

The Infinity Structural System

For multi-story apartments, condos, lofts, student housing, hotels, and senior living facilities

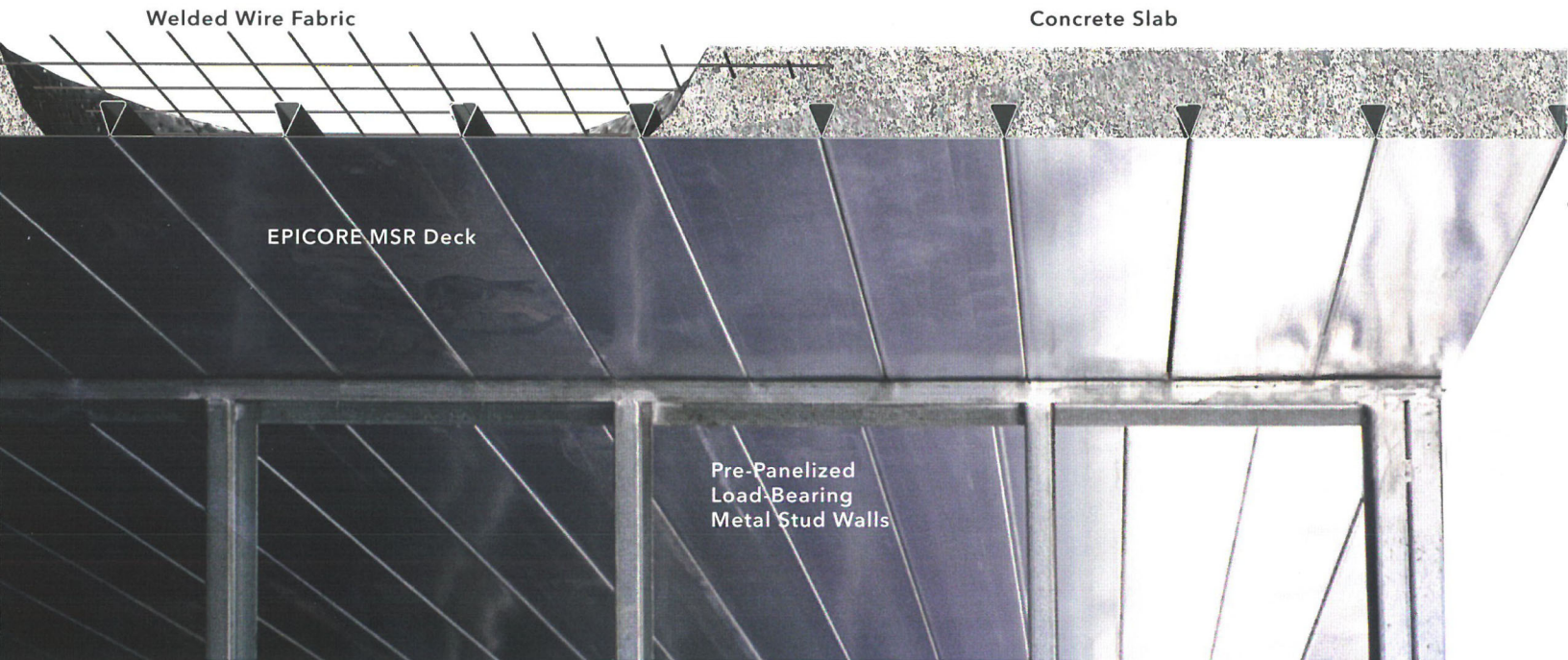


Infinity Structural Systems

The Infinity Structural System consists of the EPICORE MSR® Composite Floor System on pre-panelized load-bearing metal stud walls. Infinity Structures developed The Infinity Structural System in 1986, and has since completed hundreds of mid-rise residential buildings with the system. Over many years and many projects, Infinity has “fine-tuned” the Infinity System, making constant improvements for a more economical, faster, trouble-free and user friendly system. The Infinity System is definitely your most economical structural option once you exceed the height and density capabilities of wood framing, allowing you to go up to ten or twelve stories over your ‘Podium’.



EPICORE MSR



Welded Wire Fabric

Concrete Slab

EPICORE MSR Deck

Pre-Panelized Load-Bearing Metal Stud Walls



22 Gage EPICORE MSR Deck



20 Gage EPICORE MSR Deck

A Limitless Formula

EPICORE MSR Composite Floor System

Expanding upon the success and knowledge gained in over 30 years and several hundred million square feet of the original version EPICORE® deck, EPIC Metals and Infinity Structures introduced the new and improved EPICORE MSR Composite Floor System in 2001. EPICORE MSR is a dramatic improvement over other composite decks when combined with the load-bearing metal stud wall panels to create The Infinity System. EPICORE MSR is a 2" deep, high performance, long span, composite metal deck that acts as both the permanent form and the positive reinforcing. EPICORE MSR has triangular dovetail shaped ribs at 8" on center that key up into the concrete for exceptional strength and span capability. The bottom flutes are completely closed, and every other rib has embossed locking lugs that enhance the interlocking bond between the concrete and the EPICORE MSR deck. These innovative design features combined with the flat bottom profile of EPICORE MSR make it ideally suited for load-bearing metal stud wall panel applications because it inherently distributes loads uniformly over the metal studs (eliminating the need for special load-distribution devices or alignment of joists and studs). The EPICORE MSR System can clear span up to 29 feet with a 4" to 8" slab thickness utilizing 4,000 psi regular weight concrete. (3,000 psi or lightweight may be used if desired; consult Infinity for details).

Load-bearing Metal Stud Wall Panels

The load-bearing metal stud wall panels are 3 5/8" or 6" galvanized studs spaced at 12", 16" or 24" on center. The gage of the studs will vary from 18, 16, 14 or 12 gage depending upon loads, etc. The wall panels are fabricated off-site in a controlled environment using welded connections under very stringent QC requirements to ensure the highest quality available.

Structural Design Assistance

Infinity Structures typically gets involved in a project in the Conceptual or Schematic Design stage and works closely with the Owner, Architect, and Structural Engineer through SD's, DD's, and CD's to ensure the project gets designed efficiently & economically. In most cases, the EOR does the Structural Analysis and design and creates the Structural drawings, with Infinity Structures working in a Design assist capacity throughout the process. However, Infinity can also provide full Structural EOR Design, or Specialty Structural SBE Engineering Design of the Infinity System portion of the building above the transfer slab/podium.

PanelCAD® Detailing Software

An extremely important ingredient in the success or failure of a project is the timeliness and accuracy of the shop drawings. Infinity Structures has developed our own custom in-house wall panel detailing program named PanelCAD. This BIM software is highly automated, faster, more accurate, simplifies modifying panel details after approval comments, improves ease of checking and double-checking, dramatically reduces the opportunity for human error, and automates the material ordering process. Since it is our own software, we are continuously improving PanelCAD for even better efficiency and interfacing with EPICORE MSR as well as structural steel.

Experience & Expertise

In addition to the state-of-the-art components that create The Infinity Structural System, the most important factor that ensures a successful project is the experience and expertise of Infinity's Project Managers, Detailers, Checkers, and Erectors. Infinity's PM's and Detailers are the best in the light gage industry. Infinity's 'Authorized Installers' are highly trained and experienced erection crews that erect exclusively for Infinity Structures.

Infinity Structural System Advantages

The advantages of the Infinity System are as numerous as its versatility in application.



Economical

Lower costs than traditional masonry, steel, precast or formed concrete framing.



U.L. Rated Floor Slab

A 1-hour, 2-hour, or 3-hour, U.L. Fire rating is easily achieved when you pour the concrete on EPICORE MSR since the metal deck and concrete provide the rating. Expensive and restrictive fire-rated ceiling assemblies are eliminated. (UL #D-938)



Reduced Building Height

Maximum ceiling heights may be achieved while actually reducing the building height and exterior skin costs compared to joist or truss systems.



Speed

Fast installation and "dry in" enables quick project completion under tight schedules.



Non-Combustible

Metal stud walls and concrete floor slabs provide a safe, non-combustible building. Compared to wood frame, annual fire insurance premiums will be dramatically less, an annual insurance cost savings lasting the life of the building.



Lower Maintenance

Long-term annual maintenance costs are significantly reduced and the building's lifespan is increased.



Quality/Sound Ratings

Superb STC and IIC ratings provide owners and tenants the highest quality building available. The EPICORE MSR floor is very rigid and not "bouncy" like a joist system.



Uniform Load Distribution

The load distribution characteristics of EPICORE MSR simplify the load-bearing metal stud walls and eliminate the need for expensive load-distribution headers.



Less Weather Sensitive

Construction proceeds smoothly with fewer delays due to severe weather. Wall panels are pre-fabricated off-site in a factory which is not affected by inclement weather.



No Column "Bump Outs"

Rooms have nice straight walls with no unsightly column "bump outs" that interfere with furniture placement.



Ceiling Treatments

You have several economical choices for the finished ceiling with Epicore MSR Deck: Exposed galvanized loft look, painted deck for a tongue and groove look, or a traditional drywall ceiling.



Delivery

Rapid material deliveries ensure the project proceeds uninterrupted for earlier project completion.



Project Management

Infinity's Project Managers and Detailers are the best and most experienced in the cold formed steel industry, ensuring a smooth, trouble-free project.



Preconstruction Design Assistance

Infinity provides Pre-construction Services and Design Assistance from the Conceptual stage through SD's, DD's, and final CD's to ensure that you get a safe, efficient, and economical structure.



High Rise Capability

The Infinity System is capable of going up to 12-stories on top of a Podium which allows the Owners a higher density of units, greatly improving their Pro Forma returns.



Erectors/Installers

Infinity's highly-trained and experienced Erectors install The Infinity System exclusively, with a positive team spirit to get your building topped out fast, usually beating your schedule.



Termites

Compared to wood framing, the risk of termites and the associated costs of prevention or remediation is totally eliminated.



LEED®: Green Buildings

The extensive use of recycled materials contribute toward satisfying many prerequisites and credits under LEED and other "Green Building" criteria.

Infinity Structural System Assembly



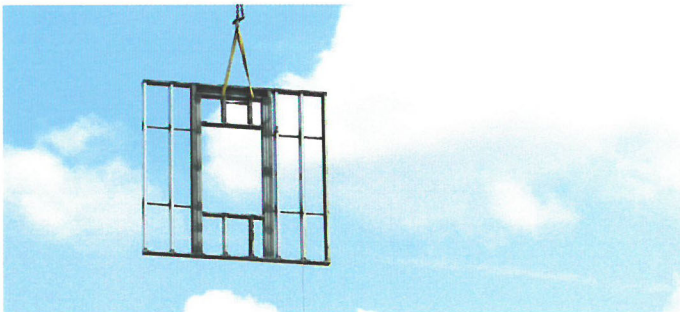
Pre-Panelized Walls

Load-bearing metal stud walls are pre-panelized offsite in a controlled environment using welded connections.



Wall Panel Delivery

Wall panels are tagged, loaded on trailers, and delivered in the proper sequence for fast erection.



Flying Panels into Place

The erector unloads the panels from the truck and sets them on the slab in the location identified by the PanelCAD erection layout drawings.



Lateral Loads / Wind & Seismic

Lateral loads are usually handled by Concrete or CMU stair and elevator cores. Structural steel braced frames or light gage X-strapping may also be used.



EPICORE MSR Composite Deck

The unique dovetail ribs with closed flutes on the underside, pinched down ends at the bearing wall, and embossed locking lugs create the ideal floor system for use with load-bearing metal stud walls.



Ideal Load Distribution

The flat deck profile of EPICORE MSR distributes the load uniformly over the load-bearing metal studs, and provides a seal over the metal stud wall for a good barrier against sound, fire or smoke transfer.



Shoring

Shoring is minimal and installs quickly and easily. Primary shoring may be removed when the concrete reaches 75% design strength. Reshoring remains in place two floors under the primary shoring per approved engineered shoring drawings



Ten to Twelve Story Capability

The Infinity System may be utilized for mid-rise residential projects up to ten or twelve stories (consult Infinity for your specific project).



Reinforcing

The EPICORE MSR slab typically has temperature wire mesh as well as some rebar. The rebar requirements are minimal compared to other flat slab systems.



Blockouts/Sleeves

Slab blockouts and sleeves for M/E/P are simple with EPICORE MSR. Core drilling is also easy with no concerns about cutting into a PT cable, prestress strand, or joist.



EPICORE MSR Slab-Beam

The unique EPICORE MSR slab-beam clear spans open areas with a concrete beam that is the same thickness as the rest of the EPICORE MSR slab so there are no obstructions in the ceiling below.



Slab-Beam (from Below)

The underside of the slab-beam is flush with the bottom of the EPICORE MSR deck. It does not require any fireproofing since it is solid concrete.

APPLICATION:

Apartments, Condominiums, and Lofts

Avoid unsightly column bump outs with The Infinity Structural System.

The Infinity Structural System is the ideal choice for high-rise apartments, condos and urban loft projects where a higher density of units on a confined site is needed. The Infinity System is faster and less expensive than traditional concrete, pre-cast or structural steel frames. Furthermore, it provides a high quality, non-combustible, low-maintenance building with excellent STC and IIC Ratings and a very long building lifespan.

In most cases, high-density high-rise sites require parking under the building, where the Infinity System offers many advantages to the owner and architect. The residential units can be designed efficiently without the constraint of matching the columns to the parking deck layout, and the floor plan won't have unsightly column bump-outs that obstruct furniture placement. Unrestricted column locations allow the parking areas under the building to maximize the number of parking spaces. The upper level of the parking structure (or retail area) is designed as a transfer slab to distribute the loads of the Infinity System to the columns in the parking area.

There are virtually no restrictions on what exterior "skin" can be utilized on a building with the Infinity Structural System. The architect can specify brick, stone, stucco, EIFS, metal siding or other forms of siding.



Ritz Residences, North Hills, NY





Theo 9+CO, Denver, CO



10 West Edge, Charleston, SC



The Caldwell, Lynn, MA

Left: 50 Regent, Jersey City, NJ

APPLICATION:

Student Housing

Quick to produce, long to last, Infinity Structures is a proven solution for residence halls.

The Infinity Structural System is a highly innovative, non-combustible steel and concrete structural framing option for student housing. The Infinity System offers the University unprecedented speed of construction to meet the tight schedules that are typical for student housing projects. The school will enjoy tremendous cost savings from the initial construction budget, long-term maintenance, and dramatically lower annual fire insurance premiums. The Infinity System ensures a high quality building with superior noise isolation from room-to-room and floor-to-floor, as well as longer building life expectancy. The high percentage of recycled material of The Infinity System contribute toward satisfying several of the prerequisites and credits under LEED, and offer the opportunity for the University to build a truly Sustainable "Green" building.

The Infinity System is featured in colleges and universities throughout the United States:

- SCAD, GA
- Baylor University, TX
- Davidson College, NC
- LaGrange College, GA
- University of Arkansas, AR
- Jackson State University, MS
- Morehouse College, GA
- North Carolina Central University, NC
- University of South Carolina, SC
- University of Central Florida, FL
- Virginia Wesleyan, VA
- Georgia Institute of Technology, GA
- Endicott College, MA
- Texas A&M University, TX
- University of Kansas, KS
- Wake Forest University, NC
- UMASS Lowell, MA
- George Mason University, VA
- Mercy College, NY
- Colorado School of Mines, CO
- Highland College, AL
- CU Denver, CO





Colorado School of Mines, Golden, CO



University of Kansas, Lawrence, KS



Savannah College of Art & Design, Atlanta, GA

Left: University of South Carolina, Columbia, SC

APPLICATION:

Hotels

Offering guests a comfortable, quiet, and peaceful night's sleep.

The Infinity Structural System is the best option for hotels up to twelve stories, and has been proven in a couple hundred hotel buildings since 1986. Hotels are typically modular and repetitious, which creates a very economical application for the Infinity System. The speed of construction ensures the owner the earliest possible opening date, reducing the interest cost on the construction loan and generating room revenues earlier. The end result is a high quality, noise-resistant hotel building that will maintain its value and protect the owner's investment for many years to come. The owner will also enjoy substantially lower maintenance costs, dramatically lower insurance premiums, and virtually eliminate the cost and risk of termite problems as compared to a wood framed hotel.



Hilton Garden Inn, Alexandria, VA

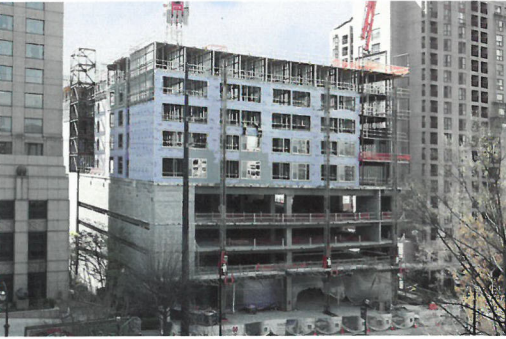


The Harpeth Hotel, Franklin, TN





Hyatt Place-Pena Station, Denver, CO



AC Moxy in Atlanta, GA

Left: The Higgins, New Orleans, LA

APPLICATION:

Senior Housing

Providing safety and comfort for our Greatest Generation.

The Infinity Structural System has been utilized on dozens of senior housing projects and assisted living facilities ranging from 2-stories to 10-stories in height. The system provides a non-combustible, high-quality, noise resistant building that helps ensure the safety of its elderly residents and peace-of-mind for their loved ones. Designers and developers of senior housing projects select the Infinity System for the same reasons described in our Student Housing, Apartments and Condos, and Hotel sections of this brochure: speed of construction, economical initial construction costs, lower long-term maintenance costs, high quality, rigid concrete floors and longer building life expectancy.



St. George CCRC, Roswell, GA



The Somerby, Sandy Springs, GA





The Terraces, New Orleans, LA

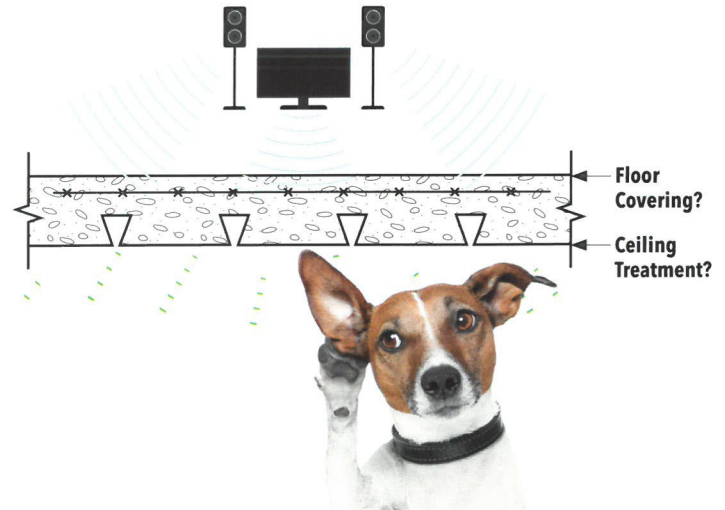


Atria Englewood Senior Living, CO

Left: Vinson Hall, McLean, VA

Sound Transmission Ratings

EPICORE MSR®'s superior sound absorption scores higher in noise control than traditional floor construction.



EPICORE MSR STC Rating: 50-62*

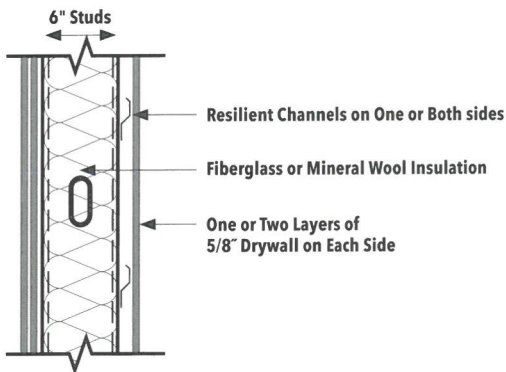
The Sound Transmission Class rating of the EPICORE MSR Floor System has been lab and field tested at STC: 50 to 62. STC ratings will vary depending upon slab thickness, floor covering, ceiling treatment, etc. (Consult Infinity Structures for further details).

EPICORE MSR IIC Rating: 50-90*

The Impact Insulation Class rating of the EPICORE MSR Floor System has been lab and field tested at IIC: 50 to 90. IIC ratings will vary depending upon slab thickness, floor covering, ceiling treatment, etc. (Consult Infinity Structures for further details).

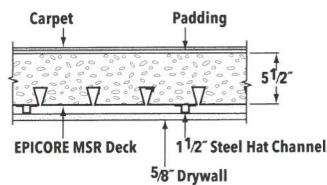
Infinity Wall Panel STC Rating: 51-63

The load-bearing metal stud wall panels have been lab tested to achieve an STC of 51 to 63. The tests were performed on wall panels with 6"-14 gage metal studs at 16" oc with welded connections (exactly like the wall panels on 'real' projects). The STC ratings will vary depending upon number of layers of drywall, resilient channels, and type of acoustical insulation utilized. (Consult Infinity Structures for further details.)



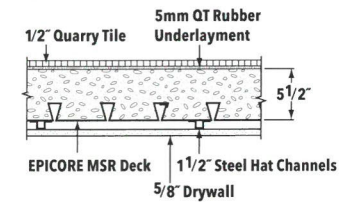
Carpet: Drywall Ceiling

STC=55 IIC=81



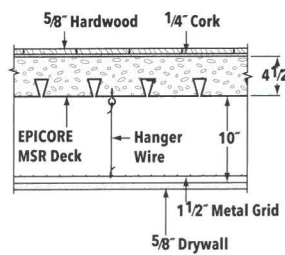
Quarry Tile: Drywall Ceiling

STC=54 IIC=51



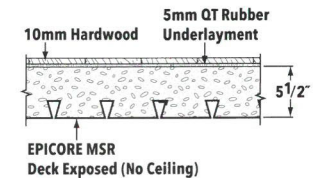
Hardwood Floor: Suspended Ceiling

STC=58 IIC=NT



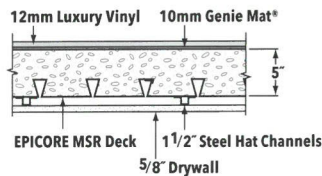
Hardwood Floor: Exposed Deck

STC=51 IIC=53



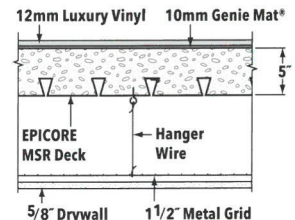
Luxury Vinyl Floor: Drywall Ceiling

STC=52 IIC=52



Luxury Vinyl Floor: Suspended Ceiling

STC=59 IIC=62



*STC and IIC test reports available upon request

U.L. Fire Ratings

EPICORE MSR® U.L. Rating: 1-3 Hours*

The U.L. Fire Ratings for the EPICORE MSR floor system range from 1 hour to 3 hours depending upon slab thickness and type of concrete per U.L. #D-938*. It is important to realize that the fire rating is achieved by the combination of the EPICORE MSR deck and concrete slab and does not require expensive fire rated ceiling membranes like most other "floor/ceiling assemblies."

EPICORE MSR Fire Ratings* (U.L. Design # D-938)

Restrained Fire Rating	Total Slab Depth (in.)	Type and Density of Concrete (pcf)
1 hour	4"	RW (150)
1 hour	3.75"	LW (110)
1½ hours	4.5"	RW (150)
1½ hours	4"	LW (110)
2 hours	5"	RW (150)
2 hours	4.25"	LW (110)
3 hours	6.5"	RW (150)
3 hours	5"	LW (110)

NOTE:
RW = Regular Weight Concrete
LW = Lightweight Concrete



Metal Stud Wall U.L. Rating: 1-3 Hours*

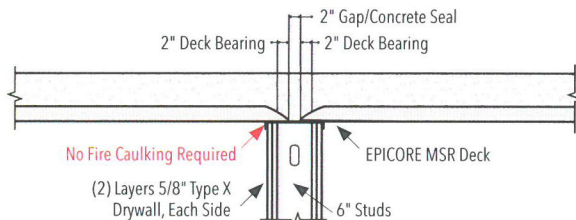
The U.L. Fire Ratings for the load-bearing metal stud walls range from 1 hour (single layer of 5/8" firecode drywall on each side) to 3 hours (multiple layers of firecode drywall) per U.L. #U-423, #U-424, #U-425 and #U-426.

U.L. Head-of-Wall: 2 Hour

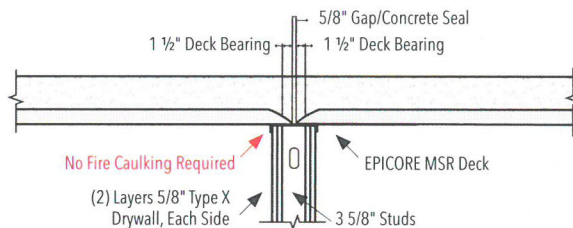
U.L. Assembly #HW-S-0115

Infinity's U.L. Head-of-Wall fire assembly saves substantial time and money on your project. We offer both a 1-Hour and 2-Hour U.L. Head-of-Wall, and neither requires any fire caulking! The unique pinched down ends and closed flutes of the Epicore MSR deck, combined with leaving a gap between deck sheets at the bearing wall, automatically seals up the top of the wall with concrete during the pour. This eliminates transfer of fire, smoke, and even sound across the top of the wall at no extra cost. Our HOW assembly also eliminates having multiple inspections by the building Inspectors prior to covering up the walls with drywall, which helps accelerate the construction schedule.

6" Stud Wall



3 5/8" Stud Wall



*See Underwriters Laboratories, Inc. Fire Resistance Directory for full details.

Ceiling Treatment Options

Various options to suit any interior design.

There are many different ceiling treatment options available with the EPICORE MSR Composite Floor System. Unless the project is an urban loft concept with exposed ductwork, you will have some areas with furred-down ceilings to handle the HVAC, plumbing, sprinkler system, etc. Many architects create tray ceilings, lightwells, or other architectural features to enhance appearances while utilizing the dropped ceiling areas for utility systems. The remaining areas that are not dropped can be handled in several ways depending upon the project type, targeted market, and the architect and owner's desired look. Some of those options are shown here.



EPICORE MSR 20ga Painted



EPICORE MSR 20ga Painted

Painting the EPICORE MSR® Deck

The most economical ceiling finish is to simply paint the underside of the EPICORE MSR deck. Since the EPICORE MSR has closed flutes, there will be a seam every 8" on center creating a tongue and groove effect (similar to a 1 x 8 wood plank ceiling). The EPICORE MSR deck should be thoroughly cleaned with a pre-paint cleaner to remove any oils. A metal prep primer spray (compatible with galvanized metal) is applied, followed by the finished coat of paint. The finish should be a flat non-glossy paint.**

**It is important for the architect or owner to consult Infinity regarding their expectations of the quality level of finish that can be achieved by directly finishing the bottom of EPICORE MSR compared to the potential cost savings. For the highest quality level ceiling finish, it is recommended that drywall be used. (Please consult Infinity Structures for further details.)



Exposed Galvanized Deck (22 Gage)



Hat Channels and Drywall

A common approach is to shoot metal hat channels to the bottom side of the EPICORE MSR deck after the concrete has been poured and then screw drywall to the hat channels (Note that the drywall is not required to achieve the U.L. rating). In an apartment or condo project with a lot of overhead electrical, it is preferable to use 1.5" or 2" hat channels to run the electrical conduit underneath the EPICORE MSR and have enough plenum depth for the conduit and electrical boxes. Electrical conduit and boxes may be placed in the EPICORE MSR slabs; however, using the 1.5" hat channels with the electrical below keeps the electrician out of the critical path, enabling a faster pour schedule. Combining this with the pre-punched holes in the Infinity Wall Panels simplifies the electrician's job, and reduces expenses. The STC rating is slightly higher with drywall ceilings as well.



Exposed Galvanized Deck (20 Gage)

On urban loft projects, the architect may desire to simply leave the bottom of the EPICORE MSR deck as an exposed galvanized finish. Thoughtfully combined with exposed ductwork and sprinkler piping, the exposed EPICORE MSR deck can achieve a high-tech industrial loft look while also providing the cost savings of eliminating the drywall ceilings.

EPICORE MSR® Engineering Tables For 22 Gage Composite Deck

General Notes

All designs are based on the use of regular weight concrete (150 pcf), with a compressive strength of 4,000 psi. Reinforcing steel other than EPICORE MSR shall have a yield strength of 60,000 psi. Maximum allowable deflection under the total load (live + dead) is limited to $L/360$ in all cases. For lightweight and/or 3,000 psi concrete, consult Infinity Structures.

22 Gage

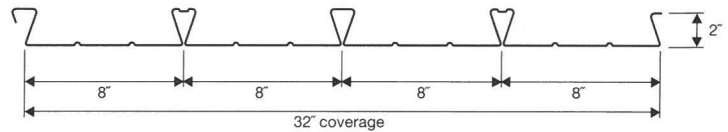


Table 1: Moment Coefficients

<p>Simple Spans</p> <p style="text-align: center;">$wL^2/8$</p>
<p>Continuous Spans – Positive Moments</p> <p>2 Spans</p> <p style="text-align: center;">$wL^2/11$ $wL^2/11$</p> <p>3 or more Spans</p> <p style="text-align: center;">$wL^2/11$ $wL^2/16$ $wL^2/16$ $wL^2/11$</p>
<p>Continuous Spans – Negative Moments</p> <p>2 Spans</p> <p style="text-align: center;">$wL^2/9$</p> <p>3 or more Spans</p> <p style="text-align: center;">$wL^2/10$ $wL^2/11$ $wL^2/10$</p>

Table 2: EPICORE MSR Section Properties

Gage	22
Weight (psf)	2.0
A_s (in. ² /ft.)	0.577
I_s (in. ⁴ /ft.)	0.272
\bar{Y} (in.)	0.476
Yield (ksi)	50

NOTE: Section properties have been computed in accordance with the A.I.S.I. Cold-Formed Steel Design Manual.

Table 3: Shoring/Temperature Mesh Requirements

Slab Depth (in.)	Max Unshored Clear Span (ft.-in.) 22 Gage.	Temperature Mesh Required
4"	5-0	6x6-W2.1xW2.1
4.5"	5-0	6x6-W2.1xW2.1
5"	5-0	6x6-W2.1xW2.1
5.5"	5-0	6x6-W2.1xW2.1
6"	5-0	6x6-W2.1xW2.1
6.5"	4-6	6x6-W2.1xW2.1
7"	4-6	6x6-W2.9xW2.9
7.5"	4-6	6x6-W2.9xW2.9
8"	4-6	6x6-W2.9xW2.9

NOTE: The determination of the time for removal of supporting shores may be controlled by the presence of construction loads or deflection limitation. The removal of shores may have to occur after the concrete has reached its full compressive strength f_c , and modulus E_c and stiffness, particularly in those instances where the construction loads may be as high as the specified live load. If shoring is removed too early, more significant deflection may occur and may even result in permanent damage. The strength and stiffness of the concrete during the various stages of construction should be substantiated by job-constructed and job-cured test specimens (cylinders). See ACI 318 for more information.

Table 4: Maximum Spans For EPICORE MSR 22 Gage (ft.-in.), $f_c = 4000$ psi, Regular Weight

Total Slab Depth (in.)	SIMPLE SPANS (ft.-in.)			CONTINUOUS SPANS (ft.-in.)					
	LL = 40 psf DL = 20 psf	LL = 80 psf DL = 5 psf	LL = 100 psf DL = 5 psf	LL = 40 psf DL = 20 psf		LL = 80 psf DL = 5 psf		LL = 100 psf DL = 5 psf	
				interior span	end span	interior span	end span	interior span	end span
4"	14-0	13-1	12-5	17-3	17-3	16-1	16-1	15-5	15-5
4.5"	15-3	14-4	13-8	18-10	18-10	17-8	17-8	16-11	16-11
5"	16-6	15-6	14-11	20-5	20-5	19-2	19-2	18-5	18-4
5.5"	17-9	16-9	16-1	21-11	21-11	20-8	20-6	19-10	19-2
6"	18-11	17-10	17-0	23-5	23-5	22-1	21-3	21-3	19-11
6.5"	20-1	18-9	17-7	24-10	24-7	23-6	22-0	22-8	20-7
7"	21-2	19-3	18-1	26-2	25-2	24-10	22-7	23-11	21-3
7.5"	21-11	19-9	18-7	27-7	25-9	26-2	23-2	25-3	21-10
8"	22-4	20-3	19-1	28-10	26-3	27-6	23-9	26-7	22-4

NOTES for Tables 4 and 5:

- For simple spans:
 - No reinforcing steel other than EPICORE MSR is required.
- For continuous spans:
 - Reinforcing steel is required over interior supports. See Table 5 for suggested rebar sizes. Table assumes 3/4" concrete cover for reinforcing steel over supports.
 - Spans should be approximately equal with the larger of the two adjacent spans not greater than the shorter by more than 20 percent. See ACI 318.
 - Reinforcing over supports should extend a minimum of $.3 \times L$ on both sides of the supports. See Chapter 12 (ACI 318) Development and Splices of Reinforcement.
- Temperature and shrinkage reinforcement, consisting of welded wire fabric, shall have a minimum area of .00075 times the area of concrete above the top flange of the deck but not be less than the area of 6x6-W2.1xW2.1. See Table 3.
- All listed spans are assumed to be measured from center to center of the supports.

Table 5: Suggested Reinforcing Steel for Continuous Span **22 Gage EPICORE MSR** Slabs with 4000 psi Regular Weight Concrete

Slab Depth (in.)	Slab Span (ft.)	Continuous Spans														
		LL = 40, DL = 20					LL = 80, DL = 5					LL = 100, DL = 5				
		Between Supports		Over Supports			Between Supports		Over Supports			Between Supports		Over Supports		
		WL ² ₁₁	WL ² ₁₆	WL ² ₉	WL ² ₁₀	WL ² ₁₁	WL ² ₁₁	WL ² ₁₆	WL ² ₉	WL ² ₁₀	WL ² ₁₁	WL ² ₁₁	WL ² ₁₆	WL ² ₉	WL ² ₁₀	WL ² ₁₁
4"	14	MSR	MSR	#5@13	#4@9	#4@10	MSR	MSR	#5@10	#5@11	#4@8	MSR	MSR	#6@12	#4@6	#5@10
	15	MSR	MSR	#5@11	#5@13	#4@9	MSR	MSR	#6@12	#4@6	#4@7	MSR	MSR	#5@7	#5@8	#6@13
	16	MSR	MSR	#5@10	#5@11	#4@8	MSR	MSR	#5@7	#6@12	#4@6					
	17	MSR	MSR	#6@12	#5@10	#5@11										
4.5"	14	MSR	MSR	#4@10	#4@11	#4@12	MSR	MSR	#5@11	#5@13	#4@9	MSR	MSR	#5@10	#5@11	#4@8
	15	MSR	MSR	#5@13	#4@9	#4@10	MSR	MSR	#5@10	#5@11	#4@8	MSR	MSR	#6@12	#4@6	#5@10
	16	MSR	MSR	#5@11	#5@13	#4@9	MSR	MSR	#6@12	#4@6	#5@11	MSR	MSR	#5@7	#6@12	#4@6
	17	MSR	MSR	#5@10	#5@11	#4@8	MSR	MSR	#6@11	#6@12	#4@6					
5"	16	MSR	MSR	#5@13	#4@9	#4@10	MSR	MSR	#5@10	#5@11	#5@12	MSR	MSR	#6@12	#4@6	#5@10
	17	MSR	MSR	#5@11	#4@8	#4@9	MSR	MSR	#6@12	#4@6	#4@7	MSR	MSR	#5@7	#6@12	#4@6
	18	MSR	MSR	#5@10	#5@11	#4@8	MSR	MSR	#6@11	#6@12	#4@6	MSR	MSR	#6@9	#5@7	#5@8
	19	MSR	MSR	#6@13	#5@10	#4@7	MSR	MSR	#6@9	#6@11	#6@12					
5.5"	15	MSR	MSR	#4@10	#4@11	#4@12	MSR	MSR	#4@8	#4@9	#4@10	MSR	MSR	#5@11	#5@12	#5@13
	16	MSR	MSR	#4@9	#4@10	#4@11	MSR	MSR	#5@11	#5@12	#5@13	MSR	MSR	#4@6	#5@10	#5@11
	17	MSR	MSR	#4@8	#4@9	#4@9	MSR	MSR	#4@6	#5@10	#5@12	MSR	MSR	#6@12	#4@6	#5@10
	18	MSR	MSR	#5@11	#5@12	#5@13	MSR	MSR	#6@12	#4@6	#5@10	MSR	MSR	#5@7	#5@8	#6@13
	19	MSR	MSR	#4@6	#5@11	#5@12	MSR	MSR	#6@11	#6@12	#4@6	MSR	MSR	#6@9	#5@7	#5@8
	20	MSR	MSR	#6@12	#4@6	#5@11	MSR	MSR	#6@9	#6@11	#6@12					
6"	16	MSR	MSR	#4@9	#4@10	#4@12	MSR	MSR	#5@12	#5@13	#4@9	MSR	MSR	#5@10	#5@11	#4@8
	17	MSR	MSR	#5@13	#4@9	#4@10	MSR	MSR	#5@10	#5@11	#5@13	MSR	MSR	#6@13	#5@10	#5@11
	18	MSR	MSR	#5@12	#5@13	#4@9	MSR	MSR	#4@6	#5@10	#5@11	MSR	MSR	#5@8	#6@13	#5@10
	19	MSR	MSR	#5@10	#5@11	#5@13	MSR	MSR	#6@12	#4@6	#5@10	MSR	MSR	#5@7	#5@8	#5@9
	20	MSR	MSR	#4@6	#5@10	#5@11	MSR	MSR	#5@7	#6@12	#6@13		MSR	#6@9	#5@7	#5@8
	21	MSR	MSR	#6@12	#4@6	#5@10	MSR	MSR	#6@9	#5@7	#6@12		MSR	#6@8	#6@9	#5@7
	22	MSR	MSR	#6@11	#6@12	#4@6		MSR	#5@6	#6@9	#5@7					
6.5"	18	MSR	MSR	#4@8	#4@9	#4@10	MSR	MSR	#5@10	#5@11	#4@8	MSR	MSR	#6@12	#4@6	#4@7
	19	MSR	MSR	#5@11	#4@8	#4@9	MSR	MSR	#6@13	#5@10	#5@11	MSR	MSR	#6@11	#6@12	#4@6
	20	MSR	MSR	#5@10	#5@11	#4@8	MSR	MSR	#5@8	#6@13	#5@10	MSR	MSR	#5@7	#6@11	#6@12
	21	MSR	MSR	#6@13	#5@10	#5@11	MSR	MSR	#5@7	#5@8	#6@13		MSR	#6@9	#5@7	#6@11
	22	MSR	MSR	#6@12	#4@6	#5@10	MSR	MSR	#6@9	#5@7	#5@8		MSR	#6@8	#6@9	#5@7
	23	MSR	MSR	#5@7	#6@12	#4@6		MSR	#6@8	#6@9	#5@7					
7"	19	MSR	MSR	#5@12	#5@13	#4@9	MSR	MSR	#4@6	#5@10	#5@11	MSR	MSR	#6@12	#4@6	#5@10
	20	MSR	MSR	#5@10	#5@12	#5@13	MSR	MSR	#6@12	#4@6	#5@10	MSR	MSR	#5@7	#6@12	#4@6
	21	MSR	MSR	#4@6	#4@7	#5@12	MSR	MSR	#6@11	#6@12	#4@6	MSR	MSR	#6@9	#6@11	#6@12
	22	MSR	MSR	#6@12	#4@6	#4@7	MSR	MSR	#5@7	#6@11	#6@12		MSR	#5@6	#6@9	#6@11
	23	MSR	MSR	#5@8	#6@13	#4@6		MSR	#6@9	#5@7	#6@11		MSR	#6@8	#6@9	#6@10
	24	MSR	MSR	#5@7	#5@8	#5@9		MSR	#6@8	#6@9	#5@7					
	25	MSR	MSR	#6@9	#5@7	#6@12										
7.5"	21	MSR	MSR	#5@10	#5@11	#4@8	MSR	MSR	#5@8	#6@13	#5@10	MSR	MSR	#5@7	#5@8	#5@9
	22	MSR	MSR	#6@13	#5@10	#5@11	MSR	MSR	#5@7	#6@12	#6@13		MSR	#6@9	#5@7	#5@8
	23	MSR	MSR	#6@12	#4@6	#5@10	MSR	MSR	#6@9	#6@11	#6@12		MSR	#6@8	#6@9	#5@7
	24	MSR	MSR	#6@11	#6@12	#4@6		MSR	#5@6	#6@10	#6@11		MSR	#6@7	#5@6	#6@9
	25	MSR	MSR	#5@7	#6@11	#6@12		MSR	#6@8	#6@9	#5@7		MSR	#6@7	#6@8	#5@6
	26		MSR	#6@9	#5@7	#5@8		MSR	#6@7	#6@8	#6@9					
8"	21	MSR	MSR	#5@10	#5@12	#5@13	MSR	MSR	#6@12	#4@6	#5@10	MSR	MSR	#6@11	#6@12	#4@6
	22	MSR	MSR	#4@6	#5@10	#5@12	MSR	MSR	#6@11	#6@12	#4@6	MSR	MSR	#6@10	#6@11	#6@12
	23	MSR	MSR	#6@12	#4@6	#4@7	MSR	MSR	#5@7	#5@8	#6@12		MSR	#6@9	#5@7	#6@11
	24	MSR	MSR	#5@8	#6@13	#5@10		MSR	#6@9	#5@7	#5@8		MSR	#6@8	#6@9	#5@7
	25	MSR	MSR	#5@7	#6@12	#6@13		MSR	#5@6	#6@9	#5@7		MSR	#6@7	#6@8	#6@9
	26	MSR	MSR	#6@9	#6@11	#6@12		MSR	#6@7	#5@6	#6@9		MSR	#6@7	#6@7	#5@6
	27		MSR	#6@9	#5@7	#6@11		MSR	#6@7	#6@8	#6@9					

NOTE: See notes under Table 4 on page 20.

EPICORE MSR® Engineering Tables For 20 Gage Composite Deck

General Notes

All designs are based on the use of regular weight concrete (150 pcf), with a compressive strength of 4,000 psi. Reinforcing steel other than EPICORE MSR shall have a yield strength of 60,000 psi. Maximum allowable deflection under the total load (live + dead) is limited to $L/360$ in all cases. For lightweight and/or 3,000 psi concrete, consult Infinity Structures.

20 Gage

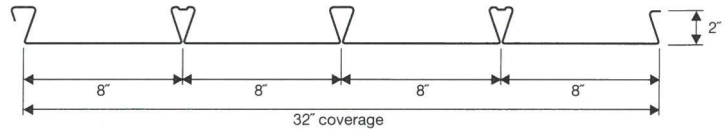


Table 6: Moment Coefficients

<p>Simple Spans</p> <p style="text-align: center;">$wL^2/8$</p>
<p>Continuous Spans – Positive Moments</p> <p style="text-align: center;">2 Spans</p> <p style="text-align: center;">$wL^2/11$ $wL^2/11$</p> <p style="text-align: center;">3 or more Spans</p> <p style="text-align: center;">$wL^2/11$ $wL^2/16$ $wL^2/16$ $wL^2/11$</p>
<p>Continuous Spans – Negative Moments</p> <p style="text-align: center;">2 Spans</p> <p style="text-align: center;">$wL^2/9$</p> <p style="text-align: center;">3 or more Spans</p> <p style="text-align: center;">$wL^2/10$ $wL^2/11$ $wL^2/10$</p>

Table 7: EPICORE MSR Section Properties

Gage	20
Weight (psf)	2.5
A_s (in. ² /ft.)	0.700
I_s (in. ⁴ /ft.)	0.330
\bar{Y} (in.)	0.48
Yield (ksi)	50

NOTE: Section properties have been computed in accordance with the A.I.S.I. Cold-Formed Steel Design Manual.

Table 8: Shoring/Temperature Mesh Requirements

Slab Depth (in.)	Max Unshored Clear Span (ft.-in.) 20 Gage		Temperature Mesh Required
	Exposed Ceilings	Covered by Drywall	
4"	5-0	6-0	6x6-W2.1xW2.1
4.5"	5-0	6-0	6x6-W2.1xW2.1
5"	5-0	5-6	6x6-W2.1xW2.1
5.5"	4-6	5-6	6x6-W2.1xW2.1
6"	4-6	5-6	6x6-W2.1xW2.1
6.5"	4-6	5-0	6x6-W2.1xW2.1
7"	4-0	5-0	6x6-W2.9xW2.9
7.5"	4-0	5-0	6x6-W2.9xW2.9
8"	4-0	5-0	6x6-W2.9xW2.9

NOTE: The determination of the time for removal of supporting shores may be controlled by the presence of construction loads or deflection limitation. The removal of shores may have to occur after the concrete has reached its full compressive strength f'_c , and modulus E_c and stiffness, particularly in those instances where the construction loads may be as high as the specified live load. If shoring is removed too early, more significant deflection may occur and may even result in permanent damage. The strength and stiffness of the concrete during the various stages of construction should be substantiated by job-constructed and job-cured test specimens (cylinders). See ACI 318 for more information.

Table 9: Maximum Spans For EPICORE MSR 20 Gage (ft-in) $f'_c = 4000$ psi, Regular Weight

Total Slab Depth (in.)	SIMPLE SPANS (ft.-in.)			CONTINUOUS SPANS (ft.-in.)					
	LL = 40 psf DL = 20 psf	LL = 80 psf DL = 5 psf	LL = 100 psf DL = 5 psf	LL = 40 psf DL = 20 psf		LL = 80 psf DL = 5 psf		LL = 100 psf DL = 5 psf	
				interior span	end span	interior span	end span	interior span	end span
4"	14-3	13-4	12-9	17-8	17-8	16-6	16-6	15-9	15-9
4.5"	15-7	14-7	13-11	19-3	19-3	18-0	18-0	17-3	17-3
5"	16-10	15-10	15-2	20-10	20-10	19-7	19-7	18-9	18-9
5.5"	18-1	17-1	16-4	22-4	22-4	21-1	21-1	20-3	20-3
6"	19-3	18-3	17-6	23-10	23-10	22-6	22-6	21-8	21-8
6.5"	20-5	19-4	18-8	25-3	25-3	23-11	23-11	23-0	22-6
7"	21-7	20-6	19-9	26-8	26-8	25-4	24-9	24-5	23-3
7.5"	22-8	21-7	20-4	28-0	28-0	26-8	25-4	25-8	23-10
8"	23-9	22-2	20-10	29-4	28-8	27-11	26-0	27-0	24-6

NOTES for Tables 9 and 10:

- For simple spans:
 - No reinforcing steel other than EPICORE MSR is required.
- For continuous spans:
 - Reinforcing steel is required over interior supports. See Table 10 for suggested rebar sizes. Table assumes 34" concrete cover for reinforcing steel over supports.
 - Spans should be approximately equal with the larger of the two adjacent spans not greater than the shorter by more than 20 percent. See ACI 318.
 - Reinforcing over supports should extend a minimum of .3 x L on both sides of the supports. See Chapter 12 (ACI 318) Development and Splices of Reinforcement.
- Temperature and shrinkage reinforcement, consisting of welded wire fabric, shall have a minimum area of .00075 times the area of concrete above the top flange of the deck but not be less than the area of 6x6-W2.1xW2.1. See Table 8.
- All listed spans are assumed to be measured from center to center of the supports.

Table 10: Suggested Reinforcing Steel for Continuous Span **20 Gage EPICORE MSR** Slabs with 4000 psi Regular Weight Concrete

Slab Depth (in.)	Slab Span (ft.)	Continuous Spans														
		LL = 40, DL = 20					LL = 80, DL = 5					LL = 100, DL = 5				
		Between Supports		Over Supports			Between Supports		Over Supports			Between Supports		Over Supports		
		WL ² 11	WL ² 16	WL ² 9	WL ² 10	WL ² 11	WL ² 11	WL ² 16	WL ² 9	WL ² 10	WL ² 11	WL ² 11	WL ² 16	WL ² 9	WL ² 10	WL ² 11
4"	14	MSR	MSR	#5@13	#4@9	#4@10	MSR	MSR	#5@10	#5@11	#4@8	MSR	MSR	#6@12	#4@6	#5@10
	15	MSR	MSR	#5@11	#5@13	#4@9	MSR	MSR	#6@12	#4@6	#4@7	MSR	MSR	#5@7	#5@8	#6@13
	16	MSR	MSR	#5@10	#5@11	#4@8	MSR	MSR	#5@7	#6@12	#4@6					
	17	MSR	MSR	#6@12	#5@10	#5@11										
4.5"	15	MSR	MSR	#5@13	#4@9	#4@10	MSR	MSR	#5@10	#5@11	#4@8	MSR	MSR	#6@12	#4@6	#5@10
	16	MSR	MSR	#5@11	#5@13	#4@9	MSR	MSR	#6@12	#4@6	#5@11	MSR	MSR	#5@7	#6@12	#4@6
	17	MSR	MSR	#5@10	#5@11	#4@8	MSR	MSR	#6@11	#6@12	#4@6	MSR	MSR	#6@9	#5@7	#5@8
	18	MSR	MSR	#6@13	#5@10	#5@11	MSR	MSR	#6@9	#6@11	#6@12					
5"	19	MSR	MSR	#5@8	#5@9	#5@10										
	16	MSR	MSR	#5@13	#4@9	#4@10	MSR	MSR	#5@10	#5@11	#5@12	MSR	MSR	#6@12	#4@6	#5@10
	17	MSR	MSR	#5@11	#4@8	#4@9	MSR	MSR	#6@12	#4@6	#5@10	MSR	MSR	#5@7	#6@12	#6@13
	18	MSR	MSR	#5@10	#5@11	#4@8	MSR	MSR	#6@11	#6@12	#4@6	MSR	MSR	#6@9	#5@7	#5@8
5.5"	19	MSR	MSR	#5@9	#5@10	#5@11	MSR	MSR	#6@9	#6@11	#6@12					
	20	MSR	MSR	#5@8	#6@13	#5@10										
	16	MSR	MSR	#4@9	#4@10	#4@11	MSR	MSR	#5@11	#4@8	#5@13	MSR	MSR	#4@6	#5@10	#5@11
	17	MSR	MSR	#4@8	#5@13	#4@9	MSR	MSR	#4@6	#5@10	#5@12	MSR	MSR	#6@12	#4@6	#5@10
	18	MSR	MSR	#5@11	#5@12	#5@13	MSR	MSR	#6@12	#4@6	#5@10	MSR	MSR	#5@7	#5@8	#6@13
	19	MSR	MSR	#4@6	#5@11	#5@12	MSR	MSR	#6@11	#6@12	#4@6	MSR	MSR	#6@9	#5@7	#5@8
6"	20	MSR	MSR	#6@12	#4@6	#4@7	MSR	MSR	#6@9	#6@11	#6@12	MSR	MSR	#6@8	#6@9	#5@7
	21	MSR	MSR	#6@11	#6@12	#4@6	MSR	MSR	#5@6	#6@9	#6@11					
	22	MSR	MSR	#5@7	#5@8	#6@12										
	16	MSR	MSR	#4@9	#4@10	#4@12	MSR	MSR	#5@12	#5@13	#4@9	MSR	MSR	#5@10	#5@11	#4@8
	17	MSR	MSR	#5@13	#4@9	#4@10	MSR	MSR	#5@10	#5@11	#5@13	MSR	MSR	#6@13	#5@10	#5@11
	18	MSR	MSR	#5@11	#5@13	#4@9	MSR	MSR	#4@6	#5@10	#5@11	MSR	MSR	#5@8	#6@13	#5@10
	19	MSR	MSR	#5@10	#5@11	#5@13	MSR	MSR	#6@12	#6@13	#5@10	MSR	MSR	#5@7	#5@8	#6@12
6.5"	20	MSR	MSR	#4@6	#5@10	#5@11	MSR	MSR	#5@7	#6@12	#6@13	MSR	MSR	#6@9	#5@7	#5@8
	21	MSR	MSR	#6@12	#4@6	#5@10	MSR	MSR	#6@9	#5@7	#6@12	MSR	MSR	#6@8	#6@9	#5@7
	22	MSR	MSR	#6@11	#6@12	#4@6	MSR	MSR	#5@6	#6@9	#5@7					
	19	MSR	MSR	#5@11	#4@8	#5@13	MSR	MSR	#6@13	#5@10	#5@11	MSR	MSR	#6@11	#6@12	#4@6
	20	MSR	MSR	#5@10	#5@11	#4@8	MSR	MSR	#5@8	#6@13	#5@10	MSR	MSR	#5@7	#6@11	#6@12
	21	MSR	MSR	#6@13	#5@10	#5@11	MSR	MSR	#5@7	#5@8	#6@13	MSR	MSR	#6@9	#5@7	#6@11
7"	22	MSR	MSR	#6@12	#6@13	#5@10	MSR	MSR	#6@9	#5@7	#5@8	MSR	MSR	#6@8	#6@9	#5@7
	23	MSR	MSR	#5@7	#6@12	#4@6	MSR	MSR	#6@8	#6@9	#5@7		MSR	#6@7	#6@8	#6@9
	19	MSR	MSR	#5@12	#5@13	#4@9	MSR	MSR	#4@6	#5@10	#5@11	MSR	MSR	#6@12	#4@6	#5@10
	20	MSR	MSR	#5@10	#5@12	#5@13	MSR	MSR	#6@12	#4@6	#5@10	MSR	MSR	#5@7	#6@12	#6@13
	21	MSR	MSR	#4@6	#5@10	#5@12	MSR	MSR	#6@11	#6@12	#4@6	MSR	MSR	#6@9	#5@7	#6@12
	22	MSR	MSR	#6@12	#4@6	#4@7	MSR	MSR	#5@7	#6@11	#6@12	MSR	MSR	#5@6	#6@9	#6@11
	23	MSR	MSR	#5@8	#5@9	#4@6	MSR	MSR	#6@9	#5@7	#6@11	MSR	MSR	#6@8	#6@9	#6@10
7.5"	24	MSR	MSR	#5@7	#5@8	#6@13	MSR	MSR	#6@8	#6@9	#5@7		MSR	#6@7	#6@8	#6@9
	25	MSR	MSR	#6@9	#5@7	#6@12		MSR	#6@7	#5@6	#6@9					
	22	MSR	MSR	#6@13	#5@10	#5@11	MSR	MSR	#5@7	#6@12	#6@13	MSR	MSR	#6@9	#5@7	#5@8
	23	MSR	MSR	#6@12	#4@6	#5@10	MSR	MSR	#6@9	#5@7	#6@12	MSR	MSR	#6@8	#6@9	#5@7
	24	MSR	MSR	#6@11	#6@12	#4@6	MSR	MSR	#5@6	#6@10	#6@11		MSR	#6@7	#5@6	#6@9
	25	MSR	MSR	#5@7	#6@11	#6@12	MSR	MSR	#6@8	#6@9	#5@7		MSR	#6@7	#6@8	#5@6
8"	26	MSR	MSR	#6@9	#5@7	#5@8		MSR	#6@7	#6@8	#6@9					
	27	MSR	MSR	#5@6	#6@9	#5@7										
	22	MSR	MSR	#4@6	#5@10	#5@11	MSR	MSR	#6@11	#6@12	#4@6	MSR	MSR	#6@10	#6@11	#6@12
	23	MSR	MSR	#6@12	#4@6	#4@7	MSR	MSR	#5@7	#5@8	#6@12	MSR	MSR	#6@9	#5@7	#6@11
	24	MSR	MSR	#5@8	#6@13	#5@10	MSR	MSR	#6@9	#5@7	#5@8	MSR	MSR	#6@8	#6@9	#5@7
	25	MSR	MSR	#5@7	#5@8	#6@13	MSR	MSR	#5@6	#6@9	#5@7		MSR	#6@7	#6@8	#6@9
	26	MSR	MSR	#6@9	#6@11	#6@12	MSR	MSR	#6@7	#5@6	#6@9		MSR	#6@6	#6@7	#5@6
27	MSR	MSR	#6@9	#5@7	#6@11		MSR	#6@7	#6@8	#6@9		MSR	#6@6	#6@7	#6@8	
28	MSR	MSR	#6@8	#6@9	#5@7											
29		MSR	#6@7	#5@6	#6@9											

NOTE: See notes under Table 9 on page 22.

EPICORE MSR® Engineering Tables

Table 11: Cantilevered Slabs

Slab Depth [†] (in.)	Span (ft.)	Reinforcing Steel Required Over Supports	
		60 psf Live Load [*]	100 psf Live Load ^{**}
4.5"	6	#4@8	#4@6
	5	#4@13	#4@9
	4	#4@18	#4@14
5"	7	#4@7	#5@7
	6	#4@10	#4@7
	5	#4@14	#4@10
5.5"	4	#4@18	#4@17
	7	#4@8	#4@6
	6	#4@11	#4@8
6"	5	#4@15	#4@12
	4	#4@15	#4@15
	8	#4@6	#5@7
6.5"	7	#4@9	#4@6
	6	#4@12	#4@9
	5	#4@13	#4@13
7"	9	#5@8	#5@6
	8	#4@7	#5@8
	7	#4@9	#4@7
7.5"	6	#4@12	#4@10
	5	#4@12	#4@12
	9	#4@6	#5@7
	8	#4@8	#4@6
	7	#4@11	#4@11
	5	#4@11	#4@11
	10	#5@8	#5@6
	9	#4@6	#5@7
	8	#4@8	#4@6
	7	#4@10	#4@8
	6	#4@10	#4@10
	5	#4@10	#4@10

* 65 psf superimposed
 ** 105 psf superimposed
 † at point of maximum moment

- NOTE:
1. Cantilevered slabs shall be formed with ribs of EPICORE MSR parallel to span.
 2. See Detail 10 on page 26 for general construction of cantilevered slabs.
 3. Table assumes $f_c = 4000$ psi.
 4. Table assumes 1½" concrete cover for reinforcing steel over supports.
 5. All listed spans are assumed to be measured from the center of the supports to the end of the cantilever.



Cantilevered Formed-in-place Balcony

Table 12: Continuous Span Slab Beams

Slab Beam Depth (in.)	Tributary Slab Span (ft.)	Slab Beam Span (ft.-in.)	Reinforcing Steel Required				
			Between Supports		Over Supports		
			+WL ² 11	+WL ² 16	-WL ² 9	-WL ² 10	-WL ² 11
5"	18	10.5	8-#6	8-#4	•	9-#5	8-#5
		10	8-#5	6-#4	9-#5	8-#5	7-#5
		9	5-#5	5-#4	7-#5	7-#5	6-#5
	16	11	8-#6	7-#4	6-#6	9-#5	8-#5
		10	5-#5	5-#4	8-#5	7-#5	7-#5
		9	6-#4	4-#4	6-#5	6-#5	5-#5
	14	11.5	8-#6	6-#4	•	9-#5	8-#5
		11	6-#6	6-#4	9-#5	8-#5	7-#5
		10	5-#5	5-#4	7-#5	6-#5	6-#5
5.5"	18	11.5	9-#6	5-#6	11-#5	7-#6	6-#6
		11	6-#6	5-#5	10-#5	6-#6	8-#5
		10	5-#5	6-#4	8-#5	7-#5	7-#5
	16	12	9-#6	6-#5	11-#5	7-#6	9-#5
		11.5	6-#6	6-#4	10-#5	6-#6	8-#5
		11	6-#5	6-#4	8-#5	8-#5	7-#5
	14	12.5	9-#6	7-#4	10-#5	9-#5	8-#5
		12	6-#6	6-#4	9-#5	8-#5	7-#5
		11.5	6-#5	6-#4	8-#5	7-#5	7-#5
6"	18	12.5	9-#6	6-#6	11-#5	8-#6	7-#6
		12	7-#6	7-#4	11-#5	7-#6	6-#6
		11.5	7-#5	7-#4	10-#5	9-#5	8-#5
	16	13	9-#6	7-#5	11-#5	7-#6	7-#6
		12.5	7-#6	7-#4	10-#5	7-#6	8-#5
		12	5-#6	7-#4	10-#5	8-#5	8-#5
	14	13.5	8-#6	7-#4	8-#6	7-#6	6-#6
		13	6-#6	7-#4	10-#5	6-#6	8-#5
		12.5	5-#6	6-#4	9-#5	8-#5	7-#5
6.5"	20	12.5	8-#6	6-#5	12-#5	8-#6	7-#6
		12	6-#6	5-#5	11-#5	7-#6	6-#6
		11	6-#5	7-#4	9-#5	8-#5	7-#5
	18	13.5	10-#6	7-#6	9-#6	8-#6	7-#6
		13	8-#6	5-#5	8-#6	8-#6	7-#6
		12	7-#5	7-#4	10-#5	6-#6	8-#5
	16	14	10-#6	6-#6	9-#6	8-#6	7-#6
		13	6-#6	7-#4	10-#5	7-#6	8-#5
		12	6-#5	6-#4	8-#5	8-#5	7-#5
7"	20	13.5	9-#6	7-#5	10-#6	8-#6	8-#6
		13	7-#6	6-#5	9-#6	8-#6	7-#6
		12	7-#5	7-#4	10-#5	7-#6	8-#5
	18	14.5	11-#6	8-#6	10-#6	9-#6	8-#6
		14	9-#6	7-#5	9-#6	8-#6	7-#6
		13	5-#6	5-#5	11-#5	7-#6	6-#6
	16	15.5	12-#6	9-#6	10-#6	9-#6	8-#6
		15	10-#6	9-#5	9-#6	8-#6	8-#6
		14	7-#6	8-#4	11-#5	7-#6	6-#6

• Concrete overstressed

- NOTE:
1. Design of slab beam is based on superimposed load of 40 psf LL + 20 psf DL + slab weight and width of 3'-10".
 2. Spans should be approximately equal with the larger of the two adjacent spans not greater than the shorter by more than 20 percent. See ACI 318.
 3. Tributary slab spans must be continuous. See Table 5 on page 21, and Table 10 on page 23.
 4. Reinforcing over supports should extend a minimum of .3 x L on both sides of the supports. See Chapter 12 (ACI 318) Development and Splices of Reinforcement.
 5. See Details 12 and 13 on page 27 for general construction of slab beam system.
 6. All reinforcing is to be equally spaced along the 3'-10" width.
 7. Table assumes $f_c = 4000$ psi.
 8. All listed spans are assumed to be measured from center to center of the supports.

Table 13: Simple Span Slab Beams

Slab Depth (in.)	Epicore MSR Slab Span (ft.)	Slab Beam Span (ft.)	Reinforcing Steel Required Over Supports	
			LL = 40 psf DL = 20 psf	LL = 100 psf DL = 5 psf
5"	12	5	4-#4	4-#4
		6	4-#4	5-#4
		7	4-#4	6-#4
		8	5-#4	7-#5
	14	5	4-#4	4-#4
		6	4-#4	5-#4
		7	5-#4	7-#4
		8	6-#4	8-#6
	16	5	4-#4	4-#4
		6	4-#4	6-#4
		7	6-#4	9-#4
		8	7-#5	•
18	5	4-#4	5-#4	
	6	5-#4	7-#4	
	7	6-#4	8-#5	
	8	9-#5	•	
5.5"	14	5	4-#4	4-#4
		6	4-#4	5-#4
		7	5-#4	6-#4
		8	6-#4	9-#4
	16	5	4-#4	4-#4
		6	4-#4	5-#4
		7	5-#4	7-#4
		8	7-#4	9-#5
	18	5	4-#4	4-#4
		6	4-#4	6-#4
		7	6-#4	8-#4
		8	8-#4	8-#6
20	5	4-#4	5-#4	
	6	5-#4	7-#4	
	7	6-#4	7-#5	
	8	7-#5	•	
6"	16	5	4-#4	4-#4
		6	4-#4	5-#4
		7	5-#4	7-#4
		8	6-#4	9-#4
	18	5	4-#4	4-#4
		6	4-#4	6-#4
		7	5-#4	8-#4
		8	7-#4	7-#5
	20	5	4-#4	4-#4
		6	4-#4	4-#4
		7	6-#4	8-#4
		8	8-#4	9-#5
22	5	4-#4	5-#4	
	6	5-#4	7-#4	
	7	7-#4	9-#4	
	8	6-#5	•	
6.5"	16	6	4-#4	5-#4
		7	5-#4	6-#4
		8	6-#4	8-#4
		9	7-#4	8-#5
	18	6	4-#4	5-#4
		7	5-#4	7-#4
		8	7-#4	9-#4
		9	8-#4	10-#5
	20	6	4-#4	6-#4
		7	6-#4	8-#4
		8	7-#4	7-#5
		9	7-#5	•
22	6	5-#4	6-#4	
	7	6-#4	9-#4	
	8	8-#4	8-#5	
	9	9-#5	•	

Table 13: Simple Span Slab Beams (continued)

Slab Depth (in.)	Epicore MSR Slab Span (ft.)	Slab Beam Span (ft.)	Reinforcing Steel Required Over Supports	
			LL = 40 psf DL = 20 psf	LL = 100 psf DL = 5 psf
7"	18	6	4-#4	5-#4
		7	5-#4	7-#4
		8	6-#4	9-#4
		9	8-#4	7-#5
	20	6	4-#4	6-#4
		7	5-#4	7-#4
		8	7-#4	6-#5
		9	9-#4	9-#5
	22	6	4-#4	6-#4
		7	6-#4	8-#4
		8	8-#4	7-#5
		9	6-#5	•
24	6	5-#4	7-#4	
	7	6-#4	9-#4	
	8	8-#4	•	
	9	8-#5	•	
7.5"	20	7	5-#4	7-#4
		8	7-#4	9-#4
		9	8-#4	8-#5
		10	7-#5	•
	22	7	6-#4	8-#4
		8	7-#4	7-#5
		9	9-#4	8-#5
		10	9-#5	•
	24	6	5-#4	6-#4
		7	6-#4	8-#4
		8	8-#4	7-#5
		9	7-#5	•
26	6	5-#4	7-#4	
	7	7-#4	9-#4	
	8	9-#4	•	
	9	7-#5	•	
8"	20	8	6-#4	9-#4
		9	8-#4	7-#5
		10	7-#5	7-#6
		11	7-#6	•
	22	8	7-#4	6-#5
		9	9-#4	8-#5
		10	7-#5	•
		11	9-#6	•
	24	7	6-#4	8-#4
		8	8-#4	7-#5
		9	6-#5	•
		10	9-#5	•
26	7	6-#4	9-#4	
	8	8-#4	7-#5	
	9	7-#5	•	
	10	7-#6	•	

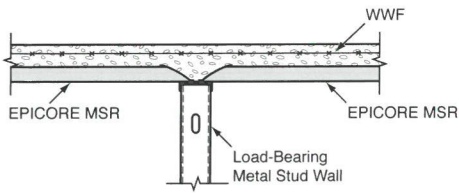
• Concrete overstressed

NOTE:

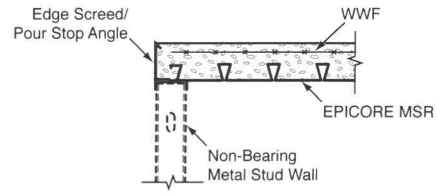
- Epicore MSR Slab Span must be checked against Epicore MSR catalog to ensure that Epicore MSR slab is sufficient.
- Epicore MSR Slab Span must be designed with negative moment resisting steel placed in the top portion of the slab and running through the Slab Beam.
- Epicore MSR Slab Span is measured from center of support to center of slab beam (or from center of slab beam to center of slab beam if Epicore MSR slab is continuous).
- Table assumes the use of Normal Weight Concrete (approx. 150 pcf) and $f'c = 4000$ psi.
- Slab Beam width is 3'-10". Reinforcing steel is to be equally spaced along the 3'-10" width.
- Placement and coverage of reinforcing steel shall be in accordance with the recommendations of the latest edition of ACI-318.
- Vertical shear is based on uniformly end-supported slab beams. If columns and plates are used to support slab beams, punching shear must be checked and the columns and plates must be sized accordingly.

Typical Details*

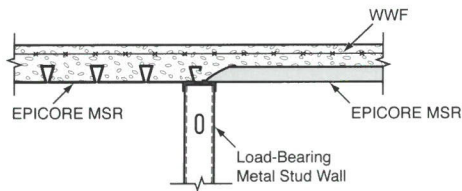
1. Interior Bearing Wall



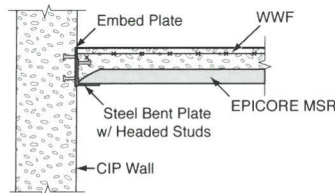
6. End Non-Bearing Wall



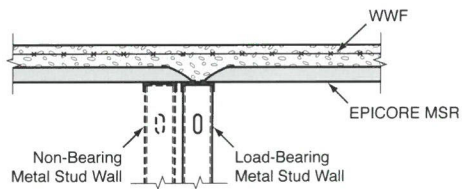
2. Interior Bearing Wall



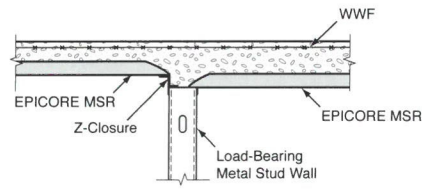
7. EPICORE MSR on Concrete Shear Wall



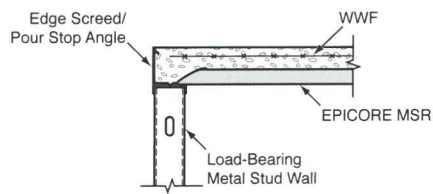
3. Double "Demising" Wall



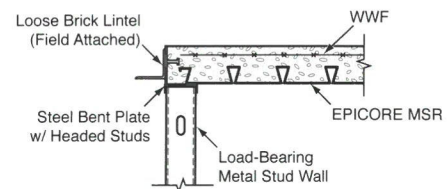
8. Dropped EPICORE MSR Slab



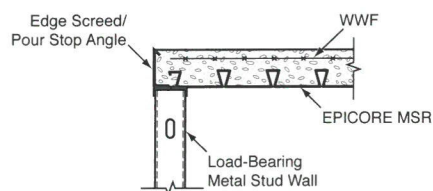
4. End Bearing Wall



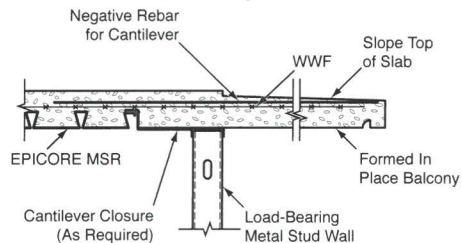
9. Brick Relief



5. End Bearing Wall

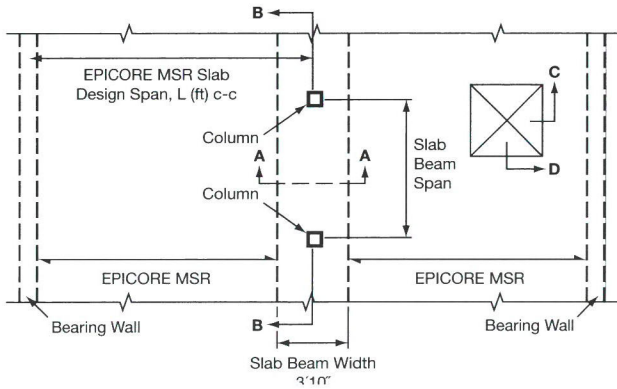


10. Cantilevered Balcony

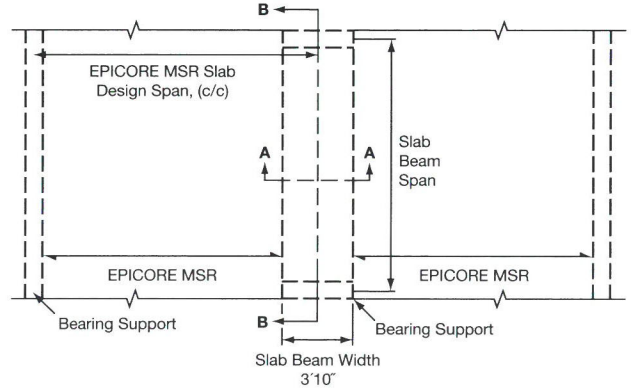


*Details shown are based on simple span design. For Continuous Span Design, negative reinforcing shall be added over bearing (See Table 5 & 10, pages 21 and 23).

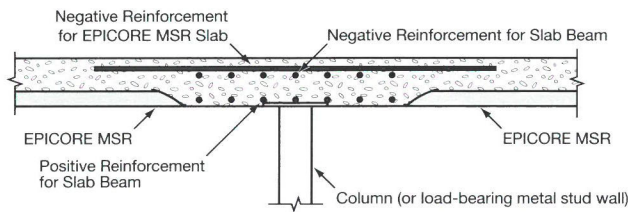
11. Continuous Span Slab-Beam



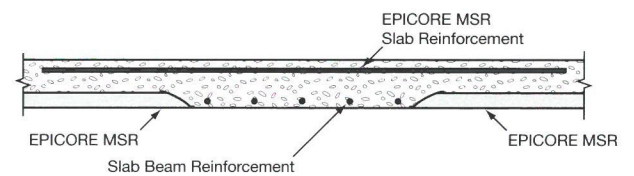
16. Simple Span Slab-Beam



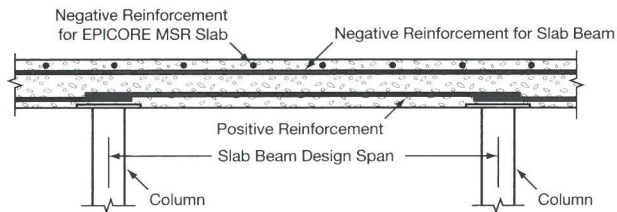
12. Continuous Slab Beam: Section A-A



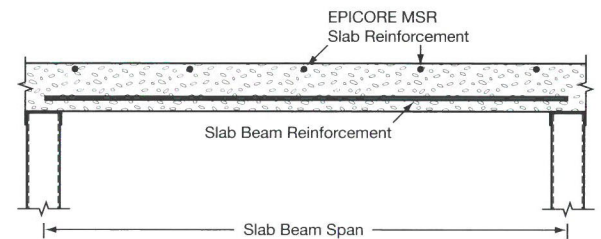
17. Simple Slab Beam: Section A-A



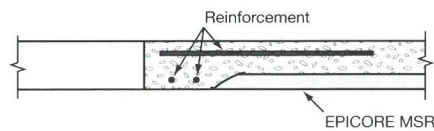
13. Continuous Slab Beam: Section B-B



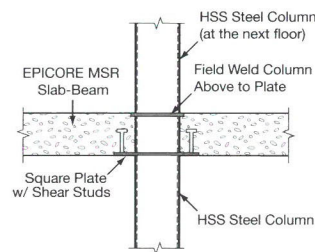
18. Simple Slab Beam: Section B-B



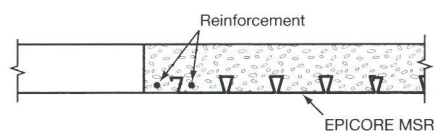
14. Opening Perpendicular to Deck Span: Section C



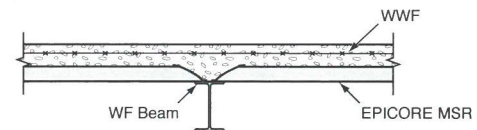
19. HSS Columns @ Slab-Beams



15. Opening Parallel to Deck Span: Section D



20. Steel Beam



NOTE:
Temperature and shrinkage reinforcement is required for all EPICORE MSR Slabs.
See tables 3 and 8, pages 22 and 24.

Designer's Responsibility and Warranty

DESIGNER'S RESPONSIBILITY

The information presented in this brochure has been prepared in accordance with generally recognized engineering principles. We recommend that this information not be used or relied upon for any application without a thorough review by a licensed professional engineer, designer, or architect who shall be competent to evaluate the significance and limitations of this material and who will accept responsibility for the application of this material for any specific application.

Infinity Structures makes no representation or warranty respecting any information contained in this manual, including but not limited to the accuracy, completeness, or suitability of such information for any particular purpose or use.

Infinity Structures expressly disclaims any and all warranties, expressed or implied.

By making this information available, Infinity Structures is not rendering professional services, and assumes no duty or responsibility with respect to any person making use of such information.

In addition, Infinity Structures shall not be liable for any claim, demand, injury, loss, expense, or liability of any kind whatsoever which in any way arises out of or is connected with the use of the information contained in this publication, whether or not such claim, demand, loss, expense, or liability results directly or indirectly from any action or omission of Infinity Structures. Any party using the information contained in this brochure assumes all liability arising from such use.

Since hazards may be associated with the handling, installation, or use of steel and its accessories, prudent construction practices should always be followed. We recommend that the parties involved in such handling, installation, or use review all applicable manufacturer's material safety data sheets, applicable rules and regulations of the Occupational Safety and Health Administration, and other government agencies having jurisdiction over such handling, installation, or use, and other relevant construction practice publications, including the Steel Deck Institute (SDI) Manual for Construction with Steel Deck.

WARRANTY

Infinity Structures warrants that materials to be furnished under this contract, insofar as they are supplied by Infinity Structures, shall be free from structural defects. In the event of the failure of the material within one year from the date of delivery, and providing that such failure is attributed to defects found to have existed at the time of delivery, Infinity Structures' liability hereunder shall be limited to furnishing necessary replacement material. Infinity Structures assumes no liability for damages, losses, or injuries, direct or consequential, that may arise from use or inability to use the products.

Except as herein provided, there are no expressed or implied warranties as to merchantability or fitness of the materials for any particular purpose.



INFINITY STRUCTURES

6250 Shiloh Rd. Suite 210, Alpharetta, GA 30005
678-513-4080

www.infinitystructures.com

