radial manner



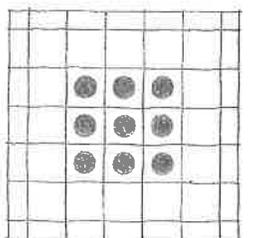
Clustered Form

A collection of forms grouped together by proximity or the sharing of a common visual trait



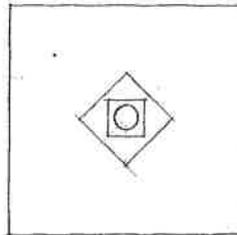
Grid Form

A set of modular forms related and regulated by a three-dimensional grid



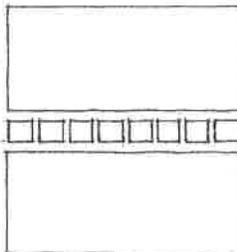
Each type of spatial organization is introduced by a section that discusses the formal characteristics, spatial relationships, and contextual responses of the category. A range of examples then illustrates the basic points made in the introduction. Each of the examples should be studied in terms of:

- What kinds of spaces are accommodated and where? How are they defined?
- What kinds of relationships are established among the spaces, one to another, and to the exterior environment?
- Where can the organization be entered and what configuration does the path of circulation have?
- What is the exterior form of the organization and how might it respond to its context?



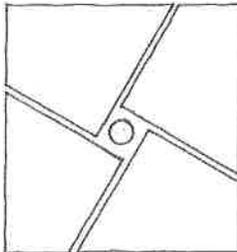
Centralized Organization

A central, dominant space about which a number of secondary spaces are grouped



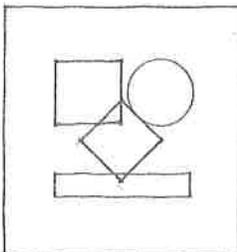
Linear Organization

A linear sequence of repetitive spaces



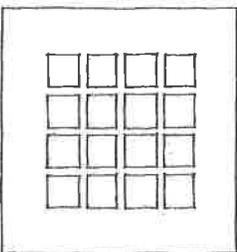
Radial Organization

A central space from which linear organizations of space extend in a radial manner



Clustered Organization

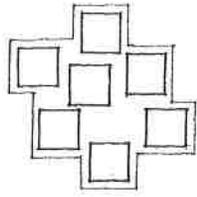
Spaces grouped by proximity or the sharing of a common visual trait or relationship



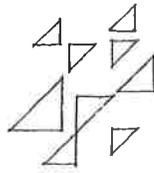
Grid Organization

Spaces organized within the field of a structural grid or other three-dimensional framework

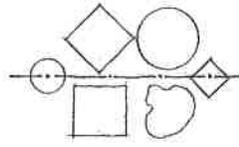
CLUSTERED ORGANIZATIONS



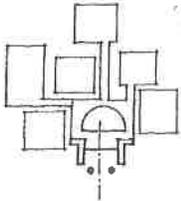
Repetitive spaces



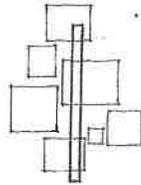
Sharing a common shape



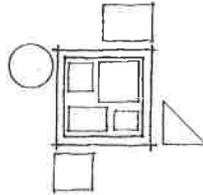
Organized by an axis



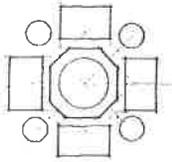
Clustered about an entry



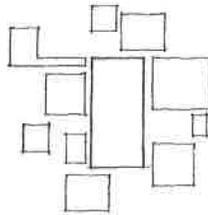
Grouped along a path



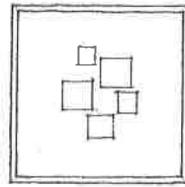
A loop path



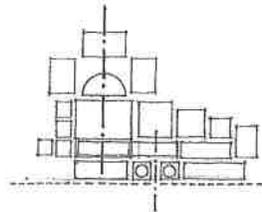
Centralized pattern



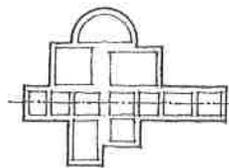
Clustered pattern



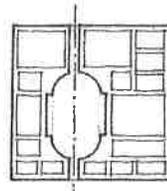
Contained within a space



Axial conditions



Axial condition



Symmetrical condition

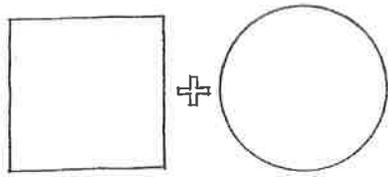
A clustered organization relies on physical proximity to relate its spaces to one another. It often consists of repetitive, cellular spaces that have similar functions and share a common visual trait such as shape or orientation. A clustered organization can also accept within its composition spaces that are dissimilar in size, form, and function, but related to one another by proximity or a visual ordering device such as symmetry or an axis. Because its pattern does not originate from a rigid geometrical concept, the form of a clustered organization is flexible and can accept growth and change readily without affecting its character.

Clustered spaces can be organized about a point of entry into a building or along the path of movement through it. The spaces can also be clustered about a large defined field or volume of space. This pattern is similar to that of a centralized organization, but it lacks the latter's compactness and geometrical regularity. The spaces of a clustered organization can also be contained within a defined field or volume of space.

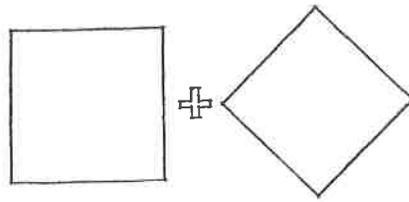
Since there is no inherent place of importance within the pattern of a clustered organization, the significance of a space must be articulated by its size, form, or orientation within the pattern.

Symmetry or an axial condition can be used to strengthen and unify portions of a clustered organization and help articulate the importance of a space or group of spaces within the organization.

FORMAL COLLISIONS OF GEOMETRY

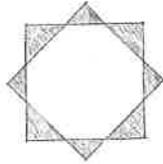
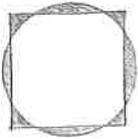


Circle and Square

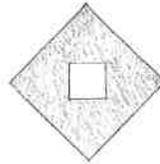
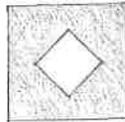
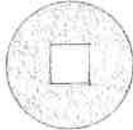


Rotated Grid

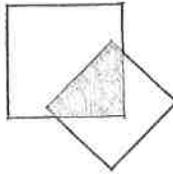
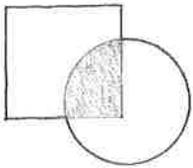
When two forms differing in geometry or orientation collide and interpenetrate each other's boundaries, each will vie for visual supremacy and dominance. In these situations, the following forms can evolve:



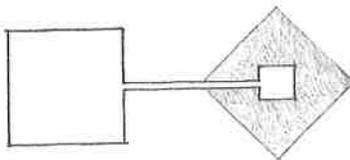
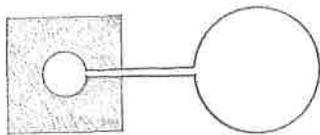
- The two forms can subvert their individual identities and merge to create a new composite form.



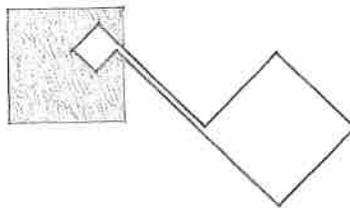
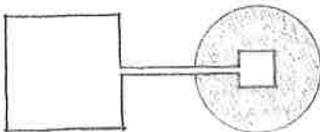
- One of the two forms can receive the other totally within its volume.



- The two forms can retain their individual identities and share the interlocking portion of their volumes.



- The two forms can separate and be linked by a third element that recalls the geometry of one of the original forms.



1. Linear

All paths are linear. A straight path, however, can be the primary organizing element for a series of spaces. In addition, it can be curvilinear or segmented, intersect other paths, have branches, or form a loop.

2. Radial

A radial configuration has linear paths extending from or terminating at a central, common point.

3. Spiral

A spiral configuration is a single, continuous path that originates from a central point, revolves around it, and becomes increasingly distant from it.

4. Grid

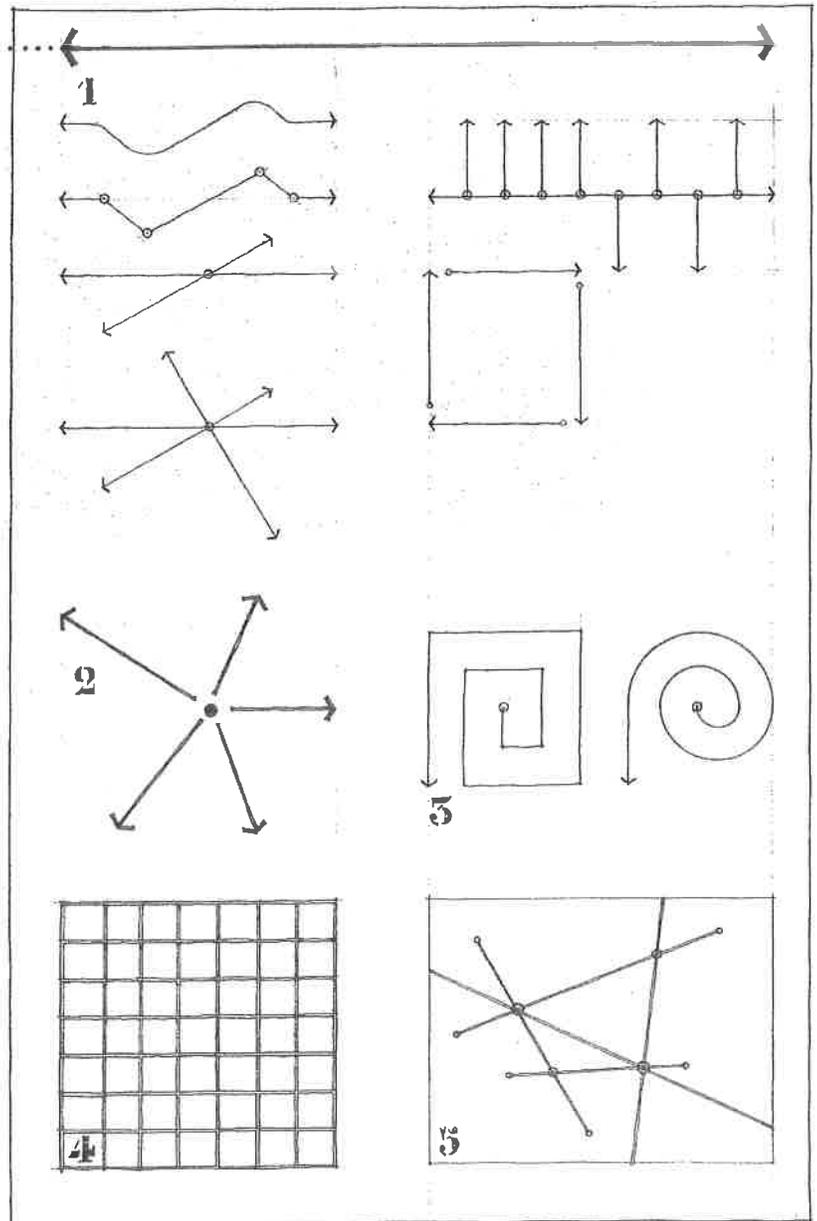
A grid configuration consists of two sets of parallel paths that intersect at regular intervals and create square or rectangular fields of space.

5. Network

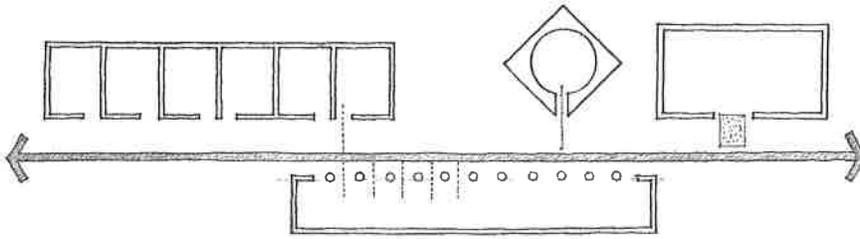
A network configuration consists of paths that connect established points in space.

6. Composite

In reality, a building normally employs a combination of the preceding patterns. Important points in any pattern are centers of activity, entrances to rooms and halls, and places for vertical circulation provided by stairways, ramps, and elevators. These nodes punctuate the paths of movement through a building and provide opportunities for pause, rest, and reorientation. To avoid the creation of a disorienting maze, a hierarchical order among the paths and nodes of a building should be established by differentiating their scale, form, length, and placement.

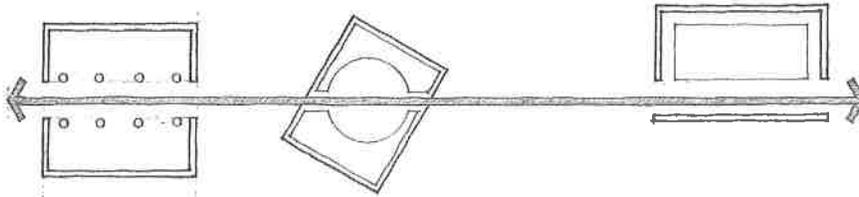


Paths may be related to the spaces they link in the following ways. They may:



Pass by Spaces

- The integrity of each space is maintained.
- The configuration of the path is flexible.
- Mediating spaces can be used to link the path with the spaces.



Pass through Spaces

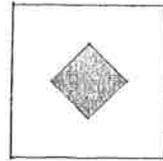
- The path may pass through a space axially, obliquely, or along its edge.
- In cutting through a space, the path creates patterns of rest and movement within it.



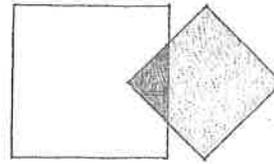
Terminate in a Space

- The location of the space establishes the path.
- This path-space relationship is used to approach and enter functionally or symbolically important spaces.

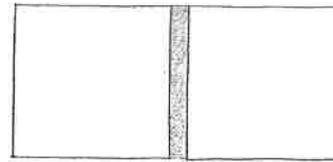
Space within a Space



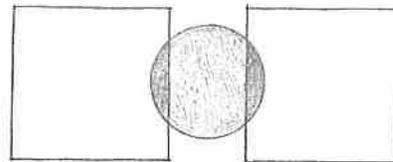
Interlocking Spaces



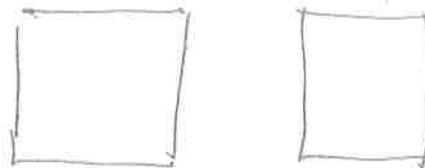
Adjacent Spaces



Spaces Linked by a Common Space

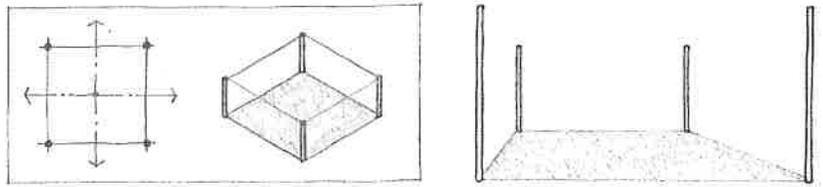


SPATIAL
TENSION



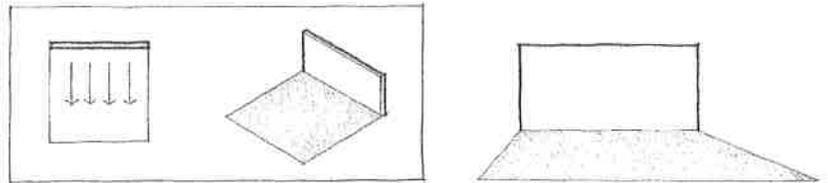
Vertical Linear Elements

Vertical linear elements define the perpendicular edges of a volume of space.



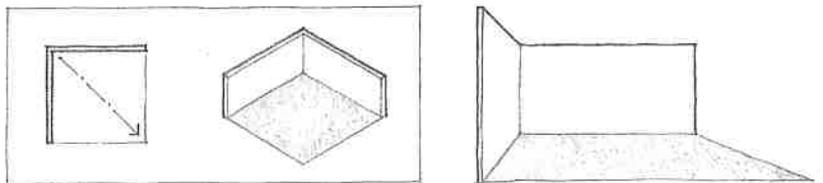
Single Vertical Plane

A single vertical plane articulates the space on which it fronts.



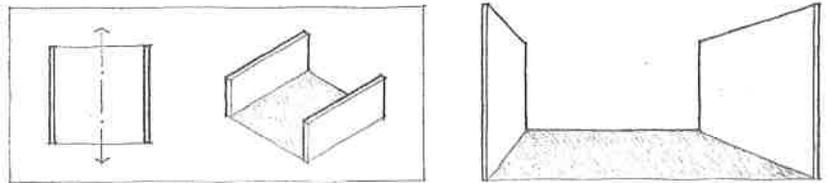
L-shaped Plane

An L-shaped configuration of vertical planes generates a field of space from its corner outward along a diagonal axis.



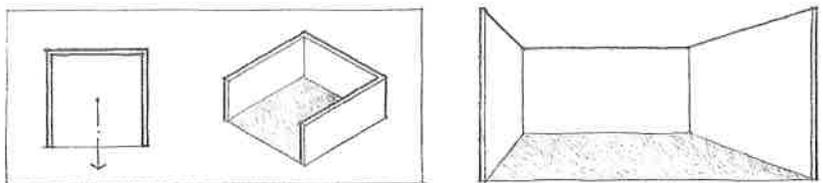
Parallel Planes

Two parallel vertical planes define a volume of space between them that is oriented axially toward both open ends of the configuration.



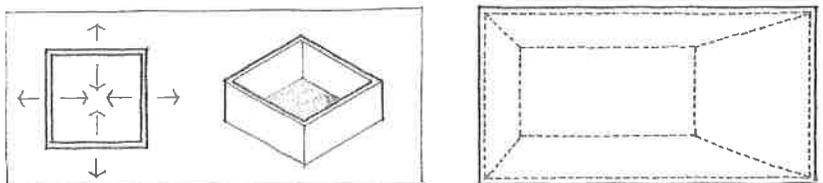
U-shaped Plane

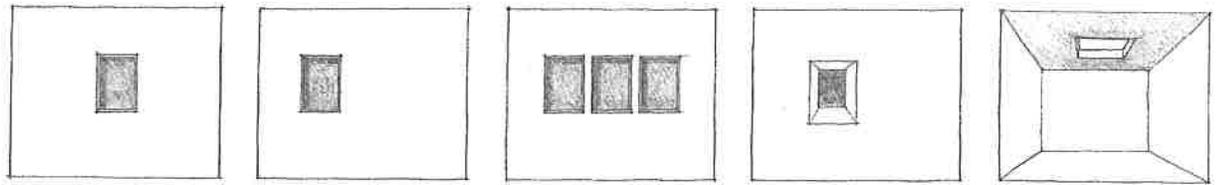
A U-shaped configuration of vertical planes defines a volume of space that is oriented primarily toward the open end of the configuration.



Four Planes: Closure

Four vertical planes establish the boundaries of an introverted space and influence the field of space around the enclosure.





Centered

Off-center

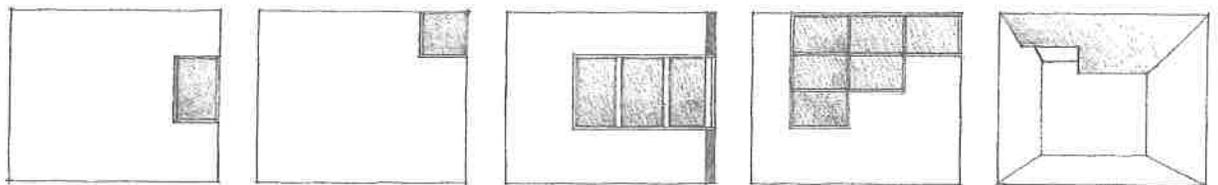
Grouped

Deep-set

Skylight

Within Planes

An opening can be located wholly within a wall or ceiling plane and be surrounded on all sides by the surface of the plane.



Along one edge

Along two edges

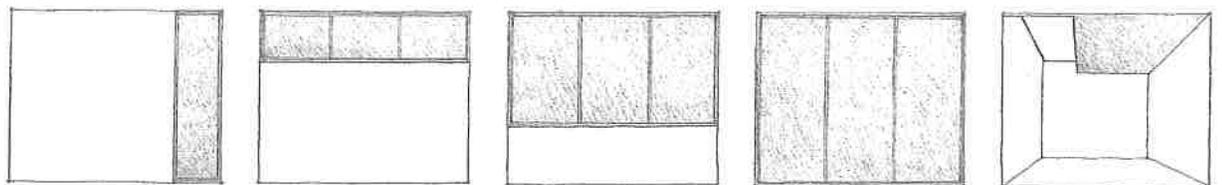
Turning a corner

Grouped

Skylight

At Corners

An opening can be located along one edge or at a corner of a wall or ceiling plane. In either case, the opening will be at a corner of a space.



Vertical

Horizontal

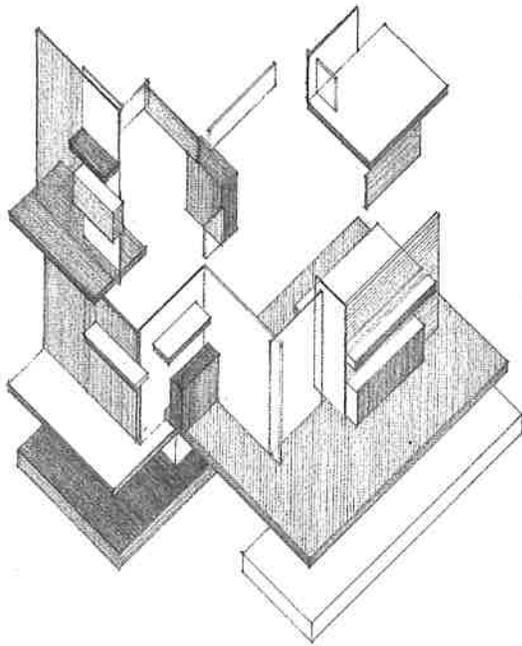
Three-quarter opening

Window-wall

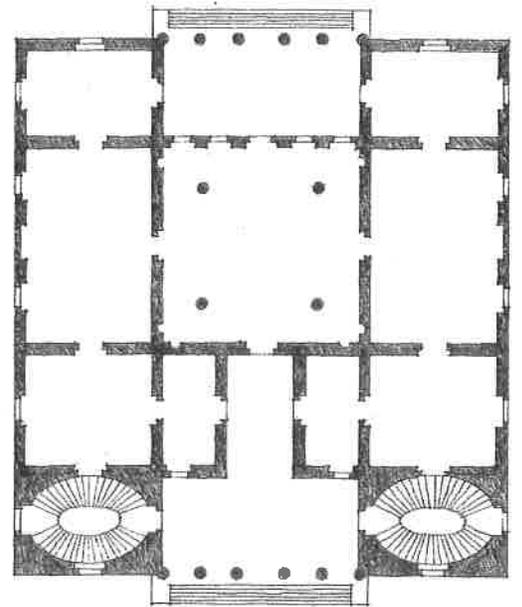
Skylight

Between Planes

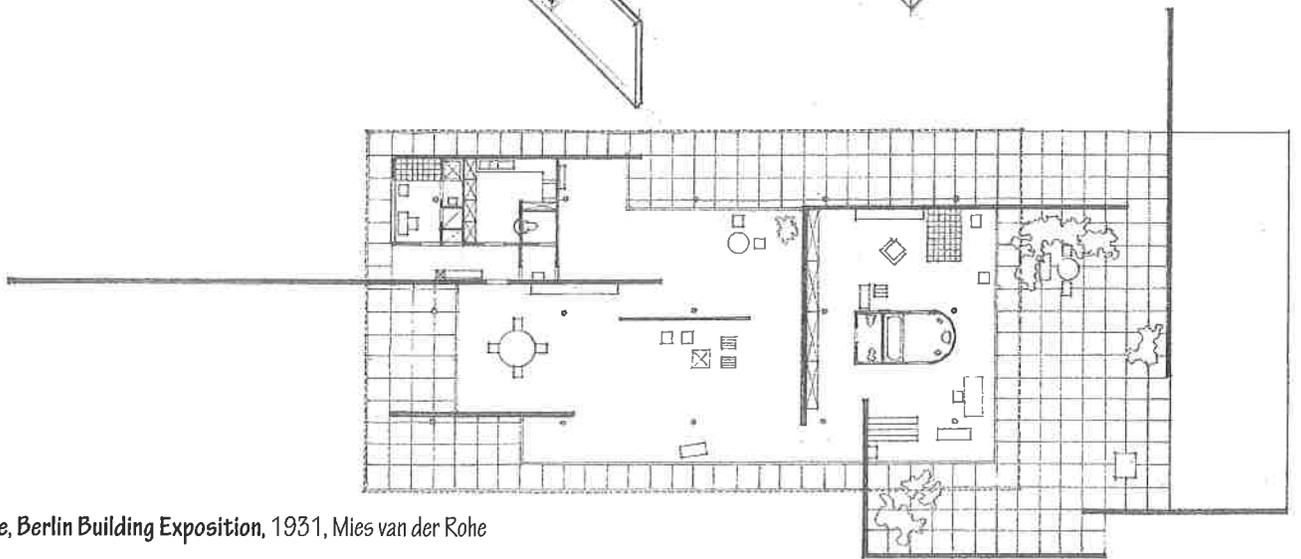
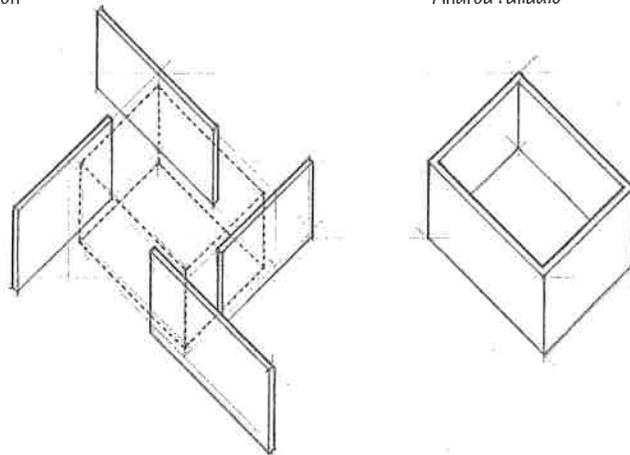
An opening can extend vertically between the floor and ceiling planes or horizontally between two wall planes. It can grow in size to occupy an entire wall of a space.



Color Construction (Project for a Private House),
1922, Theo van Doesburg and Cornelis van Eesteren



Palazzo Garzadore (Project), Vicenza, Italy, 1570,
Andrea Palladio



House, Berlin Building Exposition, 1931, Mies van der Rohe



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440 SENIOR STUDIO
SCHEMATIC & FINAL PRESENTATION

Elements to cover in Verbal Presentation

The verbal component of your final presentation will be evaluated using the *same* Evaluation Criteria used throughout the quarter (see syllabus page 10, and previous grade sheets).

Specifically, I'll be looking for your verbal presentation to provide *support* for the following aspects of your design solution. As you prepare for the presentation you should consider:

Vision

Summarize the “big-idea” of what you want this prototype to *achieve*. Make sure we understand what your brand vision is, and clearly explain those client goals and principles that are *central* to the design concept. Focus on key aspects of the design problem and show how you addressed them in your design solution.

Functionality

Briefly recap the target demographic and their needs & expectations. Show how the overall spatial organization and specific design selections (materials, colors, furniture, lighting, etc) satisfy these needs and expectations. Explain how these “functional” aspects of the project reinforce the brand vision.

Human Impact

Explain how your solution is beneficial. Convince us that you are responding to the relevant cultural and social expectations of the target demographic. Show us how your design solution creates a positive human experience, both physically and psychologically.

Innovation

Explain what it is that specifically makes this place “stand-out” in the crowded marketplace of health, exercise and wellness options. Discuss how various design principles have been used in your solution in a way that supports a unique and innovative user-experience. Convince us that your design solution is an innovative response to the needs of the project.

I strongly suggest you prepare an outline of your talking points, (and perhaps use note cards to aid memory) but please do *not* read from a script.



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440 SENIOR STUDIO

(35 points)

SCHEMATIC DESIGN PRESENTATION – “Internal” for client & other team members

1.0 Objectives:

The objectives for this assignment are as follows:

Vision

- 1.1 To present a design solution whose overall vision is thematically clear, coherent & concise, and compatible with the client’s ambitions and other design criteria established in the Design Program.

Functionality

- 1.2 To present a design solution that responds to the *specific* activities, events and behavioral needs identified in the Design Program, and whose spatial organization, spatial definition, sense of enclosure, furnishings, materials, and lighting is consistent with the brand identity established in the Market Study and Design Program.

Human Impact

- 1.3 To present a design solution that promotes positive human experience, and responds to the social and cultural aspects of the target demographic, including their expectations for acoustic/visual privacy, anthropometrics/proxemics, and universal/inclusive design.

Innovation

- 1.4 To present a design solution that depicts a strong, unique, and original health & wellness prototype suitable for you and your client to “pitch” to an international five-star resort owner.

2.0 Guidelines & Format:

The following guidelines should be followed for this exercise:

- 2.1 Present all schematic design work using the 11” x 17” landscape format.
- 2.2 The presentation must include *all previous* elements from the Market Study and Design Program.
- 2.3 The presentation must include the following *new* elements for BOTH floors:
 - Space Plan – computer drawn, showing furnishings in all spaces, rooms & areas
- 2.4 The presentation must include the following *new* elements for *each* of your **five (5)** specific spaces:
 - Overall architectural character
 - Furnishings & major equipment
 - Lighting systems & fixtures
 - Finishes – floor, wall & ceiling
 - Color concept & palette
- 2.5 The verbal component of your presentation should *concisely* summarize the key elements of the “design problem” you are aiming to solve, and clearly guide the choice of design elements and concepts employed in your solution.

INTERIOR DESIGNERS INSTITUTE
440 Senior Studio

Schematic Design Presentation 35 points

Name: _____

Project Name: _____

Location: _____

Concept: _____

1. **Vision** (6 points)

- _____ Thematic clarity
- _____ Thematic coherence & consistency
- _____ Compatibility with design criteria

2. **Functionality** (6 points)

- _____ Response to functional requirements
- _____ Consistency with vision & brand identity
- _____ Appropriate elements of physical setting (materials, lighting, furnishings)

3. **Human Impact** (6 points)

- _____ Promotes positive human experience
- _____ Response to user demographics
- _____ Human Factors (ergonomics, proxemics)

4. **Innovation** (6 points)

- _____ Originality & ingenuity
- _____ Use of design principles & concepts
- _____ Attention to detail

5. **Professional-grade Presentation** (6 points)

- _____ Organization & clarity of expression
- _____ Overall graphic quality of presentation

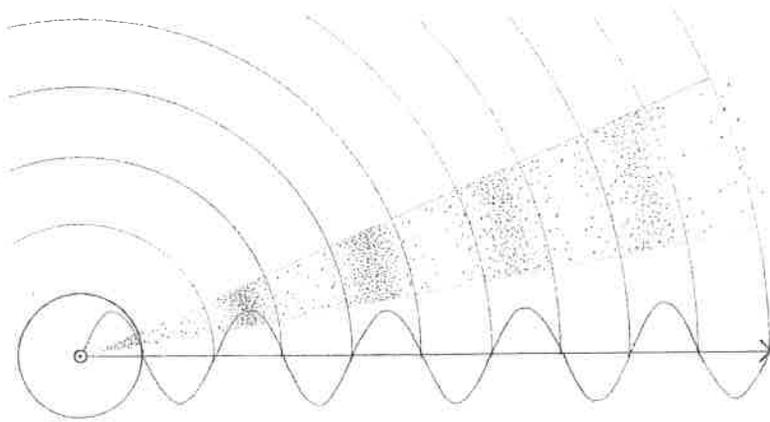
6. **Verbal Presentation** (5 points)

- _____ Organization & clarity of expression

Comments: _____

5. Acoustical Research

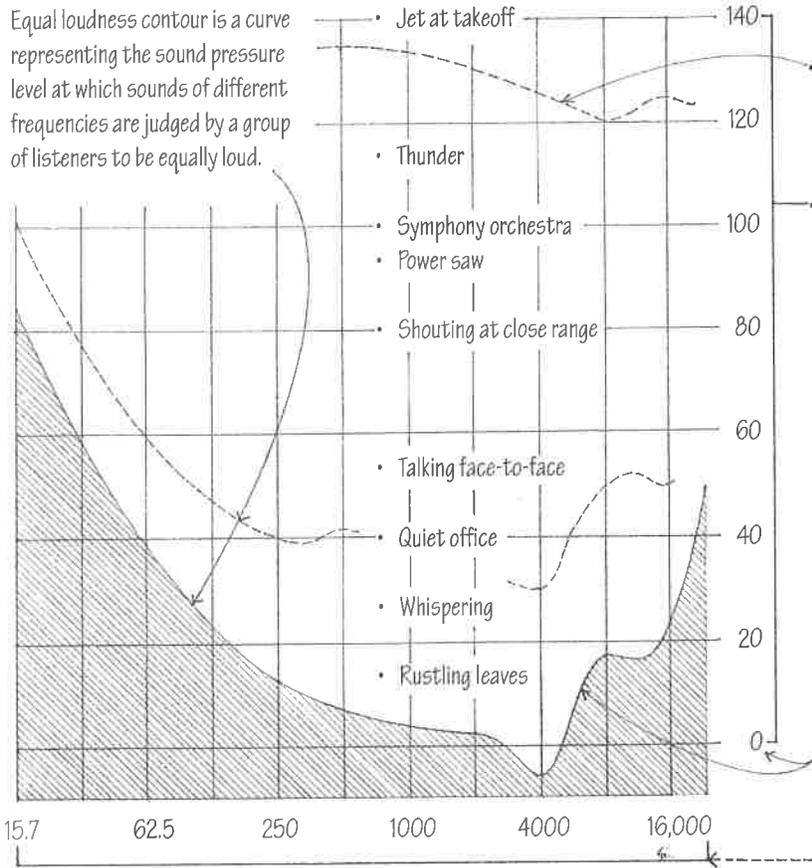
A.14 ACOUSTICS



Acoustics is the branch of physics that deals with the production, control, transmission, reception, and effects of sound. Sound may be defined as the sensation stimulated in the organs of hearing by mechanical radiant energy transmitted as longitudinal pressure waves through the air or other medium.

- Sound waves are longitudinal pressure waves in air or an elastic medium producing an audible sensation.
- Sound travels through air at approximately 1087' (0.3 km) per second at sea level, through water at approximately 4500' (1.4 km) per second, through wood at approximately 11,700' (3.6 km) per second, and through steel at approximately 18,000' (5.5 km) per second.

• Equal loudness contour is a curve representing the sound pressure level at which sounds of different frequencies are judged by a group of listeners to be equally loud.

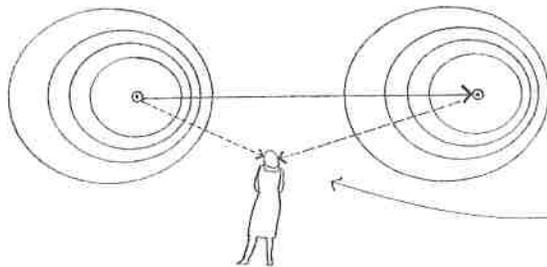


• The threshold of pain is the level of sound intensity high enough to produce the sensation of pain in the human ear, usually around 130 dB.

• Decibel (dB) is a unit for expressing the relative pressure or intensity of sounds on a uniform scale from 0 for the least perceptible sound to about 130 for the average threshold of pain. Decibel measurement is based on a logarithmic scale since increments of sound pressure or intensity are perceived as equal when the ratio between successive changes in intensity remain constant. The decibel levels of two sound sources, therefore, cannot be added mathematically: e.g., 60 dB + 60 dB = 63 dB, not 120 dB.

• The threshold of hearing is the minimum sound pressure capable of stimulating an auditory sensation, usually 20 micropascals or zero dB.

• The audio frequency is a range of frequencies from 15 Hz to 20,000 Hz audible to the normal human ear. Hertz (Hz) is the SI unit of frequency, equal to one cycle per second.



• Doppler effect is an apparent shift in frequency occurring when an acoustic source and listener are in motion relative to each other, the frequency increasing when the source and listener approach each other and decreasing when they move apart.

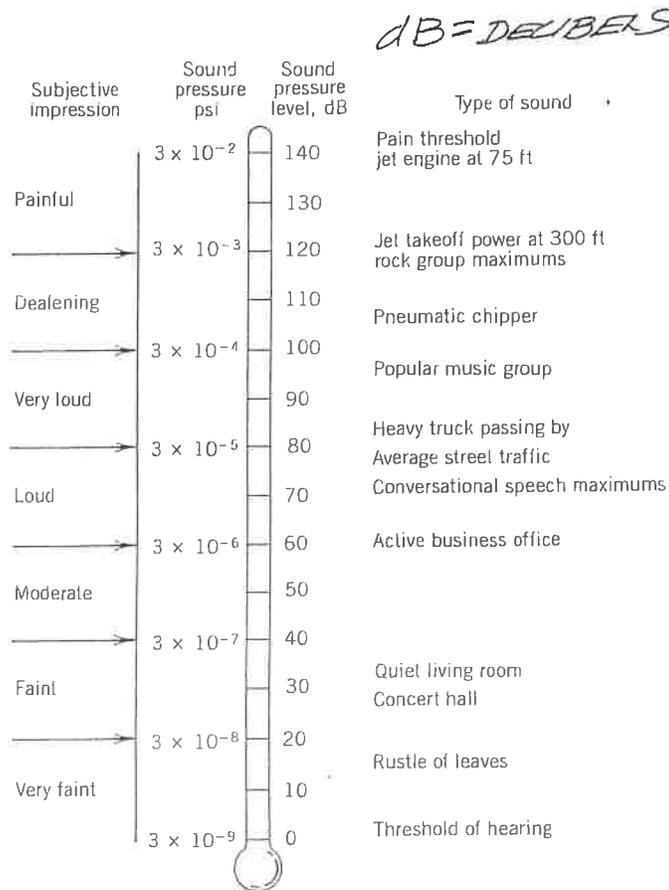


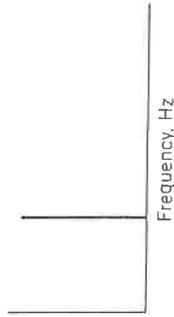
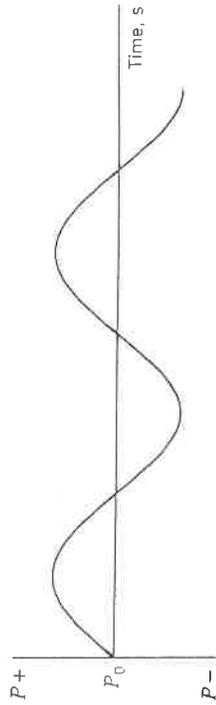
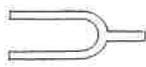
Figure 1.6 Acoustical thermometer compares the magnitude of sound pressures of sounds, in pounds per square inch, with the equivalent logarithmic quantities, decibels, used in acoustical standards. (From William J. Cavanaugh, "Acoustics—General Principles," in *Encyclopedia of Architecture: Design, Engineering & Construction*, Joseph A. Wilkes, Ed. Copyright © 1988 John Wiley & Sons. Reprinted by permission of John Wiley & Sons.)

Fortunately, it is not always necessary to deal with the full frequency range of various sounds of concern in many building acoustics problems. When the frequency characteristics are known for a type of sound source and are generally repeatable and/or are constant, simple single-number sound level values may be adequate. Figure 1.8 shows typical octave band spectra for various transportation noise sources along with their simple sound level equivalent values. Over the past several decades an enormous amount of measured data on aircraft, rail, and highway transportation sources as well as on other environmental sounds has been accumulated by international and national agencies. The automobile, aircraft, and truck sound level spectra illustrated in Figure 1.8, for example, are from the U.S. Environmental Protection Agency. Chapter 3 describes an application of the use of such data in the acoustical design of the outside enclosing walls, windows, and roofs of buildings.

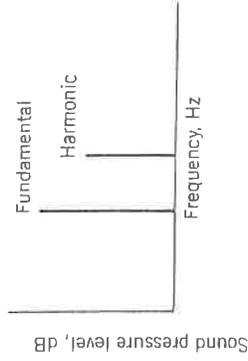
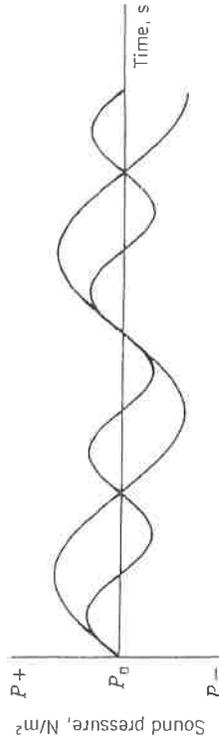
"Simple" Frequency-Weighted Sound Levels

The human ear does not simply add up all the energy for a sound over the entire audible range and interpret this value as the *loudness* of the sound. The human ear

Pure tone



Musical tone



Common sounds
(music, speech,
noise)

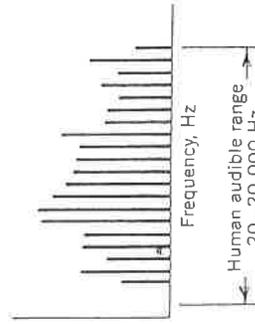
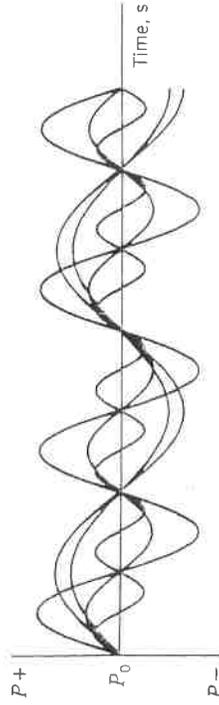
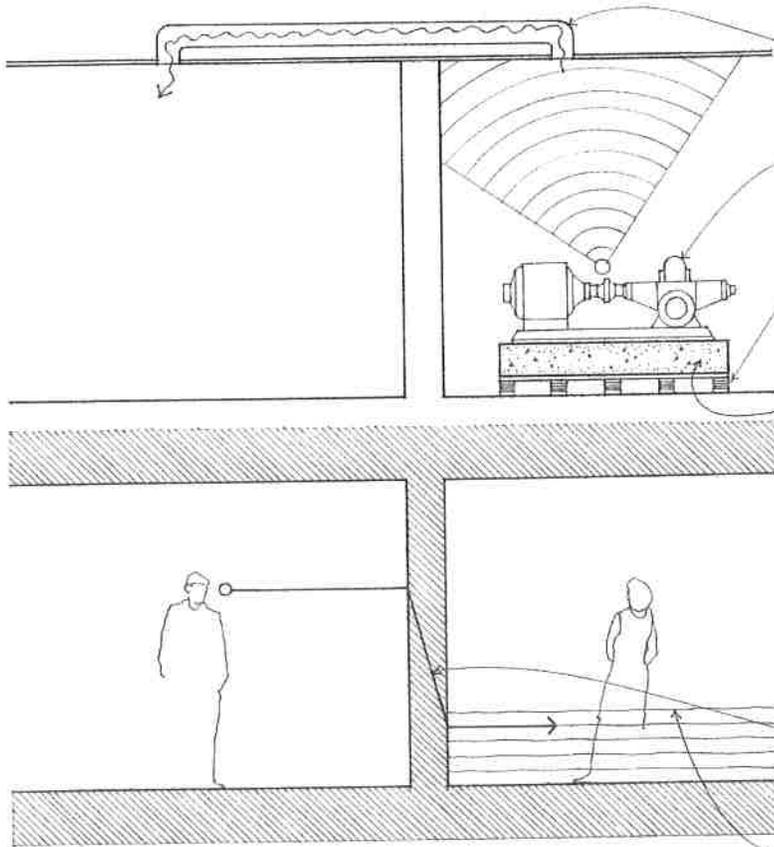


Figure 1.3 Comparison of simple and more complex everyday sounds. Simple, pure, and musical tones contain sound energy at a fundamental frequency or fundamental plus harmonically related frequencies only. Common everyday sounds contain sound energy over a wide range of the human audible spectrum. (From William J. Cavanaugh, "Acoustics—General Principles," in Encyclopedia of Architecture: Design, Engineering & Construction, Joseph A. Wilkes, Ed. Copyright © 1988 John Wiley & Sons. Reprinted by permission of John Wiley & Sons.)

SOUND WAVES

A.16 SOUND CONTROL



Noise is any sound that is unwanted, annoying, or discordant, or that interferes with one's hearing of something. Whenever possible, undesirable noises should be controlled at their source.

Block flanking paths that transmit sound through plenum spaces and along such interconnecting structures as ductwork or piping.

Select mechanical equipment with low sone ratings. Sone is a subjective unit of loudness equal to that of a 1000 Hz reference sound having an intensity of 40 dB.

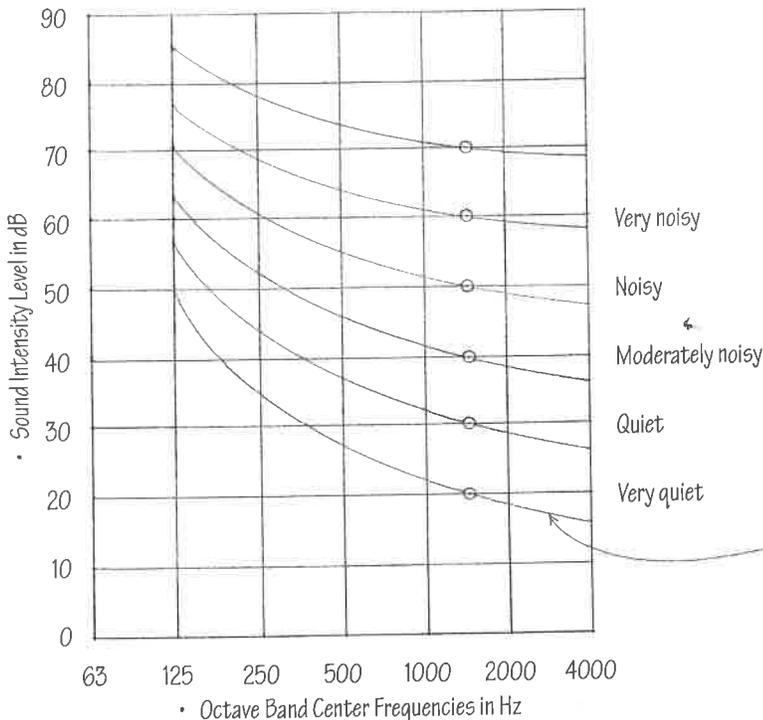
Use resilient mountings and flexible bellows to isolate equipment vibrations from the building structure and supply systems to reduce the transmission of vibration and noise to the supporting structure.

Inertia block is a heavy concrete base for vibrating mechanical equipment, used in conjunction with vibration isolators to increase the mass of the equipment and decrease the potential for vibratory movement.

Noise Reduction

The required reduction in noise level from one space to another depends on the level of the sound source and the level of the sound's intrusion that may be acceptable to the listener. The perceived or apparent sound level in a space is dependent on:

- The transmission loss through the wall, floor, and ceiling construction;
- The absorptive qualities of the receiving space;
- The level of masking or background sound, which increases the threshold of audibility for other sounds in its presence.
- Background noise or ambient sound is the sound normally present in an environment, usually a composite of sounds from both exterior and interior sources, none of which are distinctly identifiable by the listener.
- White noise is an unvarying, unobtrusive sound having the same intensity for all frequencies of a given band, used to mask or obliterate unwanted sound.



Noise criteria curve is one of a series of curves representing the sound pressure level across the frequency spectrum for background noise that should not be exceeded in various environments. Higher noise levels are permitted at the lower frequencies since the human ear is less sensitive to sounds in this frequency region.

sounds of pressure amplitudes in excess of 100 Pa and yet can detect sound pressures of 0,00001 Pa. Such small sound pressures, in the ear's most sensitive range which is from 1000 Hz to 5000 Hz, produce a displacement of the eardrum of the order of 10^{-11} m. This minute distance is approximately one tenth of the diameter of a hydrogen molecule. The ear, however, is more than just an extremely sensitive microphone. It is also, together with the brain a frequency analyser capable of fine discrimination between tones.

The minimum intensity level perceptible by the ear at a particular frequency is known as the threshold of hearing or threshold of audibility at that frequency. The threshold of hearing varies from person to person even among people who have "normal" hearing. This threshold is also a function of the age of the listener, the progressive loss in sensitivity at the higher frequencies with age is called presbycusis. From Fig.1.14 one can see that it requires nearly a million times more power to produce an audible sound at 50 Hz than at 3000 Hz.

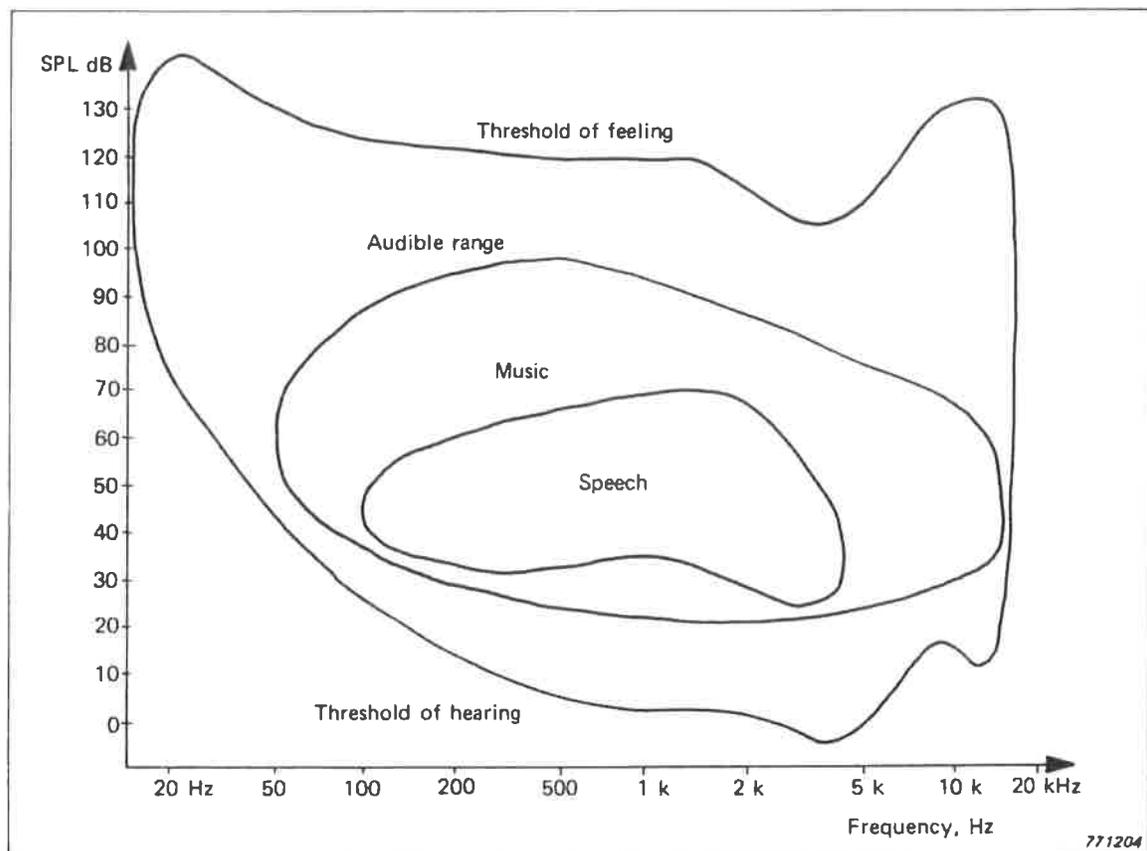


Fig.1.14. Audible range of frequencies and sound pressure levels bounded by threshold of hearing and the threshold of feeling together with approximate regions for speech and music

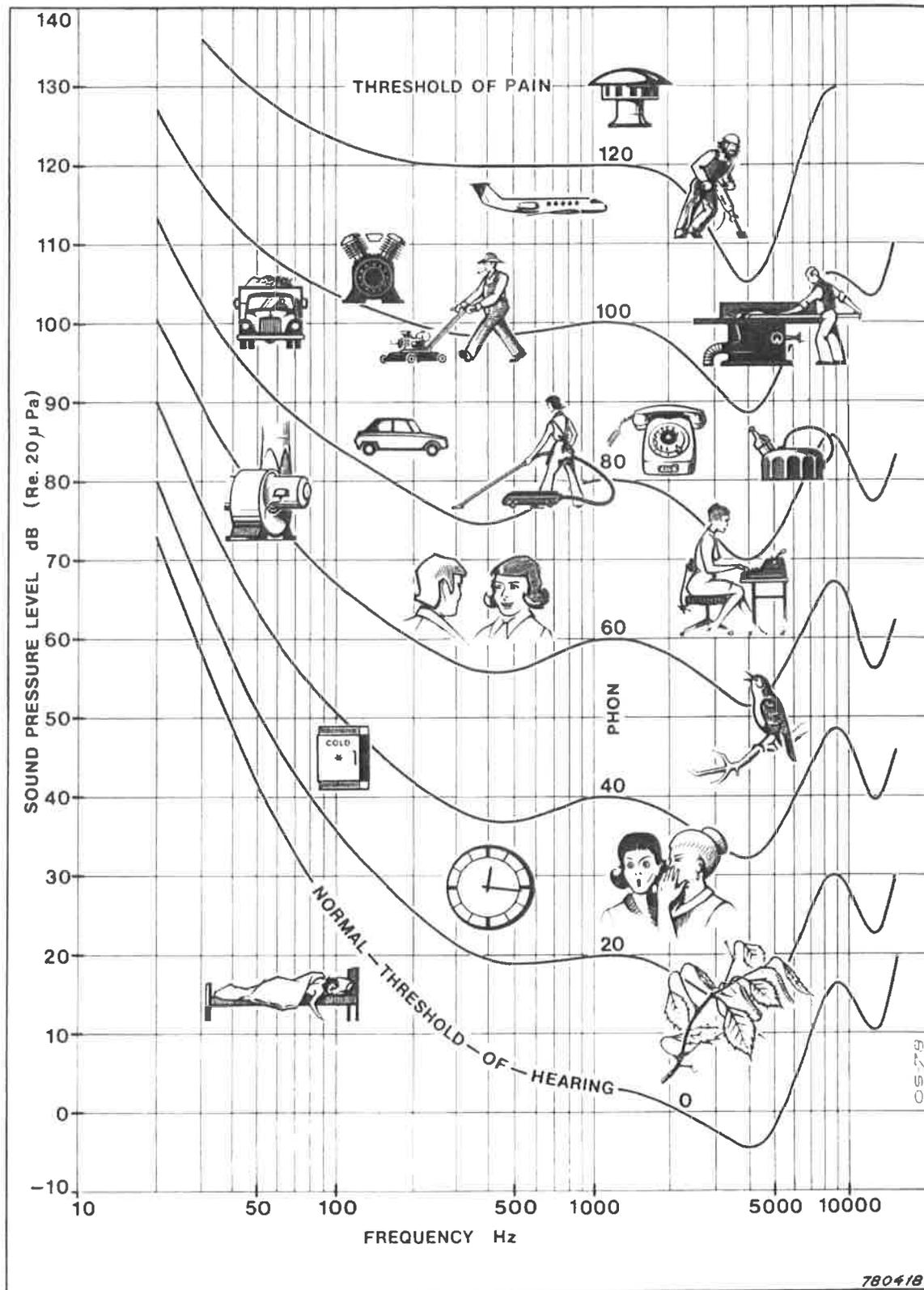


Fig.1.15. Equal loudness contours

a curved surface will either be focused or dispersed depending on whether the surface is concave or convex (Fig.2.2). Diffraction of sound rays can and does occur but the effect is more noticeable for low frequency, long wavelength sounds than with high frequency sounds of short wavelength.

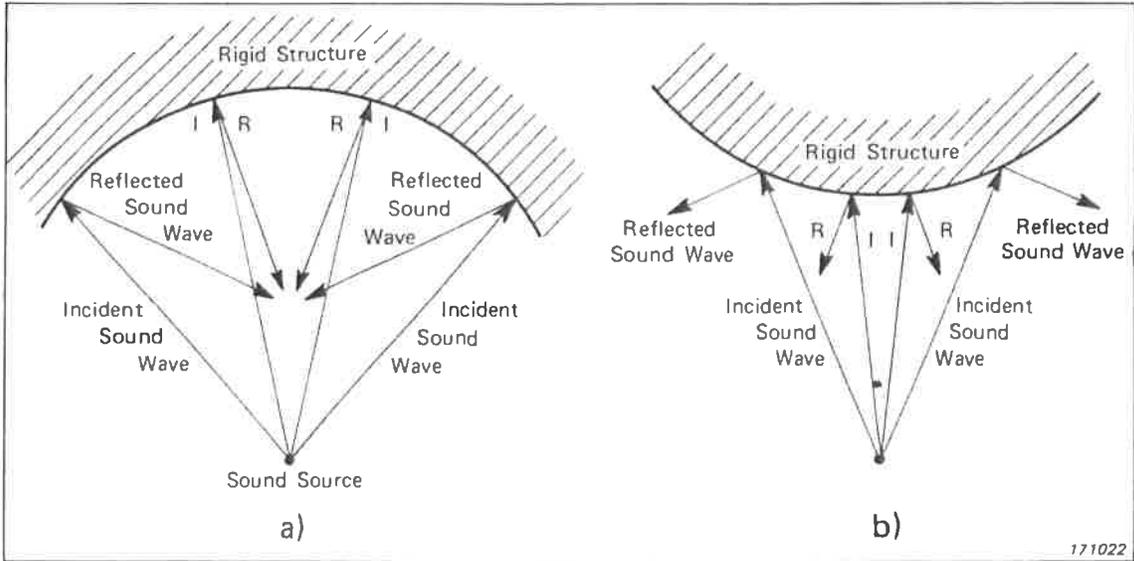


Fig.2.2. Reflections of sound rays

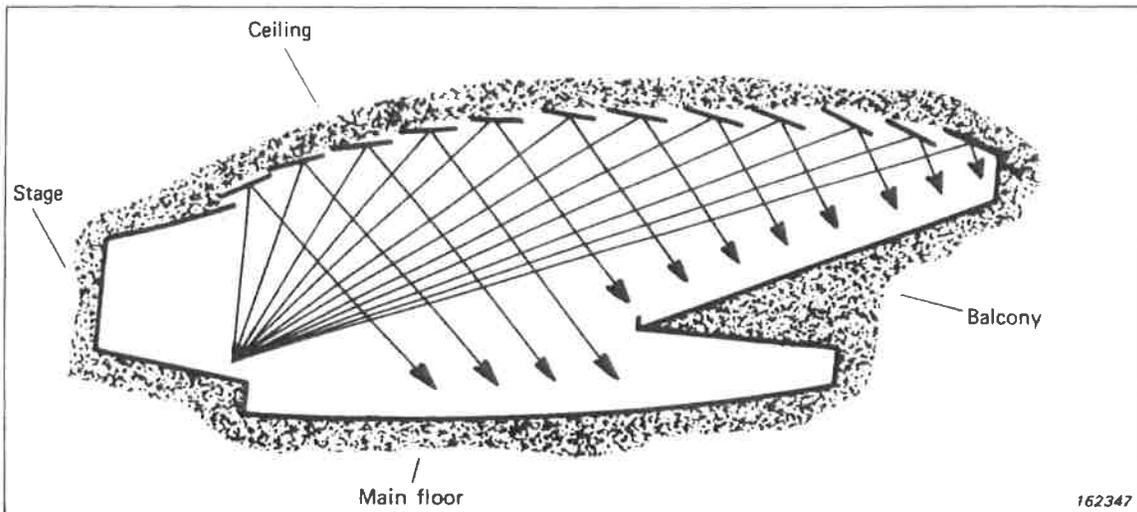


Fig.2.3. Graphical construction of the first reflections of the sound waves in a concert hall

The concept of a sound ray and the geometrical study of sound ray paths plays an important role in the design of large rooms and auditoria, enabling troublesome echoes and flutter effects to be detected and dealt with at the



USG Presents **Understanding Acoustics in Architectural Design**

by: James D. Janning, AIA, CSI
Architectural Systems Manager, USG Corporation

In today's architectural environment, good acoustical design isn't a luxury – it's a necessity. Acoustics impacts everything from employee productivity in office settings to performance quality in auditoriums to the market value of apartments, condominiums and single-family homes.

While the science behind sound is well understood, using that science to create desired acoustical performance within a specific building or room is complex. There's no single acoustical "solution" that can be universally applied to building design. Each built environment offers its own unique set of acoustical parameters. The acoustical design for a business conference room, for instance, differs greatly from the design needed for a kindergarten classroom.

Understanding these differences and knowing how

to utilize building materials, system design and technologies are key factors behind successful acoustical design. This article will provide basic background on the science and measurement of sound, as well as insights into some of the principles of wall partition and ceiling system acoustical design.

The Science of Sound

Technically speaking, sound is defined as a vibration in an elastic medium. An elastic medium is any material (air, water, physical object, etc.) that has the ability to return to its normal state after being deflected by an outside force such as a sound vibration. The more elastic a substance, the better it is able to conduct sound waves. Lead, for instance, is very inelastic and therefore a poor sound conductor. Steel, on the other hand, is highly elastic and an excellent sound conductor.

Sound vibrations travel through elastic mediums in the form of small pressure changes alternating above and below the static (at rest) nature of the conducting material. Picture a vibrating tuning fork. As it moves in one direction, it compresses the air particles next to it. They, in turn, pass on the reaction to adjacent particles of air. As the tuning fork vibrates in the other direction, it leaves a void or rarefaction. This rarefaction follows along behind the compression. It, in turn, is followed by another compression, and then another rarefaction and so on.

Each of these compression/rarefaction cycles is called a wave. The number of waves that occur per second is termed frequency. Frequency is measured in terms of hertz (Hz). One Hz is equal to one cycle per second. The human ear can discern sounds ranging from approximately 20 to 20,000 Hz. Human speech ranges between 125 and 4,000 Hz.

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION Series

Use the learning objectives below to focus your study as you read **Understanding Acoustics in Architectural Design**. To earn one AIA/CES Learning Unit including one hour of health safety welfare credit, answer the questions on page 297, then follow the reporting instructions on page 368 or use the Continuing Education self report form located at architecturalrecord.com.

Learning Objectives:

- Know how sound waves form and how they travel through elastic mediums
- Understand how sound can be isolated and absorbed in building design
- Realize the benefits that sound masking provides for closed and open-office spaces

The amplitude of sound waves – how far they travel above and below the static pressure of the elastic medium they are traveling through – is measured in decibels (dB). The higher the decibel level, the higher the volume, or loudness of a sound. A jet airplane has an amplitude of 140dB, while a human whisper is approximately 20dB. A typical office environment usually falls in the 40 to 60dB range.

Sound Movement

Architectural acoustics is the process of managing how both airborne and impact sound is transmitted – and controlled – within a building design. While virtually every material within a room – from furniture to floor coverings to computer screens – affects sound levels to one degree or another, wall partitions, ceiling systems and floor/ceiling assemblies are the primary elements that designers use to control sound.

Sound moves through building spaces in a variety of ways. Most commonly, it is transmitted through air. But wall partitions, ceilings and floor/ceiling assemblies can also transmit both airborne sound, such as human voices and ringing telephones, and impact sound, such as footsteps on a floor. Sound waves actually travel through many physical objects faster and with less loss of energy than they travel through air. Sound waves travel at a rate of 1,128 feet per second through air (at 70 degrees F); 11,700 feet per second through wood; and 18,000 feet per second through steel.

Sound reflection occurs when sound waves bounce off smooth, hard wall, ceiling and floor surfaces. Concave surfaces tend to concentrate or focus reflected sound in one area. Convex surfaces do just the opposite; they tend to disperse sound in multiple directions.

Sound reverberation is the persistence of sound reflection after the source of the sound has ceased. Reverberation can have both a positive and negative effect in architectural design. For example, specifying highly reflective ceiling panels directly above the stage area in an auditorium will help direct sound toward specific seating areas, thus enhancing the room's acoustical performance. However, that same reflective performance will become a negative factor if highly reflective wall and ceiling materials are installed in the rear of the auditorium. That's because the sound reflections from the rear of the room take too long to reach the audience,

resulting in a distracting echo effect.

Sound can also diffract, or bend and flow around an object or through a small space or opening. This gives sound waves the ability to “squeeze” through very small openings with little loss of energy. The small openings under and around doors, floor tracks, electrical boxes and conduit and HVAC ducting are typical sources of sound diffraction. These are commonly referred to as “flanking” or “leaking” paths. They can be controlled by the proper application of acoustical sealant.



Water-felted mineral fiber panels have face perforations to improve acoustical performance. They are the most economical acoustical ceiling choice.

Isolating Sound

A primary goal of a wall partition, ceiling system and floor/ceiling assembly design is to minimize the flow of airborne and impact sound through the use of special materials, methods of construction and designs.

The effectiveness of an assembly's ability to isolate airborne sound is quantified by Sound Transmission Class (STC) ratings. STC is expressed as a single number and usually ranges from approximately 35 to 70. It quantifies the transmission loss (TL) of an assembly. A wall partition or floor/ceiling assembly that reduces the overall incoming sound levels from 80dBA to 20dBA would have an STC rating of approximately 60.

A related measurement is Ceiling Attenuation Class (CAC). This rating quantifies how much sound is lost when it is transmitted through the ceiling of one room into an adjacent room through a common plenum. Like STC, a higher CAC rating indicates that the ceiling system allows less sound transmission. For closed-office environments, a CAC of 40 to 44 is usually desirable.

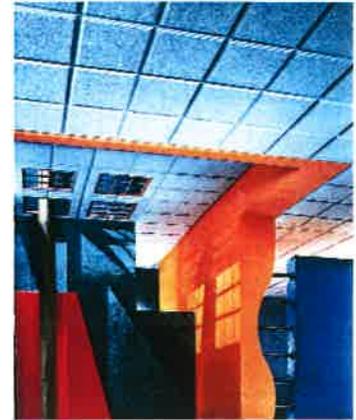
Impact sound transmission in a floor/ceiling assembly is quantified by Impact Isolation Class (IIC). This is a single number rating that quantifies an assembly's ability to isolate impact sounds generated from footsteps and other impact sources. It is tested in laboratory conditions by a tapping machine that impacts the floor of a “source” room. The sound of the tapping is measured in a “receiving” room, located directly beneath the source room.

Wall Partitions and STC

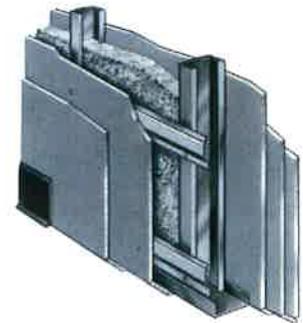
Reducing sound transmission through wall partitions can be accomplished in a variety of ways, including isolation (the separation of adjoining wall partition surfaces), mass, absorption, decoupling (inelasticity) and the elimination of flanking paths (sound leakage).

Increasing the mass of a partition forces sound waves to work harder and expend more energy to pass through the medium. Specifically, doubling the mass of a partition can reduce sound transmission by up to 5dB. However, using mass alone to increase sound control has definite limitations. To achieve a 60dB reduction, a total mass of 320 pounds per square foot is required. This is equivalent to approximately 3 feet of solid concrete, which is obviously impractical for virtually any building design.

Isolating air space within a partition is an effective means for raising STC performance, but like mass, it has its limitations. Doubling the partition air space can reduce sound transmission by up to 5dB, but to achieve a reduction of 60dB requires an isolated air space 4 feet wide. Again, this is hardly practical for building design. The effectiveness of air isolation is limited by the fact that the



Polymer-matrix ceiling panels feature smooth, natural textures, excellent sag resistance and excellent NRC and CAC performance.



Designing High-STC Wall Partitions: This gypsum board wall assembly uses mass (2 gypsum board layers are on one side, and 3 layers are on the other side), decoupling (resilient channels are screw-attached to the steel studs) and absorption (a layer of mineral fiber insulation is friction-fitted in the partition cavity) to enhance STC performance.



Cast mineral fiber ceiling panels feature natural textures, integrated color and excellent durability. Their high NRC and CAC values make them a versatile option for a wide range of applications.

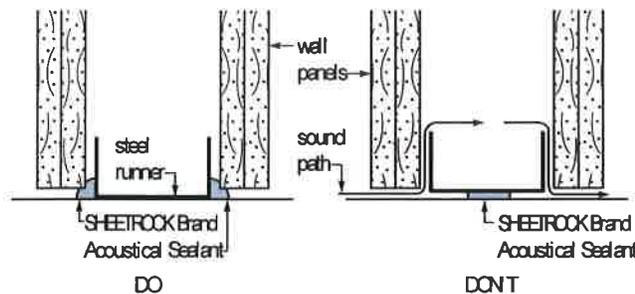
wood or steel studs attaching both sides of the partition assembly transmit sound no matter how wide the isolated space. Like electricity, sound waves seek the path of least resistance, which in this case is the structural framing.

Adding a layer of fibrous sound-absorbing insulation material, such as mineral wool, into the partition cavity dissipates sound by creating friction, which transforms sound energy into heat. Again, however, the effectiveness of sound attenuation blankets is limited by the presence of studs, which

provide a direct route for sound waves to travel through the assembly.

Decoupling the partition through the use of resilient channels, which decouples the surface diaphragm from the structural member, increases the effectiveness of both air isolation and absorption. Resilient channels are attached to framing, with the attachment leg facing down. The screws attaching the gypsum panels should not penetrate through the channel and into the stud, as this negatively impacts resilient channel acoustical performance.

Finally, sealing flanking paths (small air gaps that enable sound to travel with little energy dissipation) is a critically important factor in controlling sound transmission. A properly sealed wall assembly featuring two layers of 5/8-inch gypsum board on both sides and a 1 1/2-inch thick sound attenuation blanket achieves an STC of 53. The same wall without the acoustical sealant has an STC of approximately 29 – a dramatic difference. The key is to apply an adequate bead of acoustical sealant on the outside edge of the floor, ceiling and intersection tracks on both sides of the partition. Applying bead to only one side of the assembly does not fully seal all possible flanking paths. It is necessary to acoustically seal both the space between the floor track and the floor, and between the panel and the track.



Sealing flanking paths in wall partitions is a critically important factor in controlling transmission. An adequate bead of acoustical sealant should be applied to both outside edges of the floor, ceiling and intersection tracks (left).

Ceiling Panels and NRC

Another way to control airborne sound within a room is through the use of materials that absorb sound by converting sound waves into heat. The ability of a material to absorb sound is quantified by Noise Reduction Coefficient (NRC) ratings. NRC represents the average amount of sound energy a material absorbs over frequencies between 250 and 2,000 Hz. NRC values range from 0.00 to 1.00. To have any acoustical value at all, a material must have a minimum NRC of 0.50. That means that the material absorbs 50 percent of the sound and reflects the other 50 percent.

An acoustical material that doesn't reflect any sound (it absorbs 100 percent) has an NRC of 1.00.

NRC is a key factor in determining the performance of acoustical ceiling panels. Various types of ceiling panels provide varying levels of NRC, as well as CAC performance.

Cast mineral fiber panels offer the best combination of NRC and CAC. The panels are made from an individual cast process that combines excellent sound absorption properties with outstanding durability. The NRC performance of cast panels ranges from 0.65 to 0.95 and the CAC performance ranges from 35 to 44. Cast panels are ideal for conference/speech privacy areas, as well as hospitality, entertainment and retail environments.

Polymer-matrix mineral fiber ceiling panels combine a smooth, natural texture with high NRC (ranging from 0.65 to 0.95) and high CAC (35 to 39). The panels offer superior sag resistance and outstanding dimensional durability. They are non-perforated and ideal for room-to-room privacy areas, as well as reception and lobby areas, hotels, offices and other applications where sound absorbency is needed.

Dry-felted glass fiber panels offer extremely high NRC ratings (0.95 to 1.00), but CAC ratings of 20 to 29 are lower than other types of acoustical panels. The lightweight, sag-resistant panels are ideal for open floor plans, retail stores, auditoriums and gymnasiums, conference rooms and executive offices, but are not recommended for office-to-office privacy.

Water-felted mineral fiber ceiling panels are made using a dense, continuous manufacturing process that orients the mineral fibers for optimal sound absorption. The panels feature perforations and fissures in the surface to enhance sound performance, and range in NRC from 0.50 to 0.60. Their CAC ranges from 35 to 39. The panels come in a wide range of textures and colors and offer a cost-effective choice for a variety of general-purpose applications.

Generally speaking, panels with a high NRC are good choices for open-office areas, healthcare facilities, schools and other applications where speech privacy is a priority. Panels with a high CAC are best for private offices and other areas where sound needs to be confined within a particular space.

In open-office settings, the ceiling's acoustical performance can be significantly enhanced through the use of sound-masking technologies. Sound-masking systems produce electronic sounds similar to that of softly blowing air. The sound is projected through special speakers installed above the ceiling panels. Sound masking is set 3 to 5 decibels above conversational speech, thus enabling speech privacy and alleviating distractions from other office noise. (For more



Dry-felted glass fiber ceiling panels typically offer the highest NRC values (.95 to 1.00) in the industry, making them ideal choices for open offices and other areas requiring speech privacy.

information on sound masking in open office environments, see the "Sound Masking: An Effective Solution for Open Office Environments" article below.)

Successful Acoustical Design

When creating acoustical specifications, remember that every space presents a unique acoustical challenge. An employment office, for example, may require all-confidential private offices, while a bank may warrant varying levels of speech privacy. In office settings, conference rooms and executive offices usually require high levels of acoustical control, but other areas may require only moderate measures. Consider the past environment of the occupants. What are they accustomed to? Next, establish the privacy needs

of the occupants and finally, establish the privacy potential of each working space. Which areas, given the layout preference, offer the best potential for confidential uses? And which will work better in a more open environment?

Successful acoustical design is a detail-oriented process, both in terms of specification and construction. Careful material and systems specifications are imperative, as are good construction practices. Acoustical performance often depends not so much on what was done correctly, but what was done incorrectly. The key to success is careful attention to detail during all phases of planning, design and construction. ■

Sound Masking: An Effective Solution for Open-Office Environments

The demand for open office environments isn't going away. A report by The International Facility Management Association (IFMA) shows that more than 80 percent of respondents use open-plan systems in their space planning.

In addition, many businesses are now allotting less space to employees within open plans, upping the number of people within a room in order to cut overhead. And the trend toward a "team" environment has brought upper management and other executives out of their once private offices and into the mix.

Add speaker phones, voicemail and other noisy technology, and the office environment can easily become distracting. With statistics showing that productivity levels in a non-distracting space will rise anywhere from 3 to 20 percent, open-office acoustics are an increasingly critical design issue for architects.

This isn't to say that the role of the architect is to create an office that is dead quiet. In very quiet environments, employees, clients and/or customers often won't speak in a normal tone of voice and instead will lower their voices to near-whispers in order not to distract other employees and to avoid being overheard. And the smallest of sounds, from a tapping pen to a clicking keyboard, can easily shatter the fragile concentration of coworkers.

As office walls come down and more employees are packed together into the workplace, privacy is affected as well. And industry research indicates that workplaces will continue to become noisier, affecting employee productivity, morale and retention.

Architects are increasingly turning to sound masking to override sounds that can't be absorbed or blocked by design elements such as carpeting, acoustical wall panels, ceiling panels or partitions. At the other end of the spectrum, sound masking in quiet environments allows employees to speak at normal conversational levels while maintaining speech privacy.

Today's sound masking has gone well beyond simple white noise machines. Diffracted sound can be masked with electronically produced sound that's evenly distributed through a space by speakers placed above the ceiling.

Sound masking provides a constant, fixed level of unobtrusive background sound that is set to cover speech level and soften other office noises, which then do not appear as distractions to the human ear. To be effective, the masking level should

be 3 to 5 decibels louder than incoming speech from adjacent work stations. In an open plan office, the STC (Sound Transmission Class) and NRC (Noise Reduction Coefficient) must be balanced to achieve good speech privacy, while the background sound levels are comfortable and uniformly maintained.

Because sound masking is complementary to the speech spectrum and effectively covers speech levels, it reduces the intelligibility of conversations, which makes conversations less distracting to those working nearby.

Architects should consider specifying sound-masking units that have a step

attenuator, a rotating volume control for precise sound level adjustment volume control and a rotating volume control for paging/music. Units should be able to produce up to 86dBA to meet the requirements for all ceiling treatments, and should have adjustable sound spectrum shaping controls in order to meet the varying spectral requirements of drywall ceilings, various types of ceiling panels, air return grills and openings around lighting fixtures. The sound-generating units must also generate random sequence sounds and not produce a noticeable repetitive pattern or sequence.

While effective sound-masking systems have traditionally utilized loudspeakers strategically placed above the office ceiling to produce uniform sound masking throughout the workspace, one of the newest and most popular options for architects are sound-masking systems that work in tandem with acoustical ceiling panels. These ceiling sound-masking systems are superior to other types of centralized or flat-surface speakers alone, giving the architect more options and control over ceiling design and sound-masking systems. These systems can be ordered from the acoustic ceiling panel manufacturer and/or the sound-masking company.



Lencore's Spectra Sound Masking creates a harmonious atmosphere in which to work that increases people's ability to concentrate, restores speech privacy and allows for greater employee productivity and efficiency.

Click for Additional Required Reading

As part of this CES activity, you are required to read the "Room Acoustics" section of USG Corporation's Sound Control Manual. To access the material online go to http://www.usg.com/Design_Solutions/2_3_11_acoustics.asp. To request a faxed copy of the material, contact Marty Duffy at (312) 606-5781 or mduffy@usg.com. (For a further detailed discussion of sound and acoustics you can access other sections of this document at that site, but only the Room Acoustics section material is included in the final quiz.)

Learning Objectives

- Know how sound waves form and how they travel through elastic mediums
- Understand how sound can be isolated and absorbed in building design
- Realize the benefits that sound masking provides for closed and open-office spaces

Instructions

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 243. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on Record's website—architecturalrecord.com—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

Questions

- Q: 1. The more elastic a substance, the better it is able to conduct sound waves.
A: a. True
b. False
- Q: 2. A higher CAC rating indicates that a ceiling system allows more sound transmission.
A: a. True
b. False
- Q: 3. Ways to isolate sound include all but which of the following:
A: a. Increasing the mass of a partition
b. Isolating air space within a partition
c. Installing masking systems
d. Sealing flanking paths
- Q: 4. A wall partition or floor/ceiling assembly that reduces the overall incoming sound levels from 80dBA to 20dBA would have an STC rating of approximately:
A: a. 100
b. 60
c. Minus 60
d. One quarter (1/4)
- Q: 5. To seal flanking paths, the key is to apply the acoustical sealant:
A: a. On the side of the assembly where the source originates
b. On both sides of the assembly
c. On the side of the assembly where the sound is being received
- Q: 6. An acoustical material that doesn't reflect any sound has an NRC of:
A: a. 0.00
b. 0.50
c. 1.00
- Q: 7. Which ceiling panels offer the best combination of NRC and CAC?
A: a. Cast mineral fiber panels
b. Water-felted mineral fiber panels
c. Dry-felted glass fiber panels
d. Polymer-matrix mineral fiber panels
- Q: 8. Generally speaking, panels with a high _____ are good choices for open-office areas.
A: a. CAC
b. IIC
c. NRC
- Q: 9. The purpose of sound masking is to:
A: a. Provide a distraction to speech and office sounds
b. Cover speech level and soften other office noises
c. Create an office that is dead quiet and therefore more productive
d. Promote the open-office team environment
- Q: 10. To be effective, sound masking should be:
A: a. 3 to 5 decibels lower than incoming speech
b. the same decibel level as incoming speech
c. 3 to 5 decibels louder than incoming speech
- Q: 11. Match the term with the correct definition:
A: a. Noise Reduction Coefficient (NRC)
b. Sound Transmission Class (STC)
c. Ceiling Attenuation Class (CAC):
1. Quantifies the effectiveness of an assembly's ability to isolate airborne sound.
2. Quantifies how much sound is lost when transmitted through a ceiling of one room into an adjacent room through a common plenum
3. Quantifies the ability of a material to absorb sound

About USG

USG Corporation is a Fortune 500 company with subsidiaries that are market leaders in their key products groups: gypsum wallboard, joint compound and related gypsum products; cement board; gypsum fiber panels; ceiling panels and grid; and building products distribution. The company received the 2001 AIA/CES Award for Excellence for its commitment to providing quality continuing education programs.

USG subsidiaries United States Gypsum Company and USG Interiors, Inc. are industry leaders in the design, development and testing of acoustical wall, floor and ceiling systems.

USG Interiors, a leading manufacturer of acoustical ceiling panels and suspension systems, offers a wide range of cast, polymer-matrix mineral fiber, glass fiber and water-felted mineral fiber ceiling panels to accommodate virtually any acoustical design. The company's recently introduced HALCYON™ CLIMAPLUS™ Ceiling Panels provide a highest-possible NRC rating of 1.0. The panels offer superior sound performance for open offices, lobbies, libraries and other areas where acoustical privacy is a priority.

USG Interiors has formed a strategic partnership with Lencore Acoustics Corp., to offer Lencore's state-of-the-art sound-masking systems with all USG acoustical ceilings.

Lencore Acoustics, the country's leader in sound masking, offers a full range of products and services that address the acoustics within office environments. By manufacturing the highest quality background sound masking systems available, and offering a full line of acoustical wall panel and baffle products, Lencore is in a unique position to meet the acoustical challenges of Fortune 500 companies around the globe. The company is the only manufacturer of sound masking that can provide E-Sound™ and IndePage™ technologies. E-Sound ensures the highest quality masking sound, while IndePage allows for an individual volume control for paging. With a widespread network of representatives and manufacturing capabilities, Lencore can custom design the right sound masking system for virtually any office environment. The company backs its products with an unconditional 10-year full warranty. For more information, call Lencore at (516) 223-4747 or visit the company's Web site at www.lencore.com.

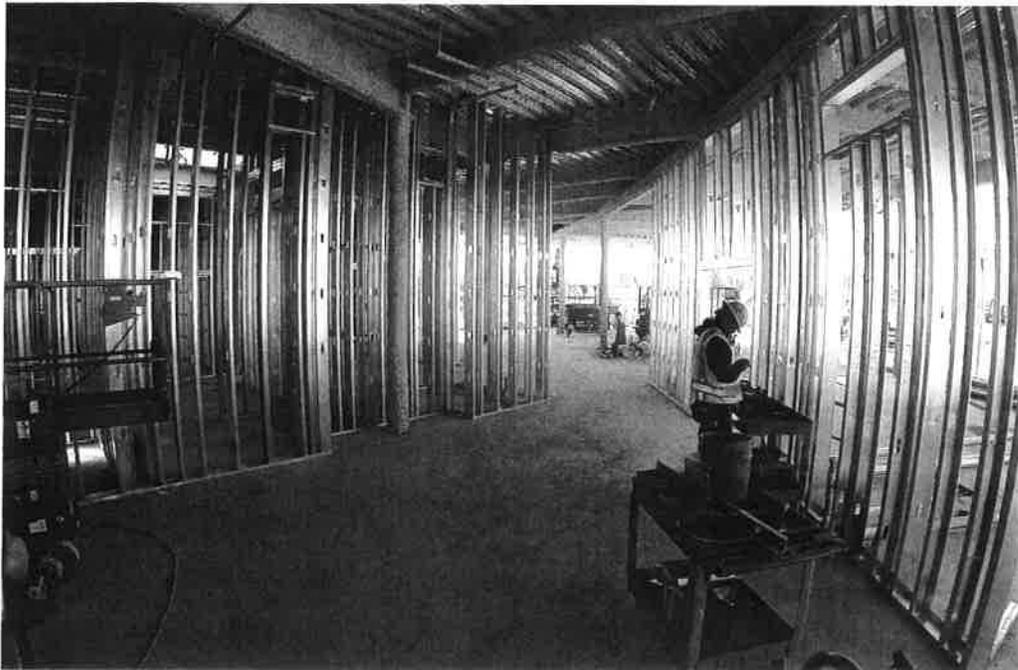
For further information about USG's acoustical wall, ceiling and floor systems, write USG Corporation, P.O. Box 806278, Chicago, IL 60680-4124, call USG's Customer Service Department at 800-USG-4YOU or visit the company's Web site at www.usg.com.



800-USG-4YOU
www.usg.com
Email: usg4you@usg.com

NOISE CONTROL IN STEEL FRAME COMMERCIAL BUILDINGS

Presented by:



By Paige Lozier

THE IMPORTANCE OF BUILDING NOISE CONTROL

Simply put, audible sound results from small changes in pressure that are propagated via waves that eventually reach the ear drum. The properties of these sound waves are important when dealing with noise control in buildings. Variations in acoustic wavelength cause changes in the frequency, or pitch, of the sound. The sound wave is also perceived at different loudness levels for each frequency. This affects the achievable sound transmission loss in building partitions. Sound transmission loss is a measurement of the amount of sound that is eliminated between rooms separated by a common partition. These characteristics and their effect on noise control can be illustrated with the following example. The sound from a home theater subwoofer has a long wavelength, which results in low-frequency

noise. Because the wavelengths for these low frequencies are so long, it is more difficult to both attenuate (reduce) and perceive small changes in loudness for the subwoofer. The surround speakers around the home theater, however, operate at much higher frequencies and are far easier to attenuate. Differences in loudness for these higher frequencies are far easier for the human ear to perceive.

Noise is simply unwanted sound. Noise is created throughout a building from a wide variety of sources and in varying frequency ranges. Noise may originate from HVAC or mechanical equipment such as transformers and fluorescent ballasts, fans and pumps, appliances, elevators, and plumbing. Noise may be radiated into chutes, stairwells and elevator shafts, or from people, and loud speakers. Noise can transmit through solid materials as

LEARNING OBJECTIVES

At the end of this program, participants will be able to:

1. Define terminology related to noise control.
2. Examine why noise control is essential in building design and construction.
3. Compare traditional and damped wall partition designs.
4. Describe how the use of constrained-layer damping panels allows building designers and specifiers the flexibility to achieve required noise ratings in steel assembly partitions.

CONTINUING EDUCATION

CREDIT: 1 LU/HSW

COURSE NUMBER: ARsept2015.3

Use the learning objectives to focus your study as you read this article. To earn credit and obtain a certificate of completion, visit <http://go.hw.net/AR915Course3> and complete the quiz for free as you read this article. If you are new to Hanley Wood University, create a free learner account; returning users log in as usual.



well, such as beams, floors, and even cabinets via structure-borne vibration. Many building materials such as doors, windows, and bathtubs are efficient sound radiators, worsening noise pollution within the building.

In addition, the advent of high quality audio systems and home theaters has drastically changed noise control in the built environment, as illustrated in the previous example. Previously, hospitality and multi-family facilities only needed to isolate a neighbor's voice, but they now must contend with loud movies or games exploding through partitions from behind entertainment centers or even simple television screens.

Today, most commercial and residential construction requires increased sound isolation between rooms. Since the 1950's, standard room-to-room noise reduction (sound transmission loss, as defined above) has steadily

achieved a sound transmission class (STC) of 34 to 40. Many tenants, owners, builders and specifiers have come to the painful and often costly realization that the amount of isolation provided by an STC 34 to 40 partition is simply unacceptable. At such a level of noise control, the sound radiated from loud conversations (85 dB), outside vehicle noise (90 dB) and music (100 dB) is so annoying that lawsuits are filed and an enormous amount of money is lost.

Noise litigation has become an increasing concern in the building industry. Poor designs based on inaccurate or misleading information, a lack of incorporating noise control into the design in the first place, and high-risk, high-failure designs all affect the comfort of tenants and may result in a settlement.

With adjacent room noise easily reaching peak sound pressure levels of 85 to 110 dB, walls today should be built to achieve STC ratings of 50 to 65. Intelligent design implemented by knowledgeable architects and contractors employs the use of innovative materials and techniques to achieve STC ratings of 60 or higher, as conditions warrant. The long term result of these designs, when implemented correctly, is that customers and occupants are happier with their investment. The "quiet" return on investment is high because such commercial and residential properties are easier to rent, generate fewer complaints, and produce higher resale values.



The advent of high quality audio systems and home theaters has drastically changed noise control in the built environment. Photo courtesy of QuietRock and PABCO Gypsum.

UNDERSTANDING NOISE CONTROL TERMINOLOGY

Before we continue further, let's discuss some terms you must understand in order to grasp the important issues surrounding noise control.

Hertz and Decibels

Human beings are capable of hearing a very wide range of frequencies, or pitches, from the

low-frequency tones of a bass drum to the high pitch of a flute, for example. We perceive both of these sounds differently because the vibration in air that results from each of these sound sources is processed differently in the human ear. Frequency is measured in Hertz. Essentially faster sound waves or sound waves with smaller wavelengths result in higher frequencies. Conversely, the slower and longer sound waves are perceived as lower in frequency, or tone. The audible range of frequencies for the average human is 20 Hz to 20,000 Hz.

Sound is typically measured as a sound pressure level (SPL) in decibels (dB). The decibel is a non-linear (where 2 dB + 2 dB is NOT equal to 4 dB) unit and is generally related to the volume (or loudness) of a particular sound source. The general range of human hearing is from around 0 to 120 dB. A sound of a quiet library is roughly 30 dB, while 120 dB is the threshold where the ears begin to feel pain because the sound is so loud.

Sound Absorption vs. Sound Transmission

There are two general types of building noise control, sound absorption and sound transmission. Sound absorbing materials are used on room surfaces or in ceilings in an attempt to control noise within a room, improving speech communication or improving the quality of sound from an orchestra, for example. Absorptive or reflective materials can be tested for their sound absorption coefficients, or the percentage of noise that is absorbed when striking a material surface. Rooms with very little sound absorption (hard surfaces) may result in too many echoes, making speech difficult to understand. Rooms with too many sound absorptive materials are perceived as "dead" and may be poor environments for listening to music.

The Sound Transmission Class (STC) is a single-number rating that is calculated based on the amount of sound that is "attenuated" or reduced as it passes through an assembly partition. The higher the STC number, the more sound is attenuated. Walls, floors, ceilings, windows and doors will all have respective STC ratings depending on their design and the materials used in their construction. As this is a calculated result, it is not a uniform reduction across all sound frequencies.

The STC rating is calculated from the sound transmission loss measurement. STC ratings ignore frequencies below 125 Hz and above 4,000 Hz. Frequencies below 500 Hz are also

de-emphasized during the calculation of STC. The STC rating was initially created for noise in the speech range of frequencies. It is no surprise then that, with the advent of the home theater and many other lower-frequency noise sources, the STC rating has become less and less relevant in building noise control design.

Sound Transmission Loss

As previously mentioned, the Sound Transmission loss (STL) is a measurement of the sound that penetrates through a partition (wall, floor/ceiling, etc.) from one room to another room. STL is measured in decibels over a broad range of frequencies. The ASTM standard E90 defines and describes methods for making laboratory STL measurements.

STL is measured in a two-room laboratory measurement suite with microphones over a frequency range that is divided into segments called 1/3rd octave bands. In one of the rooms a loudspeaker sound source is excited with random noise that is similarly loud at all frequencies. With the loudspeaker on, microphone SPL measurements are made within the source room. Then, with the loudspeaker still on, SPL measurements are made in the adjacent receiving room. The subtraction of the receiving room SPL from the source room SPL, after accounting for the amount of absorption in the room, is equal to the Sound Transmission Loss (STL).



Restaurants and other noisy areas will most likely exceed NC 40 ratings. Photo courtesy of QuietRock and PABCO Gypsum.

NOISE CRITERIA (NC) RATING AND NOISE REDUCTION COEFFICIENT (NRC)

The Noise Criteria, or NC rating, is a single number that represents the amount of background noise in a single room. It is an SPL measurement (in dB) and includes any steady-state noise sources such as HVAC and traffic noise. The SPL data is plotted and then fitted to a Noise Criteria curve.

Recording studios and concert halls are typically designed to achieve a maximum NC rating of 20 (very quiet). Residential homes and spaces such as conference rooms are normally designed to achieve NC ratings between 25 and 30. Churches and hotel rooms achieve NC ratings between 30 and 35, on average, while open-plan offices and classroom NC ratings lie between 35 and 40. Restaurants and other noisy areas will most likely exceed an NC 40.

The Noise Reduction Coefficient (NRC) is a single-number index determined from a laboratory test and used for rating how absorptive a particular material is. This industry standard ranges from zero (perfectly reflective) to 1* (perfectly absorptive). It is simply the arithmetic average of the mid-frequency sound absorption coefficients (250, 500, 1000 and 2000 Hertz) rounded to the nearest 5%.

Products designed specifically for absorption (NRC rating) are often assumed to provide some level of "soundproofing" due to the use of the term "sound absorption" when referencing the material. This can be a very costly misconception, as the sound absorption of such products refers to the ability of the material to reduce sound reflectance (sound bouncing or reflecting off of hard surfaces) and has little bearing on the STL. For instance, in commercial buildings you will often find acoustical ceiling tiles, the porous tiles that are placed within metal grids hanging from the ceiling. These tiles are designed to make the room less reflective (less echo and reverberation), however these tiles typically do very little to reduce sound transmission from room to room. Most products that are NRC-rated cannot be assumed to provide much in terms of STL improvement.

Other Sound Metrics

The reverberation time (T60), absorption area (S_a) and speech intelligibility index (SII) are some other metrics that can be useful in evaluating and applying the sound absorption within a room for various purposes. Reverberation time is calculated from the time that it takes for sound to decay (decrease in loudness) by 60 dB at each frequency.

Speech intelligibility Index (SII) is measured as a combination of T60 and the speech and background noise. An SII of 0 means that speech in the room is not audible (most likely due to high background noise or too much reverberation or a combination of these) and a value of 1 means that more or all speech within the room is intelligible. An SII value of 0.5 is considered to result in fair quality of speech and is standard for most areas.



Speech Privacy Class provides a means of measuring the isolation of speech noise between the interior of a closed room and locations outside the room. Photo courtesy of QuietRock and PABCO Gypsum.

Speech Privacy Class

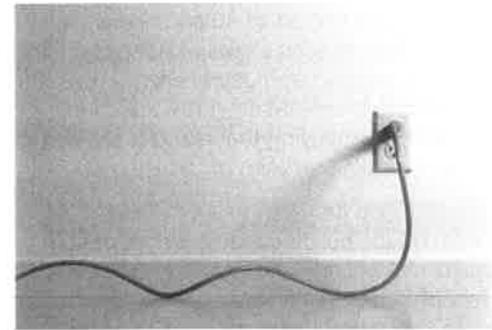
Currently the STC is used as the go-to metric for evaluating a partition's sound isolation performance related to speech privacy. However, a much better metric is the recently developed Speech Privacy Class (SPC). The SPC, also based on the transmission loss like the STC, is calculated in a different way.

SPC is based on a combination of the measurement of STL between the interior of a closed room and locations outside the room and the background noise levels at the same locations. The results can be used to rate the degree of speech privacy between enclosed spaces or to estimate the probability of speech intelligibility or audibility at a specific place outside of a room.

People speak at different levels and vary these levels into the presence of room noise and other room characteristics. Consequently it is not possible to say definitively whether a room is protected against eavesdropping. The probability of being overheard is the only reasonable way to determine speech privacy. The owners or managers of the "private" space that is under consideration must determine the criteria for this probability according to their specific goals and circumstances.

Evaluating speech privacy logically requires both a measurement of the background noise within a room as well as the transmitted speech because background noise can have a drastic effect on how we perceive human speech. According to the ASTM standard E2638, SPC 75 is considered to be Standard Speech Privacy, where the listener can understand one or two words occasionally and the speech is frequently audible. SPC 80 is considered to be Standard Speech Security, where the listener can rarely understand one or two words and the speech is only occasionally audible. High Speech Security is obtained at an

SPC level of 85. At this point in the SPC range, the speech is, for the most part, unintelligible and is rarely noticed by a listener.



Since air offers less resistance to sound, much of the sound energy will exit a structure through air openings and penetrations in the barriers. Photo courtesy of QuietRock and PABCO Gypsum.

WHY ACOUSTIC SYSTEMS FAIL

Sound waves, like water, will find any leakage point to penetrate through a partition. Since air offers less resistance to sound than a piece of metal or wood, much of the sound energy will exit a structure through air openings in the barriers. Thus, a 5-foot square 1" thick lead wall might reduce the noise traveling from one room to another. However, if there are three 1/2" holes for wires in this lead wall, the majority of sound will penetrate through those holes, thereby reducing the effectiveness of the wall as a barrier to noise. Incidentally, the complete assembly or system must be considered when confronted with any building noise reduction problem.

This example of a system failure may be simple, but there are other reasons why an acoustical design might fail, including acoustic "short-circuiting" failures and layout failures. Failures related to short-circuiting are often a result of mis-designed ceilings, coupling by seismic traps or pipes, or incorrectly installed resilient isolation materials. Layout failures include mechanical equipment that is exposed to tenant space, incorrect duct design that results in sound transmission through the duct work from room to room, poor door layouts, and partial-height partitions that allow the transmission of sound through a lay-in ceiling plenum. Partitions designed for building noise isolation must be continuous from the floor all the way to the structural deck to be effective as sound barriers. Proper duct design and door layout involves creating a longer path for the sound between adjacent rooms and doors.

Failures in acoustic design are often repeated frequently due to cost cutting or lack of

consideration for noise control when planning. Sometimes designers simply can't "see" these sound isolation problems on a floor plan so, problems only surface when they are experienced by the first occupants. Finally, poor follow-up during the construction process or failing to budget for the noise control retrofit costs can lead to acoustical failure.

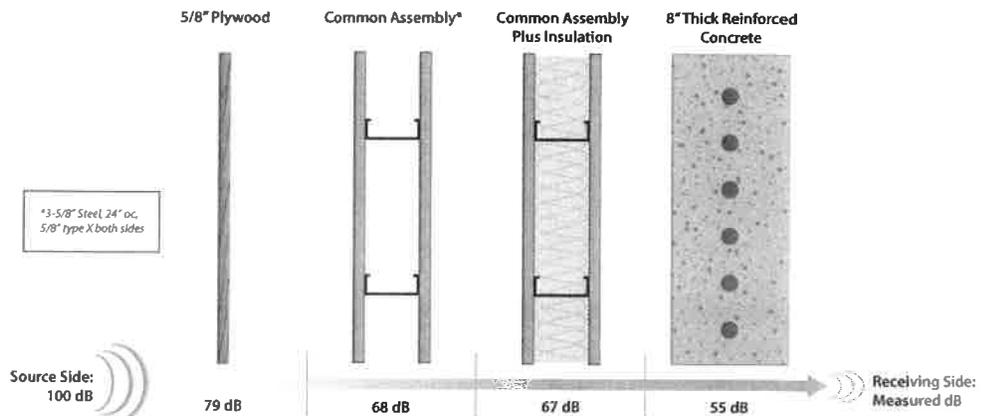
MAKING WALLS QUIET—NOISE CONTROL TECHNIQUES

Mass Loading

When designing for noise reduction in any system, four primary tradeoffs need to be considered: weight, space, cost and aesthetics. Given adequate funding and unlimited weight and space requirements, a 10-foot thick lead barrier, welded on all sides, could be constructed and achieve the desired sound isolation. Given the mass of this type of barrier, it would require a considerable amount of sound energy to transmit any noise through the partition. This scenario, although extreme, is an example of a particular method of noise control called "mass loading." Mass, in the form of additional or thicker and heavier panels or slabs, can be added to the partitions between noise sources and occupants. However, few buildings have such extra square footage to spare, let alone the added cost (exceeding a few hundred thousand dollars) and weight (exceeding 20 tons) to support a sound isolation treatment like the lead barrier described previously. Mass-loading, tried and proven for over a century, is often not the most efficient method of reducing noise and vibration. Most building construction projects cannot afford the significant cost or weight that this method requires.



This article continues on <http://go.hw.net/AR915Course3>. Go online to read the rest of the article and complete the corresponding quiz for credit.



When considering reducing noise in any system, four major tradeoffs need to be considered: weight, space, cost and aesthetics. Image courtesy of QuietRock and PABCO Gypsum.

QUIZ

- Which of the following is a measurement of the amount of sound that is eliminated between rooms separated by a common partition?
 - Sound Transmission Loss
 - Sound Transmission Class
 - Noise Criteria Rating
 - Noise Reduction Coefficient
- Restaurants and other noisy areas will most likely exceed a Noise Criteria Rating of _____.
 - 20
 - 30
 - 40
- According to the ASTM standard E2638, _____ is considered to be High Speech Security; at this point in the SPC range, the speech is unintelligible and is rarely noticed by a listener.
 - SPC 75
 - SPC 80
 - SPC 85
- Which of the following failures includes mechanical equipment that is exposed to tenant space, incorrect duct design that results in sound transmission through the duct work from room to room, poor door layouts, and partial-height partitions that allow the transmission of sound through a lay-in ceiling plenum?
 - Short-circuiting failures
 - Layout failures
- What are the primary tradeoffs that need to be considered when designing for noise reduction in any system?
 - Weight
 - Space
 - Cost
 - Aesthetics
 - All of the above
- True or False: Mass-loading, tried and proven for over a century, is often the most efficient method of reducing noise and vibration.
- True or False: Designing and constructing staggered- or double-stud frames is an effective way of increasing sound isolation between enclosures.
- The advantages of damping are that:
 - CLD fits into spaces that cannot allow for other treatments.
 - CLD is nearly equal in labor cost to a standard gypsum panel.
 - CLD is the best treatment for speech noise (privacy) versus multiple layers of gypsum panels.
 - All of the above.
- True or False: A CLD panel on one side with 2 layers of 5/8" Type X gypsum wallboard on the other side can be used in a heavy-gauge framing application to achieve and exceed the minimum STC-rating code requirements.
- True or False: CLD panels use decoupling in order to optimize sound isolation between partitions.

SPONSOR INFORMATION



PABCO® Gypsum provides quality gypsum wallboard products and superior customer service for commercial and residential projects. Our goal—have reliable products available when and where you need them. Be it our trusted FLAME CURB®, light-weight LITECORE®, protective PABCO GLASS® or award winning QuietRock®; we have what the job demands.

Definitions

Like most specialized fields, the science of acoustics has a language all its own. Some of the most important terms and concepts to be familiar with include:

Absorption	Percentage of sound waves that a material transforms into heat energy and thereby does not reflect back into the space.
Articulation index (AI)	A measurement of how well speech can be understood in a space. High AI is desirable in spaces such as auditoriums and theaters and can be achieved with a combination of materials and design details that strategically reflect and absorb sound. Reduced AI is desirable for spaces such as open offices, where many people must work independently, and in financial and healthcare facilities, which are subject to federal privacy rules; sound masking can be used to reduce AI (see the next page for more information).
Ceiling Attenuation Class (CAC)	A measurement of the ability of a ceiling panel to block the travel of sound from an enclosed room up into the plenum and down to adjacent spaces. High-CAC ceiling panels can provide this type of sound control, increasing speech privacy in private spaces and reducing distractions to those outside.
Conductivity	The ability of a material to transmit sound waves. In addition to moving through air, sound waves can travel even more easily through many solid objects. For example, sound waves move through air (70 °F) at just 1,128 feet per second but travel about 10 times faster (11,700 feet per second) through wood, and faster still (18,000 feet per second) through steel. Therefore, designers must consider not only airborne sound, such as voices and ringing telephones, but also structure-borne sound created by footfall, doors opening and closing, and building systems such as elevator machinery and HVAC equipment.
Diffraction	The bending of sound waves around objects or through small spaces and openings with little energy loss. Spaces around doors, floor tracks, electrical boxes, and conduit and HVAC ducting are typical channels for sound diffraction. These spaces should be filled with acoustical sealant to prevent unwanted sound from intruding into adjacent spaces.
Flanking Paths	Small gaps and openings around doors, floor tracks, electrical boxes, and conduit and HVAC ducting that allow sound to pass through if not filled with acoustical sealant. Also called “leaking paths.”
Impact Isolation Class (IIC)	Measurement of the ability of a floor/ceiling assembly to isolate sound from footfall and other impact sources, reducing the intrusion of noise into rooms directly below.
Noise Reduction Coefficient (NRC)	Measurement of the ability of a material such as an acoustical ceiling panel to absorb sound energy in the frequency range of 250 Hz to 2,000 Hz (see “pitch” for more information). High-NRC ceiling panels provide this type of sound control, which is important for large spaces such as open-plan offices.

Definitions

Pitch	The oscillation rate of a sound wave, which travels as a small pressure change alternating above and below the static (at rest) state of the conducting material. Each cycle of compression and re-expansion is a wave. The number of waves occurring per second is the frequency, which is measured as hertz (Hz); one Hz equals one cycle per second. A sound's pitch rises as its frequency increases. The human ear can discern sounds ranging from approximately 20 Hz to 20,000 Hz. Human speech ranges between 125 Hz and 4,000 Hz.
Reflection	The bouncing of sound waves off any hard, smooth wall, ceiling or floor surface, making them audible beyond the immediate area of the source. The shape of surfaces also affects where sound may travel. Concave surfaces concentrate or focus sound, while convex surfaces can disperse sound in multiple directions.
Reverberation	Sound that persists in an enclosed space by reflecting off surfaces in the room.
Sound Masking	A carefully engineered sound spectrum similar to that of softly blowing air, which is amplified through speakers to raise the ambient sound level, "masking" conversations and background noise. In enclosed rooms, sound masking increases speech privacy by lowering the articulation index, preventing conversations from being overheard.
Sound Transmission Class (STC)	Measurement of the ability of a wall or floor assembly to isolate airborne sound and prevent it from passing from one side to the other.
Transmission	The passage of sound waves from its source, through a vibrating medium, and to a listener. "Airborne sound" passes through a space by vibrating the air. "Structure-borne sound" travels through wall partitions, ceilings and floor/ceiling assemblies.
Volume	The loudness of a sound—how much the amplitude of a sound wave exceeds the static pressure of the conducting medium—as measured in decibels (dB). The higher the decibel level, the greater the volume. Noise from a jet plane has an amplitude of 140 dB, while a human whisper is approximately 20 dB. Sound in a typical office environment reaches 40 dB to 60 dB. Volume doubles with each 10 dB increase in sound energy.

STC Guidelines

Building Type	Room	Adjacent Room Room	STC			
			Minimum ^d	Medium	High	
Residential, including motels, hospitals, and dormitories	Bedroom	Bedroom	45	50	55	
		Living room	50	55	60	
		Kitchen	50	55	60	
		Bathroom	50	55	60	
		Corridor	45	50	55	
		Lobby	50	55	60	
		Mech. room	55	60	60+	
	Living Room	Living room	40	45	55	
		Kitchen	45	50	60	
		Bathroom	45	50	60	
		Corridor	45	45	55	
		Lobby	50	55	60	
		Mech. room	50	60	60+	
	Kitchen or Bathroom	Kitchen	40	45	50	
		Bathroom	40	45	50	
		Corridor	40	40	50	
		Lobby	45	50	60	
		Mech. room	45	55	60+	
	Business	Office	Office	45	50	55
			General area	40	45	50
			Corridor	40	45	50
Washroom			45	50	55	
Kitchen			45	50	55	
Conference room			45	50	55	
Conference Room			General area	40	45	50
		Corridor	40	40	45	
		Washroom	40	45	50	
		Kitchen	45	50	55	
General Area		Conference room	40	45	50	
		Corridor	40	40	45	
		Washroom	40	45	50	
		Kitchen	45	50	55	
School		Classroom	Classroom	45	50	55
	Laboratory		45	50	55	
	Corridor		40	40	45	
	Kitchen		50	55	55	
	Shop		55	60	60	
	Recreation area		45	50	55	
	Music room		60	60	60	
	Mech. room		50	55	60	
	Music Room	Washroom	45	50	55	
		Laboratory	45	50	55	
		Corridor	45	50	55	
		Shop	50	55	60	
		Recreation area	50	55	60	
		Music room	55	60	60	
Mech. room	50	55	60			

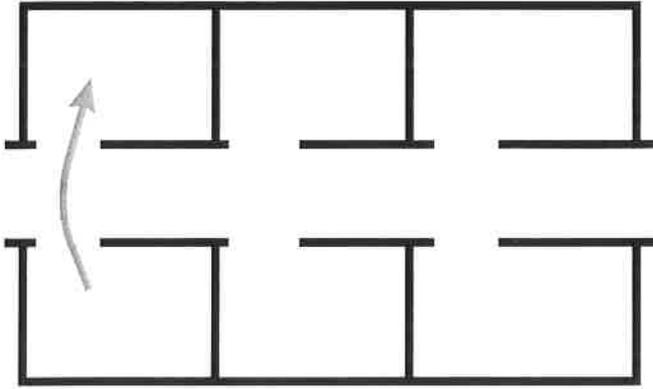
Note

(d) Current model building codes require a minimum STC (and IIC) separation of dwelling units. The 2003 International Building Code requires a minimum separation of 50 STC and 50 IIC for apartments, condominiums and townhouses. Local jurisdictions using the 2003 International Residential Code may require a minimum separation of 45 STC for townhouses.

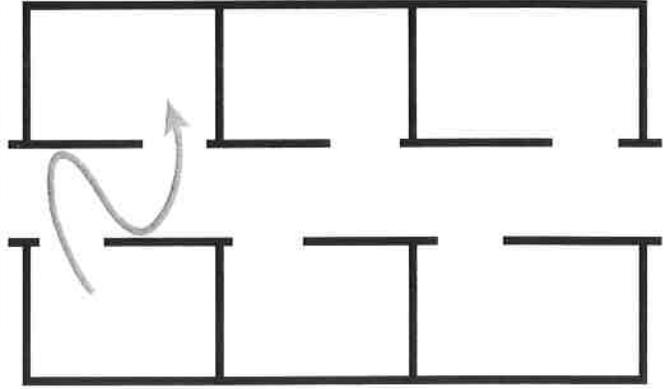
Flanking Path Details

Typical Flanking Paths

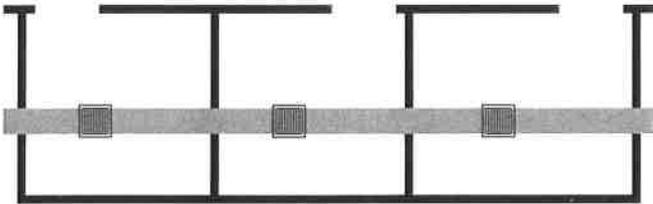
Doorway Placement – Avoid



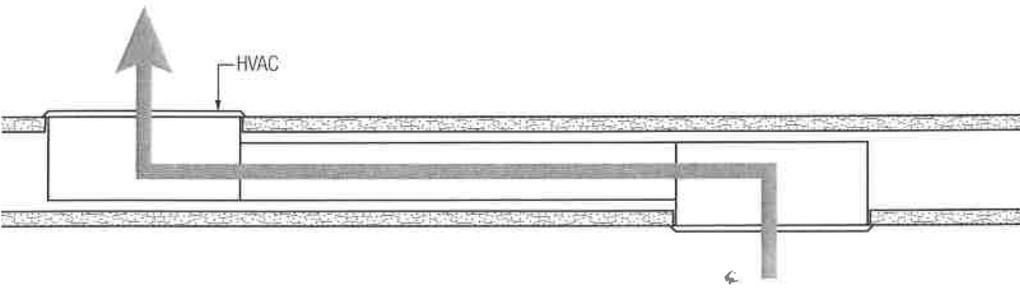
Doorway Placement – Better



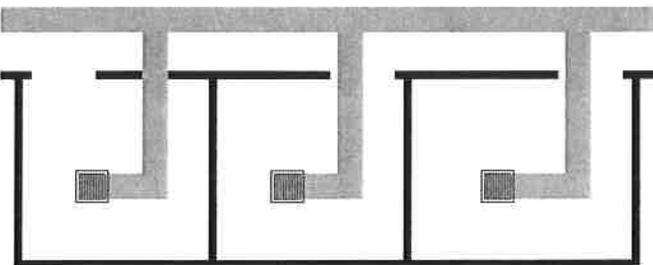
HVAC Design – Avoid



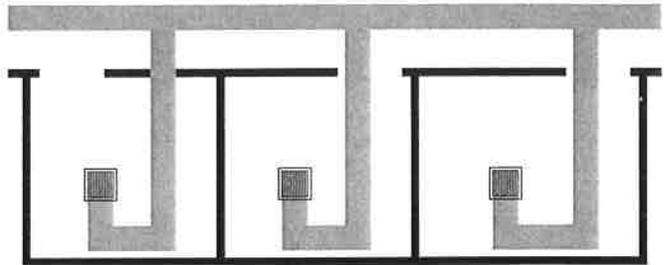
HVAC Design – Avoid



HVAC Design – Better

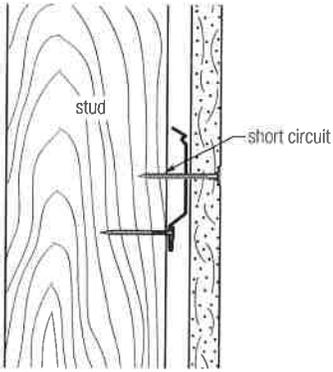


HVAC Design – Recommended

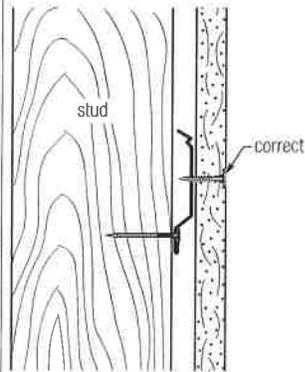


Interrupting Flanking Paths

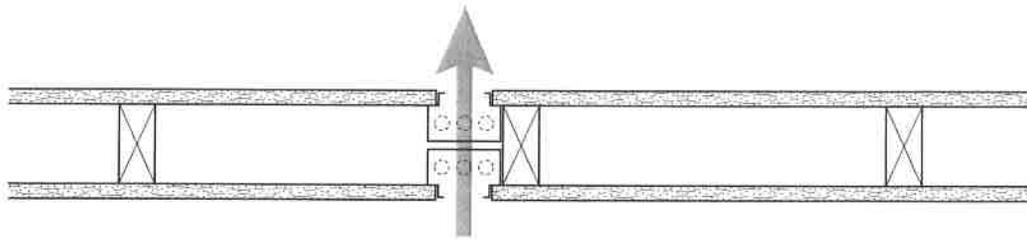
Resilient Channel Wall Framing – Avoid



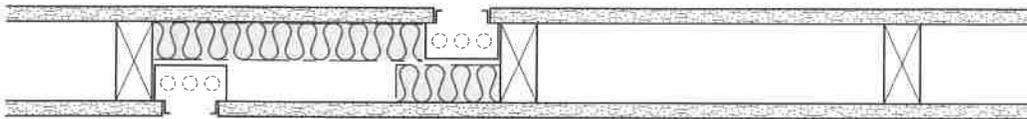
Resilient Channel Wall Framing – Recommended



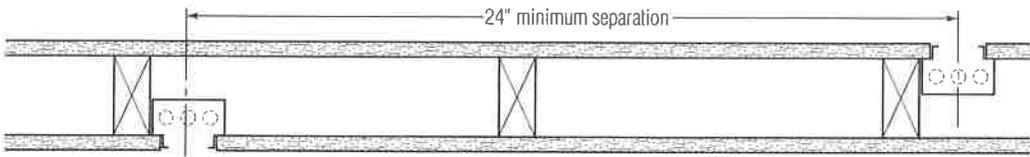
Electrical Boxes – Avoid



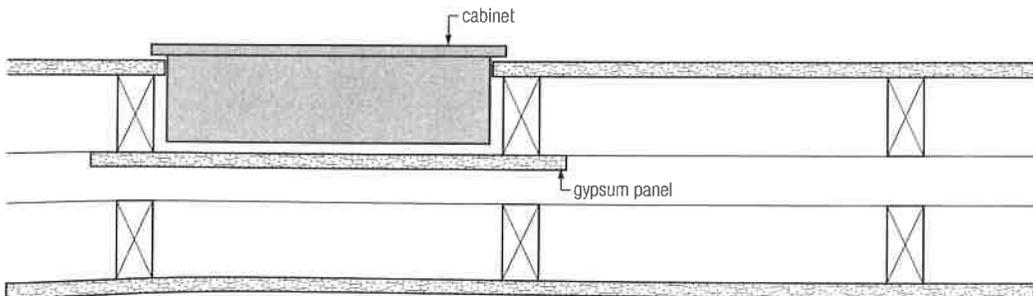
Electrical Boxes – Better



Electrical Boxes – Recommended



Cabinet Cutout

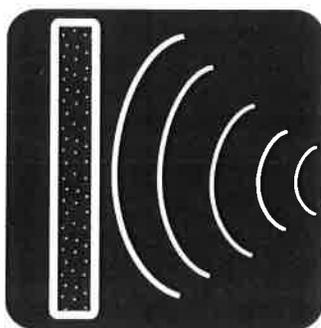




20th Edition
GA-600-2012



FIRE RESISTANCE DESIGN MANUAL



SOUND CONTROL

GYPSUM SYSTEMS

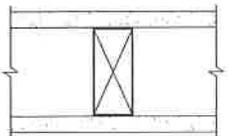
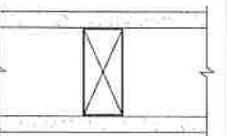
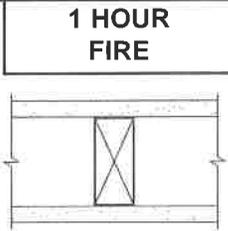
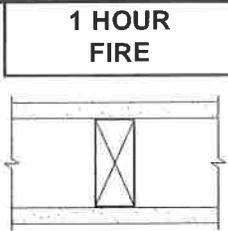
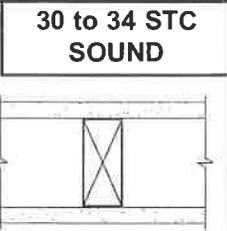
WALLS AND INTERIOR PARTITIONS, NONCOMBUSTIBLE

GA FILE NO. WP 1204	GENERIC	1 HOUR FIRE	40 to 44 STC SOUND
GYPSUM WALLBOARD, STEEL STUDS			
<p>Base layer 1/2" type X gypsum wallboard or gypsum veneer base applied parallel to each side of 3 1/2" 20 ga steel studs 24" o.c. with 1 5/8" Type S-12 drywall screws 12" o.c. Face layer 1/2" type X gypsum wallboard or gypsum veneer base applied parallel to each side with 1 5/8" Type S-12 drywall screws 12" o.c. Studs attached to each side of floor and ceiling runners by welding or with 1/2" Type S-12 pan head screws.</p> <p>Joints staggered 24" each layer and side.</p> <p>Bracing: Lateral bracing spaced not over 40" o.c. shall be 1" by 18 ga steel straps attached to each side or channel bracing attached to each stud with a clip angle. For studs with holes or punch-outs in the web the "Q" factor shall be determined by means of stub column tests. Tested at 100 percent of design load. (Passed 90 minute fire test.) (LOAD-BEARING)</p>		<p>Thickness: 5 1/2" Approx. Weight: 9 psf Fire Test: UL NC 505-1, 7-29-82, UL Design U425 Sound Test: See WP 1615 (NGC 2250, 1-3-68)</p>	

GA FILE NO. WP 1206	GENERIC	1 HOUR FIRE	40 to 44 STC SOUND
GYPSUM WALLBOARD, STEEL STUDS			
<p>One layer 5/8" type X gypsum wallboard or gypsum veneer base applied parallel to each side of 3 1/2" 20 ga steel studs 24" o.c. with 1" Type S-12 drywall screws 12" o.c. Studs attached to each side of floor and ceiling runners by welding or with 1/2" Type S-12 pan head screws.</p> <p>Joints staggered 24" on opposite sides.</p> <p>Bracing: Lateral bracing spaced not over 40" o.c. shall be 1" by 18 ga steel straps attached to each side or channel bracing attached to each stud with a clip angle. For studs with holes or punch-outs in the web the "Q" factor shall be determined by means of stub column tests. Tested at 100 percent of design load. (LOAD-BEARING)</p>		<p>Thickness: 4 3/4" Approx. Weight: 6 psf Fire Test: UL NC 505-2, 7-29-82, UL Design U425 Sound Test: See WP 1350 (NGC 2385, 7-28-70)</p>	

GA FILE NO. WP 1240	GENERIC	1 HOUR FIRE	40 to 44 STC SOUND
GYPSUM VENEER PLASTER, GYPSUM VENEER BASE, STEEL STUDS			
<p>One layer 1/2" type X gypsum veneer base applied parallel or at right angles to each side of 2 1/2" steel studs 24" o.c. with 1" Type S drywall screws 8" o.c. at vertical joints and 12" o.c. at intermediate studs. 1/16" gypsum veneer plaster applied over each side.</p> <p>Joints staggered 24" on each side and on opposite sides. Sound tested with 3" glass fiber insulation in stud space and with studs 16" o.c. (NLB)</p>		<p>Thickness: 3 5/8" Approx. Weight: 5 psf Fire Test: UC, 8-5-63; UC, 11-1-63; UC, 5-31-66 Sound Test: G&H NG-269FT, 12-20-65</p>	

WALLS AND INTERIOR PARTITIONS, WOOD FRAMED

GA FILE NO. WP 3510	GENERIC	1 HOUR FIRE	35 to 39 STC SOUND
<p align="center">GYPSUM WALLBOARD, WOOD STUDS</p> <p>One layer 5/8" type X gypsum wallboard or gypsum veneer base applied parallel or at right angles to each side of 2 x 4 wood studs 24" o.c. with 6d coated nails, 17/8" long, 0.0915" shank, 1/4" heads, 7" o.c.</p> <p>Joints staggered 24" on opposite sides. (LOAD-BEARING)</p>			
<p align="center">GYPSUM WALLBOARD, WOOD STUDS</p> <p>One layer 5/8" type X plain or predecorated gypsum wallboard applied parallel to each side of 2 x 4 wood studs 24" o.c. with 6d coated nails, 17/8" long, 0.0915" shank, 1/4" heads, 7" o.c. at joints and top and bottom plates and 3/8" beads of adhesive at intermediate studs.</p> <p>Joints staggered 24" on opposite sides. (LOAD-BEARING)</p>			
<p align="center">GYPSUM WALLBOARD, WOOD STUDS</p> <p>One layer 5/8" type X plain or predecorated gypsum wallboard, water-resistant gypsum backing board, or gypsum veneer base applied parallel or at right angles to each side of 2 x 4 wood studs 16" o.c. with 6d coated nails, 17/8" long, 0.0915" shank, 1/4" heads, 7" o.c. Joints of square edge, bevel edge or predecorated wallboard may be left exposed.</p> <p>Joints staggered 16" on opposite sides. (LOAD-BEARING)</p>			
<p align="center">GA FILE NO. WP 3605</p>	<p align="center">GENERIC</p>	<p align="center">1 HOUR FIRE</p>	<p align="center">30 to 34 STC SOUND</p>
<p>Thickness: 47/8"</p> <p>Approx. Weight: 7 psf</p> <p>Fire Test: UL R3501-47, -48, 9-17-65, UL Design U309; UL R1319-129, 7-22-70, UL Design U314</p> <p>Sound Test: NGC 2404, 10-14-70</p>		<p>Thickness: 47/8"</p> <p>Approx. Weight: 7 psf</p> <p>Fire Test: FM WP 90, 8-21-67</p> <p>Sound Test: G&H NG-246FT, 7-2-65</p>	
<p>Thickness: 47/8"</p> <p>Approx. Weight: 7 psf</p> <p>Fire Test: UL R1319-4, -6, 6-17-52; UL R2717-39, 1-20-66; UL R3501-52, 3-15-66, UL Design U305; ULC Design W301</p> <p>Sound Test: OR 64-8, 2-4-64</p>			

CHASE WALLS, WOOD FRAMED

GA FILE NO. WP 5510

GENERIC

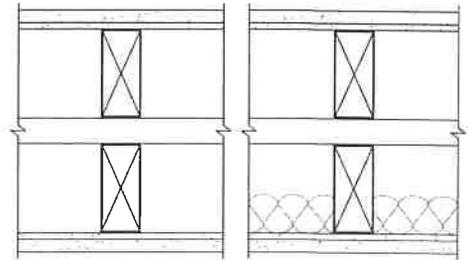
**1 HOUR
FIRE**

**55 to 59 STC
SOUND**

GYPSUM WALLBOARD, WOOD STUDS

Base layer 1/4" gypsum wallboard applied parallel to each side of double row of 2 x 4 wood studs 16" o.c. on separate plates spaced 1 1/2" apart with 4d coated nails, 1 1/2" long, 0.099" shank, 1/4" heads, 12" o.c. Joints staggered 16" on opposite sides. Face layer 1/2" type X plain or predecorated gypsum wallboard or gypsum veneer base applied parallel to each side with 3/8" beads of adhesive 16" o.c. and 5d coated nails, 1 3/4" long, 0.099" shank, 1/4" heads, 16" o.c. at top and bottom plates. 4d finish nails, 1 1/2" long, 0.072" shank, 0.1055" heads, driven at a 45° angle 16" o.c. horizontally and 24" o.c. vertically. Joints offset 24" from base layer joints.

Sound tested with 1 1/2" mineral fiber insulation in stud space. Horizontal bracing required at mid-height. **(LOAD-BEARING)**



Thickness: 10"
 Approx. Weight: 9 psf
 Fire Test: See WP 3341
 (FM WP-147, 1-2-69);
 UL R4024, 10-31-68
 Sound Test: G&H BW-32ST, 4-22-68

GA FILE NO. WP 5512

GENERIC

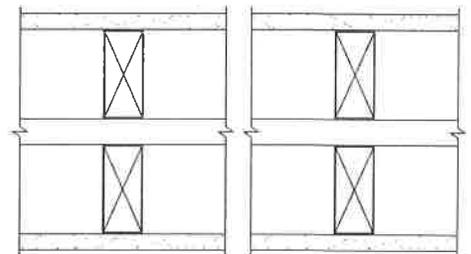
**1 HOUR
FIRE**

**45 to 49 STC
SOUND**

GYPSUM WALLBOARD, WOOD STUDS

One layer 5/8" type X gypsum wallboard or gypsum veneer base applied parallel or at right angles to each side of double row of 2 x 4 wood studs 16" o.c. on separate plates 1" apart with 6d coated nails, 1 7/8" long, 0.0915" shank, 1/4" heads, 7" o.c.

Joints staggered 16" on opposite sides. Horizontal bracing required at mid-height. **(LOAD-BEARING)**



Thickness: 9 1/4"
 Approx. Weight: 8 psf
 Fire Test: See WP 3605
 (UL R1319-4, -6, 6-17-52;
 UL R2717-39, 1-20-66;
 UL R3501-52, 3-15-66,
 UL Design U305;
 ULC Design W301);
 UL R4024, 10-31-68
 Sound Test: NRCC TL-93-261,
 IRC-IR-761, 3/98

CHASE WALLS, NONCOMBUSTIBLE

GA FILE NO. WP 5000

PROPRIETARY*

**1 HOUR
FIRE**

**60 to 64 STC
SOUND**

**GYPSUM WALLBOARD, STEEL STUDS,
GLASS FIBER INSULATION**

One layer 5/8" proprietary type X gypsum wallboard applied parallel or at right angles to ONE SIDE of a double row of 2 1/2" 25 ga steel studs 24" o.c. and not less than 1" apart with 1" Type S drywall screws 8" o.c. when applied at right angles to studs or 8" o.c. along vertical and bottom edges and 12" o.c. at intermediate studs when applied parallel to studs.

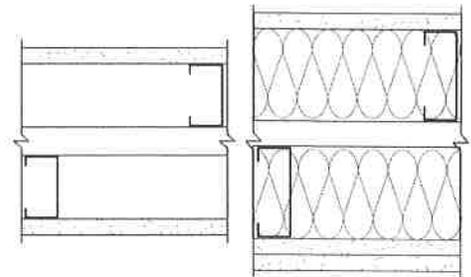
OPPOSITE SIDE: One layer 5/8" proprietary type X gypsum wallboard applied parallel or at right angles to studs with 1" Type S drywall screws 8" o.c. when applied at right angles to studs or 8" o.c. along vertical and bottom edges and 12" o.c. at intermediate studs when applied parallel to studs.

Vertical joints centered over studs and staggered one stud cavity on opposite sides of wall. Horizontal joints on opposite sides need not be staggered or backed. Lateral bracing on both sides of the wall not less than 5 feet on center vertically. (NLB)

Sound tested with a second layer of 5/8" proprietary type X gypsum wallboard on one side of a double row of 3 5/8" 20 ga steel studs with 3 1/2" glass fiber insulation, 0.5 pcf, friction fit on both sides in cavity.

PROPRIETARY GYPSUM PANEL PRODUCT

Georgia Pacific Gypsum LLC - 5/8" DensArmor Plus® Fireguard® Interior Panel



Thickness: 7 1/4" (Fire)
10 1/8" (Sound)
Approx. Weight: 7 psf
Fire Test: UL R2717, 09CA13628, 6-1-09, UL Design V469
Sound Test: RAL TL09-333, 11-19-09

GA FILE NO. WP 5001

PROPRIETARY*

**1 HOUR
FIRE**

**60 to 64 STC
SOUND**

**GYPSUM WALLBOARD, STEEL STUDS,
GLASS FIBER INSULATION**

One layer 5/8" proprietary type X gypsum wallboard applied parallel or at right angles to ONE SIDE of a double row of 2 1/2" steel studs either 16" or 24" o.c. and not less than 1" apart with 1" Type S drywall screws 8" o.c. at vertical joints and 12" o.c. at intermediate studs.

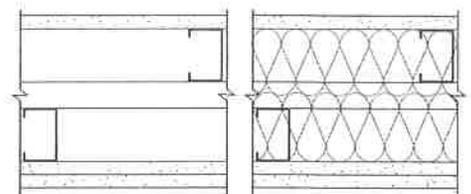
OPPOSITE SIDE: **Base** layer 5/8" proprietary type X gypsum wallboard applied parallel or at right angles to studs with 1" Type S drywall screws 8" o.c. at vertical joints and 12" o.c. at intermediate studs. **Face** layer 5/8" proprietary type X gypsum wallboard applied parallel or at right angles to studs with 1 5/8" Type S drywall screws 12" o.c. Face layer vertical joints offset one stud cavity from base layer vertical joints.

Horizontal joints staggered 12" each layer and side.

Sound tested with 3 1/2" glass fiber insulation, 0.5 pcf, on both sides in cavity. (NLB)

PROPRIETARY GYPSUM BOARD

American Gypsum Company LLC - 5/8" FireBloc® Type X



Thickness: Minimum 7 1/4"
Approx. Weight: 7 psf
Fire Test: UL R14196, 09NK18093 3-12-10
UL Design V496
Sound Test: RAL TL10-352, 10-26-10
RAL TL10-354, 10-27-10

*Contact the manufacturer for more detailed information on proprietary products.



INTERIOR DESIGNERS INSTITUTE 1061 CAMELBACK RD NEWPORT BEACH CA 92660 P.949.675.4451 F.949.759.0667 www.idi.edu

SENIOR STUDIO

ASSIGNMENT

ACOUSTICAL STUDY

1.0 Objectives:

The objectives for this assignment are as follows:

- 1.1 To develop an understanding of the spatial complexity, scale, and architectural character of the interior spaces and how to control/contain the acoustical issues/concerns that are present.
- 1.2 To specify products that focus on acoustical issues/concerns while not losing focus on the products architectural and artistic merits. Develop an understand how the interior architectural character of one space influences another.
- 1.3 To support the process of designing by means of 3-D visualization, elevations/sections and clear visual communication.
- 1.4 Student must DEVELOP their selected **5 spaces** to highlight acoustical solutions and products being selected.

2.0 Guidelines & Format:

The following guidelines should be followed for this exercise:

- 2.1 Present all findings and analysis using the 11" x 17" landscape format.

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440 Senior Studio

Acoustic Research 20 points

Name: _____

Project Name: _____

Location: _____

Concept: _____

1. **Vision** (4 points)
_____ Design clarity, coherence & consistency
_____ Compatibility with project design criteria

2. **Functionality** (4 points)
_____ Response to functional requirements
_____ Appropriate materials and systems to achieve functional goals

3. **Human Impact** (4 points)
_____ Response to user needs for acoustic control
_____ Selections achieve required level of acoustic performance

4. **Innovation** (4 points)
_____ Use of design principles & concepts to achieve desired impact
_____ Attention to detail

5. **Professional-grade Presentation** (4 points)
_____ Organization & clarity of expression
_____ Overall graphic quality of presentation

Comments: _____

6. Fire & Egress Study

INTERIOR DESIGNERS INSTITUTE
440 Senior Studio

Fire. Life-safety & Egress Study

20 points

Name: _____

Project Name: _____

Location: _____

Concept: _____

In each of the “Five Areas” you are focusing on, complete the following:

1. **Egress** (4 points)

- _____ Indicate Floor Area, Occupant Load Factor, and number of occupants
- _____ Indicate number of required exits (based on that load calc)

2. **Surface Flamespread of Wall & Ceiling Finishes** (4 points)

- _____ Indicate required surface flamespread
- _____ Indicate maximum smoke development index

3. **Ceiling Plan Development - Egress Lighting** (4 points)

- _____ Include ceiling plan symbols
- _____ Show egress lighting and battery-back-up

4. **Ceiling Development** (4 points)

- _____ Indicate Fire Sprinkler head locations
- _____ Indicate Fire Alarm device locations

5. **Professional-grade Presentation** (4 points)

- _____ Organization & clarity of expression
- _____ Overall graphic quality of presentation

Comments: _____

2016 California Building Code Requirements

Senior Studio

Egress Study

Applicable Codes

BUILDING CODES

- 2016 CA Building Code
- 2016 CA Mechanical Code
- 2016 CA Plumbing Code
- 2016 CA Electrical Code
- 2016 CA Fire Code
- 2016 CA Energy Code
- 2016 CA Green Building Code

ACCESSIBILITY

- 2016 CBC, Chapter 11B
- Americans with Disabilities Act ("ADA"), *2010 Standards for Accessible Design*

Focus of our Study

EGRESS CONCERNS

- Occupancy Group
- Design Occupant Load
- Occupant Load Factors
- Required # of Exits
- Exit Separation
- Door Swing
- Corridors (dead end)
- Corridors (width)
- Corridors (fire rating)

FLAME SPREAD CONCERNS

- Flame Spread Index
- Material Classification
- Thickness Exemption
- Occupancy & Location
- Required Ratings
- Floor Finishes
- Critical Radiant Flux
- Fire Sprinklers
- Fire Alarm System

Senior Studio Egress Study

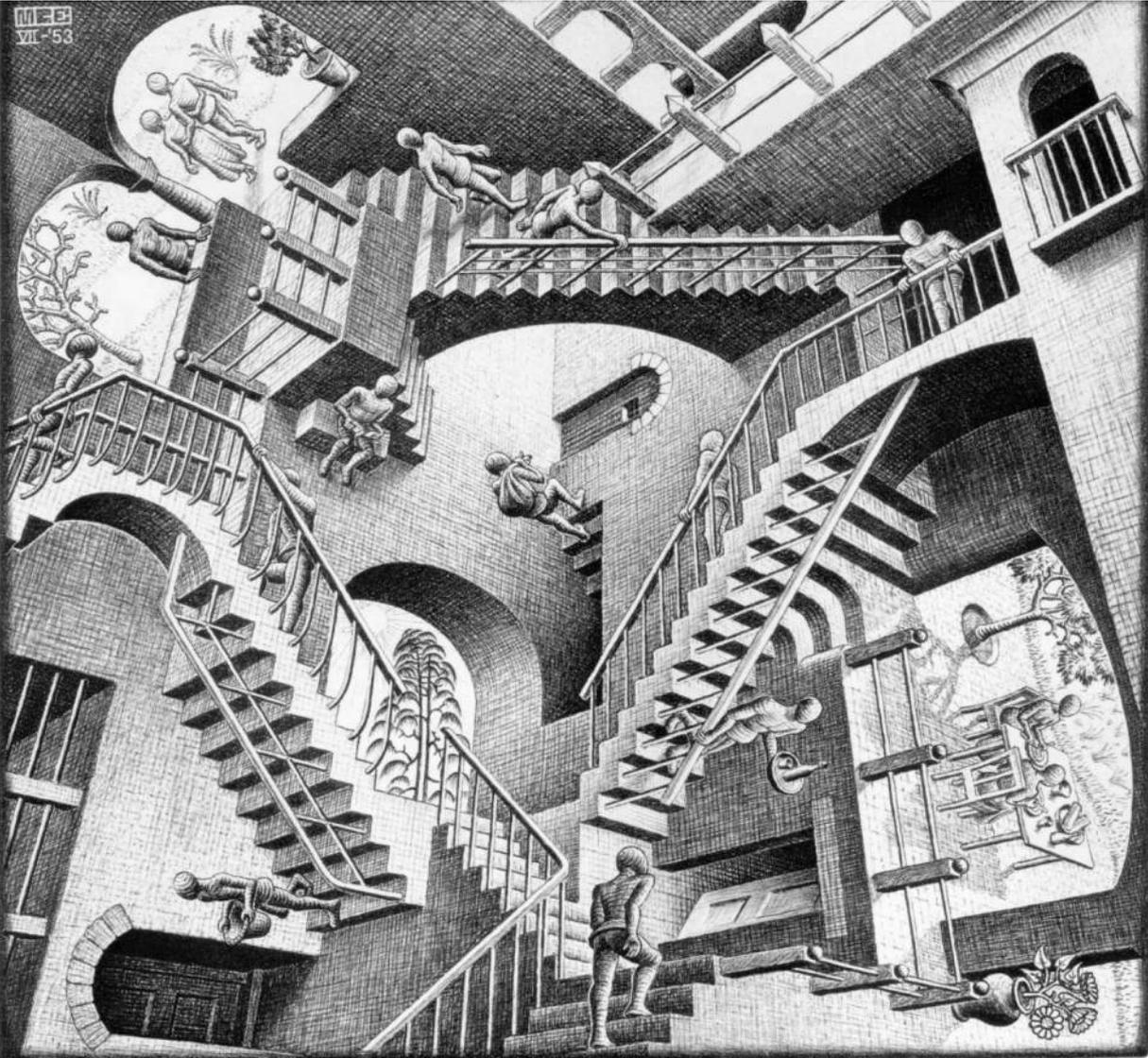
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2016 California Building Code

FACTS about our **BUILDING**

Type of Construction : V-B

Fully-automatic Fire Sprinklers



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Occupancy Group
Assembly Group A-3

303.4 Assembly Group A-3. Assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A including, but not limited to:

- Amusement arcades
- Art galleries
- Bowling alleys
- Community halls
- Courtrooms
- Dance halls (not including food or drink consumption)
- Exhibition halls
- Funeral parlors
- Gymnasiums (without spectator seating)
- Indoor swimming pools (without spectator seating)
- Indoor tennis courts (without spectator seating)
- Lecture halls
- Libraries
- Museums
- Places of religious worship
- Pool and billiard parlors
- Waiting areas in transportation terminals

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Occupancy Group *Business Group B*

SECTION 304 BUSINESS GROUP B

304.1 Business Group B. Business Group B occupancy includes, among others, the use of a building or structure, or a portion thereof, for office, professional or service-type transactions, including storage of records and accounts. Business occupancies shall include, but not be limited to, the following:

- Airport traffic control towers
- Ambulatory care facilities *servicing five or fewer patients (see Section 308.4.2 for facilities servicing more than five patients)*
- Animal hospitals, kennels and pounds
- Banks
- Barber and beauty shops
- Car wash
- Civic administration
- Clinic, outpatient [*SFM*] (*not classified as Group I-2.1*)
- Dry cleaning and laundries: pick-up and delivery stations and self-service
- Educational occupancies for students above the 12th grade
- Electronic data processing
- Food processing establishments and commercial kitchens not associated with restaurants, cafeterias and similar dining facilities not more than 2,500 square feet (232 m²) in area.
- Laboratories: testing, research and [*SFM*] instruction
- Motor vehicle showrooms
- Post offices
- Print shops
- Professional services (architects, attorneys, dentists, physicians, engineers, etc.)
- Radio and television stations
- Telephone exchanges
- Training and skill development not within a school or academic program (this shall include, but not be limited to, tutoring centers, martial arts studios, gymnastics and similar uses regardless of the ages served, and where not classified as a Group A occupancy).

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Occupancy Group
Mercantile Group M

SECTION 309 MERCANTILE GROUP M

309.1 Mercantile Group M. Mercantile Group M occupancy includes, among others, the use of a building or structure or a portion thereof, for the display and sale of merchandise and involves stocks of goods, wares or merchandise incidental to such purposes and accessible to the public. Mercantile occupancies shall include, but not be limited to, the following:

Department stores

Drug stores

Markets

Motor fuel-dispensing facilities

Retail or wholesale stores

Sales rooms

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Egress Concerns

Design Occupant Load
Areas without Fixed Seats

1004.1.2 Areas without fixed seating. The number of occupants shall be computed at the rate of one occupant per unit of area as prescribed in Table 1004.1.2. For areas without fixed seating, the occupant load shall not be less than that number determined by dividing the floor area under consideration by the occupant load factor assigned to the function of the space as set forth in Table 1004.1.2. Where an intended function is not listed in Table 1004.1.2, the building official shall establish a function based on a listed function that most nearly resembles the intended function.

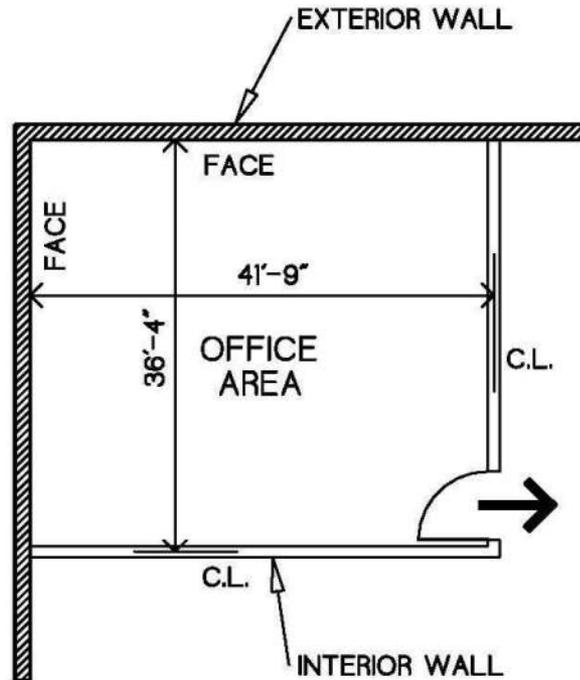
Exception: Where approved by the building official, the actual number of occupants for whom each occupied space, floor or building is designed, although less than those determined by calculation, shall be permitted to be used in the determination of the design occupant load.

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Design Occupant Load
Areas without Fixed Seats



DESIGN OCCUPANT LOAD FORMULA

$$\text{"Design Occupant Load"} = \frac{\text{Floor Area (S.F.)}}{\text{Occupant Load Factor for the use from C.B.C. Table 1004.1.2}}$$

$$\text{"Design Occupant Load"} = \frac{1,516.77 \text{ S.F.}}{\text{O.L.F. from T-1004.1.2}}$$

$$\text{"Design Occupant Load"} = \frac{1,516.75 \text{ S.F.}}{100 \text{ SF per OCC}}$$

$$\text{"Design Occupant Load"} = 15.16 \rightarrow \boxed{15}$$

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Occupant Load Factors *Areas without Fixed Seats*

**TABLE 1004.1.2
MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT**

FUNCTION OF SPACE	OCCUPANT LOAD FACTOR ^a
Accessory storage areas, mechanical equipment room	300 gross
Agricultural building	300 gross
Aircraft hangars	500 gross
Airport terminal	
Baggage claim	20 gross
Baggage handling	300 gross
Concourse	100 gross
Waiting areas	15 gross
Assembly	
Gaming floors (keno, slots, etc.)	11 gross
Exhibit Gallery and Museum	30 net
Assembly with fixed seats	See Section 1004.4
Assembly without fixed seats	
Concentrated (chairs only-not fixed)	7 net
Standing space	5 net
Unconcentrated (tables and chairs)	15 net
Bowling centers, allow 5 persons for each lane including 15 feet of runway, and for additional areas	7 net
Business areas	100 gross
Courtrooms—other than fixed seating areas	40 net
Day care	35 net
Dormitories	50 gross
Educational	
Classroom area	20 net
Shops and other vocational room areas	50 net
Exercise rooms	50 gross
Group H-5 Fabrication and manufacturing areas	200 gross
Industrial areas	100 gross
Institutional areas	
Inpatient treatment areas	240 gross
Outpatient areas	100 gross
Sleeping areas	120 gross
Kitchens, commercial	200 gross
Laboratory	
Educational	50 net
Laboratories, non-educational	100 net
Laboratory suite ^b	200 gross
Library	
Reading rooms	50 net
Stack area	100 gross
Locker rooms	50 gross
Mail buildings—covered and open	See Section 402.8.2
Mercantile	60 gross
Storage, stock, shipping areas	300 gross
Parking garages	200 gross
Residential	200 gross
Skating rinks, swimming pools	
Rink and pool	50 gross
Decks	15 gross
Stages and platforms	15 net
Warehouses	500 gross

For SI: 1 square foot = 0.0929 m².
a. Floor area in square feet per occupant.
b. See Section 433.2.

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Required Number of Exits
Spaces with One Exit

**TABLE 1006.2.1
SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY**

OCCUPANCY	MAXIMUM OCCUPANT LOAD OF SPACE	MAXIMUM COMMON PATH OF EGRESS TRAVEL DISTANCE (feet)		
		Without Sprinkler System (feet)		With Sprinkler System (feet)
		Occupant Load		
		OL ≤ 30	OL > 30	
A ^c , E, M	49	75	75	75 ^a
B	49	100	75	100 ^a
F	49	75	75	100 ^a
H-1, H-2, H-3	3	NP	NP	25 ^b
H-4, H-5	10	NP	NP	75 ^b
I-2 ^d , I-2.1, I-4	10	NP	NP	75 ^a
I-3	10	NP	NP	100 ^a
R-1	10	NP	NP	75 ^a
R-2	10	NP	NP	125 ^a
R-2.1	10	NP	NP	75
R-3 ^e , R-3.1 ^e	10	NP	NP	125 ^{a, g}
R-4 ^e	10	NP	NP	125 ^{a, g}
S ^f	29	100	75	100 ^a
U	49	100	75	75 ^a
L	<i>See Section 453.6.1</i>			

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Required Exit Separation
Diagonals are our Friends

1007.1.1 Two exits or exit access doorways. Where two exits, exit access doorways, exit access stairways or ramps, or any combination thereof, are required from any portion of the exit access, they shall be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between them. Interlocking or scissor stairways shall be counted as one exit stairway.

Exceptions:

1. Where interior exit stairways or ramps are interconnected by a 1-hour fire-resistance-rated corridor conforming to the requirements of Section 1020, the required exit separation shall be measured along the shortest direct line of travel within the corridor.
2. Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, the separation distance shall be not less than one-third of the length of the maximum overall diagonal dimension of the area served.

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Exit Doors

Swing in Direction of Exit Travel

1010.1.2.1 Direction of swing. Pivot or side-hinged swinging doors shall swing in the direction of egress travel where serving a room or area containing an occupant load of 50 or more persons or a Group H occupancy.

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Corridor Requirements *Dead Ends*

1020.4 Dead ends. Where more than one exit or exit access doorway is required, the exit access shall be arranged such that there are no dead ends in corridors more than 20 feet (6096 mm) in length.

Exceptions:

1. In occupancies in Group I-3 of Condition 2, 3 or 4, the dead end in a corridor shall not exceed 50 feet (15 240 mm).
2. In occupancies in Groups B, E, F, M, R-1, R-2, R-2.1, R-4, S and U, where the building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, the length of the dead-end corridors shall not exceed 50 feet (15 240 mm).
3. A dead-end corridor shall not be limited in length where the length of the dead-end corridor is less than 2.5 times the least width of the dead-end corridor.

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Corridor Requirements
Minimum Widths
[48" min for barrier-free]

**TABLE 1020.2
MINIMUM CORRIDOR WIDTH**

OCCUPANCY	MINIMUM WIDTH (Inches)
Any facilities not listed below	44
Access to and utilization of mechanical, plumbing or electrical systems or equipment	24
With a required occupancy capacity less than 50	36
Within a dwelling unit	36
In Group E with a corridor having a required capacity of 100 or more	72
In corridors and areas serving stretcher traffic in ambulatory care facilities	72
Group I-2 in areas where required for bed movement	96
<i>Corridors in Group I-2 and I-3 occupancies serving any area caring for one or more nonambulatory persons.</i>	96

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Corridor Requirements
Required Fire Ratings

**TABLE 1020.1
CORRIDOR FIRE-RESISTANCE RATING**

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler system ^c
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5, L	Greater than 30	Not Permitted	1
A ^e , B, F, M, S, U	Greater than 30	1	0
R-1, R-2, R-3, R-3.1, R-4	Greater than 10	1 ^d	1
I-2 ^a , I-2.1, I-4	Greater than 6	Not Permitted	1
I-3, R-2.1	Greater than 6	Not Permitted	1 ^b
E	Greater than 10	1	1

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2016 California Building Code Flame Spread Concerns

Flame Spread Index
Wall & Ceiling Finishes
How Materials are Classified

803.1.1 Interior wall and ceiling finish materials. Interior wall and ceiling finish materials shall be classified in accordance with ASTM E84 or UL 723. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes.

Class A: = Flame spread index 0-25; smoke-developed index 0-450.

Class B: = Flame spread index 26-75; smoke-developed index 0-450.

Class C: = Flame spread index 76-200; smoke-developed index 0-450.

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2016 California Building Code Flame Spread Concerns

Thickness Exemption
Wall & Ceiling Finishes
What is NOT regulated

803.2 Thickness exemption. Materials having a thickness less than 0.036 inch (0.9 mm) applied directly to the surface of walls or ceilings shall not be required to be tested.

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2016 California Building Code Flame Spread Concerns

Required Ratings

Wall & Ceiling Finishes

Occupancy & Location

803.11 Interior finish requirements based on group. Interior wall and ceiling finish shall have a flame spread index not greater than that specified in Table 803.11 for the group and location designated. Interior wall and ceiling finish materials tested in accordance with NFPA 286 and meeting the acceptance criteria of Section 803.1.2.1, shall be permitted to be used where a Class A classification in accordance with ASTM E84 or UL 723 is required.

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2016 California Building Code Flame Spread Concerns

Required Ratings
Wall & Ceiling Finishes
CBCTable 803.11

TABLE 803.11
INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY*

GROUP	SPRINKLERED ¹			NONSPRINKLERED		
	Interior exit stairways, Interior exit ramps and exit passageways ^{a, b}	Corridors and enclosure for exit access stairways and exit access ramps	Rooms and enclosed spaces ^c	Interior exit stairways, interior exit ramps and exit passageways ^{a, b}	Corridors and enclosure for exit access stairways and exit access ramps	Rooms and enclosed spaces ^c
A-1 & A-2	B	B	C	A	A ^d	B ^c
A-3 ^f , A-4, A-5	B	B	C	A	A ^d	C
B, E, M, R-1	B	C	C	A	B	C
R-4 ^m	B	C	C	A	B	B
F	C	C	C	B	C	C
H, L	B	B	C ^e	A	A	B
I-2, I-2.1	B	B	B ^{h, i}	A	A	B
I-3	A	A ^j	B	NP	NP	NP
I-4	B	B	B ^{h, i}	A	A	B
R-2	C	C	C	B	B	C
R-2.1	B	C	C	A	B	B
R-3 ^m , R-3.1	C	C	C	C	C	C
S	C	C	C	B	B	C
U	No restrictions			No restrictions		

2016 California Building Code
Flame Spread Concerns

Floor Finishes

What is not regulated

How Materials are Classified

SECTION 804 INTERIOR FLOOR FINISH

804.1 General. Interior floor finish and floor covering materials shall comply with Sections 804.2 through 804.4.2.

Exception: Floor finishes and coverings of a traditional type, such as wood, vinyl, linoleum or terrazzo, and resilient floor covering materials that are not comprised of fibers.

804.2 Classification. Interior floor finish and floor covering materials required by Section 804.4.2 to be of Class I or II materials shall be classified in accordance with NFPA 253. The classification referred to herein corresponds to the classifications determined by NFPA 253 as follows: Class I, 0.45 watts/cm² or greater; Class II, 0.22 watts/cm² or greater.

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Flame Spread Concerns

Floor Finishes
Critical Radiant Flux

804.4.2 Minimum critical radiant flux. In all occupancies, interior floor finish and floor covering materials in enclosures for stairways and ramps, exit passageways, corridors and rooms or spaces not separated from corridors by partitions extending from the floor to the underside of the ceiling shall withstand a minimum critical radiant flux. The minimum critical radiant flux shall not be less than Class I in Groups I-2 and *R-2.1* and not less than Class II in Groups A, B, E, H, *I-2.1*, I-4, M, R-1, R-2 and S.

Exception: Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, Class II materials are permitted in any area where Class I materials are required, and materials complying with *ASTM Standard E648*, and having a specific optical density smoke rating not to exceed 450 per *ASTM E662* are permitted in any area where Class II materials are required.

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Ceiling Legend
Egress Lighting
Fire Sprinklers
Smoke Detection

CEILING LEGEND

	RECESSED DOWNLIGHT, SEE SPECIFICATIONS
	RECESSED ADJUSTABLE ACCENT LIGHT, SEE SPECIFICATIONS
	PENDANT FIXTURE, SEE SPECIFICATIONS
	WALL MOUNTED LIGHT FIXTURE, SEE SPECIFICATIONS SUBSCRIPT INDICATES MOUNTING HEIGHT ABOVE FLOOR
	JUNCTION BOX
	SURFACE MOUNTED TRACK LIGHTING, SEE SPECIFICATIONS
	LED ROPE LIGHTING OR SOFFIT COVE LIGHT SUBSCRIPT INDICATES LENGTH
	2' X 2' CEILING MOUNTED LIGHT FIXTURE, SURFACE MOUNTED SEE SPECIFICATIONS
	2' X 2' CEILING MOUNTED LIGHT FIXTURE, RECESSED SEE SPECIFICATIONS
	2' X 4' FLUORESCENT LIGHT FIXTURE, SURFACE MOUNTED SEE SPECIFICATIONS
	2' X 4' FLUORESCENT LIGHT FIXTURE, RECESSED SEE SPECIFICATIONS
	EMERGENCY EGRESS 'BUG-EYE' LIGHT FIXTURE with 90 MIN BATTERY BACKUP, SEE SPECIFICATIONS SUBSCRIPT INDICATES MOUNTING HEIGHT ABOVE FLOOR
	EXIT SIGN - SINGLE OR DOUBLE FACED ARROW INDICATES EGRESS DIRECTION SEE SPECIFICATIONS
	SUPPLY AIR DIFFUSER SEE MECHANICAL DRAWINGS
	RETURN AIR GRILLE TO MATCH EXISTING SEE MECHANICAL DRAWINGS
	EXHAUST AIR GRILLE TO MATCH EXISTING SEE MECHANICAL DRAWINGS
	CEILING MOUNTED EXHAUST FAN
	FIRE SPRINKLER HEAD - RECESSED OR EXPOSED
	CEILING MOUNTED SPEAKER
	CEILING MOUNTED SMOKE DETECTOR

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Fire Sprinkler Systems Basic Head Spacing & Coverage

FIRE SUPPRESSION

FIRE SPRINKLER COVERAGE AND SPACING

HEAD TYPES AND HAZARD TYPES

HEAD TYPES

Exposed
Semi-Recessed
Concealed

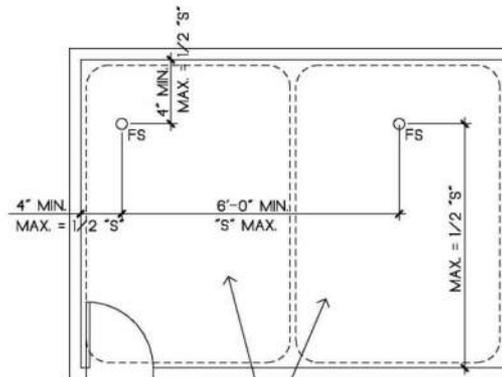
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HAZARD TYPES - BASED ON CONTENTS OF SPACE

Light Hazard B, E, M, A-2.1, A-3, I, R
Ordinary Hazard
Group 1 F-2, S-1, S-4
Group 2 F-1, S-3, S-2
Extra Hazard
Group 1 F-1, S-5
Group 2 F-1, H

BASIC COVERAGE and SPACING

Basic schematic diagram of fire sprinkler coverage and head spacing, based on NFPA 13 2010 edition, Section 8.6.3.



NFPA TABLES: 8.6.2.2.1 (a)
8.6.2.2.1 (b)
8.6.2.2.1 (c)

Hazard Type	Max. Coverage 'A'	Max. Spacing 'S'
Light	225 sf	15'
Ordinary Group 1	130 sf	15'
Ordinary Group 2	130 sf	15'
Extra Group 1	100sf	12'
Extra Group 2	100sf	12'

Max Floor Area Per Sprinkler Head is based on Hazard Type (See Tables)

'S' MAX. = maximum head spacing

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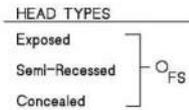
2016 California Building Code Fire & Life-Safety Issues

Fire Sprinkler Systems "Small Rooms Rule"

FIRE SUPPRESSION

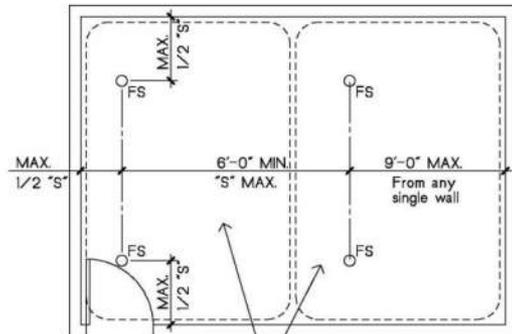
FIRE SPRINKLER COVERAGE AND SPACING

HEAD TYPES AND HAZARD TYPES



SMALL ROOM RULE

Basic schematic diagram of fire sprinkler coverage and head spacing based on NFPA 13 2010, Section 8.6.3.2.4.



Small Room Definition (3.3.17)

1. Light hazard occupancy
2. Smooth unobstructed ceiling construction
3. Rooms \leq 800 sf
4. Door lintel depth \geq 8 inches
5. Total width of door openings in each wall \leq 8 Linear feet

Max Floor Area Per Sprinkler Head is based on Hazard Type (See tables)

S MAX = maximum head spacing

Senior Studio Egress Study

Copyright 2017 Rick Fox, Architect

2016 California Building Code Fire & Life-Safety Issues

Fire Alarm Systems Basic System Overview System Components

FIRE SUPPRESSION

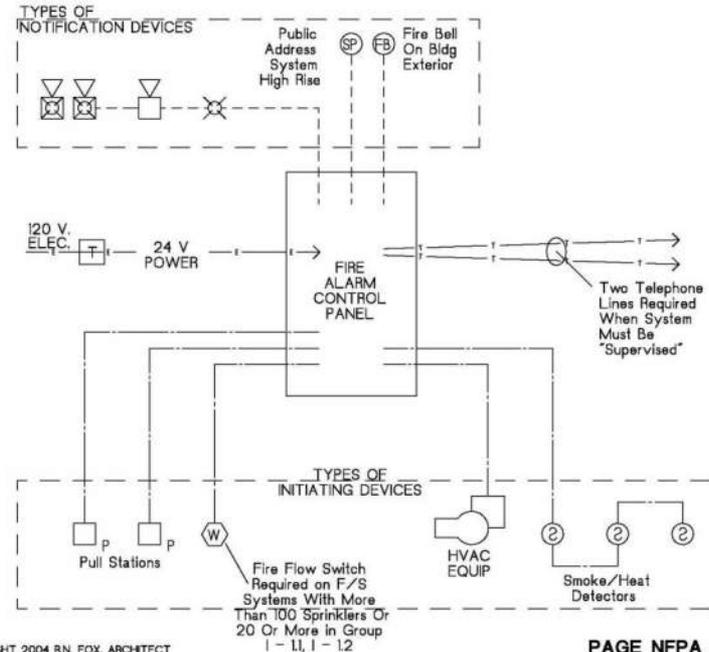
FIRE ALARM SYSTEM - OVERVIEW

BASIC SCHEMATIC DIAGRAM OF FIRE ALARM SYSTEM COMPONENTS

SYMBOLS



SYSTEM SCHEMATIC



SYSTEM DESIGN REQUIREMENTS

DETERMINATION OF OCCUPANT LOAD

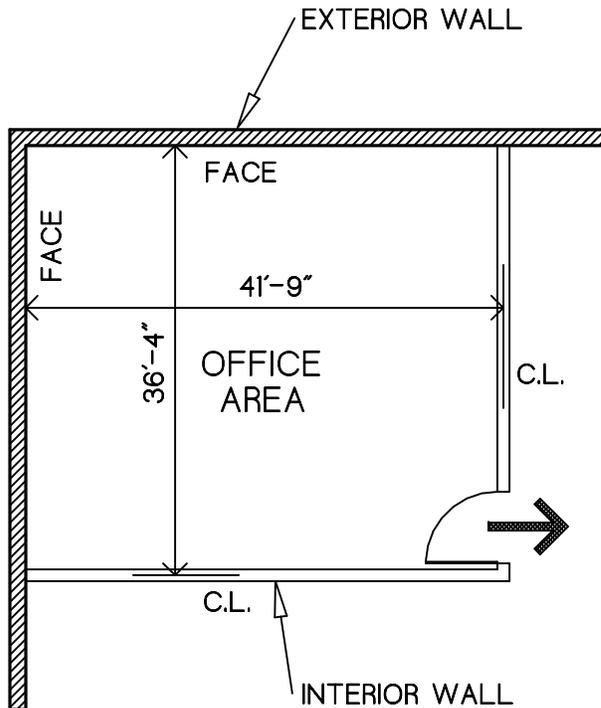
CBC REFERENCE:¹

1004.1.2 Areas without Fixed Seating

"For areas without fixed seating, the occupant load shall not be less than that number determined by dividing the floor area under consideration by the occupant load factor assigned to the function of the space as set forth in Table 1004.1.2."

1. International Code Council, Inc. (2016). "2016 California Building Code, Volume 1". Country Club Hills, Illinois.

ILLUSTRATED PROVISION: Measurement of Floor Area



DESIGN OCCUPANT LOAD FORMULA

$$\text{"Design Occupant Load"} = \frac{\text{Floor Area (S.F.)}}{\text{Occupant Load Factor for the use from C.B.C. Table 1004.1.2}}$$

$$\text{"Design Occupant Load"} = \frac{1,516.77 \text{ S.F.}}{\text{O.L.F. from T-1004.1.2}}$$

$$\text{"Design Occupant Load"} = \frac{1,516.75 \text{ S.F.}}{100 \text{ SF per OCC}}$$

$$\text{"Design Occupant Load"} = 15.16 \rightarrow \boxed{15}$$

COMMENTS: Measuring to the interior side of Exterior walls is based upon the C.B.C. definition of "Gross Floor Area" contained in Section 202. The decision to measure to the centerline of interior walls is based on the assumption that since all floor area must be measured for Occupant Load, measuring to the centerline of interior walls insures that all interior floor area is accounted for.

MEANS OF EGRESS

determined in accordance with Section 1004.1.2 and added to the number of fixed seats.

The occupant load of wheelchair spaces and the associated companion seat shall be based on one occupant for each wheelchair space and one occupant for the associated companion seat provided in accordance with Section 1108.2.3.

For areas having fixed seating without dividing arms, the occupant load shall not be less than the number of seats based on one person for each 18 inches (457 mm) of seating length.

The occupant load of seating booths shall be based on one person for each 24 inches (610 mm) of booth seat length measured at the backrest of the seating booth.

1004.5 Outdoor areas. Yards, patios, courts and similar outdoor areas accessible to and usable by the building occupants shall be provided with means of egress as required by this chapter. The occupant load of such outdoor areas shall be assigned by the building official in accordance with the anticipated use. Where outdoor areas are to be used by persons in addition to the occupants of the building, and the path of egress travel from the outdoor areas passes through the building, means of egress requirements for the building shall be based on the sum of the occupant loads of the building plus the outdoor areas.

Exceptions:

1. Outdoor areas used exclusively for service of the building need only have one means of egress.
2. Both outdoor areas associated with Group R-3 and individual dwelling units of Group R-2.

1004.6 Multiple occupancies. Where a building contains two or more occupancies, the means of egress requirements shall apply to each portion of the building based on the occupancy of that space. Where two or more occupancies utilize portions of the same means of egress system, those egress components shall meet the more stringent requirements of all occupancies that are served.

**SECTION 1005
MEANS OF EGRESS SIZING**

1005.1 General. All portions of the means of egress system shall be sized in accordance with this section.

Exception: Aisles and aisle accessways in rooms or spaces used for assembly purposes complying with Section 1029.

1005.2 Minimum width based on component. The minimum width, in inches (mm), of any means of egress components shall not be less than that specified for such component, elsewhere in this code.

1005.3 Required capacity based on occupant load. The required capacity, in inches (mm), of the means of egress for any room, area, space or story shall not be less than that determined in accordance with Sections 1005.3.1 and 1005.3.2:

**TABLE 1004.1.2
MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT**

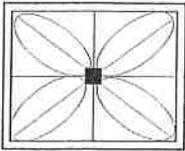
FUNCTION OF SPACE	OCCUPANT LOAD FACTOR ^a
Accessory storage areas, mechanical equipment room	300 gross
Agricultural building	300 gross
Aircraft hangars	500 gross
Airport terminal	
Baggage claim	20 gross
Baggage handling	300 gross
Concourse	100 gross
Waiting areas	15 gross
Assembly	
Gaming floors (keno, slots, etc.)	11 gross
Exhibit Gallery and Museum	30 net
Assembly with fixed seats	See Section 1004.4
Assembly without fixed seats	
Concentrated (chairs only-not fixed)	7 net
Standing space	5 net
Unconcentrated (tables and chairs)	15 net
Bowling centers, allow 5 persons for each lane including 15 feet of runway, and for additional areas	7 net
Business areas	100 gross
Courtrooms—other than fixed seating areas	40 net
Day care	35 net
Dormitories	50 gross
Educational	
Classroom area	20 net
Shops and other vocational room areas	50 net
Exercise rooms	50 gross
Group H-5 Fabrication and manufacturing areas	200 gross
Industrial areas	100 gross
Institutional areas	
Inpatient treatment areas	240 gross
Outpatient areas	100 gross
Sleeping areas	120 gross
Kitchens, commercial	200 gross
Laboratory	
Educational	50 net
Laboratories, non-educational	100 net
Laboratory suite ^b	200 gross
Library	
Reading rooms	50 net
Stack area	100 gross
Locker rooms	50 gross
Mall buildings—covered and open	See Section 402.8.2
Mercantile	
Storage, stock, shipping areas	300 gross
Parking garages	200 gross
Residential	200 gross
Skating rinks, swimming pools	
Rink and pool	50 gross
Decks	15 gross
Stages and platforms	15 net
Warehouses	500 gross

For SI: 1 square foot = 0.0929 m².

a. Floor area in square feet per occupant.

b. See Section 453.2.

7. Specification & Spec Book



TRIBUTE
STEAK HOUSE

FURNITURE SPECIFICATIONS

Date: 07/25/2006

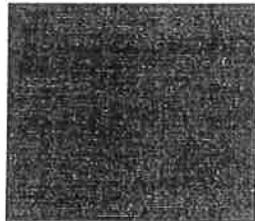
Spec Number:

F-13

DESCRIPTION: 9' Booth with fabric back, nail head trim, and vinyl base.
MODEL #: M-554 (customized)
FINISH: Black base
DIMENSIONS: 111.75"w x 31"d x 36"h
QTY: 2
LOCATION: 103 – Bar / Lounge
MANUF.: Shelby Williams

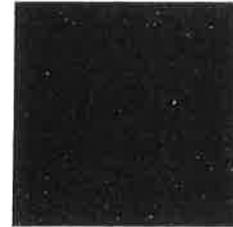


COM 1



USE: Seat back
MFG: Arc Com
PATTERN / COLOR: Turin AC65752 Mango #3
SIZE: 54"
REPEAT: None
CONTENT: 52% Viscose, 48% Polyester
ABRASION: 60,000
Flame: UFAC Class 1
Yardage: 4.75

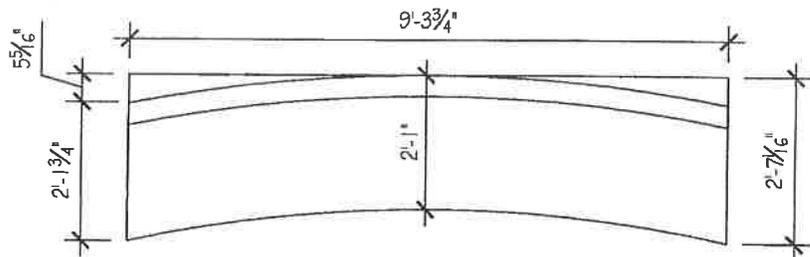
COM 1

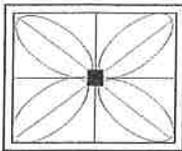


USE: Seat base
MFG: Knoll
PATTERN / COLOR: Una-Mink/K451-8
SIZE: 54"
REPEAT: None
CONTENT: 100% vinyl
ABRASION: 100,000+
Flame: UFAC Class 1
Yardage: 4.75

Notes

1. Convert straight back to a curved back as shown in attached diagram.
2. Manufacturer to submit shop drawings for approval prior to beginning production.





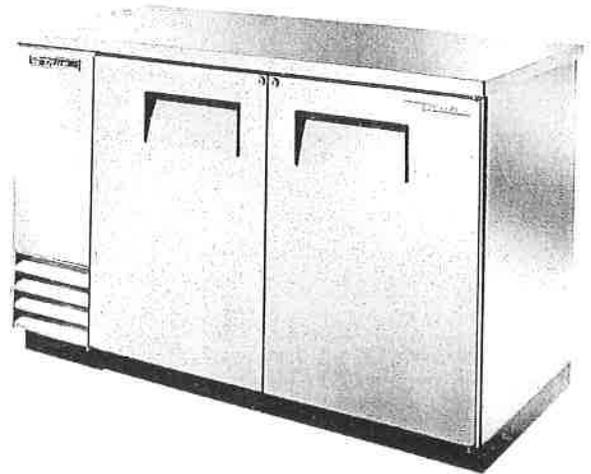
TRIBUTE
STEAK HOUSE

EQUIPMENT SPECIFICATIONS

Date: 07/25/2006

Spec Number: **E-01**

MANUF.: True
DESCRIPTION: Back Bar Cooler
MODEL #: TBB-2S
FINISH: Stainless steel
DIMENSIONS: 59" x 27" x 34"
WEIGHT: 320
QTY: 2
LOCATION: 103 - Bar / Lounge
OTHER: 9.0 AMPS



Notes

Revision History

Rev. No.	Date	Revision Description

SE6

martingale

b - 1395



PICTURED FINISHES Black Sandtex Base, Chrome Foot Ring, Brisa Distressed Vinyl in Muslin by UltraFabrics

item	part no.	seat width	seat depth	seat height	overall depth	overall height	weight	com yards
→ bar stool	b - 1395	19"	16"	30"	20.5"	44"	32	1.5
bar stool	b - 1695	20.5"	17.5"	30"	20.5"	44"	36	2

COM yards for welt: 0.25 yards per barstool

DETAILS

Swivel Connection for Functionality Included

Coordinates with Free Standing Base

Base Available in Black Sandtex

Chrome or Brass Foot Ring Available



COM UPHOLSTERY FINISHES

Find This Product at waymar.com for Direct Links to Upholstery Partners

partners
(preferred)

Arc Cam
Burch
CF Stinson

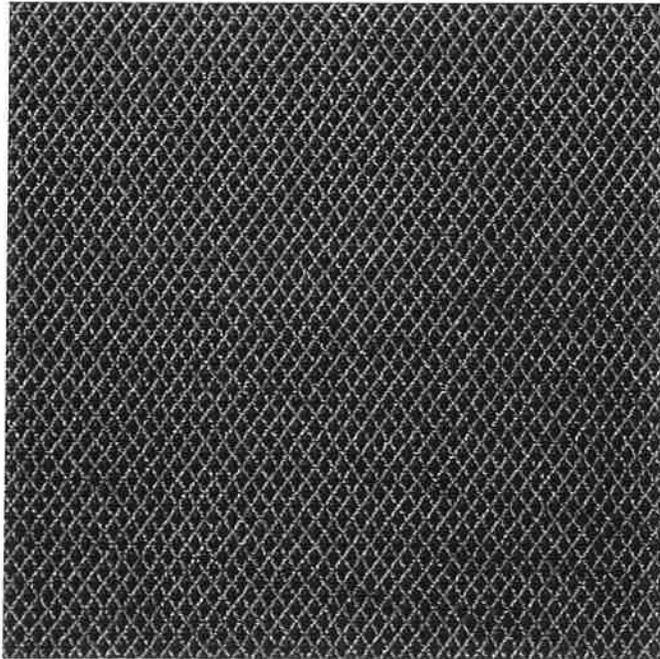
Mayer
Momentum
Nassimi

Spradling
UltraFabrics

COORDINATING PRODUCT
bar stool | b - 1695

b-1395: \$650.00 each
Estimated freight for qty. 9: \$450.00

Typical lead time is 4-6 Weeks and ships from WA 98032



COM1

SE-6, seat and back fabric

FISHNETS 7217-19 STURGEON

Content: 100% PVC(Polyvinyl)w/Polyester Knit Backing

Width: 54"

Origin: Taiwan

Repeat: .125"H/.125"V (do not railroad)

Abrasion: Exceeds 500,000 double rubs (wyzenbeek)

Lightfastness: 500 hours

Flammability: CAL 117, NFPA 260,IMO

A.652(16)8.2, ASTM E-84 Class A, Boston Fire Code

Weight: 32 oz/yd

Finish: Anti-Microbial/Anti-Bacterial

Finish: Resilience for exceptional stain resistance

Cleaning: W/S

Bleach Resistant: 1:10 Diluted Bleach Solution

Rinse thoroughly after cleaning or disinfecting.

Price: \$29/yd



Printer Friendly Version

Category: Fishnets 7217.

Tag: 7217.

Approx freight: \$2/yard

COM2

SE-6, welt

KnollTextiles Vibe in Desire

Item #K10297

Per Linear Yard

\$42 USD \$50 CAD

Approx freight: \$1.50/yard

Overview

Made of polyurethane, *Vibe* is a lightweight, tactile fabric with all the performance benefits of vinyl. Designed for upholstery application.

Primary Use

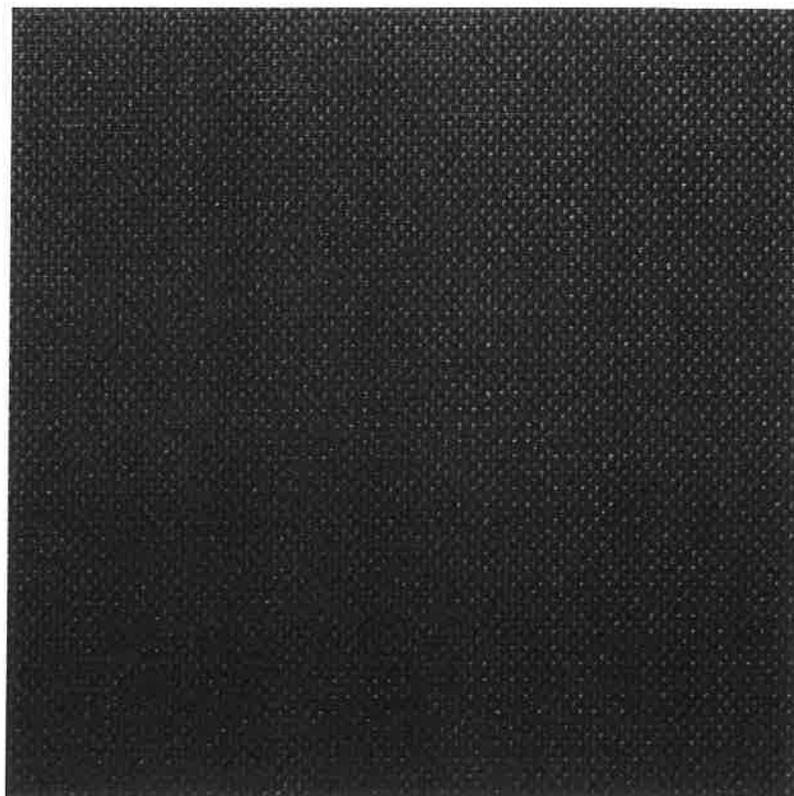
Upholstery

Designer

KnollTextiles

Content

23.0% Polyester (Backing), 77.0% Polyurethane (Face)



Details

Copyright

2006

Repeat

H: 0.0

V: 0.0

Width

54 in.

Weight

23.5 oz.

Cutting Direction

NR* - Can be railroaded

Average Bolt/Yard

45

Grade

Panel: N/A

Upholstery: C

Finishes

Backing

Antimicrobial

Polyester Knit

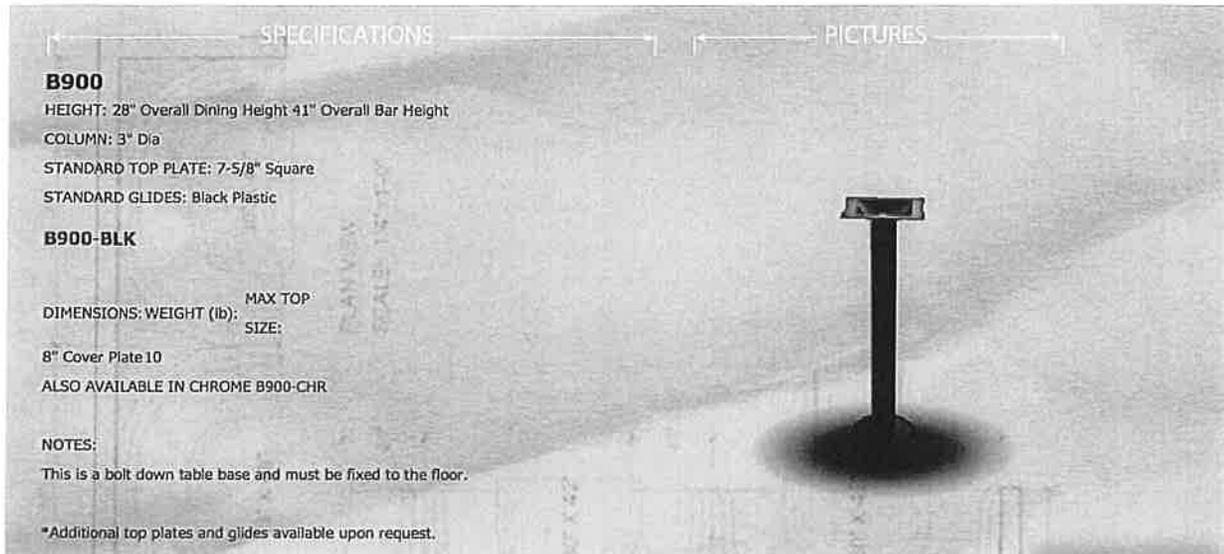
Cleaning Code

W Bleach: Water-based or foam cleaning agents or diluted household bleach may be used for cleaning this fabric.

Testing

- NFPA 260 (UFAC) : Class I
- Colorfastness Wet : 5
- Brush Pill : 5
- Lightfastness 40 hrs : 4.5
- CFFA 16 B Tongue Tear : Pass
- Tensile Strength Weft : 124
- Tensile Strength Warp : 201
- Seam Slippage Weft : 55.5 SS
- Seam Slippage Warp : 85.5 FBS
- Greenguard Certification : Pass
- Cal 117 - 2013 Section I : Pass
- Wyzenbeek Published : 100,000+

TB1



Commercial Custom Seating

\$150 each Base and 20" wall cleat
B900-BLK bolt down with 20WC wall cleat

Lead Time: 6-8 Weeks
Items shipped from CA 92841
Estimated Freight: \$45

TT1

Commercial Custom Seating

Custom Table Top
Plywood Substrate with Laminated Plastic: Vitro Seating Laminated Plastic (Yellow Ebony Boomerang, gloss finish).
W6 Oak wood knife edge detail stained to match control sample from designer with satin Bona Kimi Traffic finish

\$425 each Table Top

Lead Time: 6-8 Weeks
Items shipped from CA 92841
Estimated Freight: \$110

*This is not actual information

Table Top Specification

	Project Name: Project #: FF&E Issue Date: Addendum:
--	--

Source Information

Representative: Manufacturer: Address: Contact:	Phone: Fax:
--	------------------------------

Specification Information

Item Description:	Custom fabricated table top per plans, drawings, details & specifications.
Dimensions:	
Fabrication:	
Wood Species:	
Finish/Stain:	
Edge Detail:	See edge detail drawing
Reference:	Equipment Floor Plan & item detail drawing.
Notes/Instructions	For use with TB-1 base & wall cleat set. (1) Base & (1) wall cleat per table top. Overall table height with base attached: 29" To have flat edge on (1) " side for cleating. Submit finished corner sample to HDG for approval prior to fabrication.

Item Information

Ship To: Address: Phone: Contact: Sidemark:	Item #: Page: Item Name: Supplied By: Quantity: Room/Loc: Area:
\$ per Unit: Total \$:	FOB: Lead Time: Freight:

Table Base Specification

	Project Name: Project #: FF&E Issue Date: Addendum:
--	--

Source Information

Representative: Manufacturer: Address: Contact:	Phone: Fax:
--	------------------------------

Specification Information

Model Name/#:	
Finish:	
Dimensions:	"H x " J-Bolt cover plate x " Dia. column, " wall cleat.
Top Plate:	
Reference:	Equipment Floor Plan & Item Picture
Notes/Instructions	For use with TT table top. (1) Base & (1) wall cleat per table top. Overall table height with base attached: Base and wall cleat must provide stable and adequate support for " x " x " wood with laminated plastic table top.

Item Information

Ship To: Address: Phone: Contact: Sidemark:	Item #: Page: Item Name: Supplied By: Quantity: Room/Loc: Area:
\$ per Unit: Total \$:	FOB: Lead Time: Freight:

LT1

Qty. 4,
Ship to the site

REJUVENATION

LIGHTING & HOUSE PARTS



Irvington Item #A4764

<http://www.rejuvenation.com/s/ghe3>

Specification	Detail
Item #	A4764
Light count	4"
Finish	Antique Copper
Length	60"
Socket type	Incandescent
Switch	None
Min Length	25"
Shade(s) Chosen	B6831 AT
Max Wattage Per Socket	100W
UL Listing	UL Listed Damp
Canopy Width	4.89"
Overall Width	21.58"
Shade height	5"
Canopy Size	4-7/8"
Fitter Outside Diameter	2-5/8"

Base price: \$435.00

Selected options total: \$275.00

Total price as shown: \$710.00

Leadtime: 4-6 Weeks

Items shipped from manufacturing facility in Portland, OR

Estimated freight: \$215



Colonial Amber Frosted Bell Shade Item #B6831

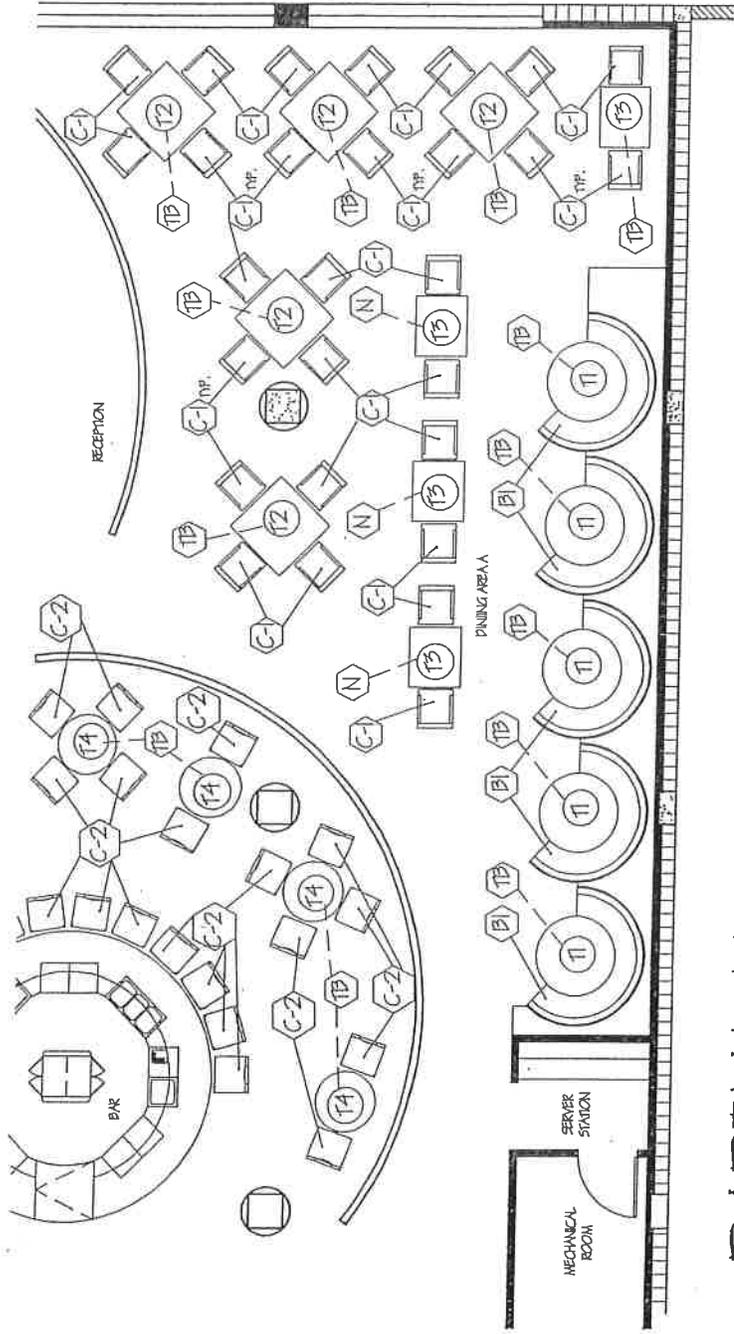
<http://www.rejuvenation.com/s/epp7>

Specification	Detail	Price as shown:
Item #	B6831-AT	\$35.00
Color	Amber Tint	
Diameter	4"	
Fitter Outside Diameter	2-1/4"	
Height	4-3/4"	
Installed Shade Height	4-1/2"	

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Figure 12-3 A furniture plan shows the placement of each piece of furniture. It is referenced by a symbol to an accompanying furniture schedule that details the specifications of the component.

FURNITURE SCHEDULE (PARTIAL EXAMPLE)											
MARK	QUANTITY	MANUFACTURER	DESCRIPTION	FABRIC/ FINISH	REMARKS	MARK	QUANTITY	MANUFACTURER	DESCRIPTION	FABRIC/ FINISH	REMARKS
C-1	90	AME INDUSTRIES, INC.	30-180 URBAN HOUR 20W, 22D, 55H	GRANITE, LIZ JORDAN- HILL, MARGENT FRAME, POLISHED CHROME	CLASS A FLAME SPREAD FABRIC	C-1	11	FALCON PRODUCTS	CUSTOM WOOD TABLE TOP 30"x36"	SOLID OAK TOPS W/ NATURAL MAPLE SPAIN	FELD FINISH TO MATCH DESIGNER'S EXAMPLE
C-2	30	AME INDUSTRIES, INC.	35-670 SNAKE PASTORAL 19W, 19D, 46H - 50"SH	SEAT: 2057-703 PULSWAN DESIGNER, NATURAL MAPLE CAPS: POLISHED CHROME	CLASS A FLAME SPREAD FABRIC	C-2	6	FALCON PRODUCTS	CUSTOM WOOD TABLE TOP 36" DIA. ROUND	SOLID OAK TOPS W/ NATURAL MAPLE SPAIN	TOP WITH STAINLESS STEEL SEAT SEE DETAIL, 311 22
C-3	16	FALCON PRODUCTS	CUSTOM WOOD TABLE TOP 48" DIA. ROUND	SOLID OAK TOPS W/ NATURAL MAPLE SPAIN	BASE: 10 POLISHED CHROME - SEE LIBRARY UNDER TP	C-3	5	FALCON PRODUCTS	CUSTOM WOOD TABLE TOP 42" DIA. ROUND	SOLID OAK TOPS W/ NATURAL MAPLE SPAIN	FELD FINISH TO MATCH DESIGNER'S EXAMPLE
C-4	12	FALCON PRODUCTS	CUSTOM WOOD TABLE TOP 42"x42"	SOLID OAK TOPS W/ NATURAL MAPLE SPAIN		C-4	7	BROWN JORDAN	29x31-4800 PINING TABLE 42" DIA. ROUND	FRAME: POLISHED STAINLESS STEEL, W/ VENEERED TOP	



PARTIAL FIRST FLOOR FURNITURE PLAN

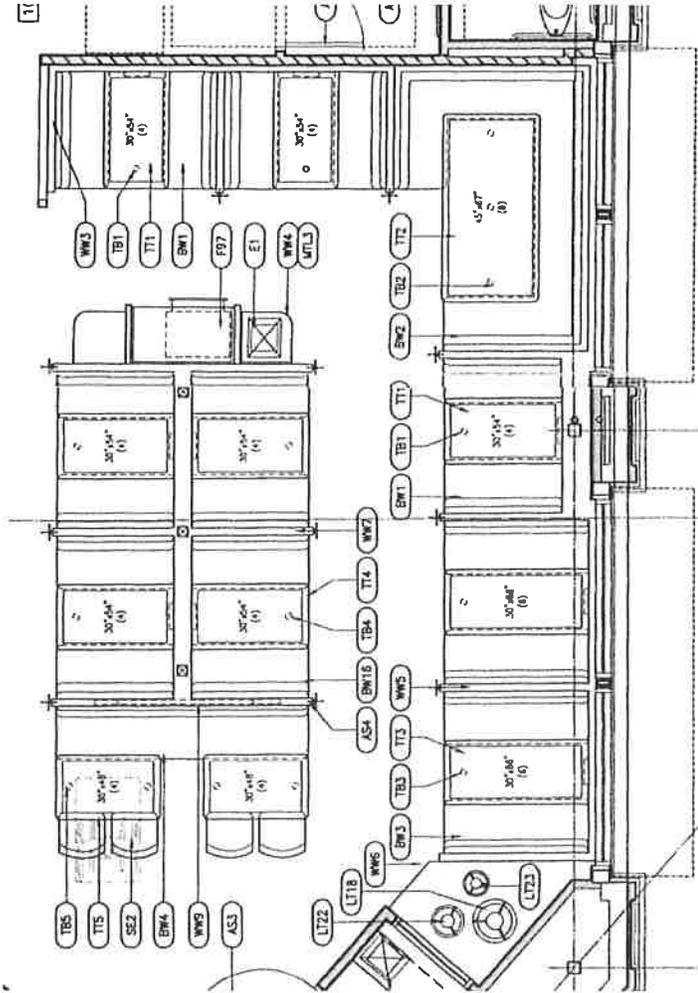
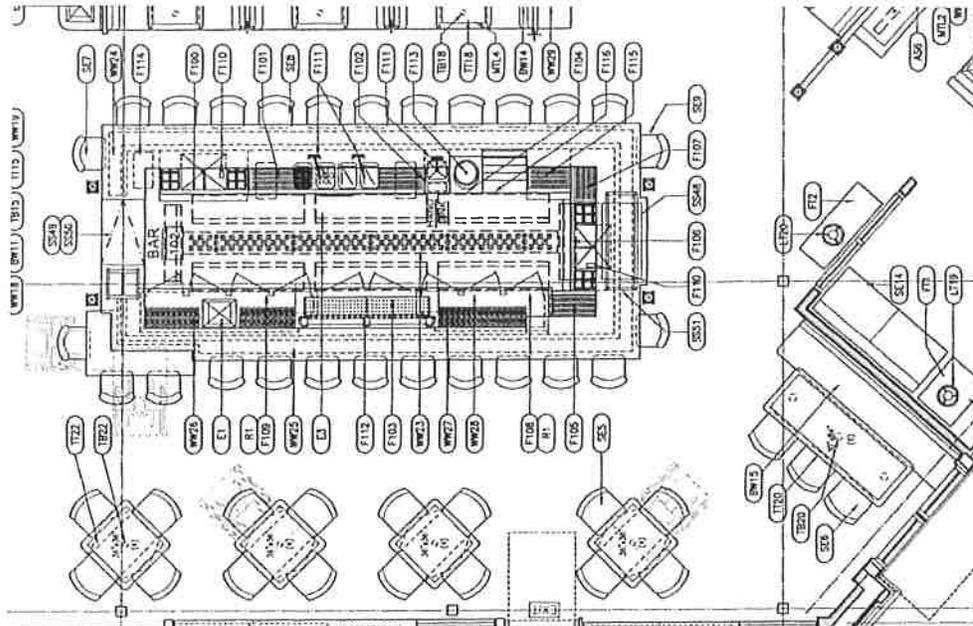
SE6

SE6	9	OWNER
	4	OWNER

LOUNGE BAR STOOLS
 (DOES NOT INCLUDE ATTIC STOCK)
 INCLUDE BAR STOOLS

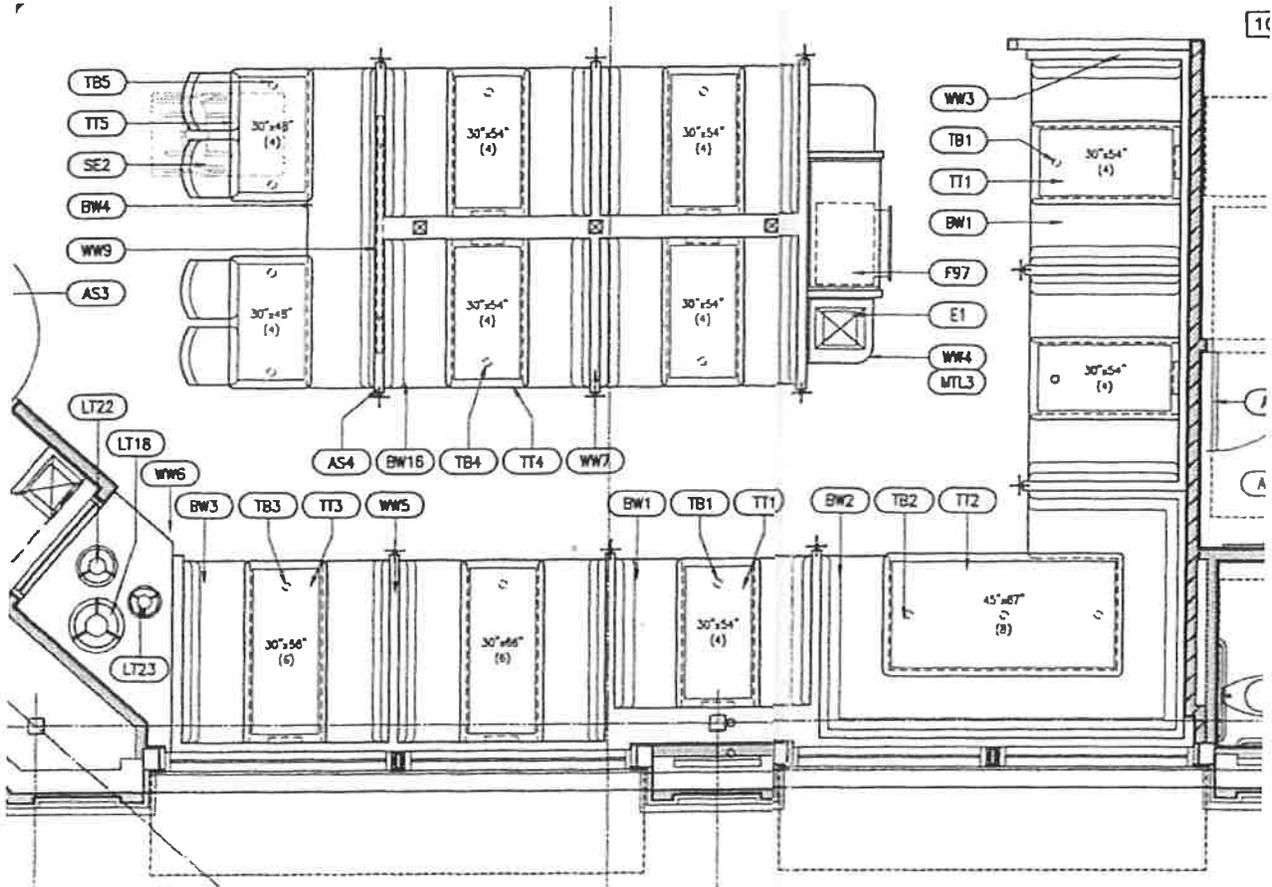
TB1 & TT1

SS68	TABLE BASES AND TOPS	QUANTITY	OWNER
TB1	DINING 30"x54" PULLMAN TABLE BASE	3	OWNER
TT1	DINING 30"x54" PULLMAN TABLE TOP	3	OWNER



TB1 & TT1

SS68	-	-	-	-	-
TABLE BASES AND TOPS					
TB1	DINING 30"x54" PULLMAN TABLE BASE	3	OWNER	BWF	-
TT1	DINING 30"x54" PULLMAN TABLE TOP	3	OWNER	BWF	-
	DINING 45"x67" TABLE BASE	-	-	-	-



FURNITURE SCHEDULE

REF #	SPEC#	DESC	MODEL	MFG	QTY	FINISH	FABRIC	NOTES
F-01	F-01	BOOTH	M-554	SHELBY WILLIAMS	8	BLACK BASE	ARC COM AC65752 MANGO; KNOLL K4518	
F-02	F-02	BOOTH	M-554	SHELBY WILLIAMS	1	BLACK BASE	ARC COM AC65152 MANGO; KNOLL 4518	
F-03	F-03	BOOTH	M584	SHELBY WILLIAMS	2	MEDIUM FRUITWOOD	KNOLL K5849; KNOLL K4518	
F-04	F-04.1	30" SQUARE TABLE TOP	900 SERIES	TABLE TOPICS	6	WALNUT		
F-04	F-04.2	TABLE BASE	823	ACERAY	6	WALNUT / CHROME		
F-05	F-05	ARM CHAIR	W88A	MARK DAVID	36	WALNUT	S. HARRIS PLANETARY - SAFFRON; CARNEGIE 6982-41	
F-06	F-06	BOOTH	CUSTOM	COMMERCIAL CUSTOM SEATING	6	WALNUT	ARC COM TURIN-MANGO; KNOLL K4518	
F-07	F-07.1	RECTANGULAR TABLE TOP	900 SERIES	TABLE TOPICS	6	WALNUT		
F-07	F-07.2	TABLE BASE	824	ACERAY	6	WALNUT / CHROME		
F-08	F-08.1	42" SQ. TABLE TOP	900 SERIES	TABLE TOPICS	6	WALNUT		
F-08	F-08.2	TABLE BASE	824	ACERAY	6	WALNUT / CHROME		
F-09	F-09	60" ROUND TABLE	65001	DECCA	1	WALNUT		
F-10	F-10	DINING CHAIR	ELLIOT	ROBIN BRUCE	6	WALNUT	RODOLPH CADENCE - AUTUMN RED	
F-11	F-11	BOOTH	M-554	SHELBY WILLIAMS	2	MEDIUM FRUITWOOD	KNOLL K5849; KNOLL K4518	
F-12	F-12.1	BOAT SHAPED TABLE	900 SERIES	TABLE TOPICS	2	WALNUT		
F-12	F-12.2	TABLE BASE	824	ACERAY	6	WALNUT / CHROME		
F-13	F-13	BOOTH	M-554	SHELBY WILLIAMS	2	BLACK BASE	ARC COM TURIN - MANGO; KNOLL K4518	
F-14	F-14.1	30" ROUND TABLE TOP	900 SERIES	TABLE TOPICS	4	WALNUT		
F-14	F-14.2	TABLE BASE	823	ACERAY	4	WALNUT / CHROME		
F-15	F-15.1	SIDE CHAIR	W885	MARK DAVID	3	DARK WALNUT	ARC COM WHISPER - AMBER	
F-15	F-15.2	SIDE CHAIR	W885	MARK DAVID	4	DARK WALNUT	ARC COM WHISPER - GOLDENROD	
F-15	F-15.3	SIDE CHAIR	W885	MARK DAVID	3	DARK WALNUT	ARC COM WHISPER - TOMATO	
F-16	F-16.1	24" ROUND TABLE TOP	900 SERIES	TABLE TOPICS	2	WALNUT		
F-16	F-16.2	TABLE BASE	823	ACERAY	2	WALNUT / CHROME		
F-17	F-17.1	30" ROUND TABLE TOP	900 SERIES	TABLE TOPICS	5	WALNUT		
F-17	F-17.2	TABLE BASE	936	ACERAY	5	WALNUT / CHROME		
F-18	F-18	BAR STOOL	W855 CHICAGO	MARK DAVID PETER ALEXANDER	30	DARK WALNUT	MATARAM 464160-002	
F-19	F-19	SOFA	CONSTANTINE	PETER ALEXANDER	1	DARK WALNUT	CARNEGIE 6981-41	
F-20	F-20	END TABLE	TABLE	ALEXANDER	2	DARK WALNUT		
F-21	F-21.1	DINING CHAIR	ELLIOT	ROBIN BRUCE	10	WALNUT	BRENTANO FRAGUE - OPERA	
F-21	F-21.2	DINING CHAIR	ELLIOT	ROBIN BRUCE	2	WALNUT	NIERMANN WEEKS MOHAIR LUXE - COCOA	
F-22	F-22	DINING TABLE	65001	DECCA	1	WALNUT		
F-23	F-23	BUFFET	ALLEN GHENY	PETER ALEXANDER	1	WALNUT		
F-24	F-24	FOLDING TABLE	5AA72RHL	BRIGHT FURNITURE	6	WHITE		
F-25	F-25	STACKING CHAIR	5253P	SHELBY WILLIAMS	50	BRASS	ARC COM BERGAMO - MANGO	
F-26	F-26	HOSTESS STAND	50112	VAUGHN BENZ		EBONY		

out the project, a general note will be sufficient. Also, if the majority of the walls are finished the same, this could be indicated in a general note and only the exceptions graphically drawn on the plan or in an accompanying schedule (Figure 11-6).

Scale of Finish Plans

Finish plans are drawn at as small a scale as possible, yet large enough to accurately convey information critical for placing finishes. The finishes are drawn in plan view simplistically, preventing clutter for ease of recognition. As there is often not a lot of detailed information that needs to be drawn in the floor-plan view, a scale of $\frac{1}{8}'' = 1'-0''$ (1:100 metric) is generally used. However, if sufficient detail is needed to clarify exact configurations or details of the pieces, a scale of $\frac{1}{4}'' = 1'-0''$ (1:50 metric) can be used.

Drafting Standards for Finish Plans

The advantage of the dedicated finish plan is that more detailed information can be given to the workers on locations of specific finish treatments. A finish plan helps eliminate questions and mistakes that might arise if a finish schedule alone were used. However, remember that items such as installation instructions are not included on the finish plan, but in the written specifications.

When drawing the finish plan, the designer uses lines to show the extent and location of each finish, as shown in Figure 11-7. When the finish lines are drawn, door openings are generally ignored to ensure that the surfaces above the doors, in corners, and between doors are also covered. Finishes on the doors and frames are either specified in a note or referred to on the door schedule; they are not generally a part of the finish plan. However, some

FLOOR COVERING SCHEDULE	
FLOOR COVERING	
FC-1	CARPET UNFIELD STYLE: 1000 COLOR: GREEN APPLE WIDTH: 12'-0" * BASE: 2 1/2" VINYL COVE BASE - JOHNSON OCEAN #871
FC-2	RESILIENT FLOORING MANF. JOANNO STYLE: METRO (VINYL) COLOR: ELECTRIC BLUE SIZE: 17' x 17' TILES
FC-3	MARBLE MANF. IGR STYLE: REGENCY COLOR: CREAM SIZE: 18' x 18' x 3/8"
FC-4	CERAMIC TILE MANF. FLORIDIAN TILE STYLE: SEABREEZE COLOR: TANGERINE SIZE: 12' x 12' x 3/8"
* GROUT: GRIBSOY/ BEIGE 447-1	
* GROUT: GRIBSOY/ BEIGE 447-1	
FLOOR COVERING NOTES	
1. GROUT TO BE SUPPLIED & INSTALLED BY GC. TILES TO BE INSTALLED WITH CONSISTENT GROUT WIDTH THROUGHOUT - APPROX 1/8" GROUT JOINT WIDTH.	
2. CERAMIC TILE TO BE SUPPLIED BY OWNER, INSTALLED BY GC. TILES TO BE INSTALLED WITH CONSISTENT GROUT WIDTH THROUGHOUT - APPROX 1/4" GROUT JOINT WIDTH.	

Figure 11-5 An example of a floor-covering schedule for a commercial project.

PAINT SCHEDULE	
SUPPLIED AND APPLIED BY THE GENERAL CONTRACTOR UNLESS NOTED OTHERWISE.	
1. PAINT MANUFACTURER IS SPECIFIED AS GLIDDEN PAINTS. SUBSTITUTIONS ALLOWED ARE BENJAMIN MOORE AND SHERWIN-WILLIAMS.	
2. PREFERRED METHOD OF PAINT APPLICATION IS BY SPRAY APPLICATION.	
P-1	GLIDDEN 10671 - SEMI-GLOSS LATEX - LT. BEIGE
P-2	GLIDDEN 10664 - FLAT FINISH LATEX - IVORY
P-3	GLIDDEN 2364 - SEMI-GLOSS LATEX - LT. PINK
P-4	GLIDDEN 1254 - SEMI-GLOSS FINISH LATEX - MEDIUM PINK
PAINT NOTES	
1. CONTRACTOR TO REVIEW DETAIL SHEETS, FINISH PLANS, AND ELEVATIONS FOR PAINTED SURFACES.	
2. ALL FACTORY WHITE SPEAKER PLATES TO BE SPRAY PAINTED TO MATCH ADJACENT SURFACES.	
3. ALL WOOD SURFACES ARE TO BE PRIMED WITH OIL-BASED PRIMER AND FINISHED WITH OIL-BASED SEMI-GLOSS PAINT.	
4. ALL METAL SURFACES TO BE PAINTED SHALL FIRST BE PRIMED WITH METAL PRIMER AND FINISHED WITH SEMI-GLOSS OIL-BASED PAINT.	
5. FINISH COATS MUST NOT SHOW BRUSH MARKS, IF THIS METHOD IS USED VS. SPRAYING OF ANY MISCELLANEOUS ITEM.	

Figure 11-6 A detailed paint schedule is helpful in commercial projects where several walls and details are to be painted.

Figure 11-9 Enlarged detail of a custom tile floor pattern.

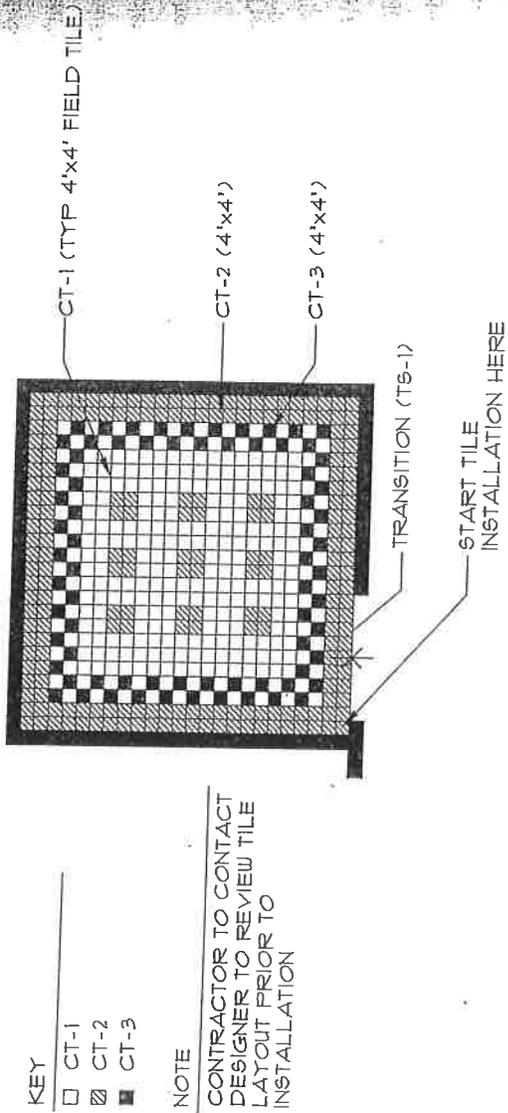


Figure 11-10 A specification using an actual material swatch.

WC-1 Vinyl Wallcovering	
Man:	Lanark
Pattern:	Kyosi
Color:	Fresco
Number:	L2-KY-05
Repeat:	Random Match
Type:	II
Width:	54"

12 CERAMIC TILE FLOOR PATTERN

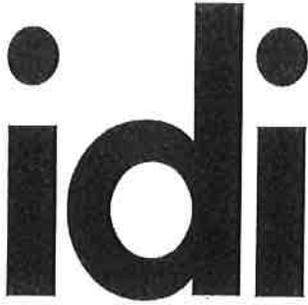
A5.2 SC: 1/4"=1'-0"



SYMBOL	QTY	MANUFACTURER	ITEM NO.	DESCRIPTION	DIMENSIONS	WATTS/ AMPS	REMARKS
L01	8	AXO LIGHTING	CLAVIUS30	RIBBON SHADE WALL LAMP W/ CHROME PLATED FINISH	7"H X 12"W X 5"D	60W	SHALL BE MOUNTED 6' A.F.F.
L02	2	ZIA-PRIVEN DESIGN	RECTANGULAR WATERFALL	CHANDELIER W/ 115 YARDS OF SMOOTH BEADED CRYSTAL CHAIN & A BLACK SILK SHADE	54"H X 42"W X 16"D	60W	
L03	4	GEORGE KOVACS	P739-077	TABLE LAMP W/ BLACK FABRIC SHADE & CHROME FINISH	22.5"H X 14"DIA.	150W	
L04	112	LIGHTOLOGY	LH5113H	COMPACT DIRECTIONAL FLUORESCENT RECESSED LIGHTING ON DIMMER W/ BLACK METAL BAFFLE TRIM; TRIM: LR543W	6"DIA	150W/ 120V	
L05	6	ARTEMIDE	QUOTINIM SONG	WALL MOUNTED LUMINAIRE FOR INDIRECT FLROESCENT LIGHTING FORMED IN STEEL W/SILVER GREY POWDER COATED FINISH	14"H X 7"W X 4"D	13W	
L06	9	ZIA-PRIVEN DESIGN	ANSONIA SCENCE	HALF ROUND SCENCE WITH 10 YARDS OF LARGE 14MM CZECH CRYSTAL CHAINS; 2-TIER FRAME	18"H X 13"W X 6"D	100W	
L07	11	SWAVORSKI	EYRIS WALL; CRYSTAL DIVINE	SURFACE MOUNTED WALL LUMINAIRE W/ STAINLESS STEEL ANTHRACITE-GREY	14.29MM H X 10.91 MM W X 4.33MM D	25W/120V	
L08	5	PLUG LIGHTING	NIAGRA	CHADELIER;MADE OF GLASS BALL FABRIC STRIPS	59"H X 6" DIA. TUBE	120V	
L09	11	ALLAN KNIGHT & ASSOCIATES	11338	ANTILLIA TWO TIER CRYSTAL PENDANT	17"H (NOT INCLUDING DROP) X 47"DIA.	60W	

EQUIPMENT SCHEDULE

REF #	SPEC#	DESC	MODEL	MFG	QTY	FINISH	WEIGHT	DIMENSIONS	NOTES
E-01	E-01	BACK BAR COOLER	TBB-25	TRUE	2	STAINLESS STEEL	320	59" X 27" X 34"	
E-02	E-02	METAL BAR SINK	5LB31C	SUPREMEMETAL	2	STAINLESS STEEL	51	36" X 18" X 36"	
E-03	E-03	DISHWASHER	JPX-300H	JACKSON	2	STAINLESS STEEL	200	24" X 22" X 34"	
E-04	E-04	CE BIN	8-24	KROWNE	1	STAINLESS STEEL	50	24" X 18" X 33.5"	
E-05	E-05	WINE COOLER	WC5100BG	AVANTI	4	STAINLESS STEEL	99	23.5" X 23" X 33.75"	



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FINISH AND FF&E ABBREVIATIONS

FINISH ABBREVIATIONS

BK – BRICK
CT – CEILING TILE
EPX – EPOXY FLOORING
FRP – FIBERGLASS REINFORCED POLYESTER
G – GLASS
LP – LAMINATED PLASTIC
MF – METAL FINISH
P - PAINT
PL – PLASTER
RF – RESILIENT FLOORING
SOS – SOLID SURFACE
SF – SPECIAL FINISH
S – STONE
TZ – TERRAZZO
T – TILE
WC – WALL COVERING
W – WOOD

FIXTURE, FURNITURE & EQUIPMENT

AS – Accessories
AW – Artwork
BW – Boothwork
C – Carpet
F – Furniture
LT – Decorative Lighting
MTL – Metal Work
TT – Table Tops
TB – Table Bases
WW – Wood Work



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ASSIGNMENT 7

(30 points)

SPECIFICATION BOOKS

1.0 Content Guidelines

1.1 The Spec Book shall cover all floor, wall and ceiling finishes, furnishings, equipment, accessories, and lighting associated with the essential five (5) spaces highlighted in your project design, and shall be sufficient to depict the overall scope and character of those spaces. You do NOT need to specify gym/fitness equipment.

1.1 The Spec book content shall be presented in the following order, based on a modified version of the Construction Specifications Institute (CSI) MasterSpec format:
Section tabs are required for the EACH of Sections (1,2,3,4) listed below:

Section 1: Finishes (list finishes in the following order, to the extent you have them)

Woods (for cabinetry, millwork & trim)
Translucent Resin Panels or Specialty Glass
Plastic Laminate
Ceramic Tile (floor & wall)
Acoustic Ceiling Tile
Specialty Ceiling Systems
Wood Flooring
Resilient Flooring
Carpet
Wall Coverings (paper, vinyl, textile)
Paints & Stains

Section 2: Furnishings

Section 3: Lighting

Section 4: Accessories & Equipment (use this section IF you need it)

Artwork
Equipment (such as food service, if you are specifying a café)

2.0 Publication Format:

2.1 The Pictorial Spec Book shall be published in the following format:

2.1.1 Binder Style:

8 ½" x 11" 3-ring, D-ring style binder;
with integral clear plastic front for insertion of custom project cover;
Individual 8 ½" x 11" pages shall be located in clear plastic sheet protectors;
All spec pages shall be in color.

2.2 All individual **Sections** of the Spec Book listed above shall be identified by a tab.

2.3 Any 11" x 17" pages shall be landscape orientation, three-folded; NO plastic sleeves.

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Specification Binder 30 points

Name: _____

Project Name: _____

Location: _____

Concept: _____

1. Furnishings (5 points)

- _____ Response to functional requirements
- _____ Consistency with vision & brand identity
- _____ Response to user demographics/expectation
- _____ Human Factors (ergonomics, proxemics)
- _____ Attention to detail

2. Lighting (5 points)

- _____ Response to functional requirements
- _____ Consistency with vision & brand identity
- _____ Response to user demographics/expectations
- _____ Human Factors (ergonomics, proxemics)
- _____ Attention to detail

3. Finishes (5 points)

- _____ Response to functional requirements
- _____ Consistency with vision & brand identity
- _____ Response to user demographics/expectations
- _____ Human Factors (ergonomics, proxemics)
- _____ Attention to detail

4. Professional-grade Presentation (10 points)

- _____ Organization & clarity (Cover, table of contents, sections)
- _____ Overall graphic quality of presentation (page layout & design, information clarity)

Comments: _____

8. Construction Document Set

REGULATORY REQUIREMENTS

ALL WORK OF THIS PROJECT SHALL CONFORM TO THE FOLLOWING MODEL CODES AND ALL APPLICABLE REVISIONS, MODIFICATIONS AND SUPPLEMENTS ISSUED BY GOVERNMENTAL AGENCIES HAVING JURISDICTION OVER THE PROJECT, AS WELL AS, ALL APPLICABLE CODES AND ORDINANCES ENACTED BY GOVERNMENTAL OR QUASI-GOVERNMENTAL AGENCIES HAVING JURISDICTIONS:

2016 CALIFORNIA BUILDING CODE ("CBC")
2016 CALIFORNIA MECHANICAL CODE ("CMC")
2016 CALIFORNIA PLUMBING CODE ("CPC")
2016 CALIFORNIA FIRE CODE ("CFC")
2016 CALIFORNIA ELECTRICAL CODE ("CEC")
2016 CALIFORNIA ENERGY CODE
2016 CALIFORNIA GREEN BUILDING CODE ("CGBC")

HAZARDOUS MATERIALS QUANTITIES

THE WORK OF THIS PERMIT DOES NOT INCLUDE THE STORAGE, HANDLING, OR DISPENSING OF HAZARDOUS MATERIALS THAT EXCEED THE QUANTITIES LISTED IN CBC TABLES 307.1 (1) AND 307.1 (2).

WORK REQUIRING SEPARATE PERMITS

SEPARATE PERMITS ARE REQUIRED FOR THE FOLLOWING:

..
..

- 1) FIRE SPRINKLERS;
- 2) FIRE ALARM SYSTEMS;
- 3) MAGNETIC SECURITY CARD ACCESS DEVICES/SYSTEMS;

SPECIAL INSPECTION

IN ADDITION TO REQUIRED REGULAR INSPECTIONS, SPECIAL INSPECTION IS REQUIRED FOR THE FOLLOWING ITEMS IN ACCORDANCE WITH CBC SEC 1701 AND THE SPECIAL INSPECTION PROGRAM CONTAINED IN THESE SPECIFICATIONS

- 1) FIELD WELDING;
- 2) EPOXY ANCHORS;
- 3) ..
- 4) ..

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Construction Documents Set 30 points

Name: _____

Project Name: _____

Location: _____

Concept: _____

1. First Floor **(8 points)**

- _____ Floor Plan (Room names, #'s, Int Elev Ref)
- _____ Floor Finish Plan (legend, legible hatching)
- _____ Furniture Plan (ID tags)
- _____ Reflected Ceiling Plan (finishes, fixtures, symbols)

2. Second Floor **(8 points)**

- _____ Floor Plan (Room names, #'s, Int Elev Ref)
- _____ Floor Finish Plan (legend, legible hatching)
- _____ Furniture Plan (ID tags)
- _____ Reflected Ceiling Plan (finishes, fixtures, symbols)

3. Interior Elevations **(8 points)**

- _____ Surface and Material callouts
- _____ Dimensioning
- _____ Naming & Referencing
- _____ Completeness (of each elevation, all required walls elevated)

4. Professional-grade Presentation **(6 points)**

- _____ Organization & clarity (Cover Sheet, set order, sheet #'s)
- _____ Overall graphic quality of presentation (Title Block, notes, text, graphics)

Comments: _____

9. Promotional Item

10. Final Presentation – Boards & Booklet

COMPOSITION

Composition in general refers to the arrangement of several elements so as to make one integrated whole, where all elements have a share in producing the whole. It is the essence of composition that everything should be in a determined place or position and perform an intended part advantageously for the whole. An intended unity, discipline and order must be the result of a good composition. This order does not necessarily refer to a formal order. In the case of architectural drawing, a good composition should always be a vehicle to express the essence of the design.

It is almost impossible to prescribe specific rules which will enable someone to compose. But there are simple laws of arrangement that would assist a designer to set forth some guidelines and interpretation for creating a composition.

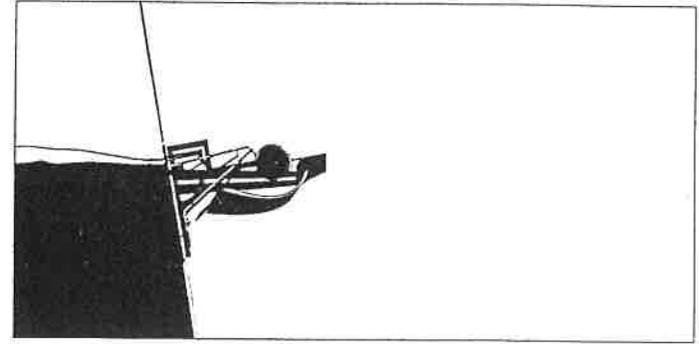
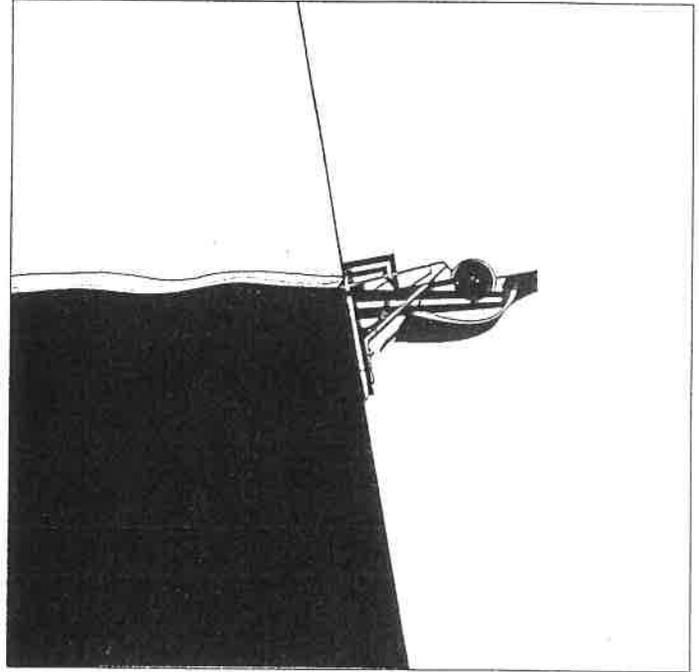
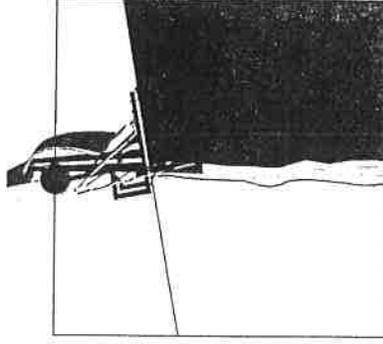
Important aspects of composition for architectural design presentation are illustrated on the following pages.

FRAME OF REFERENCE

- Frame of Reference
- Figure-ground

SHAPE AND SIZE OF THE BOARD

- Narrow Rectangular Outline (Frame)
- Square Outline
- Curvilinear Outline
- Irregular Edges

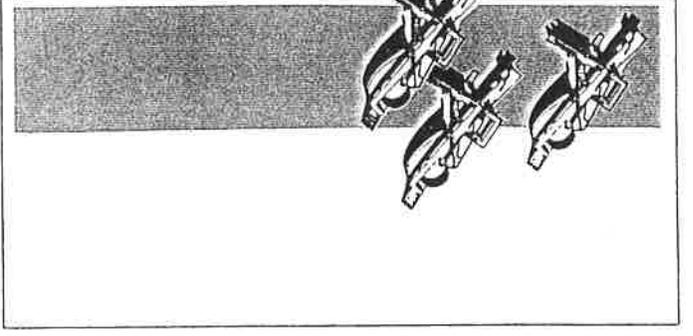
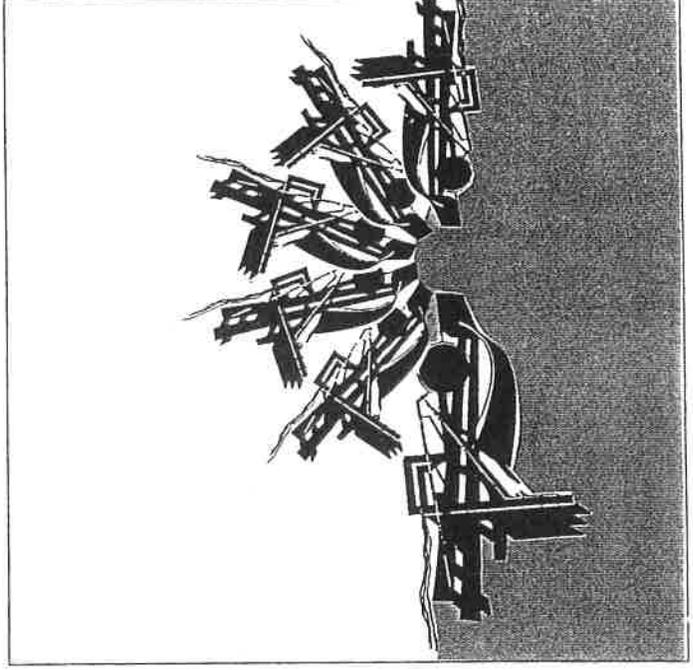
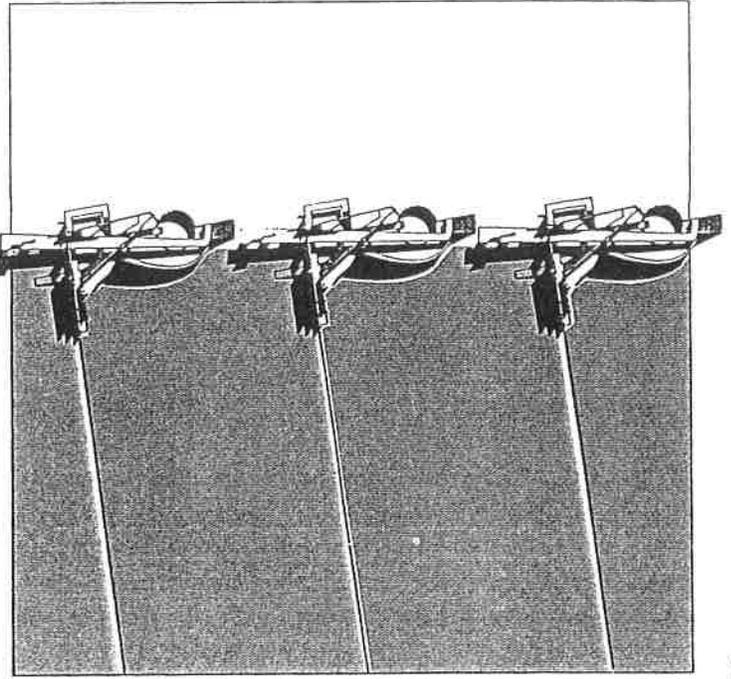
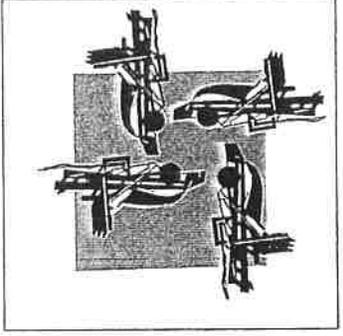
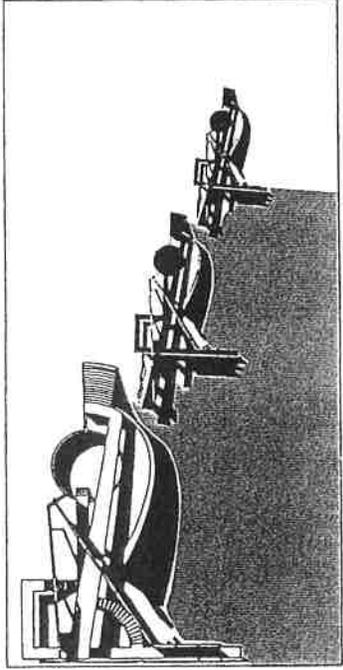
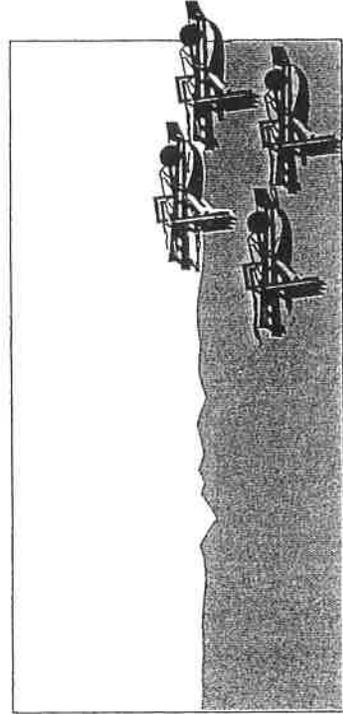


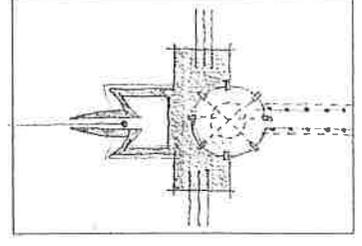
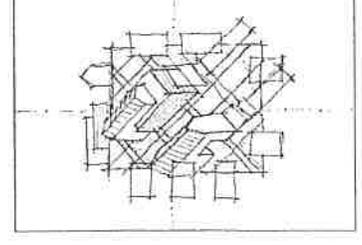
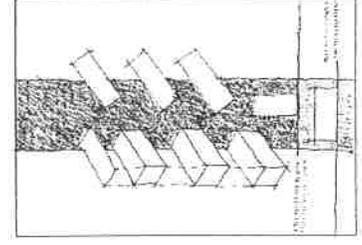
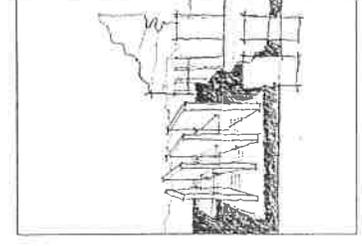
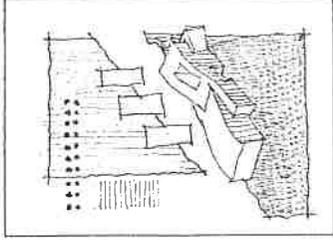
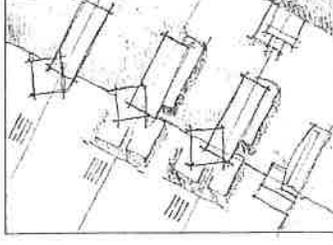
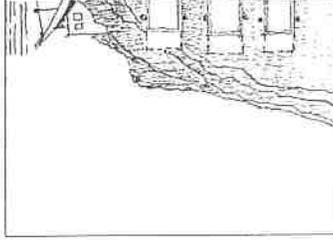
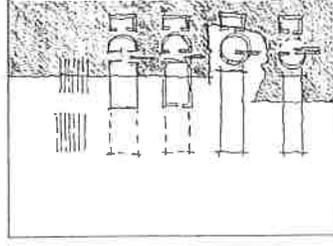
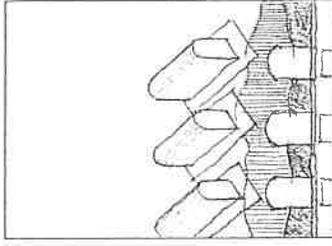
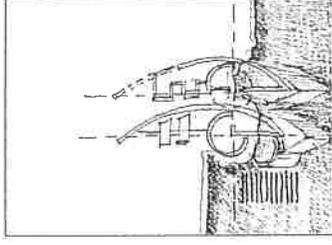
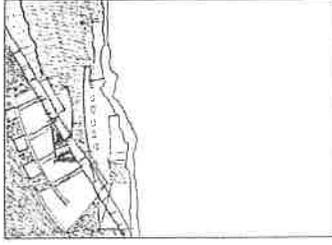
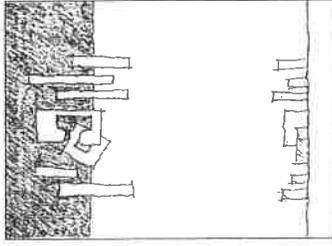
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FRAME OF REFERENCE

COMPOSITION AND LAYOUT

FRAME OF REFERENCE/Figure-GROUND





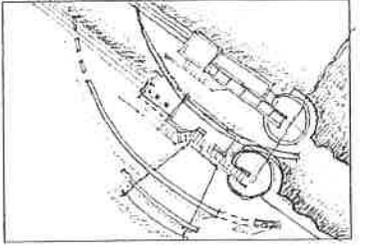
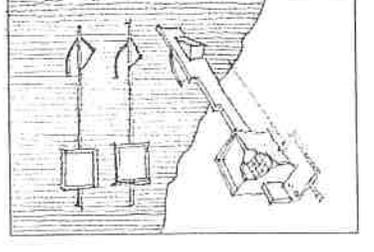
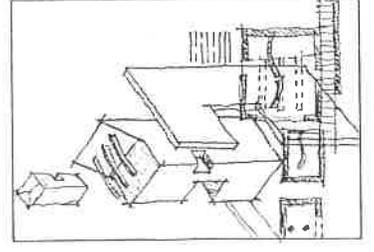
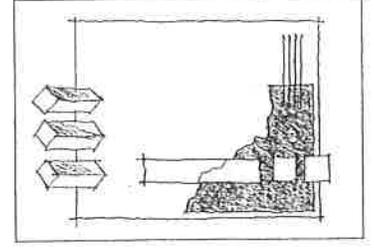
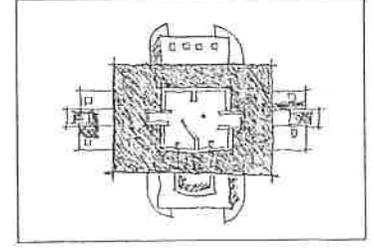
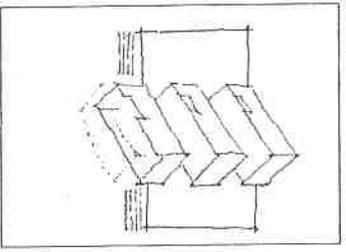
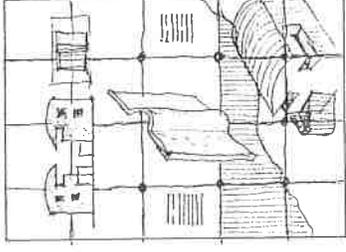
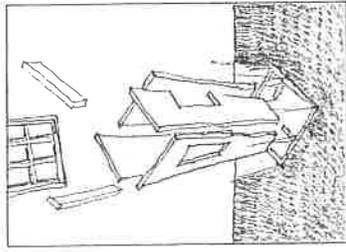
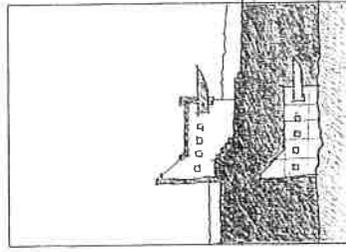
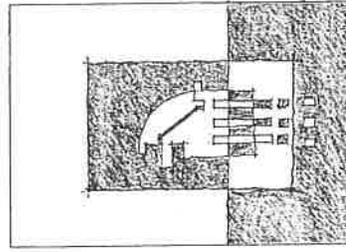
LAYOUT EMPHASIS

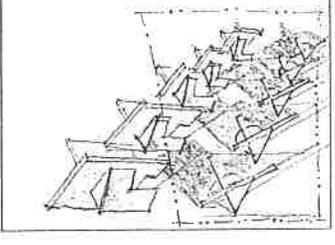
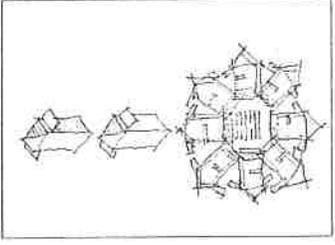
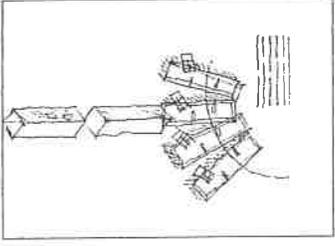
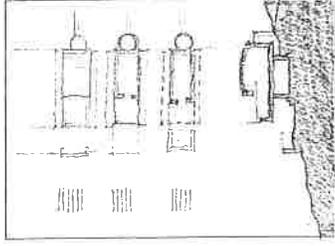
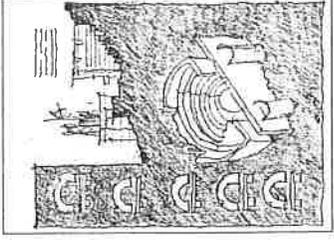
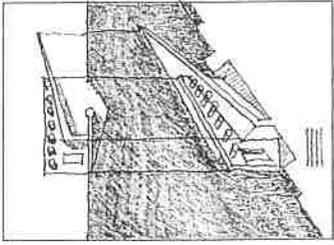
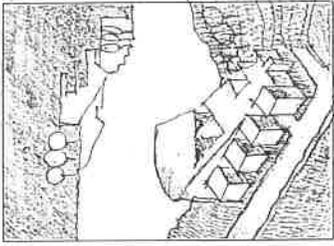
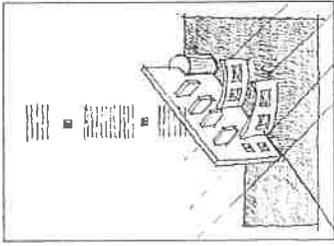
- Composition with Dominant Top
- Composition with Dominant Base
- Composition with Dominant Side
- Composition with Diagonal Emphasis
- Composition with Horizontal Emphasis
- Composition with Vertical Emphasis
- Composition with Focus on a Central (or Point) Area

COMPOSITION AND LAYOUT

PRIMARY MEANS TO COMBINE DRAWINGS

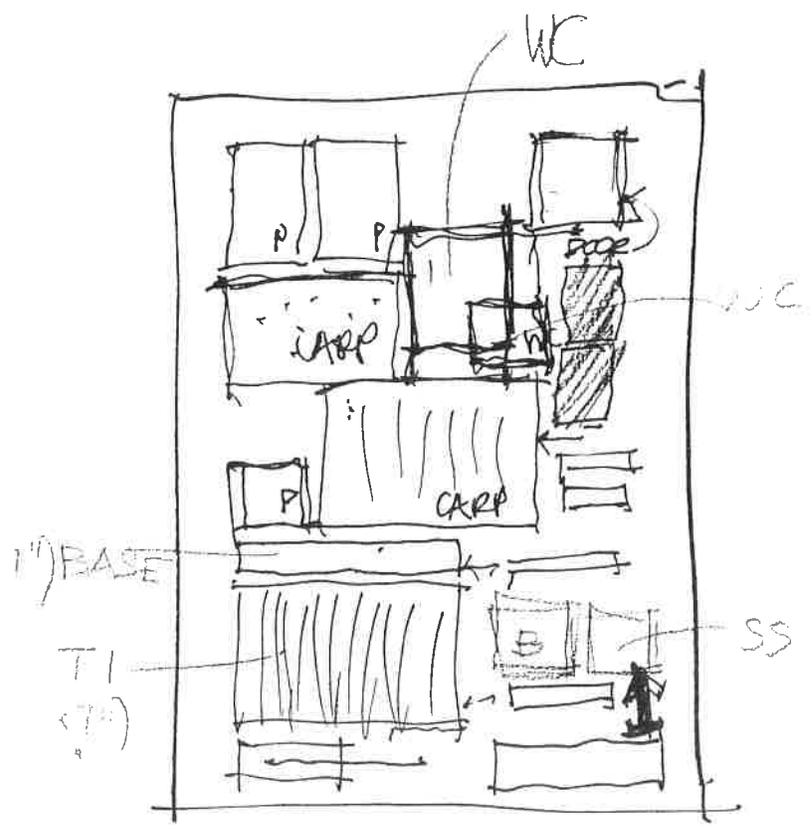
- Using Figure-ground
- Using Background
- Using Dominant Base
- Using Grid
- Using Frame
- Using Frame + Background
- Using Scale Variation
- Using Design Element





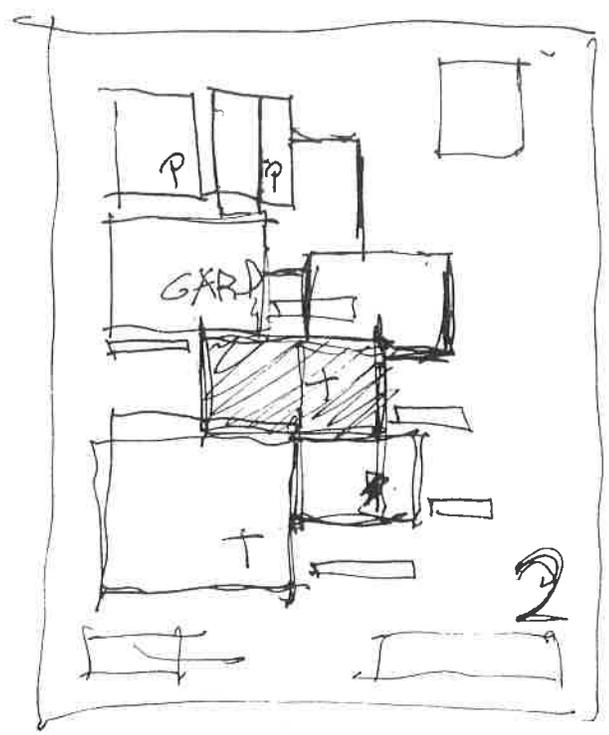
COMPOSITION MOTIF FOR TOTAL PRESENTATION

- Self-contained Composition (Singular Forms, Plural Forms, Compound Forms)
- Composition with Repetition (One-directional, Multi-directional)
- Composition with Radiation (Segmental Radiation, Full Radiation)
- Composition with Gradation (Gradation of Shape, Size, Position, Proportion)
- Composition with Similarity (Repetition, Radiation, Gradation)
- Composition with Concentration (Central, Linear, Planar Concentration)
- Composition with Contrast (Contrast of Placement, Appearance, Quantity)
- Composition with Anomaly (Anomaly in Shape, Size, Color, Texture, Position, Direction)



- 2 CARPETS
- 1 TILE
- 1 BASE
- 2 W.C.
- 2 PAINT
- 1 ACCENT PAINT
- 1 STAIN (WOOD)

SCHEME 1



- 2 TILES
- 1 CARPET
- 2 W.C.
- 2 PAINT
- 1 ACCENT PAINT
- 1 STAIN

10.1.20
17.1.20

INTERIOR DESIGNERS INSTITUTE
440 Senior Studio

Final Boards **40 points**

Name: _____

Project Name: _____

Location: _____

Concept: _____

1. **Vision** (6 points)

- _____ Thematic clarity
- _____ Thematic coherence & consistency
- _____ Compatibility with design criteria

2. **Functionality** (6 points)

- _____ Response to functional requirements
- _____ Consistency with vision & brand identity
- _____ Appropriate elements of physical setting (materials, lighting, furnishings)

3. **Human Impact** (6 points)

- _____ Promotes positive human experience
- _____ Response to user demographics
- _____ Human Factors (ergonomics, proxemics)

4. **Innovation** (6 points)

- _____ Originality & ingenuity
- _____ Use of design principles & concepts
- _____ Attention to detail

5. **Professional-grade Presentation** (8 points)

- _____ Organization & clarity of expression
- _____ Overall graphic quality of presentation

6. **Verbal Presentation** (8 points)

- _____ Organization & clarity of expression

Comments: _____
