

ART 2640, Building Systems of Interior Environments

Fall Semester 2020

Tuesdays & Thursdays 10:30-11:50

Online

Matthew Ziff, Associate Professor

M. Arch, Architect, NCIDQ

E-mail: ziff@ohio.edu

Ceilings and Ceiling Systems

Ceilings

Ceilings are described as being either:

1. tightly attached

or

2. suspended

These are basically the only options for installing a ceiling in a space;

tightly attached means that the ceiling is attached to the underside of the structure directly above:

this could be the underside of the floor above, or the underside of the structural pieces above (such as a floor slab, beams, trusses, bar joists, or other structural elements

or:

the ceiling is suspended from the structure above by a variety of means, such as wires, cables, wood framing, steel framing, et cetera.

So, ceilings are able to be located from the highest available point in a space (like the underside of the floor structure above) down to the allowable code minimum lowest point in a space, which for human occupiable spaces is typically 7'-6" above the finished floor surface.

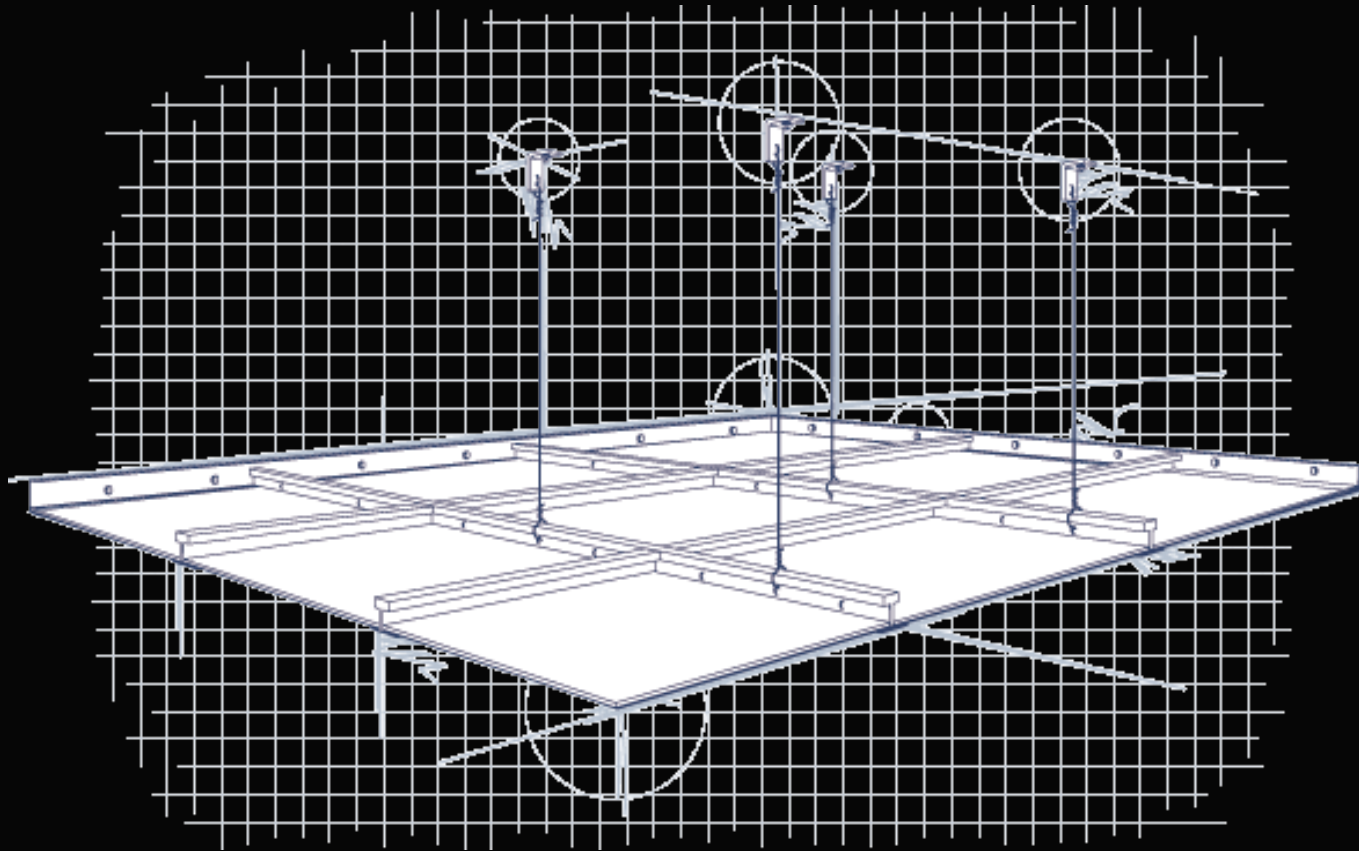
- **Suspended ceilings** always have some amount of space that is open (sometimes very little, sometimes very large) above the ceiling up to the structure above.

Plenum Space

- This space above the suspended ceiling is
- called a **plenum** space.

- this is typically used as a space in which to locate HVAC ductwork, sprinkler pipes, recessed lighting fixtures, electrical conduit, and other systems components

a typical suspended ceiling system:
suspension wires, a metal grid & modular panels



Interstitial Space

- In some large buildings the amount of mechanical equipment is so great that an entire floor space is dedicated to this equipment.
- This kind of mechanical floor space is called an **interstitial** space.
- Hospitals frequently have this type of space because they have a tremendous amount of equipment that provides fluids, gases, and complex heating and cooling needs for a hospital.

Ceiling system manufacturers

- The major manufacturers of ceiling systems in the United States are:
 - US Gypsum
 - Armstrong

Ceilings in commercial spaces

- Ceilings in public, commercial, spaces typically perform many complex functions:
- Spatial definition
- Acoustical control
- Electric lighting
- Daylight interaction: reflection/distribution
- Containment of systems components: hvac, electric wiring, sprinkler pipes, security cameras, speakers
- Fire resistance
- Abuse resistance
- Moisture control
- Visual Aesthetics

Noise Reduction Coefficient (NRC)

- Acoustical control
- Within a space the **Noise Reduction Coefficient (NRC)** of materials expresses that materials' ability to absorb sound.
- For a ceiling panel to be considered 'acoustical' it must have a minimum NRC of .50.
- In an open office area a minimum NRC of .70 is recommended.

Reverberation

- The continuation of sound reflections within a space after the source has ceased.
- [Armstrong Ceiling Systems and Acoustics](#)
- [Armstrong ceiling options](#)
- [Luminous 'stretched' ceiling material](#)
- [Luminous 'stretched' ceilings 2](#)

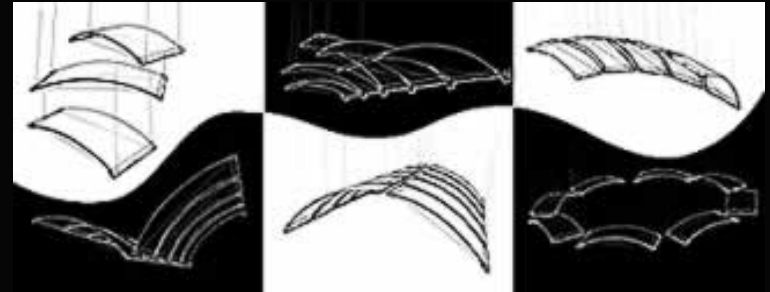
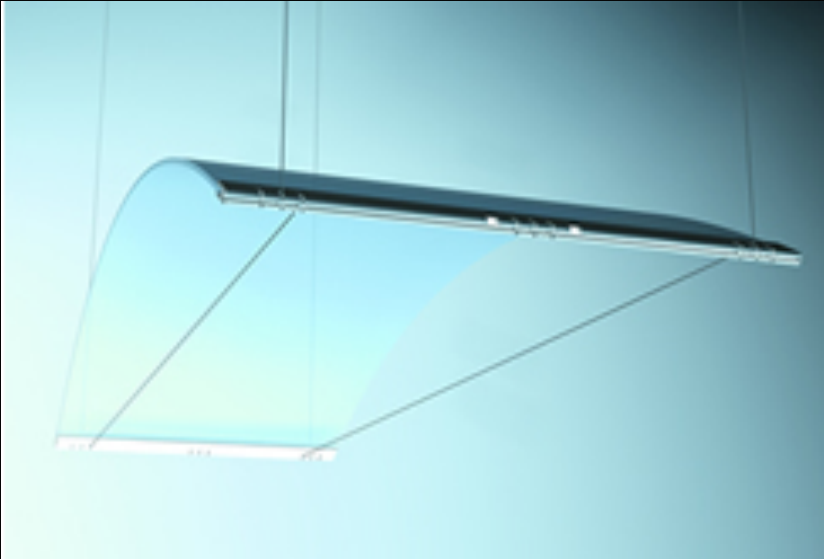
metal ceiling panels



metal panels

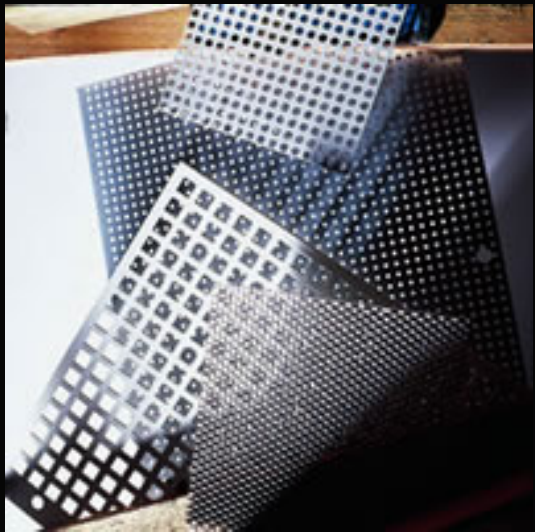


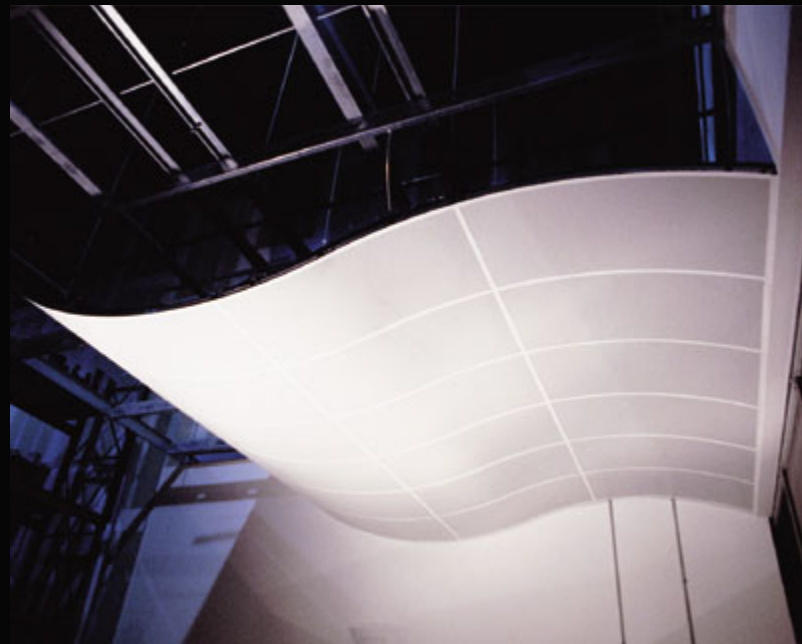
Armstrong 'infusions' accent canopies



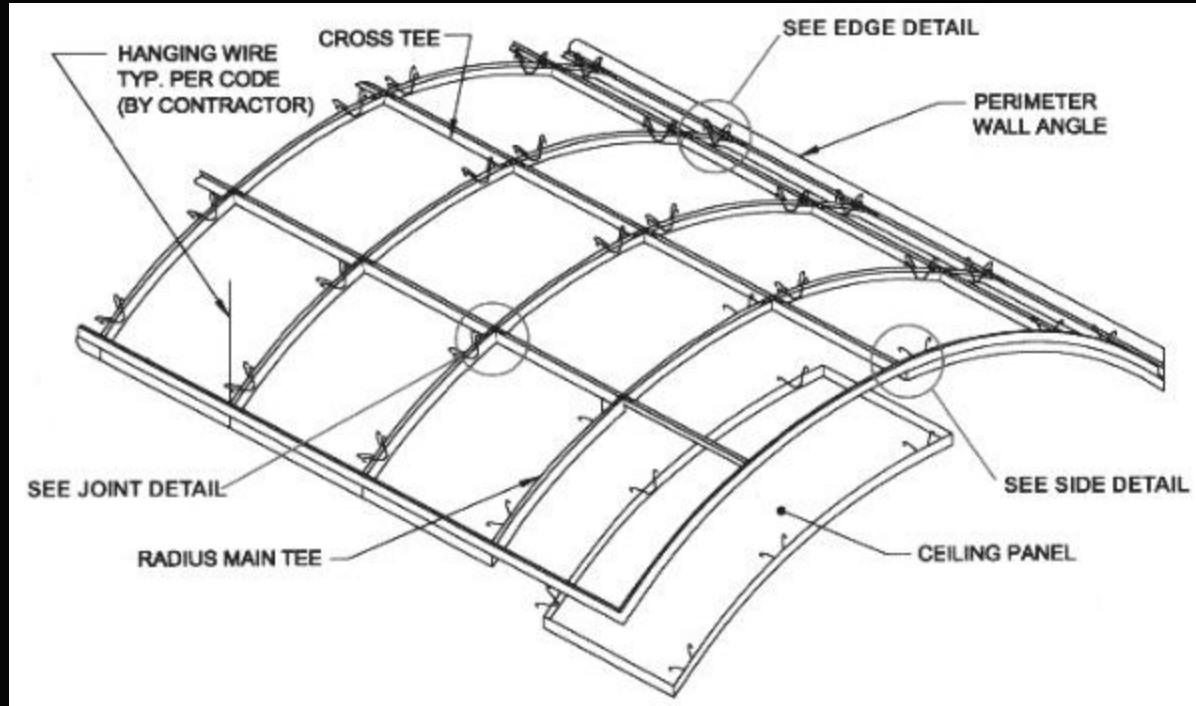
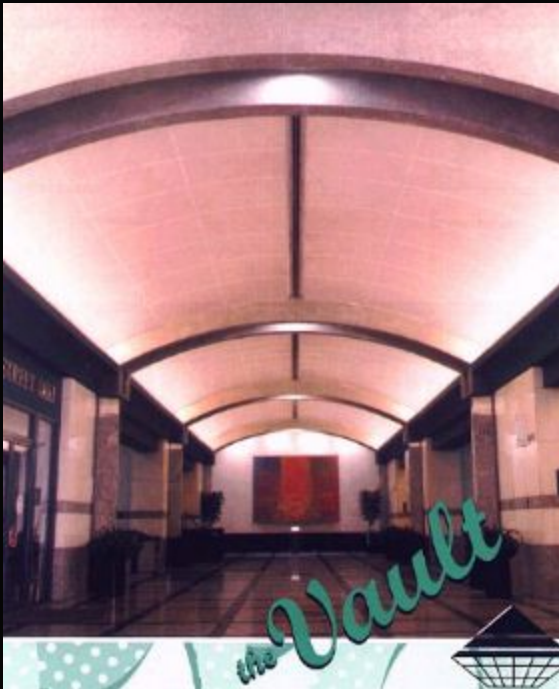
<http://www.armstrong.com/commceilingsna/article7614.html>



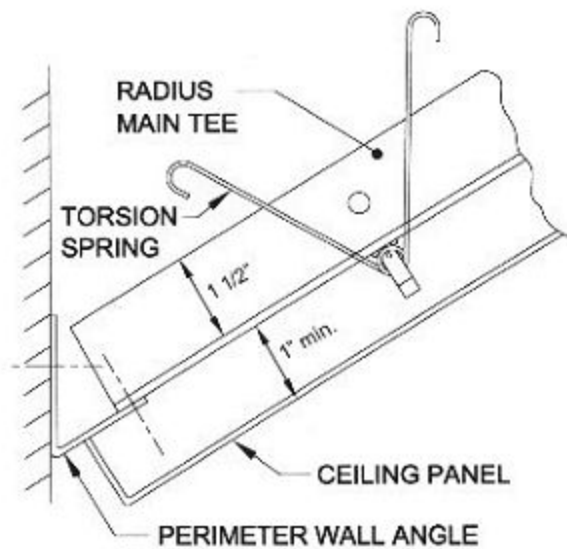




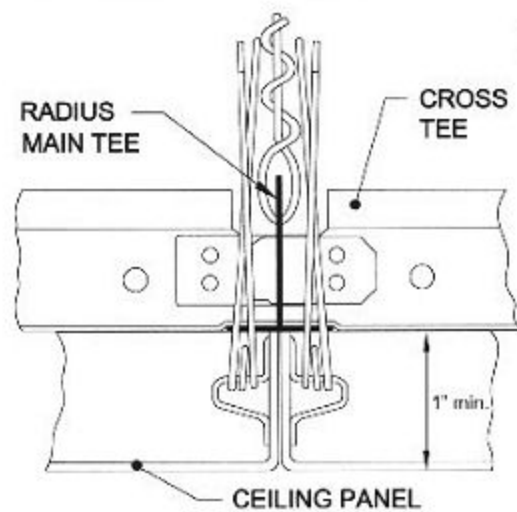




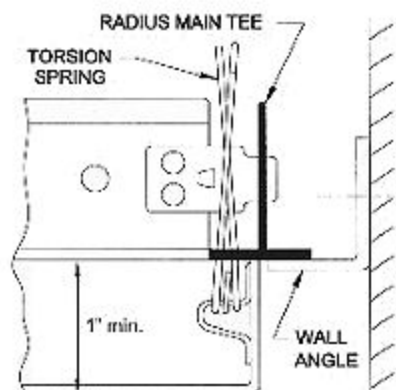
Edge Detail

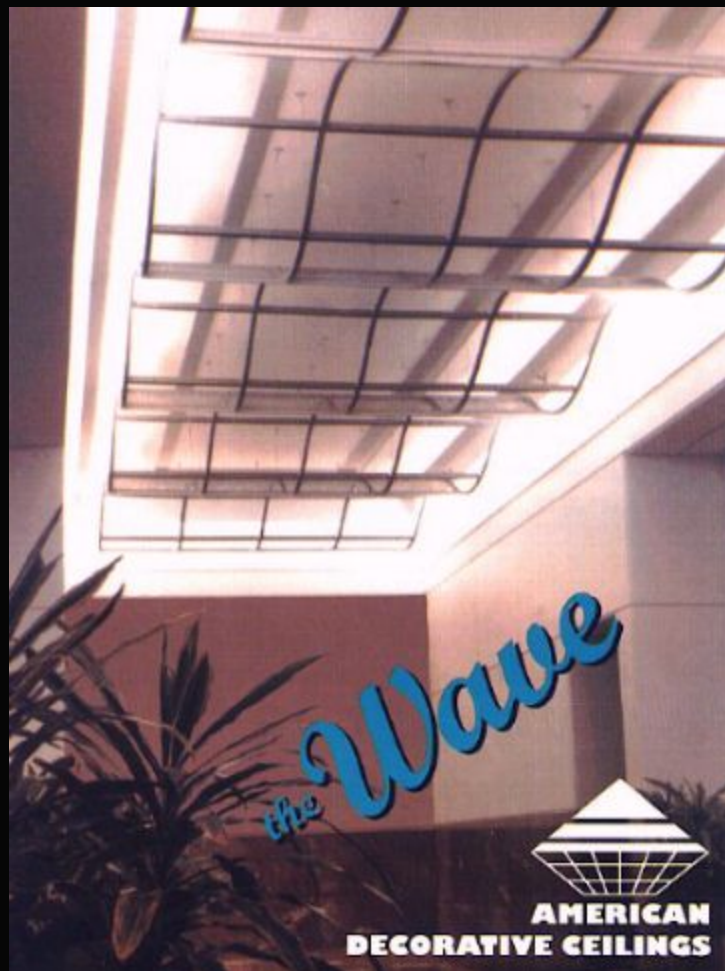


Joint Detail



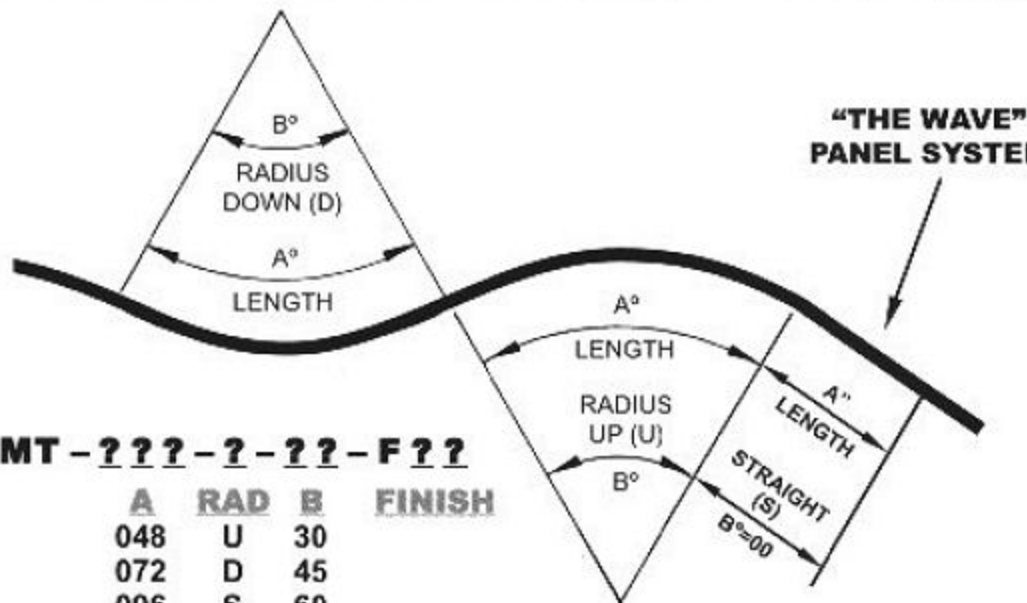
Side Detail





Part Number

"The Wave"

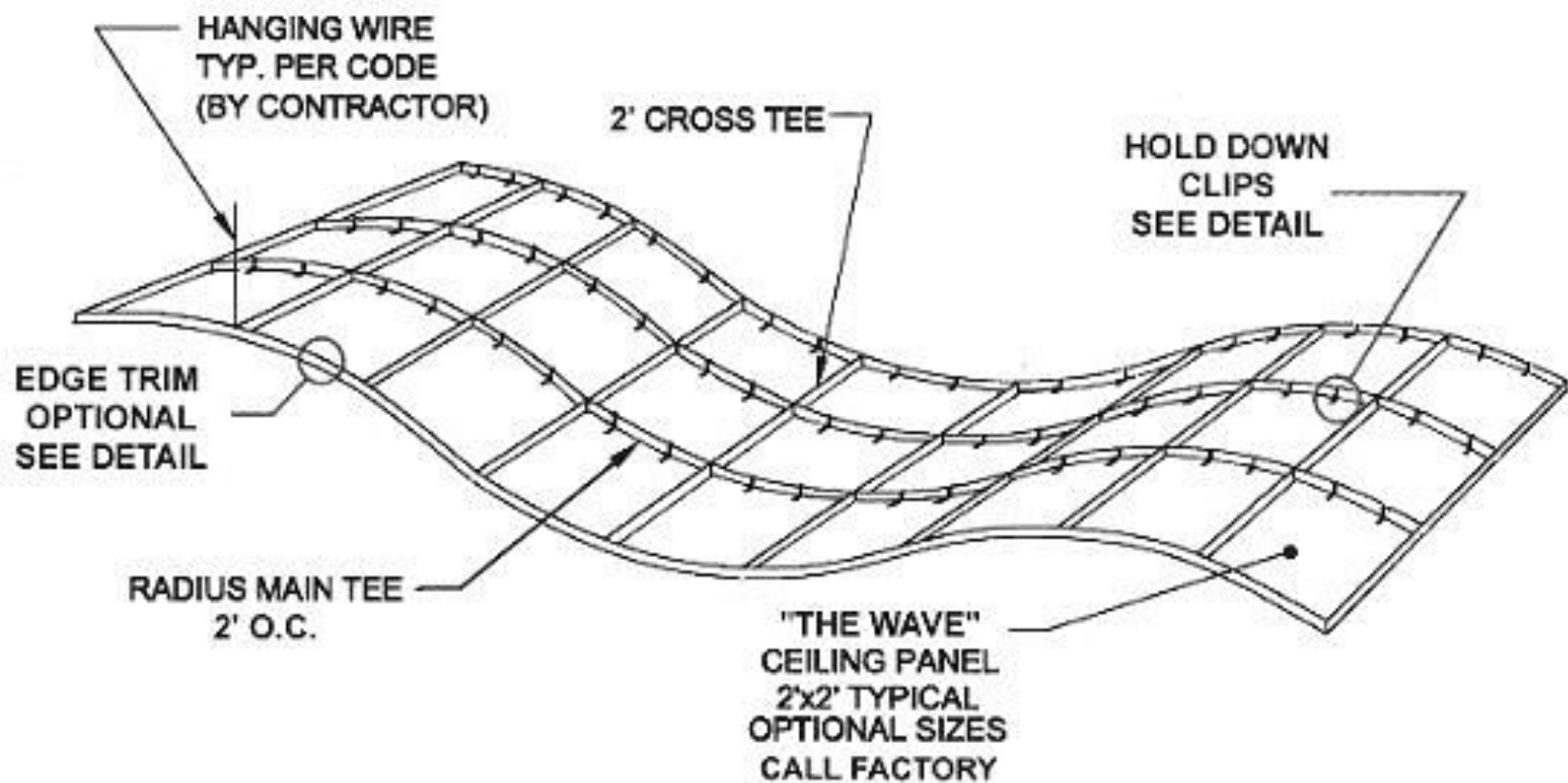


WMT - ??? - ? - ?? - F ??

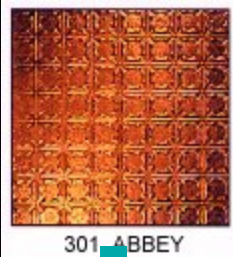
A	RAD	B	FINISH
048	U	30	
072	D	45	
096	S	60	
120		90	
		00	

See specifications for panel data. Contact the factory to discuss options.

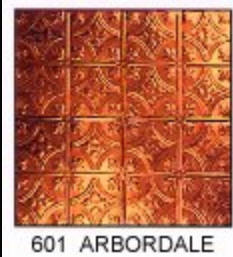
? - Fill in selection from tables.



embossed metal ceiling panels: used with a grid support system



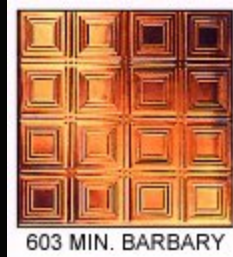
301 ABBEY



601 ARBORDALE



602 BLACKSTONE



603 MIN. BARBARY



604 CHECKERS



2400 ASTORIA



9129 SUN BURST



9241 PHOENIX



9242 SANTA FE



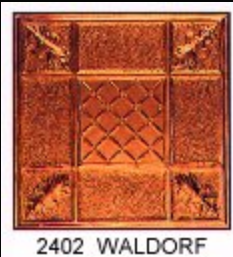
9243 CLOVERLEAF



1210 EDINBORO



1209 NORMANDY



2402 WALDORF



2403 DIAMOND HEAD



2404 DOUBLE DIAMOND



2405 LATTICE



1207 PIZZELLE



1208 DIAMOND HEIGHTS

Ventwood wood ceiling components

