LONG-SPAN COMPOSITE SYSTEMS

Featuring Versa-Dek® Composite

NEW MILLENNIUM
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Building a better steel experience.

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Long-Span Composite Systems

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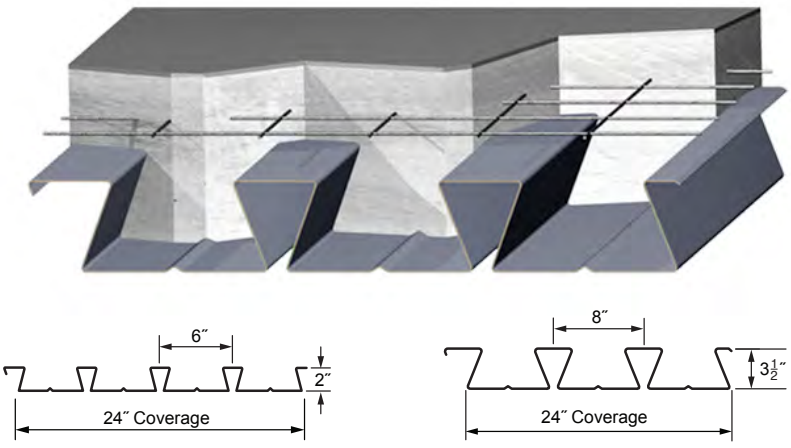
System Overview

Composite Slab Span Tables

For the complete selection of load tables, visit: **www.newmill.com**

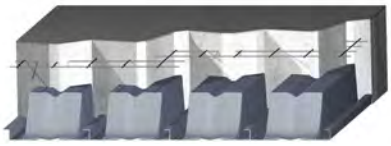
Introduction

Only New Millennium offers you the most complete range of long-span composite systems engineered to optimize the cost and performance of multi-story building projects. System selection should be determined by span, load, fire, vibration and sound control requirements. Additional considerations include aesthetics and overall desired floor depth.

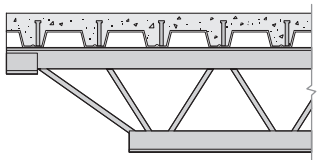


Versa-Dek® 2.0 Composite

Versa-Dek® 3.5 Composite



Deep-Dek® Composite



Composite Joists

Learn more about our long-span composite systems www.newmill.com/longspan

LOW PROFILE, LONG SPAN

Versa-Dek® Composite is a versatile, long-span composite floor system. It's 'dovetail' profiling keys to concrete to create a superior composite bond. Because more concrete is placed in the bottom of the deck, the total slab thickness needed to achieve fire ratings is the shallowest available.

Versa-Dek® Composite is ideal in multi-story residences demanding floor systems that are quiet, stable and cost-effective. Its head-of-wall fire rating eliminates the cost of placing expensive fire sealants in the deck flutes when set over CFS bearing walls. Additionally, Versa-Dek® Composite uniformly loads the top of cold-formed steel walls so distribution headers are not needed.

Versa-Dek® Composite combines cost-savings and competitive advantages applicable to any building market segment. These advantages include space optimization, acoustical control, MEP integration, and underside ceiling aesthetics when left exposed. An acoustical option brings the added advantage of sound dampening, without the addition of a drop ceiling.

Versa-Dek® Composite is formed from steel conforming to ASTM material specifications and corrosion protected with galvanized (zinc) coatings.

Versa-Dek® Composite is versatile and efficient, providing many options for installation, integration, and finish.

For the complete selection of load tables, visit: **www.newmill.com**

Advantages

SPACE OPTIMIZATION

- Low-profile slabs as thin as 4 inches maximize ceiling height and reduce building height
- Spans up to 28' create open interior spaces
- Relocatable Versa-Wedge™ hangers suspend lighting and MEP components

AESTHETICS AND PERFORMANCE

- Sleek, lineal plank ceiling aesthetic
- Galvanized coating weight and factory-applied coating options
- High-performance STC and IIC sound ratings
- Up to 3-hour fire endurance ratings
- UL approved 2-hour Head-of-Wall assembly
- Durable and dimensionally stable

EFFICIENT CONSTRUCTION

- Integrates with any beam or wall construction
- Noncombustible – lower insurance premiums
- Not susceptible to termites, mold or dry-rot
- Traditional means and methods
- No specialized equipment or training
- Allows core drilling flexibility

APPROVALS AND STANDARDS

- ICC ES Evaluation Reports ESR-2635 and ESR-3477
- Compliant with International Building Code (IBC)
- Designed in accordance with AISI S100 and ANSI/SDI C

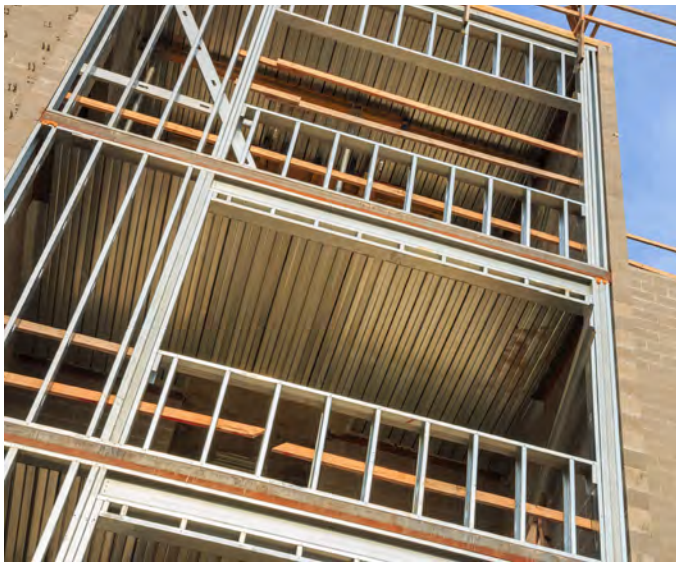
For the complete selection of load tables, visit: **www.newmill.com**

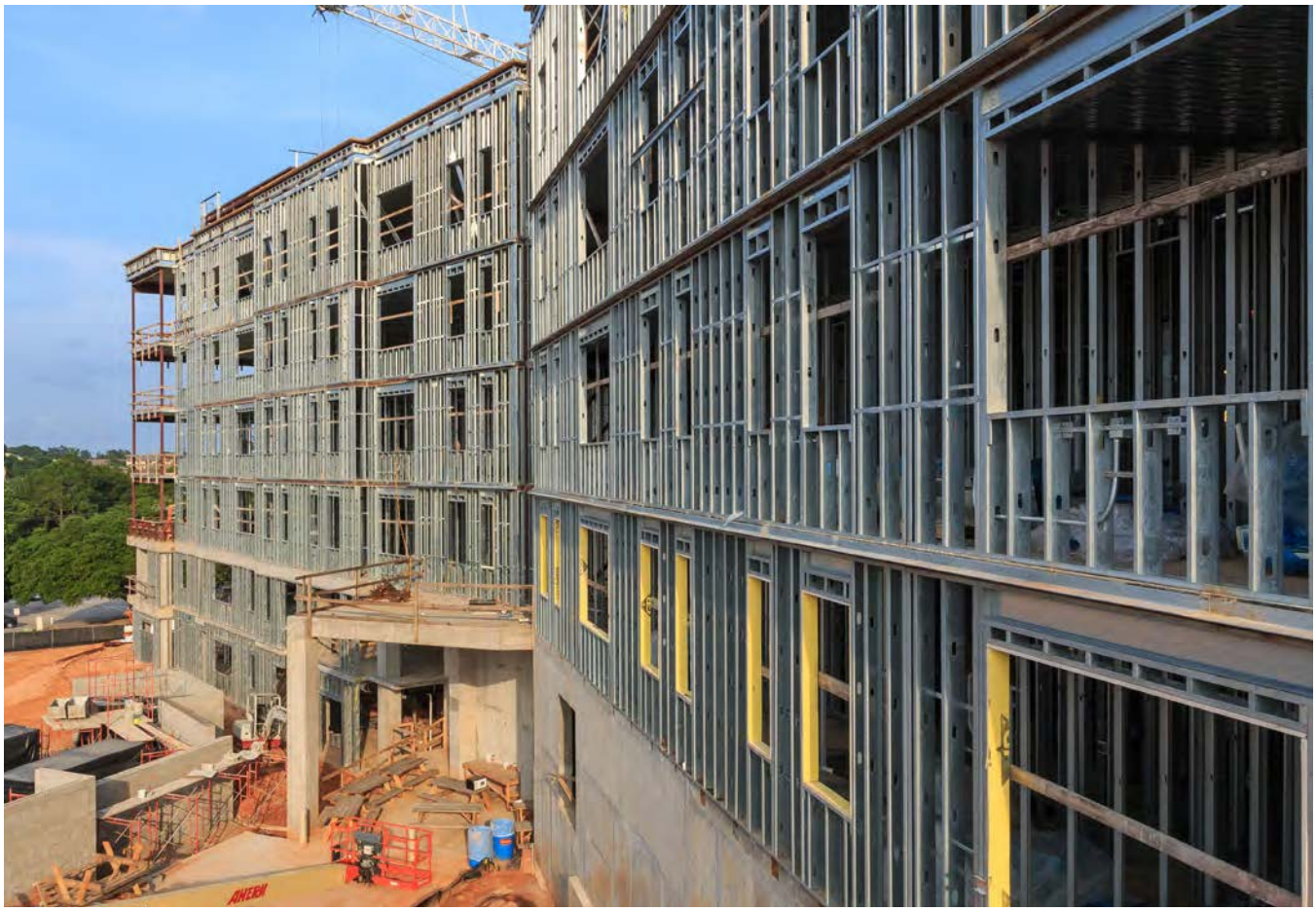
Applications

Managing floor height, fire and sound control, Versa-Dek® Composite is a low-profile floor solution suitable for any building market ... from multi-story residences to healthcare facilities to academics and parking garages. It integrates with any structural system. Engineered floor openings, sleeves and hanging devices streamline MEP installations.

Elan Heights Luxury Apartments | Houston, TX
Low-profile Versa-Dek® Composite maximized living spaces with open spans. Reduced overall building height converts to cost savings for vertical building components (e.g. facades, MEP risers, etc.)

For the complete selection of load tables, visit: **www.newmill.com**





Sam Houston State University Piney Woods Residence Hall | Huntsville, TX
The unique composite bond between dovetail shaped Versa-Dek® Composite and concrete helped create long spans between the exterior and interior corridor walls.

For the complete selection of load tables, visit: **www.newmill.com**

CityPlace in Springwoods Village | Spring, TX

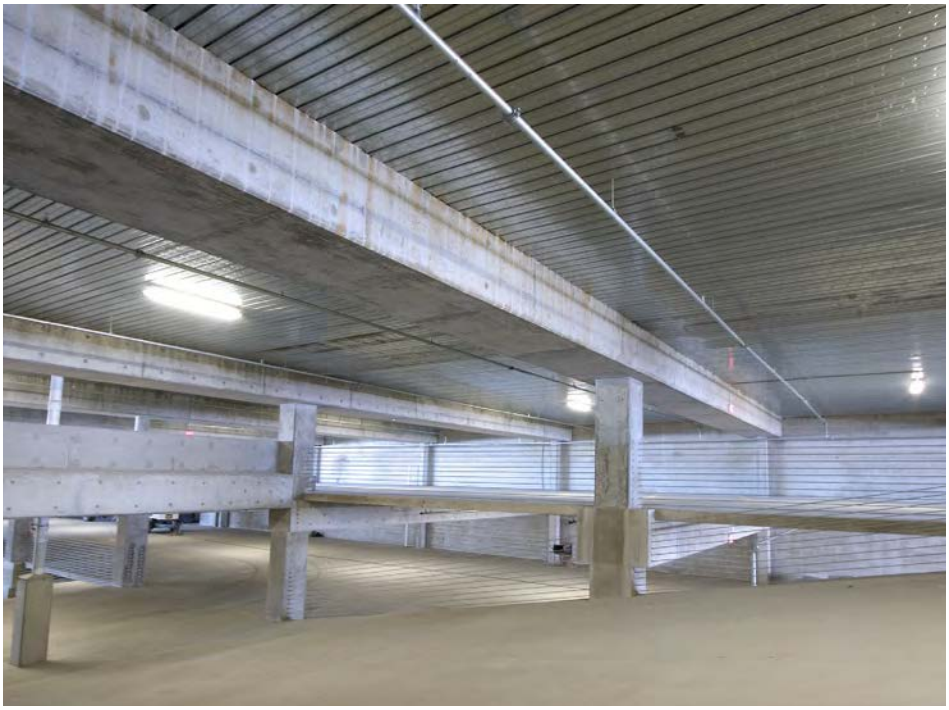
This large residential development featured Versa-Dek® Composite in combination with prefabricated CFS bearing walls and upset steel beams. Integrated concrete balconies tie to the composite slabs.

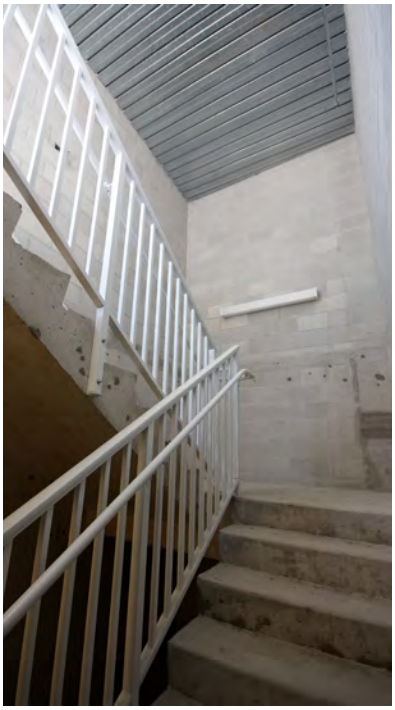
Home2 Suites | Houston, TX

Versa-Dek® Composite provides the shallowest unprotected fire ratings available. It also reduces story height while maximizing ceiling height and providing flexible MEP integration.

For the complete selection of load tables, visit: **www.newmill.com**

1011 M Street | Washington, DC
Building in urban settings presents builders with unique challenges. Here, pre-fabricated CFS bearing walls combined with Versa-Dek® Composite to produce a noncombustible frame built with just-in-time deliveries.





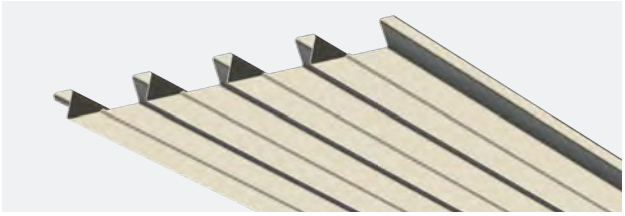
Seaport Channelside Parking Garage | Tampa, FL
This parking garage is a perfect example of the versatility of Versa-Dek® Composite: long spans, concrete beam integration, sloped ramping and durability with enhanced galvanized (zinc) coatings.

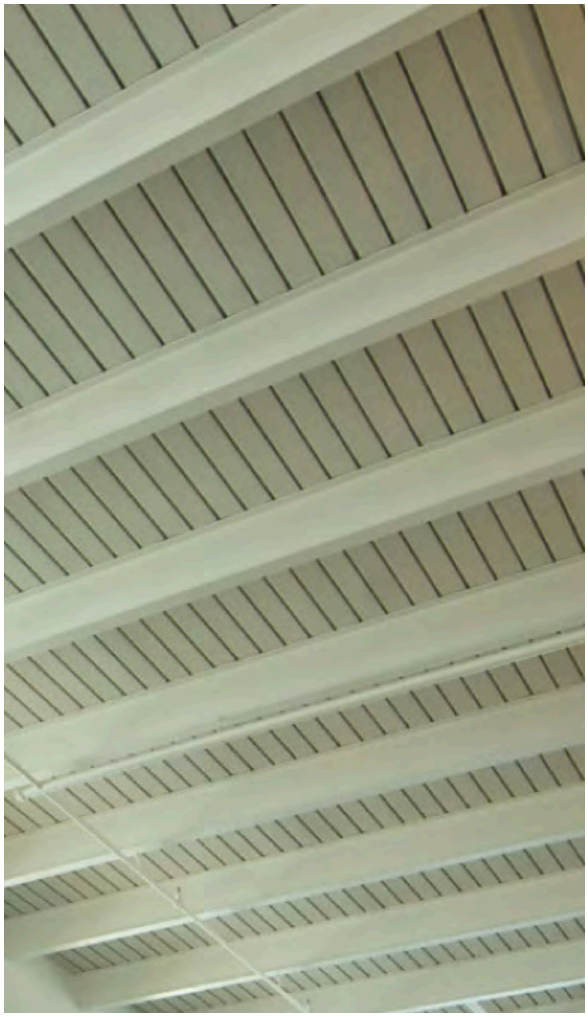
For the complete selection of load tables, visit: **www.newmill.com**

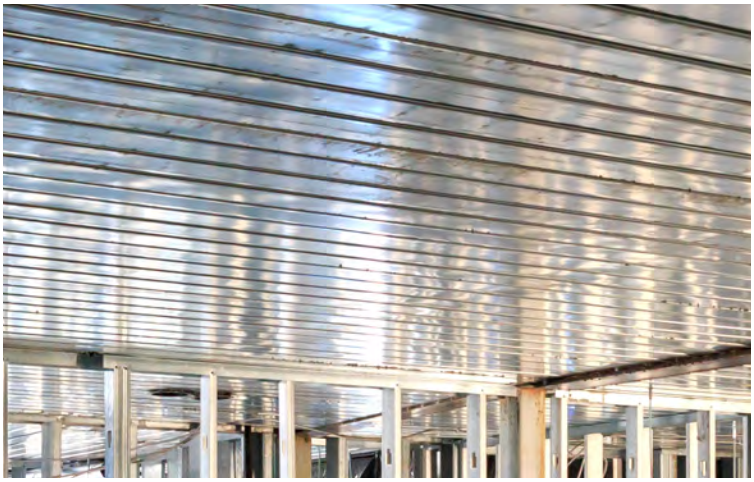
Form and Function

MAXIMIZED AESTHETIC

Reduce costs by eliminating suspended ceilings. Exposed, the dovetail design provides a clean, lineal-plank aesthetic for office, retail and learning environments. Versa-Dek® Composite is non-combustible and is fire-resistance rated up to 3 hours without protective coverings such as gypsum and spray-on materials.

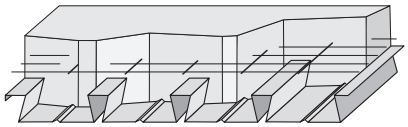


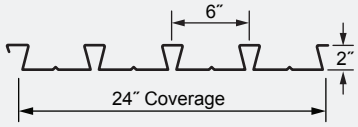




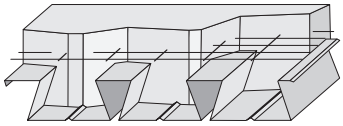
Left architecturally exposed, Versa-Dek® provides a sleek lineal-plank aesthetic that can activate any space.

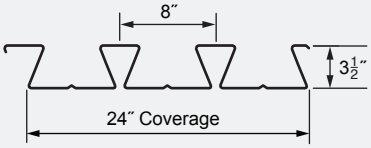
Versa-Dek® 2.0 Composite





Versa-Dek® 3.5 Composite

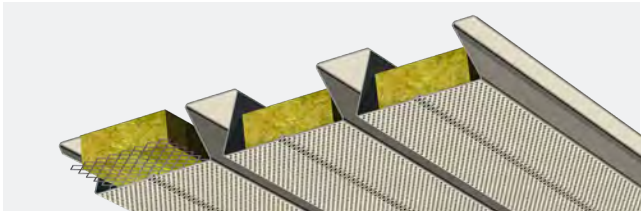




For the complete selection of load tables, visit: **www.newmill.com**

ACOUSTICAL OPTIONS

Acoustical treatments, consisting of sound insulation batts and perforated deck, combined with the deck's shape contribute to noise control. Ambient noise is absorbed in the insulation and dissipates in the deck cavity.



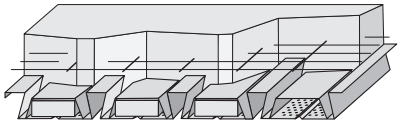
A continuous channel caps and shields the insulation and perforations from wet concrete. Unsightly side-lap screw tips are hidden in the dovetail's shadow. The exposed deck surfaces can be factory primed and readied for field applied finish paint.

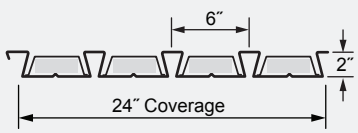
Please visit **www.newmill.com** for load tables covering both Versa-Dek® 3.5 Composite Acoustical and Versa-Dek® 2.0 Composite Acoustical. Load tables in this brochure limited to non-acoustical deck.

Cedar Grove, a Project Frog, Inc. prefabricated building. Photo courtesy of Project Frog, Inc.

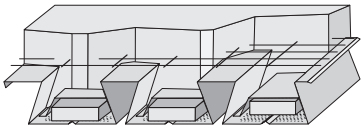
Versa-Dek® 3.5 Composite Acoustical was designed into this 2-story, 12-classroom facility. Incorporating a modular kit delivery method, multi-functioning deck contributes to aesthetics, sound control and light reflectivity.

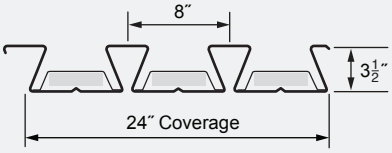
Versa-Dek® 2.0 Composite Acoustical





Versa-Dek® 3.5 Composite Acoustical





For the complete selection of load tables, visit: **www.newmill.com**

CANTILEVERED CONCRETE BALCONIES

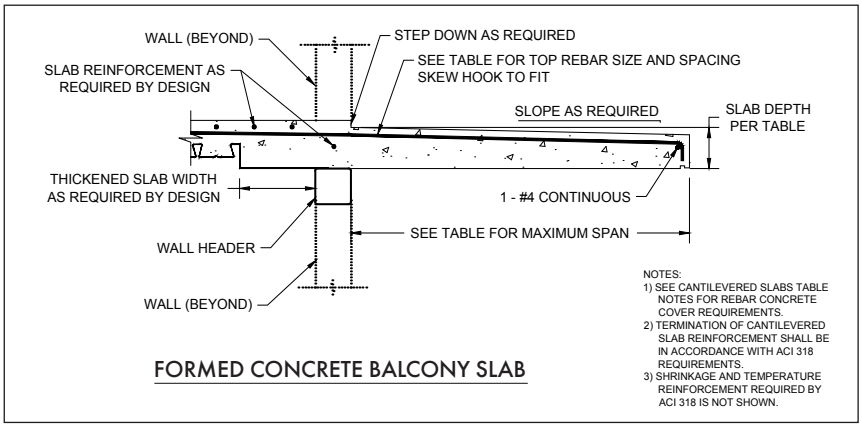
Cantilevered formed-in-place balconies can be integrated into buildings with Versa-Dek® Composite slabs.

Cantilevered Slab Reinforcement Table

Slab Depth (in.)	Maximum Span (ft)	Reinforcing Steel Required Over Supports	
		LL=60 psf SDL=5 psf (102 psf LRFD factored load)	LL=100 psf SDL=5 psf (166 psf LRFD factored load)
4.5	3′-9″	#4@11	#4@11
5	4′-2″	#4@11	#4@11
5.5	4′-7″	#4@11	#4@11
6	5′-0″	#4@11	#4@11
6.5	5′-5″	#4@11	#4@11
7	5′-10″	#4@11	#4@11
7.5	6′-3″	#4@10	#4@10

NOTES:

1. Slab depth shown in the table is at the point of maximum moment.
2. Table is based on f′c=4,000 psi concrete strength.
3. Table is based on 1-1/2″ concrete cover for reinforcing bars over supports.
4. Maximum span length is governed by ACI 318 span-to-depth requirements for cantilevered solid one-way slabs, L/h≥10.
5. The rebar size and spacing are governed either by ACI 318 requirements on rebar spacing for crack control or by the ACI 318 requirements on minimum amount of reinforcement in flexural members.
6. Termination of cantilevered slab reinforcement shall be in accordance with ACI 318.
7. Shrinkage and temperature reinforcement required by ACI 318 is not shown in section cut.



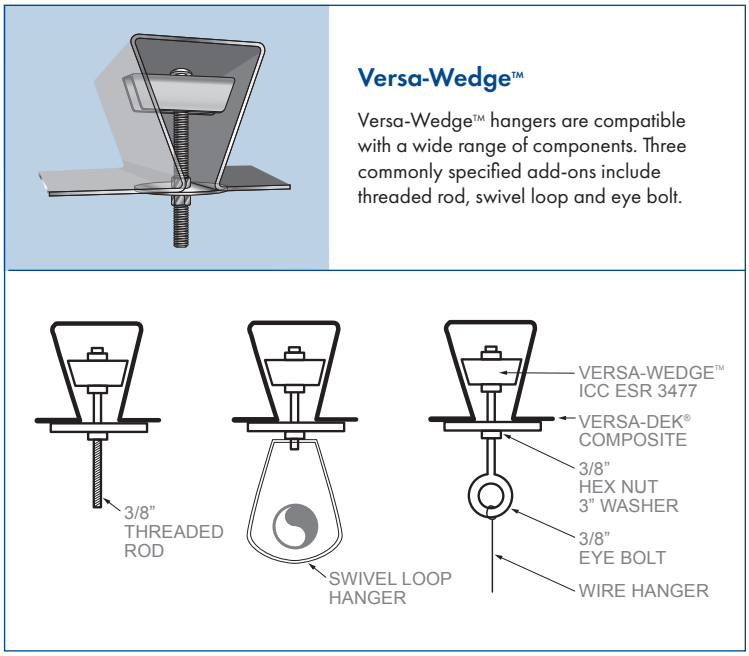
FORMED CONCRETE BALCONY SLAB

For the complete selection of load tables, visit: **www.newmill.com**

VERSA-WEDGE™ HANGER SYSTEM

Versa-Dek® Composite's dovetail profile enables placement of the Versa-Wedge™ hanger system. It's an efficient, clean and economical way to suspend MEP services below the deck. The relocatable hangers are perfect for suspending signs and banners over multi-purpose spaces.

- Quick to install, adjust and relocate on site
- Easy to remove
- Reliably suspends ceilings, light fixtures, MEP and more
- Options for up to 1,000 pound load capacity



Allowable Tension Loads for Versa-Wedge™ Hangers Installed in Ribs of Versa-Dek® Composite

Versa-Dek® Steel Deck Panels			Minimum Concrete Requirements[1]		Versa-Wedge™ Hanger		
Type	Gage	Maximum Panel Span (feet-inch)	Compressive Strength (psi)	Slab Thickness[2] (inch)	Allowable Tension Load (lbf)	Deflection (inch)	Hanger Type[3]
Versa-Dek® 2.0 Composite and Composite Acoustical	20	12′-4″	3500	4	314	0.04	VWT-20-250 VWT-20ES-250
	18	14′-9″			308	0.01	
	16	14′-9″			308	0.01	
	20	15′-4″	3500	6	323	0.01	VWT-20-375 VWT-20ES-375
	18	18′-5″			243	0.01	
	16	18′-5″			243	0.01	
Versa-Dek® 3.5 Composite and Composite Acoustical	20	18′-0″	3500	5.5	691	0.01	VWT-35-375 VWT-35-500
	18	18′-0″			691	0.01	
	16	19′-7″			934	0.01	
	20	20′-9″	3500	7.25	600	0.01	
	18	20′-9″			600	0.01	
	16	23′-9″			1069	0.01	

Refer to ICC-ES ESR-3477, UL File EX16155 and UL File EX16155 for specific hanger application and design requirements, limitations, and load capacities. Proper loading sequence, including any seismic design considerations, shall be determined by the Structural Engineer of Record. Allowable tension loads, in consideration of deck span and gauge and slab properties, may be less than those shown in table. Materials other than the wedge component of the Versa-Wedge™ hanging system are not supplied by New Millennium Building Systems.

[1] Concrete can be either lightweight (110 pcf) or normal-weight (145 pcf) complying with IBC Chapter 19.
[2] Concrete slab thickness is measured from the bottom of steel deck panel to top of concrete.
[3] -250, -375 and -500 designations denote 1/4", 3/8" and 1/2" rod diameters respectively.

For the complete selection of load tables, visit: **www.newmill.com**

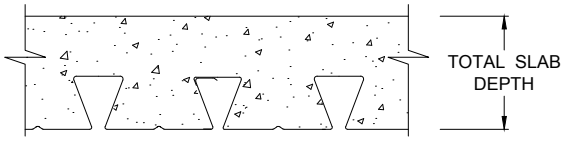
Fire and Sound Performance

Versa-Dek® Composite is UL fire rated for 1 to 3 hours, providing the thinnest slab depth requirement of any composite floor deck assembly.

VERSA-DEK® COMPOSITE FLOOR SLABS

Versa-Dek® 2.0 Composite		
Restrained Assembly Rating	Concrete Type	Total Slab Depth
1	NW	4"
1	LW	4"
1-1/2	NW	4-3/4"
2	NW	5-1/4"
2	SLW	5"
2	LW	4-1/2"
3	NW	6-3/4"
3	LW	5-1/4"
3	SLW	6"

UL Designs – D904, D917, D928, D961



Versa-Dek® 3.5 LS Composite		
Restrained Assembly Rating	Concrete Type	Total Slab Depth
1-1/2	NW	5-1/2"
1-1/2	LW	5-1/2"
2	NW	5-3/4"
2	LW	5-1/2"
3	NW	7-1/4"
3	LW	5-3/4"

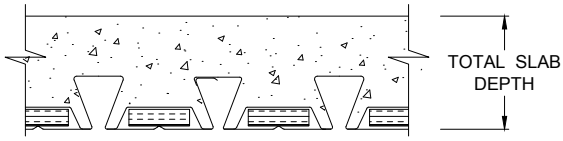
UL Designs – D947, D964

Concrete Type and Density
NW–Normal-Weight 147pcf **SLW**–Semi-Lightweight 130 pcf **LW**–Lightweight 112 pcf

VERSA-DEK® COMPOSITE ACOUSTICAL FLOOR SLABS

Versa-Dek® 2.0 Composite Acoustical		
Restrained Assembly Rating	Concrete Type	Total Slab Depth
1	NW	5-1/2"
1	LW	4-5/8"
1-1/2	NW	6"
1-1/2	LW	5"
2	NW	6-1/2"
2	LW	5-1/4"
3	NW	7-1/4"
3	LW	6-7/16"

UL Design – D929



Versa-Dek® 3.5 LS Composite Acoustical		
Restrained Assembly Rating	Concrete Type	Total Slab Depth
1-1/2	NW	6-3/4"
1-1/2	LW	5-3/4"
2	NW	7-1/4"
2	LW	6"
3	NW	8"
3	LW	6-15/16"

UL Designs – D947, D964

VERSA-DEK® COMPOSITE HEAD-OF-WALL ASSEMBLIES

Our industry exclusive UL tested Head-of-Wall design utilizes staggered deck flute installations to create continuous fire, smoke and sound breaks. Doing this eliminates placing costly (and messy) fire sealants in the open deck flutes.

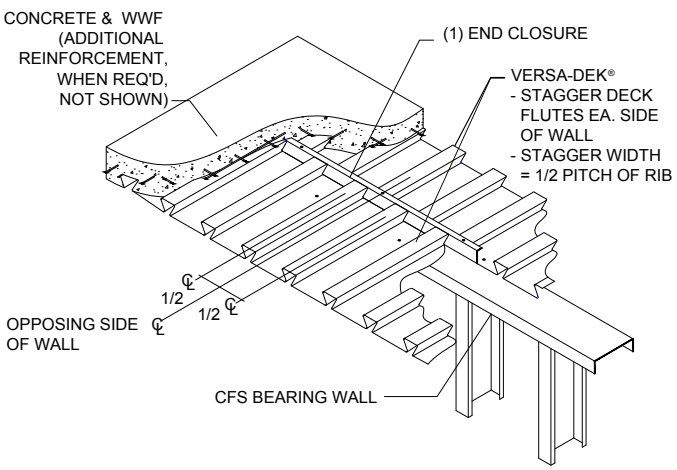
Versa-Dek® 2.0 Composite		
Restrained Assembly Rating	Concrete Type	Total Slab Depth
1 & 2	NW or LW	4-1/2"

UL Designs – HW-S-0062, HW-S-0127

Versa-Dek® 3.5 LS Composite		
Restrained Assembly Rating	Concrete Type	Total Slab Depth
1 & 2	NW or LW	5-1/2"

UL Designs – HW-S-0127

HEAD-OF-WALL FIRE-SMOKE-SOUND BREAK



For the complete selection of load tables, visit: **www.newmill.com**

ESTIMATED STC & IIC RATINGS OF VERSA-DEK® COMPOSITE FLOOR ASSEMBLIES

STC	IIC	
+0	+40	ADD 44 oz. WOVEN CARPET & ⅜" FOAM RUBBER PAD
+0	+25	ADD 20 oz. COMMERCIAL CARPET (GLUE DOWN)
+0	+21	ADD LAMINATE or HARD WOOD FLOORING OVER 6mm RUBBER SOUND MATT
+2	+1	1" ADD PER INCH THICKNESS CONCRETE TOPPING
51	24	**BASE SYSTEM:** 3-¼" NWT CONCRETE OVER 2" VERSA-DEK COMPOSITE TOTAL DEPTH: 5-¼"
		BASE SYSTEM: 2-¼" NWT CONCRETE OVER 3-½" VERSA-DEK COMPOSITE TOTAL DEPTH: 5-¾"
+1	+4	GYPSUM BOARD CEILING NOT RESILIENTLY SUSPENDED
+10 to 12	+8	GYPSUM BOARD CEILING RESILIENTLY SUSPENDED
+13 to 15	+13	ADD MIN. 2" THICK ACOUSTICAL INSULATION BATTS TO ASSEMBLY ABOVE

Notes:
1. Consult component manufacturers for information regarding sizes, types, spacings and/or installation requirements for all collateral flooring and ceiling materials.
2. STC values for base systems (bare slabs) were calculated as STC=0.1304*W+43.48 in accordance with Section 9.2 of PCI Design Handbook, 6th Edition.
3. IIC values for base systems (bare slabs) were calculated as IIC=(19.4+0.5*h)+(0.02+0.0036*h)*W. The formula was derived from the data published in Section 9.2 of PCI Design Handbook, 6th Edition.
4. Reference Architectural Acoustics handbook by David Egan for acoustical enhancements provided by floors and ceiling materials.

ACOUSTICAL PERFORMANCE

Versa-Dek® Composite serves as the base system of sound-absorption-rated floor assemblies. Collateral flooring and ceiling treatments enhance the ratings.

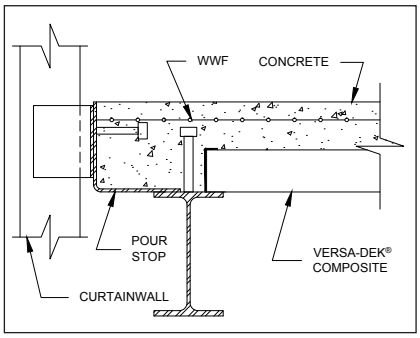
STC refers to Sound Transmission Class. Generally, the STC rating reflects how well the floor assembly reduces airborne noise (energy loss) between spaces.

IIC refers to Impact Insulation Class. IIC rating measures the floor assembly's ability to isolate impact footfall noise between spaces.

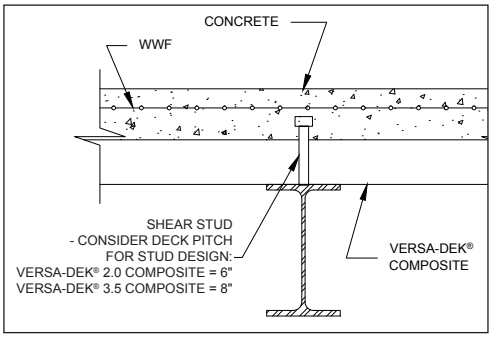
Flooring and ceiling componentry type, arrangement and installation will influence acoustical performance. Decoupling, damping and flanking techniques should also be considered in noise reduction strategies.

System Integration – Construction Details

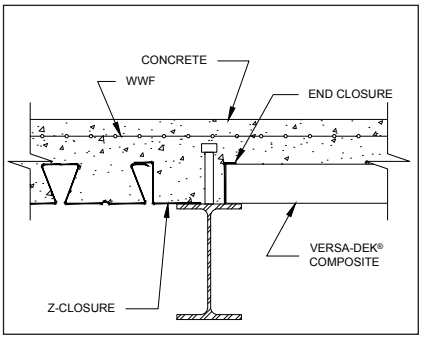
STEEL BEAM



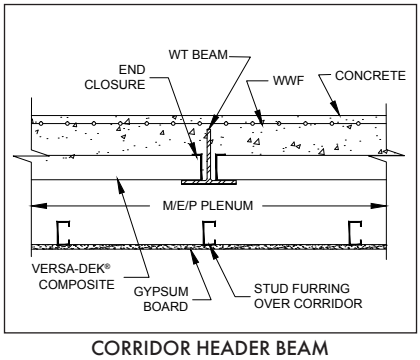
EXTERIOR BEAM



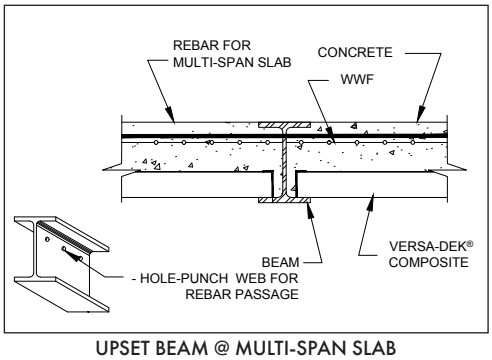
INTERIOR BEAM



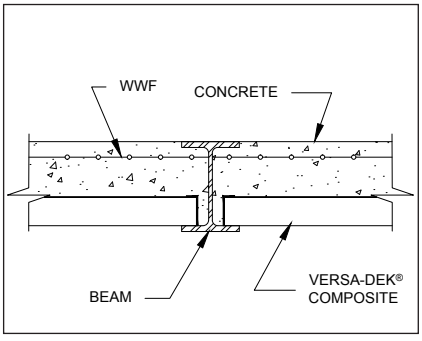
INTERIOR BEAM @ CHANGE IN DECK DIRECTION



CORRIDOR HEADER BEAM



UPSET BEAM @ MULTI-SPAN SLAB

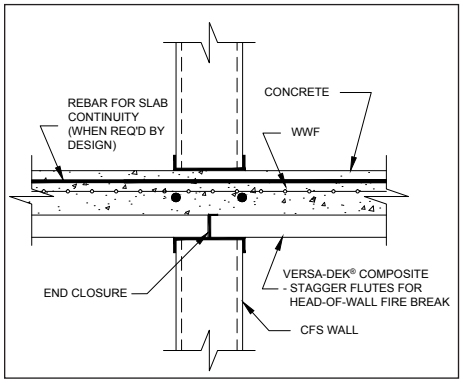


UPSET BEAM @ SINGLE-SPAN SLAB

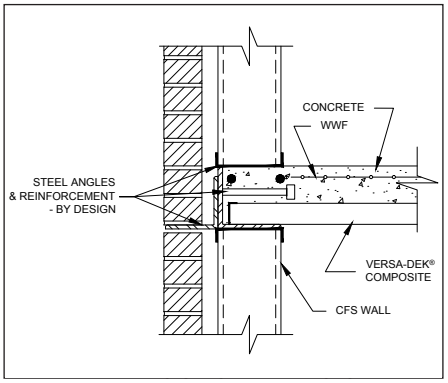
For the complete selection of load tables, visit: **www.newmill.com**

System Integration – Construction Details

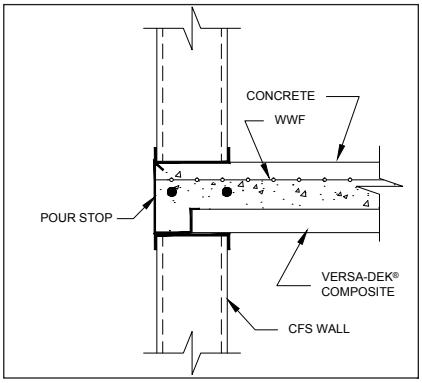
BEARING WALL



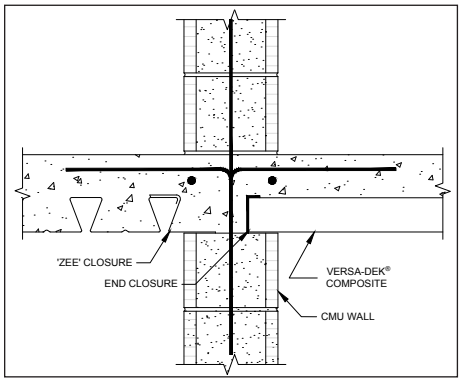
INTERIOR CFS BEARING WALL



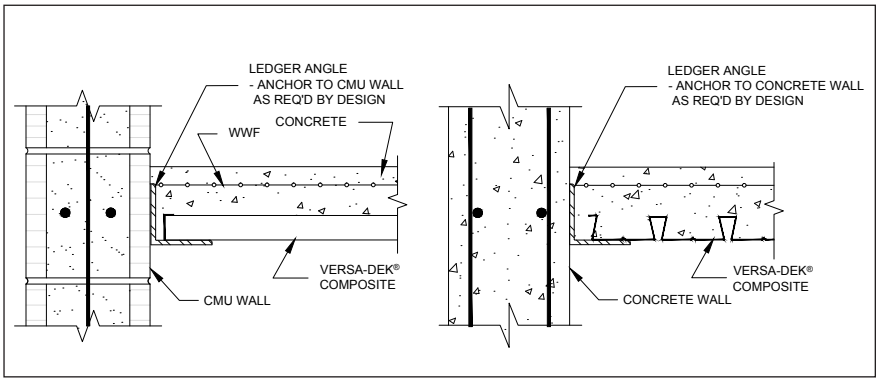
EXT. CFS BRG WALL W/BRICK SHELF



EXTERIOR CFS BRG WALL

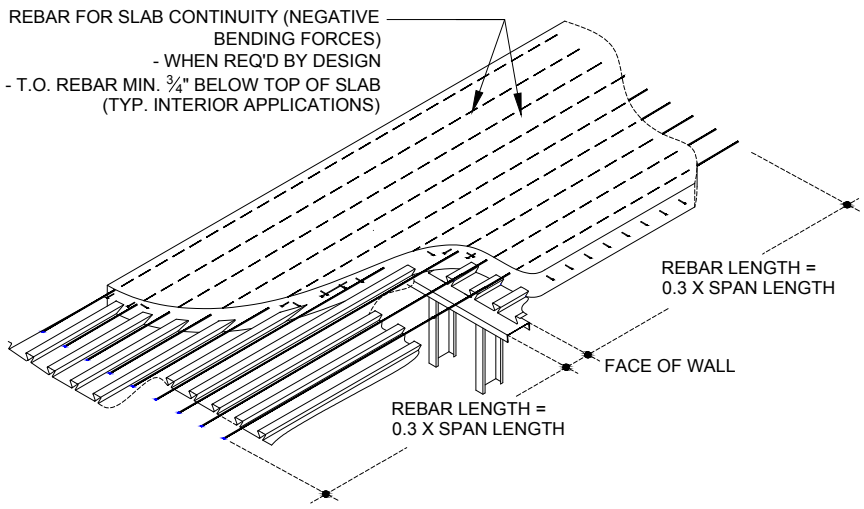


INTERIOR @ CHANGE IN DECK DIRECTION

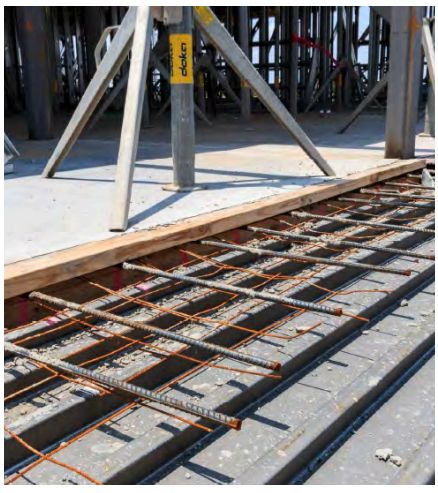


FACE OF CMU & CONCRETE CORE WALLS

SLAB REINFORCEMENT



REINFORCEMENT FOR SLAB CONTINUITY



CONCRETE CONSTRUCTION JOINT

Contact New Millennium for suggested details of slab reinforcement surrounding floor openings and penetrations along with other project specific design needs.

Installation

Versa-Dek® Composite installation employs traditional means, methods and workforce. Deck is delivered bundled in cut-to-length pieces corresponding to deck-placement drawings prepared by New Millennium.

Depending on span, construction loading needs and deck type, temporary shoring is placed between supports prior to installation. Versa-Dek® 2.0 Composite utilized in 2-hour rated slab depths, is shored at intervals ranging between 7.5' and 9' on center depending on deck and concrete properties. Versa-Dek® 3.5 Composite can be designed unshored up to 16' utilizing similarly rated slabs.

When shoring is required by design, the contractor shall employ the services of a Shoring Engineer to evaluate the shoring system selection and installation sequencing.

Upon placement and alignment, the deck is attached to the supports with welds, screws or powder actuated fasteners depending on support type and need. Deck side laps are then periodically screwed.

When placed over CFS bearing walls, the deck is typically installed in single-span lengths and the fluted ends are staggered to each side of the wall. Doing so creates a UL approved Head-of-Wall assembly that blocks fire, smoke and sound between living compartments.

Prior to placing concrete, slab-reinforcing steel is set over the deck. Welded wire mesh is utilized to control temperature-shrinkage. Micro-synthetic fibers may also be considered. Multi-span slabs, generally limited to long-span and/or high-load designs, are tied with rebar placed over supports. Rebar is also placed at slab openings, over wall distribution headers and boundary conditions depending on need.

The concrete topping is monolithically cast and finished using common equipment and techniques. The topping, utilizing either light- or normal-weight concrete finishes flat without camber. Minor slab deflection, however, is common upon release of shoring. Total slab depth is influenced by structural and fire-separation need.

Integrated slab-beams can be used to replace bearing walls and frame large floor openings. The plywood formed beams typically match the depth of the composite slab beyond the beam. Dropped slab beams may also be utilized in long-span applications. Upset, low profile steel beams may also be considered.

BUILD ASSISTANCE

New Millennium Building Systems assists builders through the bid and installation phases.

Material estimates and pricing are offered at any stage of the project.

In addition to the Versa-Dek® panel materials, New Millennium offers accessories to complete the installation. They include gage steel pour stop at boundary conditions, end- and side-closures and screw fasteners.

Our estimates do not include accessories to form MEP openings and holes. Additionally, concrete, slab reinforcement and shoring materials are the responsibility of others.

Upon award, we can provide necessary approval and field-use deck placement drawings.

Project management services help match manufacturing and delivery schedules with customer needs. Field seminars to familiarize installers with specified floor system are also available upon request.

Deck installation, slab reinforcement placement and concrete casting incorporate traditional equipment and methods.

For the complete selection of load tables, visit: **www.newmill.com**

MEP INTEGRATION

Preset pipe sleeves help streamline MEP service installations, while deck inserts and drilled-in threaded rod hangers are used to suspend services below the floor.

Versa-Dek® Composite makes engineered penetration of vent or sewage stacks readily achievable.

MEP integration is streamlined with preset and built-in features.

For the complete selection of load tables, visit: **www.newmill.com**

Composite Slab Design

According to the Steel Deck Institute Code of Standard Practice, composite slab design is the responsibility of the Project Structural Engineer of Record.

LOAD TABLES

To assist designers, New Millennium offers Versa-Dek® Composite slab design tables. Tables include:

- Deck descriptions, section properties and strengths
- Maximum allowable spans based on service and construction stage loading
- Maximum allowable superimposed uniform loads based on given span lengths
- Suggested reinforcing steel over supports for continuous spans based on given superimposed load combinations

The tables cover Versa-Dek® 2.0 Composite and Versa-Dek® 3.5 Composite, in separate sections, over a range of slab depths. Both normal-weight (145 pcf) and lightweight (110 pcf) concrete density of 4,000 psi strength are provided. Service stage instantaneous deflection limits are based on L/240 total load and L/360 live load. The maximum span and uniform load tables are applicable to single-span slabs and continuous slabs with approximately equal span lengths. Upon request, New Millennium can prepare project specific tables based on alternative criteria.

DESIGN GUIDE FOR VERSA-DEK® COMPOSITE

Please visit the New Millennium website for expanded load table coverage. In addition to tables found in this brochure, the guide includes:

- Composite slab properties (moment of inertia (MOI), positive moment capacity and one-way shear capacities)
- Factored shear bond strength of composite slabs
- Allowable load and maximum span tables accounting for long-term slab deflection
- Maximum design negative moment capacity defined by rebar type and spacing, slab depth and concrete strength

Versa-Dek® 2.0 Composite tables cover 3,000, 4,000 and 5,000 psi concrete strengths while Versa-Dek® 3.5 Composite tables cover 4,000, 5,000 and 6,000 psi concrete.

CUSTOM SLAB DESIGNS

Composite slab property tables are used for designs not conforming to the limiting criteria of allowable load tables. Examples include continuous slabs with unequal spans or loading, concentrated load conditions, etc. In these and other cases, use a standard beam analysis program to determine strength and stiffness needs based on defined load combinations and patterns. The moment, shear and stiffness requirements obtained from that analysis are then compared to the composite slab properties. Slab deflections, determined using the average of cracked and uncracked MOI as published in the property tables, shall can be compared against the required stiffness.

CONSTRUCTION STAGE (NON-COMPOSITE) DECK DESIGN

Maximum unshored clear span values were based on ANSI/SDI C-2017 for the design of deck as a form supporting the weight of deck and fluid concrete plus the worse case effect of either 20 psf uniform or 150 lb. concentrated (on a 1' width) construction live load. Construction stage deck deflection is limited to the lessor of L/180 or 3/4".

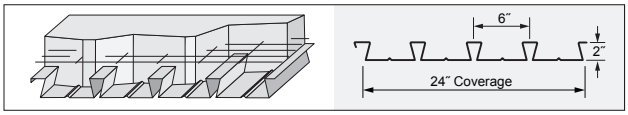
The construction live loads stated above are considered adequate for concrete transport and placement by hose and concrete finishing using hand tools.

Contact New Millennium for maximum unshored clear spans based on construction live loads greater and deflection limits more restrictive than those stated above.

For the complete selection of load tables, visit: **www.newmill.com**

Versa-Dek® 2.0 LS ES Composite

4000 PSI NORMAL-WEIGHT CONCRETE



DECK DESCRIPTION / SECTION PROPERTIES / STRENGTHS (BARE DECK)

Gage	Thickness (in.)	Coverage (in.)	Weight (psf)	F_y (ksi)	A_s (in.²/ft)	I_D (in.⁴/ft)		S_p (in.³/ft)	S_n (in.³/ft)	ϕV_n (lb/ft)	ϕR_{be} (lb/ft)	ϕR_{bi} (lb/ft)
						single	multi					
22	0.0295	24	2.25	40	0.660	0.417	0.417	0.304	0.309	4594	999	1908
20	0.0358	24	2.72	40	0.800	0.505	0.506	0.386	0.379	5548	1427	2717
18	0.0474	24	3.60	40	1.058	0.667	0.667	0.510	0.507	7280	2389	4533
16	0.0598	24	4.53	40	1.332	0.838	0.838	0.640	0.640	9096	3657	6922

F_y is steel yield stress; A_s is area of deck; I_D is deck moment of inertia for deflection calculations; S_p and S_n are deck section moduli in positive and negative bending, respectively; ϕV_n is design shear strength of deck; ϕR_{be} and ϕR_{bi} are design web crippling strengths of deck for end and interior bearing, respectively.

MAXIMUM ALLOWABLE SPANS (SERVICE AND CONSTRUCTION STAGE) – NORMAL-WEIGHT CONCRETE (145 PCF), f'c = 4000 PSI

Total Slab Depth (in.)	Service Stage									Construction Stage		
	Simple Spans (ft-in.)			Continuous Spans (ft-in.)						Maximum Unshored Clear Spans (ft-in.)		
	LL=40 psf SDL=20 psf	LL=80 psf SDL=5 psf	LL=100 psf SDL=5 psf	LL=40 psf; SDL=20 psf		LL=80 psf; SDL=5 psf		LL=100 psf; SDL=5 psf				
				interior span	end span	interior span	end span	interior span	end span	single	double	triple
22 GA Deck												
4	13' - 10"	12' - 11"	12' - 4"	20' - 6"	17' - 1"	17' - 10"	15' - 11"	16' - 6"	15' - 2"	7' - 6"	8' - 7"	8' - 10"
5	16' - 5"	15' - 5"	14' - 9"	24' - 4"	20' - 3"	22' - 10"	19' - 0"	21' - 4"	18' - 2"	6' - 11"	7' - 10"	8' - 1"
5.25	17' - 0"	16' - 0"	15' - 4"	25' - 3"	21' - 0"	23' - 8"	19' - 9"	22' - 6"	18' - 11"	6' - 9"	7' - 8"	8' - 0"
5.5	17' - 7"	16' - 7"	15' - 11"	26' - 2"	21' - 9"	24' - 7"	20' - 6"	23' - 5"	19' - 6"	6' - 8"	7' - 7"	7' - 10"
6	18' - 10"	17' - 9"	17' - 0"	27' - 11"	23' - 3"	26' - 1"	21' - 8"	24' - 4"	20' - 3"	6' - 5"	7' - 3"	7' - 6"
6.5	19' - 11"	18' - 10"	17' - 10"	29' - 7"	24' - 8"	26' - 10"	22' - 5"	25' - 2"	20' - 11"	6' - 3"	7' - 1"	7' - 3"
7	21' - 1"	19' - 8"	18' - 5"	30' - 10"	25' - 8"	27' - 7"	23' - 0"	25' - 11"	21' - 7"	6' - 0"	6' - 10"	7' - 1"
7.5	22' - 2"	20' - 1"	18' - 11"	31' - 6"	26' - 3"	28' - 4"	23' - 7"	26' - 7"	22' - 2"	5' - 10"	6' - 8"	6' - 10"
8	22' - 10"	20' - 7"	19' - 4"	32' - 1"	26' - 9"	28' - 11"	24' - 1"	27' - 3"	22' - 8"	5' - 9"	6' - 5"	6' - 8"
20 GA Deck												
4	14' - 2"	13' - 2"	12' - 7"	20' - 6"	17' - 6"	17' - 10"	16' - 3"	16' - 6"	15' - 6"	8' - 9"	9' - 6"	9' - 9"
5	16' - 9"	15' - 8"	15' - 0"	24' - 10"	20' - 8"	22' - 11"	19' - 5"	21' - 4"	18' - 7"	8' - 0"	8' - 8"	9' - 0"
5.25	17' - 4"	16' - 4"	15' - 8"	25' - 9"	21' - 5"	24' - 2"	20' - 2"	22' - 6"	19' - 4"	7' - 10"	8' - 6"	8' - 10"
5.5	18' - 0"	16' - 11"	16' - 3"	26' - 8"	22' - 3"	25' - 1"	20' - 11"	23' - 7"	20' - 1"	7' - 8"	8' - 4"	8' - 8"
6	19' - 2"	18' - 1"	17' - 4"	28' - 5"	23' - 8"	26' - 10"	22' - 4"	25' - 9"	21' - 6"	7' - 5"	8' - 1"	8' - 4"
6.5	20' - 4"	19' - 3"	18' - 6"	30' - 2"	25' - 2"	28' - 6"	23' - 9"	27' - 5"	22' - 10"	7' - 2"	7' - 9"	8' - 1"
7	21' - 6"	20' - 4"	19' - 7"	31' - 10"	26' - 6"	30' - 2"	25' - 2"	28' - 4"	23' - 7"	6' - 11"	7' - 7"	7' - 10"
7.5	22' - 7"	21' - 5"	20' - 8"	33' - 6"	27' - 11"	31' - 0"	25' - 10"	29' - 1"	24' - 3"	6' - 9"	7' - 4"	7' - 7"
8	23' - 8"	22' - 6"	21' - 2"	35' - 1"	29' - 3"	31' - 8"	26' - 5"	29' - 10"	24' - 10"	6' - 7"	7' - 2"	7' - 4"
18 GA Deck												
4	14' - 7"	13' - 7"	13' - 0"	20' - 5"	18' - 1"	17' - 9"	16' - 10"	16' - 6"	15' - 7"	10' - 4"	10' - 11"	11' - 3"
5	17' - 3"	16' - 3"	15' - 6"	25' - 7"	21' - 4"	22' - 10"	20' - 0"	21' - 3"	19' - 2"	9' - 5"	10' - 0"	10' - 4"
5.25	17' - 11"	16' - 10"	16' - 2"	26' - 7"	22' - 2"	24' - 1"	20' - 10"	22' - 5"	19' - 11"	9' - 3"	9' - 10"	10' - 2"
5.5	18' - 6"	17' - 5"	16' - 9"	27' - 6"	22' - 11"	25' - 3"	21' - 7"	23' - 7"	20' - 8"	9' - 0"	9' - 7"	9' - 11"
6	19' - 9"	18' - 8"	17' - 11"	29' - 4"	24' - 5"	27' - 7"	23' - 1"	25' - 10"	22' - 2"	8' - 9"	9' - 3"	9' - 7"
6.5	21' - 0"	19' - 10"	19' - 1"	31' - 1"	25' - 11"	29' - 5"	24' - 6"	28' - 0"	23' - 7"	8' - 5"	9' - 0"	9' - 3"
7	22' - 1"	21' - 0"	20' - 2"	32' - 10"	27' - 4"	31' - 1"	25' - 11"	29' - 11"	25' - 0"	8' - 2"	8' - 9"	9' - 0"
7.5	23' - 3"	22' - 1"	21' - 4"	34' - 6"	28' - 9"	32' - 9"	27' - 3"	31' - 7"	26' - 4"	7' - 11"	8' - 6"	8' - 9"
8	24' - 4"	23' - 2"	22' - 4"	36' - 1"	30' - 1"	34' - 4"	28' - 8"	33' - 2"	27' - 8"	7' - 8"	8' - 3"	8' - 6"
16 GA Deck												
4	15' - 0"	14' - 0"	13' - 5"	20' - 4"	18' - 7"	17' - 9"	16' - 10"	16' - 5"	15' - 7"	11' - 5"	12' - 2"	12' - 7"
5	17' - 9"	16' - 8"	16' - 0"	25' - 10"	21' - 11"	22' - 10"	20' - 7"	21' - 3"	19' - 9"	10' - 8"	11' - 2"	11' - 7"
5.25	18' - 5"	17' - 4"	16' - 7"	27' - 2"	22' - 9"	24' - 0"	21' - 5"	22' - 5"	20' - 6"	10' - 6"	11' - 0"	11' - 4"
5.5	19' - 1"	17' - 11"	17' - 2"	28' - 3"	23' - 6"	25' - 3"	22' - 2"	23' - 6"	21' - 3"	10' - 3"	10' - 9"	11' - 2"
6	20' - 4"	19' - 2"	18' - 5"	30' - 1"	25' - 1"	27' - 7"	23' - 8"	25' - 9"	22' - 9"	9' - 11"	10' - 5"	10' - 9"
6.5	21' - 6"	20' - 4"	19' - 7"	31' - 11"	26' - 7"	29' - 10"	25' - 2"	27' - 11"	24' - 3"	9' - 7"	10' - 1"	10' - 5"
7	22' - 8"	21' - 6"	20' - 9"	33' - 8"	28' - 1"	31' - 11"	26' - 7"	30' - 1"	25' - 8"	9' - 3"	9' - 9"	10' - 1"
7.5	23' - 10"	22' - 8"	21' - 10"	35' - 4"	29' - 6"	33' - 7"	28' - 0"	32' - 1"	27' - 0"	9' - 0"	9' - 6"	9' - 9"
8	25' - 0"	23' - 9"	22' - 11"	37' - 0"	30' - 10"	35' - 3"	29' - 4"	34' - 1"	28' - 4"	8' - 9"	9' - 3"	9' - 6"

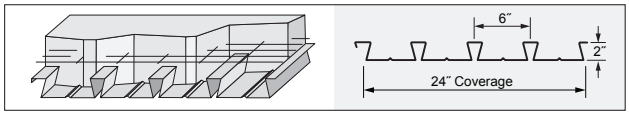
NOTES

1. Deck section properties are calculated in accordance with AISI S100-07.
2. Maximum clear spans without shoring and design web crippling strengths are based on deck bearing of 1.5" at end supports and 3" at interior supports.
3. Maximum construction clear spans are based on ANSI/SDI C-2017 design criteria. For maximum clear spans based on different criteria contact New Millennium.
4. Composite slab service stage calculations are based on ANSI/SDI C-2017 and ASCE 3-91.
5. The service stage spans are based on the instantaneous deflection limit of L/360 under total load. Contact New Millennium for maximum span based on alternative deflection criteria.
6. Long-term deflection has not been taken into consideration. Visit newmill.com for load tables that consider long-term deflection.
7. Temperature and shrinkage reinforcement in accordance with ANSI/SDI C-2017 shall be provided in the slab.
8. Negative moment (top) reinforcement is required over supports of continuous spans. See table entitled *Suggested Reinforcing Steel Over Supports for Continuous Slabs* (page 23) for details.
9. Continuous spans should be approximately equal with the span length difference not exceeding 20%. See *Custom Slab Designs* discussion (page 19) for guidance on unequal span design.

For the complete selection of load tables, visit: **www.newmill.com**

Versa-Dek® 2.0 LS ES Composite

4000 PSI LIGHTWEIGHT CONCRETE



DECK DESCRIPTION — SECTION PROPERTIES — STRENGTHS (BARE DECK)

Gage	Thickness (in.)	Coverage (in.)	Weight (psf)	F_y (ksi)	A_s (in.²/ft)	I_D (in.⁴/ft)		S_p (in.³/ft)	S_n (in.³/ft)	ϕV_n (lb/ft)	ϕR_{be} (lb/ft)	ϕR_{bi} (lb/ft)
						single	multi					
22	0.0295	24	2.25	40	0.660	0.417	0.417	0.304	0.309	4594	999	1908
20	0.0358	24	2.72	40	0.800	0.505	0.506	0.386	0.379	5548	1427	2717
18	0.0474	24	3.60	40	1.058	0.667	0.667	0.510	0.507	7280	2389	4533
16	0.0598	24	4.53	40	1.332	0.838	0.838	0.640	0.640	9096	3657	6922

F_y is steel yield stress; A_s is area of deck; I_D is deck moment of inertia for deflection calculations; S_p and S_n are deck section moduli in positive and negative bending, respectively; ϕV_n is design shear strength of deck; ϕR_{be} and ϕR_{bi} are design web crippling strengths of deck for end and interior bearing, respectively.

MAXIMUM ALLOWABLE SPANS (SERVICE AND CONSTRUCTION STAGE) – LIGHTWEIGHT CONCRETE (110 PCF), f'_c = 4000 PSI

Total Slab Depth (in.)	Service Stage									Construction Stage		
	Simple Spans (ft-in.)			Continuous Spans (ft-in.)						Maximum Unshored Clear Spans (ft-in.)		
	LL=40 psf SDL=20 psf	LL=80 psf SDL=5 psf	LL=100 psf SDL=5 psf	LL=40 psf; SDL=20 psf		LL=80 psf; SDL=5 psf		LL=100 psf; SDL=5 psf				
				interior span	end span	interior span	end span	interior span	end span	single	double	triple
22 GA Deck												
4	13' - 2"	12' - 2"	11' - 7"	19' - 6"	16' - 3"	18' - 0"	15' - 0"	17' - 0"	14' - 3"	8' - 3"	9' - 5"	9' - 9"
5	15' - 7"	14' - 6"	13' - 10"	23' - 2"	19' - 3"	21' - 7"	18' - 0"	20' - 7"	17' - 1"	7' - 7"	8' - 8"	9' - 0"
5.25	16' - 2"	15' - 1"	14' - 5"	24' - 0"	20' - 0"	22' - 5"	18' - 8"	21' - 5"	17' - 10"	7' - 6"	8' - 6"	8' - 10"
5.5	16' - 10"	15' - 8"	15' - 0"	24' - 11"	20' - 9"	23' - 3"	19' - 5"	22' - 2"	18' - 6"	7' - 4"	8' - 4"	8' - 8"
6	17' - 11"	16' - 10"	16' - 1"	26' - 7"	22' - 2"	24' - 11"	20' - 9"	23' - 10"	19' - 10"	7' - 1"	8' - 1"	8' - 4"
6.5	19' - 1"	17' - 11"	17' - 1"	28' - 3"	23' - 7"	26' - 6"	22' - 1"	25' - 5"	21' - 2"	6' - 11"	7' - 10"	8' - 1"
7	20' - 2"	18' - 11"	18' - 2"	29' - 11"	24' - 11"	28' - 1"	23' - 5"	26' - 11"	22' - 5"	6' - 8"	7' - 7"	7' - 10"
7.5	21' - 3"	20' - 0"	19' - 2"	31' - 6"	26' - 3"	29' - 8"	24' - 8"	27' - 11"	23' - 3"	6' - 6"	7' - 5"	7' - 8"
8	22' - 3"	21' - 0"	20' - 2"	33' - 0"	27' - 6"	30' - 8"	25' - 6"	28' - 8"	23' - 10"	6' - 4"	7' - 3"	7' - 6"
20 GA Deck												
4	13' - 5"	12' - 5"	11' - 10"	19' - 11"	16' - 7"	18' - 5"	15' - 5"	17' - 0"	14' - 7"	9' - 7"	10' - 5"	10' - 9"
5	16' - 0"	14' - 11"	14' - 2"	23' - 8"	19' - 9"	22' - 1"	18' - 5"	21' - 0"	17' - 6"	8' - 10"	9' - 7"	9' - 11"
5.25	16' - 7"	15' - 6"	14' - 9"	24' - 7"	20' - 6"	22' - 11"	19' - 1"	21' - 11"	18' - 3"	8' - 8"	9' - 5"	9' - 9"
5.5	17' - 2"	16' - 1"	15' - 4"	25' - 6"	21' - 3"	23' - 9"	19' - 10"	22' - 9"	18' - 11"	8' - 6"	9' - 3"	9' - 7"
6	18' - 4"	17' - 2"	16' - 5"	27' - 3"	22' - 8"	25' - 6"	21' - 3"	24' - 4"	20' - 4"	8' - 3"	8' - 11"	9' - 3"
6.5	19' - 6"	18' - 3"	17' - 6"	28' - 11"	24' - 1"	27' - 1"	22' - 7"	26' - 0"	21' - 8"	8' - 0"	8' - 8"	9' - 0"
7	20' - 7"	19' - 4"	18' - 7"	30' - 7"	25' - 5"	28' - 9"	23' - 11"	27' - 6"	22' - 11"	7' - 9"	8' - 5"	8' - 8"
7.5	21' - 8"	20' - 5"	19' - 7"	32' - 2"	26' - 9"	30' - 3"	25' - 3"	29' - 1"	24' - 3"	7' - 6"	8' - 2"	8' - 6"
8	22' - 9"	21' - 5"	20' - 7"	33' - 8"	28' - 1"	31' - 10"	26' - 6"	30' - 7"	25' - 6"	7' - 4"	8' - 0"	8' - 3"
18 GA Deck												
4	13' - 11"	12' - 11"	12' - 3"	20' - 8"	17' - 2"	18' - 5"	15' - 11"	16' - 11"	15' - 2"	11' - 5"	11' - 11"	12' - 4"
5	16' - 6"	15' - 5"	14' - 8"	24' - 6"	20' - 5"	22' - 10"	19' - 0"	21' - 9"	18' - 2"	10' - 5"	11' - 0"	11' - 5"
5.25	17' - 2"	16' - 0"	15' - 3"	25' - 5"	21' - 2"	23' - 9"	19' - 9"	22' - 8"	18' - 11"	10' - 3"	10' - 10"	11' - 2"
5.5	17' - 9"	16' - 7"	15' - 10"	26' - 4"	21' - 11"	24' - 7"	20' - 6"	23' - 6"	19' - 7"	10' - 0"	10' - 8"	11' - 0"
6	19' - 0"	17' - 9"	17' - 0"	28' - 2"	23' - 5"	26' - 4"	22' - 0"	25' - 3"	21' - 0"	9' - 8"	10' - 3"	10' - 8"
6.5	20' - 2"	18' - 11"	18' - 1"	29' - 11"	24' - 11"	28' - 1"	23' - 4"	26' - 10"	22' - 5"	9' - 5"	10' - 0"	10' - 4"
7	21' - 3"	20' - 0"	19' - 2"	31' - 7"	26' - 4"	29' - 8"	24' - 9"	28' - 6"	23' - 9"	9' - 1"	9' - 8"	10' - 0"
7.5	22' - 5"	21' - 1"	20' - 3"	33' - 3"	27' - 8"	31' - 4"	26' - 1"	30' - 1"	25' - 1"	8' - 10"	9' - 5"	9' - 9"
8	23' - 6"	22' - 2"	21' - 4"	34' - 10"	29' - 0"	32' - 11"	27' - 5"	31' - 7"	26' - 4"	8' - 7"	9' - 2"	9' - 6"
16 GA Deck												
4	14' - 4"	13' - 3"	12' - 8"	21' - 3"	17' - 9"	18' - 4"	16' - 5"	16' - 11"	15' - 7"	12' - 2"	13' - 4"	13' - 9"
5	17' - 0"	15' - 10"	15' - 1"	25' - 3"	21' - 0"	23' - 6"	19' - 7"	22' - 0"	18' - 8"	11' - 6"	12' - 4"	12' - 9"
5.25	17' - 8"	16' - 6"	15' - 9"	26' - 2"	21' - 10"	24' - 5"	20' - 4"	23' - 2"	19' - 5"	11' - 5"	12' - 1"	12' - 6"
5.5	18' - 3"	17' - 1"	16' - 4"	27' - 1"	22' - 7"	25' - 4"	21' - 1"	24' - 3"	20' - 2"	11' - 3"	11' - 11"	12' - 4"
6	19' - 6"	18' - 3"	17' - 6"	28' - 11"	24' - 1"	27' - 1"	22' - 7"	25' - 11"	21' - 8"	10' - 11"	11' - 6"	11' - 11"
6.5	20' - 9"	19' - 6"	18' - 8"	30' - 9"	25' - 7"	28' - 10"	24' - 1"	27' - 8"	23' - 0"	10' - 8"	11' - 2"	11' - 6"
7	21' - 11"	20' - 7"	19' - 9"	32' - 6"	27' - 1"	30' - 7"	25' - 6"	29' - 4"	24' - 5"	10' - 4"	10' - 10"	11' - 3"
7.5	23' - 0"	21' - 9"	20' - 10"	34' - 2"	28' - 6"	32' - 2"	26' - 10"	30' - 11"	25' - 9"	10' - 1"	10' - 7"	10' - 11"
8	24' - 2"	22' - 10"	21' - 11"	35' - 10"	29' - 10"	33' - 10"	28' - 2"	32' - 6"	27' - 1"	9' - 10"	10' - 3"	10' - 8"

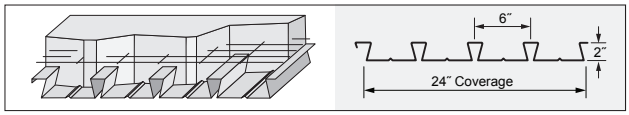
NOTES

1. Deck section properties are calculated in accordance with AISI S100-07.
2. Maximum clear spans without shoring and design web crippling strengths are based on deck bearing of 1.5" at end supports and 3" at interior supports.
3. Maximum construction clear spans are based on ANSI/SDI C-2017 design criteria. For maximum clear spans based on different criteria contact New Millennium.
4. Composite slab service stage calculations are based on ANSI/SDI C-2017 and ASCE 3-91.
5. The service stage spans are based on the instantaneous deflection limit of L/360 under total load. Contact New Millennium for maximum spans based on alternative deflection criteria.
6. Long-term deflection has not been taken into consideration. Visit newmill.com for load tables that consider long-term deflection.
7. Temperature and shrinkage reinforcement in accordance with ANSI/SDI C-2017 shall be provided in the slab.
8. Negative moment (top) reinforcement is required over supports of continuous spans. See table entitled *Suggested Reinforcing Steel Over Supports for Continuous Slabs* (page 23) for details.
9. Continuous spans should be approximately equal with the span length difference not exceeding 20%. See *Custom Slab Designs* discussion (page 19) for guidance on unequal span design.

For the complete selection of load tables, visit: **www.newmill.com**

Versa-Dek® 2.0 LS ES Composite

4000 PSI NORMAL-WEIGHT AND LIGHTWEIGHT CONCRETE



MAXIMUM UNIFORM SUPERIMPOSED SERVICE LOADS

Concrete	Slab Depth, Concrete Weight, Concrete Volume, WWF	Deck Gage	Maximum Unshored Clear Spans (ft-in.)			Uniform Service Load Capacity, PSF / Spans (ft.)													
						Simple Span Conditions								Continuous Span Condition Negative Moment Reinforcement Required					
			single	double	triple	10	12	14	16	17	18	19	20	16	18	20	22	24	26	28
4,000 PSI Normal-Weight Concrete (145 PSF)	4"	22	7' - 6"	8' - 7"	8' - 10"	199	117	56						81	44					
	44 PSF	20	8' - 9"	9' - 6"	9' - 9"	209	128	63						90	49					
	1.12 cu.yd/(100sq.ft)	18	10' - 4"	10' - 11"	11' - 3"	250	146	75						97	59					
	6x6 - W1.4 x W1.4	16	11' - 5"	12' - 2"	12' - 7"	270	164	86	41					96	68					
	5"	22	6' - 11"	7' - 10"	8' - 1"	264	215	132	69	48				150	110	64				
	56 PSF	20	8' - 0"	8' - 8"	9' - 0"	277	226	144	77	55				163	121	72				
	1.43 cu.yd/(100sq.ft)	18	9' - 5"	10' - 0"	10' - 4"	302	247	165	91	66	46			178	137	85	49			
	6x6 - W1.4 x W1.4	16	10' - 8"	11' - 2"	11' - 7"	356	269	185	104	77	55			191	141	95	56			
	5.25"	22	6' - 9"	7' - 8"	8' - 0"	280	228	157	85	60	41			159	123	79	44			
	59 PSF	20	7' - 10"	8' - 6"	8' - 10"	294	240	171	94	68	48			173	144	88	51			
	1.5 cu.yd/(100sq.ft)	18	9' - 3"	9' - 10"	10' - 2"	320	262	194	110	81	58	40		189	162	103	62			
	6x6 - W2.0 x W2.0	16	10' - 6"	11' - 0"	11' - 4"	378	285	217	124	93	69	49		206	163	115	72	41		
	6"	22	6' - 5"	7' - 3"	7' - 6"	328	268	186	130	106	78	56		187	146	108	80	48		
	68 PSF	20	7' - 5"	8' - 1"	8' - 4"	345	282	232	155	117	87	64	45	203	171	139	92	54		
	1.74 cu.yd/(100sq.ft)	18	8' - 9"	9' - 3"	9' - 7"	376	308	259	177	136	103	77	56	222	194	165	108	67		
	6x6 - W2.0 x W2.0	16	9' - 11"	10' - 5"	10' - 9"	409	335	282	198	153	118	89	66	243	212	182	123	78	46	
	6.5"	22	6' - 3"	7' - 1"	7' - 3"	360	294	205	144	121	101	82	59	206	161	119	89	65		
	74 PSF	20	7' - 2"	7' - 9"	8' - 1"	379	310	257	183	156	121	91	67	217	188	154	117	80	47	
	1.89 cu.yd/(100sq.ft)	18	8' - 5"	9' - 0"	9' - 3"	413	338	285	232	181	140	107	81	245	207	182	146	95	58	
	4x4 - W1.4 x W1.4	16	9' - 7"	10' - 1"	10' - 5"	449	368	310	259	203	158	123	94	267	233	206	165	109	69	
	7"	22	6' - 0"	6' - 10"	7' - 1"	392	321	224	157	132	111	94	78	224	176	131	97	72	52	
	80 PSF	20	6' - 11"	7' - 7"	7' - 10"	413	338	281	201	171	145	124	94	237	205	169	129	98	69	
	2.04 cu.yd/(100sq.ft)	18	8' - 2"	8' - 9"	9' - 0"	450	369	310	267	233	183	143	111	267	226	199	176	128	83	50
	6x6 - W2.9 x W2.9	16	9' - 3"	9' - 9"	10' - 1"	490	402	339	291	260	206	162	127	291	254	218	194	146	96	60
	8"	22	5' - 9"	6' - 5"	6' - 8"	457	373	263	185	155	131	110	93	261	207	154	115	85	62	
	92 PSF	20	6' - 7"	7' - 2"	7' - 4"	480	393	330	236	201	171	146	125	276	239	199	152	116	89	67
	2.35 cu.yd/(100sq.ft)	18	7' - 8"	8' - 3"	8' - 6"	500	429	362	311	281	243	211	183	311	264	232	206	172	136	97
	6x6 - W2.9 x W2.9	16	8' - 9"	9' - 3"	9' - 6"	500	468	395	340	317	297	260	209	340	297	255	227	204	164	112
4,000 PSI Lightweight Concrete (110 PSF)	4"	22	8' - 3"	9' - 5"	9' - 9"	181	90	43						62						
	33 PSF	20	9' - 7"	10' - 5"	10' - 9"	198	99	49						70						
	1.12 cu.yd/(100sq.ft)	18	11' - 5"	11' - 11"	12' - 4"	247	115	59						82	46					
	6x6 - W1.4 x W1.4	16	12' - 2"	13' - 4"	13' - 9"	266	167	67						93	54					
	5"	22	7' - 7"	8' - 8"	9' - 0"	268	186	101	53					137	84	49				
	42 PSF	20	8' - 10"	9' - 7"	9' - 11"	281	203	111	60	42				150	91	56				
	1.43 cu.yd/(100sq.ft)	18	10' - 5"	11' - 0"	11' - 5"	326	231	129	71	51				172	107	65				
	6x6 - W1.4 x W1.4	16	11' - 6"	12' - 4"	12' - 9"	352	258	145	81	60	43			193	121	75	44			
	5.25"	22	7' - 6"	8' - 6"	8' - 10"	284	217	119	64	46				161	100	60				
	45 PSF	20	8' - 8"	9' - 5"	9' - 9"	298	236	131	72	52				176	109	68				
	1.5 cu.yd/(100sq.ft)	18	10' - 3"	10' - 10"	11' - 2"	346	266	151	85	63	45			194	126	78	48			
	6x6 - W2.0 x W2.0	16	11' - 5"	12' - 1"	12' - 6"	373	288	170	97	73	54			210	143	90	55			
	6"	22	7' - 1"	8' - 1"	8' - 4"	333	274	186	107	80	59	42		199	158	101	62			
	52 PSF	20	8' - 3"	8' - 11"	9' - 3"	350	287	203	118	90	67	49		209	174	112	70	42		
	1.74 cu.yd/(100sq.ft)	18	9' - 8"	10' - 3"	10' - 8"	380	312	232	137	105	80	60	43	228	197	128	84	52		
	6x6 - W2.0 x W2.0	16	10' - 11"	11' - 6"	11' - 11"	438	339	259	155	120	92	70	52	247	217	145	94	61		
	6.5"	22	6' - 11"	7' - 10"	8' - 1"	366	301	218	142	109	82	61	44	214	174	133	86	53		
	56 PSF	20	8' - 0"	8' - 8"	9' - 0"	384	316	262	156	120	92	70	51	230	196	148	97	61		
	1.89 cu.yd/(100sq.ft)	18	9' - 5"	10' - 0"	10' - 4"	417	343	290	180	140	108	83	63	250	219	171	113	73	45	
	4x4 - W1.4 x W1.4	16	10' - 8"	11' - 2"	11' - 6"	481	372	315	202	158	124	96	74	272	239	190	127	85	54	
	7"	22	6' - 8"	7' - 7"	7' - 10"	399	328	239	172	142	110	84	63	233	191	145	112	74	45	
	61 PSF	20	7' - 9"	8' - 5"	8' - 8"	419	344	291	200	156	122	94	72	251	214	184	127	83	52	
	2.04 cu.yd/(100sq.ft)	18	9' - 1"	9' - 8"	10' - 0"	455	374	316	229	180	142	111	86	273	239	207	148	99	64	
	6x6 - W2.9 x W2.9	16	10' - 4"	10' - 10"	11' - 3"	500	406	344	256	203	160	127	99	297	261	231	167	114	75	47
	8"	22	6' - 4"	7' - 3"	7' - 6"	464	381	279	201	172	148	127	109	272	223	171	132	102	79	53
	70 PSF	20	7' - 4"	8' - 0"	8' - 3"	488	401	339	252	217	188	155	122	286	250	216	169	133	94	61
	2.35 cu.yd/(100sq.ft)	18	8' - 7"	9' - 2"	9' - 6"	500	436	369	318	279	223	179	143	318	279	242	216	162	111	74
	6x6 - W2.9 x W2.9	16	9' - 10"	10' - 3"	10' - 8"	500	474	401	347	311	250	202	162	347	304	270	237	183	128	87

NOTES

1. Deck section properties are calculated in accordance with AISI S100-07.
2. Maximum clear spans without shoring and design web crippling strengths are based on deck bearing of 1.5" at end supports and 3" at interior supports.
3. Maximum construction clear spans are based on ANSI/SDI C-2017 design criteria. For maximum clear spans based on different criteria contact New Millennium.
4. Composite slab service stage calculations are based on ANSI/SDI C-2017 and ASCE 3-91. The slab weight has been subtracted from the service loads listed above.
5. Uniform superimposed service loads were determined by dividing the superimposed LRFD design loads controlled by strength by the load factor of 1.6.
6. The uniform service loads are based on the L/360 deflection limit under total load without considering long-term deflection. Visit newmill.com for load tables that consider long-term deflection.
7. Temperature and shrinkage reinforcement in accordance with ANSI/SDI C-2017 shall be provided in the slab.
8. Negative moment (top) reinforcement is required over supports of continuous spans. See tables entitled *Maximum Design Negative Moment Capacity of Composite Slabs* (page 24) for details.
9. Continuous spans should be approximately equal with the span length difference not exceeding 20%.

For the complete selection of load tables, visit: **www.newmill.com**

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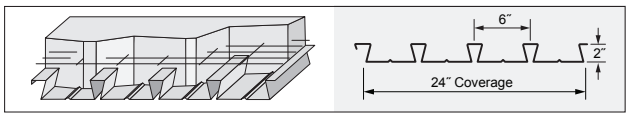
4000 PSI NORMAL-WEIGHT AND LIGHTWEIGHT CONCRETE



SUGGESTED REINFORCING STEEL OVER SUPPORTS FOR CONTINUOUS SLABS

Slab Depth (in.)	Slab Span (ft)	LL=40 psf, SDL=20 psf			LL=80 psf, SDL=5 psf			LL=100 psf, SDL=5 psf		
		$-WL^2/9$	$-WL^2/10$	$-WL^2/11$	$-WL^2/9$	$-WL^2/10$	$-WL^2/11$	$-WL^2/9$	$-WL^2/10$	$-WL^2/11$
4	15	4@8	4@9	4@10	5@8	5@10	5@11	5@7	5@8	5@9
	16	5@10	5@11	4@8	5@7	5@8	5@9	-	5@7	5@8
	17	5@9	5@10	5@11	-	5@7	5@8	-	-	-
	18	5@8	5@9	5@10	-	-	5@7	-	-	-
	19	-	5@7	5@8	-	-	-	-	-	-
5	19	5@9	5@10	5@11	5@6	5@7	5@8	6@8	5@6	5@7
	20	5@8	5@9	5@10	5@6	5@7	5@7	-	6@8	5@6
	21	5@7	5@8	5@9	-	5@6	5@6	-	-	6@8
	22	5@6	5@7	5@8	-	6@7	5@6	-	-	-
	23	6@8	5@6	5@7	-	-	6@7	-	-	-
	24	-	5@6	5@6	-	-	-	-	-	-
5.25	18	5@10	4@8	4@8	5@8	5@9	5@10	5@7	5@8	5@8
	20	5@8	5@9	5@10	5@6	5@7	5@8	6@7	5@6	5@7
	22	5@7	5@7	5@8	6@7	6@8	5@6	-	-	6@7
	23	5@6	5@7	5@7	-	6@7	5@6	-	-	-
	24	6@7	5@6	5@7	-	-	6@7	-	-	-
	25	-	6@8	5@6	-	-	-	-	-	-
	26	-	6@7	5@6	-	-	-	-	-	-
5.5	19	5@10	5@11	4@8	5@7	5@8	5@9	5@6	5@7	5@8
	21	5@8	5@9	5@10	5@6	5@7	5@7	6@7	6@8	5@6
	23	5@6	5@7	5@8	6@6	6@7	5@6	-	-	6@7
	24	5@6	5@6	5@7	-	6@7	6@8	-	-	4@3
	25	6@7	5@6	5@6	-	-	6@7	-	-	-
	26	6@6	6@7	5@6	-	-	-	-	-	-
	27	-	6@7	6@8	-	-	-	-	-	-
6	20	5@9	5@11	4@8	5@7	5@8	5@9	5@6	5@7	5@8
	22	5@8	5@9	5@10	5@6	5@6	5@7	6@7	6@8	5@6
	24	5@6	5@7	5@8	6@7	6@7	5@6	-	6@6	6@7
	25	5@6	5@6	5@7	6@6	6@7	6@8	-	6@6	6@6
	26	6@7	5@6	5@6	-	6@6	6@7	-	-	6@6
	27	6@7	6@7	5@6	-	4@2	6@6	-	-	-
	28	6@6	6@7	6@8	-	-	6@6	-	-	-
6.5	20	5@10	5@11	4@8	5@8	5@9	5@10	5@7	5@8	5@8
	22	5@8	5@9	5@10	5@6	5@7	5@8	6@8	5@6	5@7
	24	5@7	5@7	5@8	6@7	5@6	5@6	6@6	6@7	6@8
	25	5@6	5@7	5@8	6@7	6@7	5@6	6@6	6@6	6@7
	26	6@8	5@6	5@7	6@6	6@7	6@8	4@2	6@6	6@6
	27	6@7	5@6	5@6	6@5	6@6	6@7	-	6@5	6@6
	28	6@7	6@7	5@6	-	6@6	6@6	-	-	6@5
7	22	5@9	5@10	5@11	5@7	5@8	5@8	5@6	5@7	5@7
	23	5@8	5@9	5@10	5@6	5@7	5@8	6@7	5@6	5@7
	24	5@7	5@8	5@9	6@8	5@6	5@7	6@7	6@8	5@6
	25	5@6	5@7	5@8	6@7	5@6	5@6	6@6	6@7	6@8
	26	5@6	5@7	5@7	6@6	6@7	5@6	6@6	6@6	6@7
	27	6@8	5@6	5@7	6@6	6@7	6@8	6@5	6@6	6@6
	28	6@7	5@6	5@6	6@5	6@6	6@7	-	6@5	6@6
7.5	22	5@9	5@10	5@11	5@7	5@8	5@9	5@6	5@7	5@8
	23	5@8	5@9	5@10	5@6	5@7	5@8	5@6	5@6	5@7
	24	5@7	5@8	5@9	5@6	5@7	5@7	6@7	5@6	5@6
	25	5@7	5@8	5@9	6@8	5@6	5@7	6@7	6@7	5@6
	26	5@6	5@7	5@8	6@7	6@8	5@6	6@6	6@7	6@8
	27	5@6	5@6	5@7	6@6	6@7	5@6	6@5	6@6	6@7
	28	6@8	5@6	5@7	6@6	6@7	6@7	6@5	6@6	6@6
8	22	5@10	5@11	4@8	5@8	5@9	5@10	5@7	5@7	5@8
	23	5@9	5@10	5@11	5@7	5@8	5@9	5@6	5@7	5@8
	24	5@8	5@9	5@10	5@6	5@7	5@8	6@8	5@6	5@7
	25	5@7	5@8	5@9	5@6	5@6	5@7	6@7	5@6	5@6
	26	5@7	5@7	5@8	6@7	5@6	5@7	6@6	6@7	5@6
	27	5@6	5@7	5@8	6@7	6@8	5@6	6@6	6@7	6@7
	28	5@6	5@6	5@7	6@6	6@7	6@8	6@5	6@6	6@7

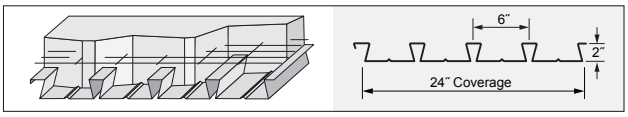
NOTES

1. Reinforcing bars are required over interior supports for continuous spans. Reinforcing bars shall extend a minimum of 0.3L on each side of support.
2. Table is based on reinforcing bars with Fy=60 ksi installed with 3/4" clear concrete cover over supports.
3. Continuous spans should be approximately equal with the larger of the two adjacent spans not greater than the shorter by more than 20%. See *Custom Slab Designs* discussion (page 19) for guidance on equal span design.
4. The $-WL^2/9$ columns apply to the interior support of the slab continuous over two spans; the $-WL^2/10$ columns apply to the first interior support of the slab continuous over more than two spans; the $-WL^2/11$ columns apply to other interior supports of the slab continuous over more than two spans.

For the complete selection of load tables, visit: **www.newmill.com**

Versa-Dek® 2.0 LS ES Composite

4000 PSI NORMAL-WEIGHT AND LIGHTWEIGHT CONCRETE



MAXIMUM DESIGN NEGATIVE MOMENT CAPACITY OF COMPOSITE SLABS

	Rebar	ϕM_n (ft-kips/ft) Total Slab Thickness (in.)					
		4	4.5	5	5.25	5.5	6
4000 PSI of Any Density	4@12	2.537	2.987	3.437	3.662	3.887	4.337
	4@10	3.005	3.545	4.085	4.355	4.625	5.165
	4@8	3.683	4.358	5.033	5.371	5.708	6.383
	4@6	4.748	5.648	6.548	6.998	7.448	8.348
	5@12	3.706	4.404	5.101	5.450	5.799	6.496
	5@10	4.354	5.191	6.028	6.446	6.865	7.702
	5@8	5.266	6.312	7.359	7.882	8.405	9.451
	5@6	-	-	9.420	10.118	10.815	12.210
	6@12	4.904	5.894	6.884	7.379	7.874	8.864
	6@10	-	6.884	8.072	8.666	9.260	10.448
	6@8	-	-	9.735	10.477	11.220	12.705
	6@6	-	-	-	-	-	-

	Rebar	ϕM_n (ft-kips/ft) Total Slab Thickness (in.)					
		6.25	6.5	7	7.5	8	8.25
4000 PSI of Any Density	4@12	4.562	-	-	-	-	-
	4@10	5.435	5.705	6.245	-	-	-
	4@8	6.721	7.058	7.733	8.408	9.083	9.421
	4@6	8.798	9.248	10.148	11.048	11.948	12.398
	5@12	6.845	7.194	7.891	8.589	9.286	9.635
	5@10	8.120	8.539	9.376	10.213	11.050	11.468
	5@8	9.974	10.497	11.544	12.590	13.636	14.159
	5@6	12.908	13.605	15.000	16.395	17.790	18.488
	6@12	9.359	9.854	10.844	11.834	12.824	13.319
	6@10	11.042	11.636	12.824	14.012	15.200	15.794
	6@8	13.447	14.190	15.675	17.160	18.645	19.387
	6@6	17.141	18.131	20.111	22.091	24.071	25.061

NOTES

[1] Table is based on Grade 60 ASTM A615 reinforcing bars with 3/4" concrete cover over supports.
[2] Slab self-weight has not been accounted for in the tabulated moment capacities. It should be included into the loads applied to the slab.

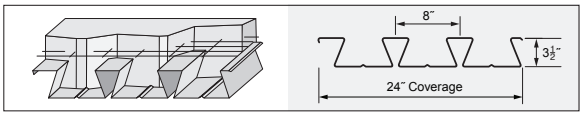
INSTRUCTIONS ON HOW TO SELECT A REINFORCEMENT PATTERN:

Step 1 – Calculate required negative moment capacity, Mreq, as follows:
$M_{req,LRFD}=[1.2(w_{slab}+w_D)+1.6w_L]L^2/C$ (LRFD)
Where: w_D = superimposed dead load, psf; w_L = live load, psf; w_{slab} = slab weight, psf; L = span length taken as the average of the adjacent span lengths (spans shall be approximately equal with the larger of two adjacent spans not greater than the shorter by more than 20%), ft; $M_{req,LRFD}$ = required LRFD factored negative moment capacity, lb-ft/ft deck width; C = negative bending coefficient (9 for interior support of two span continuous composite slab; 10 for first interior support of composite slab continuous over more than two spans; 11 for other interior supports of composite slab continuous over more than two spans).
Step 2 – Select reinforcement size and spacing from table where $\phi M_n \geq M_{req,LRFD}$ (LRFD).

For the complete selection of load tables, visit: **www.newmill.com**

Versa-Dek® 3.5 LS Composite

4000 PSI NORMAL-WEIGHT CONCRETE



DECK DESCRIPTION / SECTION PROPERTIES / STRENGTHS (BARE DECK)

Gage	Thickness (in.)	Coverage (in.)	Weight (psf)	F_y (ksi)	A_s (in.²/ft)	I_D (in.⁴/ft)		S_p (in.³/ft)	S_n (in.³/ft)	ϕV_n (lb/ft)	ϕR_{be} (lb/ft)	ϕR_{bi} (lb/ft)
						single	multi					
20	0.0358	24	3.33	40	0.978	1.959	1.959	0.775	0.910	5501	952	1954
19	0.0418	24	3.88	40	1.141	2.324	2.324	0.946	1.090	7500	1275	2594
18	0.0474	24	4.40	40	1.293	2.664	2.664	1.113	1.226	9644	1615	3264
16	0.0598	24	5.54	40	1.629	3.394	3.394	1.504	1.573	13477	2496	4990

F_y is steel yield stress; A_s is area of deck; I_D is deck moment of inertia for deflection calculations; S_p and S_n are deck section moduli in positive and negative bending, respectively; ϕV_n is design shear strength of deck; ϕR_{be} and ϕR_{bi} are design web crippling strengths of deck for end and interior bearing, respectively.

MAXIMUM ALLOWABLE SPANS (SERVICE AND CONSTRUCTION STAGE) – NORMAL-WEIGHT CONCRETE (145 PCF), f'c = 4000 PSI

Total Slab Depth (in.)	Service Stage									Construction Stage		
	Simple Spans (ft-in.)			Continuous Spans (ft-in.)						Maximum Unshored Clear Spans (ft-in.)		
	LL=40 psf SDL=20 psf	LL=80 psf SDL=5 psf	LL=100 psf SDL=5 psf	LL=40 psf; SDL=20 psf		LL=80 psf; SDL=5 psf		LL=100 psf; SDL=5 psf				
				interior span	end span	interior span	end span	interior span	end span	single	double	triple
20 GA Deck												
5.5	17' - 5"	14' - 11"	13' - 8"	20' - 10"	17' - 5"	17' - 10"	14' - 11"	16' - 5"	13' - 8"	12' - 0"	12' - 10"	13' - 5"
5.75	17' - 9"	15' - 3"	14' - 0"	21' - 4"	17' - 9"	18' - 3"	15' - 3"	16' - 10"	14' - 0"	11' - 9"	12' - 5"	12' - 11"
6	18' - 1"	15' - 7"	14' - 4"	21' - 9"	18' - 1"	18' - 8"	15' - 7"	17' - 2"	14' - 4"	11' - 7"	11' - 11"	12' - 5"
6.25	18' - 6"	15' - 11"	14' - 8"	22' - 2"	18' - 6"	19' - 1"	15' - 11"	17' - 7"	14' - 8"	11' - 4"	11' - 6"	12' - 0"
6.5	18' - 10"	16' - 2"	14' - 11"	22' - 7"	18' - 10"	19' - 5"	16' - 2"	17' - 11"	14' - 11"	11' - 1"	11' - 1"	11' - 7"
7	19' - 5"	16' - 9"	15' - 6"	23' - 4"	19' - 5"	20' - 2"	16' - 9"	18' - 7"	15' - 6"	10' - 9"	10' - 5"	10' - 10"
7.25	19' - 8"	17' - 1"	15' - 9"	23' - 8"	19' - 8"	20' - 6"	17' - 1"	18' - 11"	15' - 9"	10' - 7"	10' - 1"	10' - 6"
7.5	19' - 8"	17' - 4"	16' - 0"	23' - 8"	19' - 8"	20' - 9"	17' - 4"	19' - 2"	16' - 0"	10' - 5"	9' - 9"	10' - 2"
8	20' - 2"	17' - 10"	16' - 6"	24' - 3"	20' - 2"	21' - 5"	17' - 10"	19' - 9"	16' - 6"	10' - 1"	9' - 3"	9' - 7"
19 GA Deck												
5.5	18' - 3"	17' - 2"	16' - 4"	25' - 4"	21' - 1"	21' - 5"	17' - 10"	19' - 7"	16' - 4"	13' - 6"	14' - 8"	15' - 2"
5.75	18' - 11"	17' - 9"	16' - 9"	25' - 11"	21' - 7"	21' - 11"	18' - 3"	20' - 1"	16' - 9"	13' - 2"	14' - 4"	14' - 10"
6	19' - 6"	18' - 4"	17' - 1"	26' - 6"	22' - 1"	22' - 5"	18' - 8"	20' - 7"	17' - 1"	12' - 11"	14' - 1"	14' - 7"
6.25	20' - 1"	18' - 11"	17' - 6"	27' - 0"	22' - 6"	22' - 11"	19' - 1"	21' - 0"	17' - 6"	12' - 8"	13' - 10"	14' - 4"
6.5	20' - 8"	19' - 6"	17' - 11"	27' - 7"	23' - 0"	23' - 5"	19' - 6"	21' - 6"	17' - 11"	12' - 5"	13' - 7"	14' - 1"
7	21' - 9"	20' - 3"	18' - 7"	28' - 7"	23' - 9"	24' - 4"	20' - 3"	22' - 4"	18' - 7"	12' - 0"	13' - 2"	13' - 7"
7.25	22' - 4"	20' - 8"	18' - 11"	29' - 0"	24' - 2"	24' - 9"	20' - 8"	22' - 9"	18' - 11"	11' - 9"	13' - 0"	13' - 5"
7.5	22' - 10"	21' - 0"	19' - 3"	29' - 6"	24' - 7"	25' - 2"	21' - 0"	23' - 2"	19' - 3"	11' - 7"	12' - 9"	13' - 2"
8	24' - 0"	21' - 8"	19' - 11"	29' - 10"	24' - 10"	26' - 0"	21' - 8"	23' - 11"	19' - 11"	11' - 3"	12' - 2"	12' - 8"
18 GA Deck												
5.5	18' - 7"	17' - 5"	16' - 8"	27' - 6"	22' - 11"	24' - 8"	20' - 7"	22' - 6"	18' - 9"	14' - 5"	15' - 6"	16' - 0"
5.75	19' - 2"	18' - 0"	17' - 3"	28' - 5"	23' - 8"	25' - 5"	21' - 2"	23' - 1"	19' - 3"	14' - 3"	15' - 2"	15' - 8"
6	19' - 9"	18' - 7"	17' - 10"	29' - 3"	24' - 5"	26' - 0"	21' - 8"	23' - 9"	19' - 9"	14' - 1"	14' - 11"	15' - 5"
6.25	20' - 4"	19' - 2"	18' - 5"	30' - 2"	25' - 1"	26' - 8"	22' - 2"	24' - 3"	20' - 3"	13' - 10"	14' - 8"	15' - 2"
6.5	20' - 11"	19' - 9"	19' - 0"	31' - 0"	25' - 10"	27' - 3"	22' - 8"	24' - 10"	20' - 8"	13' - 7"	14' - 5"	14' - 11"
7	22' - 1"	20' - 10"	20' - 1"	32' - 8"	27' - 3"	28' - 4"	23' - 7"	25' - 11"	21' - 7"	13' - 1"	13' - 11"	14' - 5"
7.25	22' - 7"	21' - 5"	20' - 8"	33' - 6"	27' - 11"	28' - 10"	24' - 1"	26' - 5"	22' - 0"	12' - 11"	13' - 9"	14' - 2"
7.5	23' - 2"	22' - 0"	21' - 2"	34' - 2"	28' - 5"	29' - 5"	24' - 6"	26' - 10"	22' - 5"	12' - 8"	13' - 6"	14' - 0"
8	24' - 3"	23' - 1"	22' - 3"	35' - 2"	29' - 4"	30' - 5"	25' - 4"	27' - 10"	23' - 2"	12' - 3"	13' - 1"	13' - 7"
16 GA Deck												
5.5	19' - 1"	17' - 11"	17' - 2"	27' - 10"	23' - 7"	24' - 7"	22' - 2"	22' - 11"	21' - 3"	15' - 3"	17' - 5"	17' - 11"
5.75	19' - 8"	18' - 6"	17' - 9"	29' - 1"	24' - 4"	25' - 9"	22' - 10"	24' - 0"	21' - 11"	15' - 1"	17' - 1"	17' - 8"
6	20' - 3"	19' - 1"	18' - 4"	30' - 1"	25' - 1"	26' - 10"	23' - 7"	25' - 1"	22' - 8"	14' - 11"	16' - 10"	17' - 4"
6.25	20' - 10"	19' - 8"	18' - 11"	30' - 11"	25' - 9"	27' - 11"	24' - 4"	26' - 1"	23' - 4"	14' - 9"	16' - 6"	17' - 1"
6.5	21' - 5"	20' - 3"	19' - 6"	31' - 10"	26' - 6"	29' - 0"	25' - 0"	27' - 2"	24' - 1"	14' - 7"	16' - 3"	16' - 9"
7	22' - 7"	21' - 5"	20' - 7"	33' - 7"	27' - 11"	31' - 2"	26' - 6"	29' - 2"	25' - 6"	14' - 4"	15' - 9"	16' - 3"
7.25	23' - 2"	22' - 0"	21' - 2"	34' - 5"	28' - 8"	32' - 3"	27' - 2"	30' - 3"	26' - 2"	14' - 2"	15' - 6"	16' - 0"
7.5	23' - 9"	22' - 7"	21' - 9"	35' - 3"	29' - 4"	33' - 3"	27' - 10"	31' - 3"	26' - 10"	14' - 1"	15' - 3"	15' - 9"
8	24' - 11"	23' - 8"	22' - 10"	36' - 11"	30' - 9"	35' - 1"	29' - 3"	33' - 2"	28' - 2"	13' - 10"	14' - 10"	15' - 4"

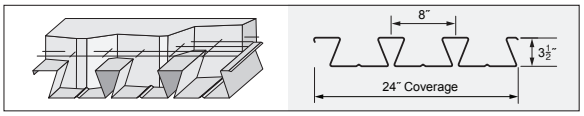
NOTES

1. Deck section properties are calculated in accordance with AISI S100-07.
2. Maximum clear spans without shoring and design web crippling strengths are based on deck bearing of 1.5" at end supports and 3" at interior supports.
3. Maximum construction clear spans are based on ANSI/SDI C-2017 design criteria. For maximum clear spans based on different criteria contact New Millennium.
4. Composite slab service stage calculations are based on ANSI/SDI C-2017 and ASCE 3-91.
5. The service stage spans are based on the instantaneous deflection limit of L/360 under total load. Contact New Millennium for maximum span based on alternative deflection.
6. Long-term deflection has not been taken into consideration. Visit newmill.com for load tables that consider long-term deflection.
7. Temperature and shrinkage reinforcement in accordance with ANSI/SDI C-2017 shall be provided in the slab.
8. Negative moment (top) reinforcement is required over supports of continuous spans. See table entitled *Suggested Reinforcing Steel Over Supports for Continuous Slabs* (page 28) for details.
9. Continuous spans should be approximately equal with the span length difference not exceeding 20%. See Custom Slab Designs discussion (page 19) for guidance on unequal span design.

For the complete selection of load tables, visit: **www.newmill.com**

Versa-Dek® 3.5 LS Composite

4000 PSI LIGHTWEIGHT CONCRETE



DECK DESCRIPTION / SECTION PROPERTIES / STRENGTHS (BARE DECK)

Gage	Thickness (in.)	Coverage (in.)	Weight (psf)	F_y (ksi)	A_s (in.²/ft)	I_D (in.⁴/ft) single	I_D (in.⁴/ft) multi	S_p (in.³/ft)	S_n (in.³/ft)	ϕV_n (lb/ft)	ϕR_{be} (lb/ft)	ϕR_{bi} (lb/ft)
20	0.0358	24	3.33	40	0.978	1.959	1.959	0.775	0.910	5501	952	1954
19	0.0418	24	3.88	40	1.141	2.324	2.324	0.946	1.090	7500	1275	2594
18	0.0474	24	4.40	40	1.293	2.664	2.664	1.113	1.226	9644	1615	3264
16	0.0598	24	5.54	40	1.629	3.394	3.394	1.504	1.573	13477	2496	4990

F_y is steel yield stress; A_s is area of deck; I_D is deck moment of inertia for deflection calculations; S_p and S_n are deck section moduli in positive and negative bending, respectively; ϕV_n is design shear strength of deck; ϕR_{be} and ϕR_{bi} are design web crippling strengths of deck for end and interior bearing, respectively.

MAXIMUM ALLOWABLE SPANS (SERVICE AND CONSTRUCTION STAGE) – LIGHTWEIGHT CONCRETE (110 PCF), f'_c = 4000 PSI

Total Slab Depth (in.)	Service Stage: Simple Spans (ft-in.) LL=40 psf SDL=20 psf	LL=80 psf SDL=5 psf	LL=100 psf SDL=5 psf	Service Stage: Continuous Spans (ft-in.) LL=40 psf; SDL=20 psf interior span	end span	LL=80 psf; SDL=5 psf interior span	end span	LL=100 psf; SDL=5 psf interior span	end span	Construction Stage: Maximum Unshored Clear Spans (ft-in.) single	double	triple
20 GA Deck												
5.5	17' - 2"	15' - 0"	13' - 10"	21' - 2"	17' - 8"	18' - 1"	15' - 0"	16' - 7"	13' - 10"	13' - 5"	14' - 9"	15' - 3"
5.75	17' - 9"	15' - 5"	14' - 2"	21' - 8"	18' - 1"	18' - 6"	15' - 5"	17' - 0"	14' - 2"	13' - 2"	14' - 6"	15' - 0"
6	18' - 4"	15' - 9"	14' - 6"	22' - 1"	18' - 5"	18' - 11"	15' - 9"	17' - 4"	14' - 6"	12' - 11"	14' - 3"	14' - 9"
6.25	18' - 10"	16' - 1"	14' - 9"	22' - 7"	18' - 10"	19' - 4"	16' - 1"	17' - 9"	14' - 9"	12' - 8"	14' - 0"	14' - 6"
6.5	19' - 2"	16' - 5"	15' - 1"	23' - 0"	19' - 2"	19' - 8"	16' - 5"	18' - 1"	15' - 1"	12' - 5"	13' - 8"	14' - 3"
7	19' - 9"	17' - 0"	15' - 8"	23' - 9"	19' - 9"	20' - 5"	17' - 0"	18' - 10"	15' - 8"	12' - 0"	12' - 10"	13' - 4"
7.25	20' - 1"	17' - 4"	15' - 11"	24' - 1"	20' - 1"	20' - 9"	17' - 4"	19' - 2"	15' - 11"	11' - 10"	12' - 5"	13' - 0"
7.5	20' - 5"	17' - 7"	16' - 2"	24' - 6"	20' - 5"	21' - 1"	17' - 7"	19' - 5"	16' - 2"	11' - 8"	12' - 1"	12' - 7"
8	20' - 11"	18' - 1"	16' - 9"	25' - 2"	20' - 11"	21' - 9"	18' - 1"	20' - 1"	16' - 9"	11' - 4"	11' - 5"	11' - 11"
19 GA Deck												
5.5	17' - 6"	16' - 4"	15' - 7"	25' - 9"	21' - 5"	21' - 8"	18' - 0"	19' - 9"	16' - 5"	14' - 11"	16' - 2"	16' - 8"
5.75	18' - 1"	16' - 10"	16' - 1"	26' - 4"	22' - 0"	22' - 2"	18' - 6"	20' - 3"	16' - 11"	14' - 9"	15' - 10"	16' - 5"
6	18' - 8"	17' - 5"	16' - 8"	27' - 0"	22' - 6"	22' - 9"	18' - 11"	20' - 9"	17' - 4"	14' - 5"	15' - 7"	16' - 1"
6.25	19' - 2"	18' - 0"	17' - 2"	27' - 7"	22' - 11"	23' - 3"	19' - 5"	21' - 3"	17' - 9"	14' - 2"	15' - 4"	15' - 10"
6.5	19' - 9"	18' - 6"	17' - 9"	28' - 1"	23' - 5"	23' - 9"	19' - 10"	21' - 9"	18' - 1"	13' - 11"	15' - 1"	15' - 7"
7	20' - 10"	19' - 7"	18' - 9"	29' - 2"	24' - 4"	24' - 9"	20' - 7"	22' - 7"	18' - 10"	13' - 5"	14' - 7"	15' - 1"
7.25	21' - 5"	20' - 2"	19' - 2"	29' - 8"	24' - 9"	25' - 2"	21' - 0"	23' - 0"	19' - 2"	13' - 3"	14' - 5"	14' - 11"
7.5	22' - 0"	20' - 8"	19' - 7"	30' - 2"	25' - 1"	25' - 7"	21' - 4"	23' - 5"	19' - 7"	13' - 0"	14' - 2"	14' - 8"
8	23' - 0"	21' - 9"	20' - 2"	31' - 1"	25' - 11"	26' - 5"	22' - 0"	24' - 3"	20' - 2"	12' - 7"	13' - 10"	14' - 3"
18 GA Deck												
5.5	17' - 10"	16' - 7"	15' - 10"	26' - 5"	22' - 0"	24' - 7"	20' - 6"	22' - 9"	18' - 11"	15' - 5"	17' - 1"	17' - 8"
5.75	18' - 4"	17' - 2"	16' - 4"	27' - 3"	22' - 8"	25' - 5"	21' - 2"	23' - 4"	19' - 6"	15' - 3"	16' - 9"	17' - 4"
6	18' - 11"	17' - 8"	16' - 11"	28' - 1"	23' - 5"	26' - 3"	21' - 10"	24' - 0"	20' - 0"	15' - 0"	16' - 6"	17' - 0"
6.25	19' - 6"	18' - 3"	17' - 5"	28' - 11"	24' - 1"	27' - 0"	22' - 6"	24' - 7"	20' - 6"	14' - 10"	16' - 2"	16' - 9"
6.5	20' - 1"	18' - 10"	18' - 0"	29' - 9"	24' - 10"	27' - 7"	23' - 0"	25' - 2"	20' - 11"	14' - 9"	15' - 11"	16' - 6"
7	21' - 2"	19' - 11"	19' - 1"	31' - 5"	26' - 2"	28' - 10"	24' - 0"	26' - 3"	21' - 10"	14' - 5"	15' - 6"	16' - 0"
7.25	21' - 9"	20' - 5"	19' - 7"	32' - 3"	26' - 10"	29' - 4"	24' - 6"	26' - 9"	22' - 3"	14' - 3"	15' - 3"	15' - 9"
7.5	22' - 3"	21' - 0"	20' - 1"	33' - 1"	27' - 6"	29' - 11"	24' - 11"	27' - 3"	22' - 8"	14' - 2"	15' - 0"	15' - 6"
8	23' - 4"	22' - 0"	21' - 2"	34' - 8"	28' - 10"	30' - 11"	25' - 9"	28' - 3"	23' - 6"	13' - 10"	14' - 7"	15' - 1"
16 GA Deck												
5.5	18' - 5"	17' - 2"	16' - 5"	27' - 4"	22' - 9"	25' - 6"	21' - 3"	23' - 8"	20' - 3"	16' - 3"	19' - 2"	19' - 0"
5.75	18' - 11"	17' - 8"	16' - 11"	28' - 1"	23' - 5"	26' - 3"	21' - 10"	24' - 10"	20' - 11"	16' - 1"	18' - 10"	18' - 10"
6	19' - 6"	18' - 3"	17' - 5"	28' - 11"	24' - 1"	27' - 0"	22' - 6"	25' - 10"	21' - 6"	15' - 11"	18' - 6"	18' - 7"
6.25	20' - 1"	18' - 9"	18' - 0"	29' - 9"	24' - 9"	27' - 10"	23' - 3"	26' - 8"	22' - 2"	15' - 9"	18' - 3"	18' - 5"
6.5	20' - 8"	19' - 4"	18' - 6"	30' - 7"	25' - 6"	28' - 8"	23' - 11"	27' - 5"	22' - 11"	15' - 7"	17' - 11"	18' - 3"
7	21' - 9"	20' - 6"	19' - 7"	32' - 4"	26' - 11"	30' - 4"	25' - 3"	29' - 1"	24' - 3"	15' - 3"	17' - 5"	17' - 11"
7.25	22' - 4"	21' - 0"	20' - 2"	33' - 2"	27' - 7"	31' - 2"	26' - 0"	29' - 11"	24' - 11"	15' - 1"	17' - 2"	17' - 9"
7.5	22' - 11"	21' - 7"	20' - 8"	34' - 0"	28' - 4"	32' - 0"	26' - 8"	30' - 8"	25' - 7"	15' - 0"	16' - 11"	17' - 6"
8	24' - 0"	22' - 8"	21' - 9"	35' - 7"	29' - 8"	33' - 7"	28' - 0"	32' - 3"	26' - 11"	14' - 9"	16' - 6"	17' - 0"

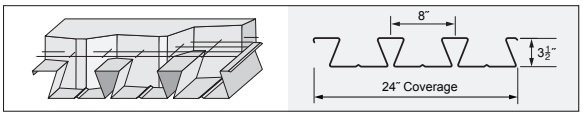
NOTES

1. Deck section properties are calculated in accordance with AISI S100-07.
2. Maximum clear spans without shoring and design web crippling strengths are based on deck bearing of 1.5" at end supports and 3" at interior supports.
3. Maximum construction clear spans are based on ANSI/SDI C-2017 design criteria. For maximum clear spans based on different criteria contact New Millennium.
4. Composite slab service stage calculations are based on ANSI/SDI C-2017 and ASCE 3-91.
5. The service stage spans are based on the instantaneous deflection limit of L/360 under total load. Contact New Millennium for maximum spans based on alternative deflection criteria.
6. Long-term deflection has not been taken into consideration. Visit newmill.com for load tables that consider long-term deflection.
7. Temperature and shrinkage reinforcement in accordance with ANSI/SDI C-2017 shall be provided in the slab.
8. Negative moment (top) reinforcement is required over supports of continuous spans. See table entitled *Suggested Reinforcing Steel Over Supports for Continuous Slabs* (page 28) for details.
9. Continuous spans should be approximately equal with the span length difference not exceeding 20%. See *Custom Slab Designs* discussion (page 19) for guidance on unequal span design.

For the complete selection of load tables, visit: **www.newmill.com**

Versa-Dek® 3.5 LS Composite

4000 PSI NORMAL-WEIGHT AND LIGHTWEIGHT CONCRETE



MAXIMUM UNIFORM SUPERIMPOSED SERVICE LOADS

Concrete	Slab Depth, Concrete Weight, Concrete Volume, WWF	Deck Gage	Maximum Unshored Clear Spans (ft-in.)			Uniform Service Load Capacity, PSF / Spans (ft.)													
						Simple Span Conditions								Continuous Span Condition Negative Moment Reinforcement Required					
			single	double	triple	10	12	14	16	17	18	19	20	16	18	20	22	24	26	28
4,000 PSI Normal-Weight Concrete (145 PSF)	5.75"	20	11' - 9"	12' - 5"	12' - 11"	243	152	104	73	62	53	45		73	53					
	59 PSF	19	13' - 2"	14' - 4"	14' - 10"	339	232	156	115	100	79	58	41	115	87	67	52	41		
	1.5 cu.yd/(100sq.ft)	18	14' - 3"	15' - 2"	15' - 8"	436	301	220	148	113	85	63	45	157	121	95	76	52		
	6x6 - W1.4 x W1.4	16	15' - 1"	17' - 1"	17' - 8"	500	380	267	167	128	98	74	54	248	194	148	100	62		
	6"	20	11' - 7"	11' - 11"	12' - 5"	257	161	110	78	66	56	48	41	78	56	41				
	62 PSF	19	12' - 11"	14' - 1"	14' - 7"	358	245	165	122	106	92	70	50	122	92	71	55	44		
	1.58	18	14' - 1"	14' - 11"	15' - 5"	461	319	233	166	132	100	75	55	166	128	101	81	63		
	6x6 - W1.4 x W1.4	16	14' - 11"	16' - 10"	17' - 4"	500	412	289	192	149	115	87	65	262	207	167	117	74	43	
	6.5"	20	11' - 1"	11' - 1"	11' - 7"	285	178	122	86	73	62	53	46	86	62	46				
	68 PSF	19	12' - 5"	13' - 7"	14' - 1"	398	272	184	135	117	102	90	73	135	102	79	62	49		
	1.74	18	13' - 7"	14' - 5"	14' - 11"	500	353	246	184	161	135	104	79	184	142	112	90	73	54	
	6x6 - W1.4 x W1.4	16	14' - 7"	16' - 3"	16' - 9"	500	500	393	249	195	153	119	92	291	229	185	152	103	65	
	7"	20	10' - 9"	10' - 5"	10' - 10"	313	196	134	95	81	69	59	50	95	69	50				
	74 PSF	19	12' - 0"	13' - 2"	13' - 7"	437	285	202	149	129	112	99	87	149	112	87	68	54	43	
	1.89	18	13' - 1"	13' - 11"	14' - 5"	500	388	270	203	177	156	138	107	203	156	123	99	81	66	49
	6x6 - W2.0 x W2.0	16	14' - 4"	15' - 9"	16' - 3"	500	500	431	315	250	198	156	123	320	252	204	168	137	90	56
	7.25"	20	10' - 7"	10' - 1"	10' - 6"	327	205	141	100	84	72	61	53	100	72	53				
	77 PSF	19	11' - 9"	13' - 0"	13' - 5"	456	298	211	155	135	118	103	91	155	118	91	71	56	42	
	1.97	18	12' - 11"	13' - 9"	14' - 2"	500	406	282	212	185	163	145	123	212	163	129	104	84	69	55
	6x6 - W2.0 x W2.0	16	14' - 2"	15' - 6"	16' - 0"	500	500	451	334	280	223	177	140	334	264	213	175	147	105	66
	7.5"	20	10' - 5"	9' - 9"	10' - 2"	341	214	147	104	88	75	64	52	104	75	52				
	80 PSF	19	11' - 7"	12' - 9"	13' - 2"	476	310	220	162	141	123	108	95	162	123	95	74	59	44	
	2.04	18	12' - 8"	13' - 6"	14' - 0"	500	423	294	221	193	171	151	135	221	171	135	108	88	72	57
	6x6 - W2.0 x W2.0	16	14' - 1"	15' - 3"	15' - 9"	500	500	470	348	308	250	200	159	348	275	222	183	153	120	78
	8"	20	10' - 1"	9' - 3"	9' - 7"	370	231	159	113	96	81	67	57	113	81	57	41			
	86 PSF	19	11' - 3"	12' - 2"	12' - 8"	500	336	239	176	152	133	117	103	176	133	103	80	64	48	
	2.2 cu.yd/(100sq.ft)	18	12' - 3"	13' - 1"	13' - 7"	500	458	319	239	210	185	164	146	239	185	146	117	95	78	62
	4x4 - W1.4 x W1.4	16	13' - 10"	14' - 10"	15' - 4"	500	500	493	377	334	298	250	201	377	298	241	198	166	140	105
4,000 PSI Lightweight Concrete (110 PSF)	5.75"	20	13' - 2"	14' - 6"	15' - 0"	243	163	106	76	65	55			76	55	41				
	45 PSF	19	14' - 9"	15' - 10"	16' - 5"	339	232	167	108	82	61	45		118	89	69	55			
	1.5 cu.yd/(100sq.ft)	18	15' - 3"	16' - 9"	17' - 4"	436	301	220	116	88	67	49		159	123	98	68	41		
	6x6 - W1.4 x W1.4	16	16' - 1"	18' - 10"	18' - 10"	500	391	273	183	102	78	59	43	259	190	124	80	50		
	6"	20	12' - 11"	14' - 3"	14' - 9"	257	172	113	80	69	59	48		80	59	43				
	47 PSF	19	14' - 5"	15' - 7"	16' - 1"	358	245	177	124	95	72	54		124	95	74	58	45		
	1.58	18	15' - 0"	16' - 6"	17' - 0"	461	319	233	133	102	78	59	43	169	131	104	80	49		
	6x6 - W1.4 x W1.4	16	15' - 11"	18' - 6"	18' - 7"	500	423	300	151	117	90	69	52	265	209	141	92	59		
	6.5"	20	12' - 5"	13' - 8"	14' - 3"	285	191	125	89	76	65	56	48	89	65	48				
	52 PSF	19	13' - 11"	15' - 1"	15' - 7"	398	272	187	138	120	98	75	56	138	105	82	65	52		
	1.74	18	14' - 9"	15' - 11"	16' - 6"	500	353	258	173	135	105	81	61	187	145	115	93	69	42	
	6x6 - W1.4 x W1.4	16	15' - 7"	17' - 11"	18' - 3"	500	500	376	194	153	120	93	72	294	232	183	123	81	51	
	7"	20	12' - 0"	12' - 10"	13' - 4"	313	210	138	98	84	72	62	53	98	72	53				
	56 PSF	19	13' - 5"	14' - 7"	15' - 1"	437	298	205	152	132	116	99	77	152	116	90	71	57	46	
	1.89	18	14' - 5"	15' - 6"	16' - 0"	500	388	284	206	173	136	107	83	206	159	126	102	84	60	
	6x6 - W2.0 x W2.0	16	15' - 3"	17' - 5"	17' - 11"	500	500	431	246	194	154	122	96	323	255	207	158	107	70	43
	7.25"	20	11' - 10"	12' - 5"	13' - 0"	327	208	144	103	88	75	65	56	103	75	56	42			
	58 PSF	19	13' - 3"	14' - 5"	14' - 11"	456	312	214	159	138	121	106	88	159	121	94	74	59	48	
	1.97	18	14' - 3"	15' - 3"	15' - 9"	500	406	297	215	189	154	121	95	215	167	132	107	88	70	43
	6x6 - W2.0 x W2.0	16	15' - 1"	17' - 2"	17' - 9"	500	500	451	274	218	173	138	109	337	267	216	178	122	81	52
	7.5"	20	11' - 8"	12' - 1"	12' - 7"	341	217	150	107	92	78	67	58	107	78	58	44			
	61 PSF	19	13' - 0"	14' - 2"	14' - 8"	476	325	224	166	144	126	111	98	166	126	98	78	62	50	41
	2.04	18	14' - 2"	15' - 0"	15' - 6"	500	423	309	224	197	173	137	108	224	174	138	111	91	76	51
	6x6 - W2.0 x W2.0	16	15' - 0"	16' - 11"	17' - 6"	500	500	470	305	243	194	155	124	352	278	226	186	138	93	61
	8"	20	11' - 4"	11' - 5"	11' - 11"	370	235	162	116	99	85	73	63	116	85	63	47			
	65 PSF	19	12' - 7"	13' - 10"	14' - 3"	500	352	242	179	156	137	120	106	179	137	106	84	67	54	42
	2.2 cu.yd/(100sq.ft)	18	13' - 10"	14' - 7"	15' - 1"	500	458	322	243	213	188	167	137	243	188	149	121	99	82	69
	4x4 - W1.4 x W1.4	16	14' - 9"	16' - 6"	17' - 0"	500	500	500	372	298	240	194	156	381	301	244	202	169	120	81

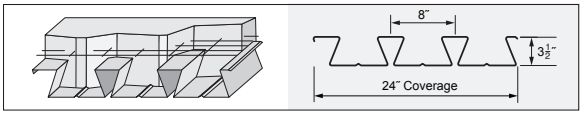
NOTES

1. Deck section properties are calculated in accordance with AISI S100-07.
2. Maximum clear spans without shoring and design web crippling strengths are based on deck bearing of 1.5" at end supports and 3" at interior supports.
3. Maximum construction clear spans are based on ANSI/SDI C-2017 design criteria. For maximum clear spans based on different criteria contact New Millennium.
4. Composite slab service stage calculations are based on ANSI/SDI C-2017 and ASCE 3-91. The slab weight has been subtracted from the service loads listed above.
5. Uniform superimposed service loads were determined by dividing the superimposed LRFD design loads controlled by strength by the load factor of 1.6.
6. The uniform service loads are based on the L/360 deflection limit under total load without considering long-term deflection. Visit newmill.com for load tables that consider long-term deflection.
7. Temperature and shrinkage reinforcement in accordance with ANSI/SDI C-2017 shall be provided in the slab.
8. Negative moment (top) reinforcement is required over supports of continuous spans. See table entitled *Maximum Design Negative Moment Capacity of Composite Slabs* (page 29) for details.
9. Continuous spans should be approximately equal with the span length difference not exceeding 20%. See *Custom Slab Designs* discussion (page 19) for guidance on unequal span design.

For the complete selection of load tables, visit: **www.newmill.com**

Versa-Dek® 3.5 LS Composite

4000 PSI NORMAL-WEIGHT AND LIGHTWEIGHT CONCRETE



SUGGESTED REINFORCING STEEL OVER SUPPORTS FOR CONTINUOUS SLABS

Slab Depth (in.)	Slab Span (ft)	LL=40 psf, SDL=20 psf			LL=80 psf, SDL=5 psf			LL=100 psf, SDL=5 psf		
		$-WL^2/9$	$-WL^2/10$	$-WL^2/11$	$-WL^2/9$	$-WL^2/10$	$-WL^2/11$	$-WL^2/9$	$-WL^2/10$	$-WL^2/11$
5.5	16	4@10	4@11	4@12	5@11	4@8	4@9	5@9	5@11	4@8
	19	5@10	5@11	4@8	5@7	5@9	5@10	5@6	5@7	5@8
	22	5@7	5@8	5@9	6@7	5@6	5@7	-	6@7	5@6
	24	5@6	5@7	5@7	-	-	6@8	-	-	-
	26	-	6@8	5@6	-	-	-	-	-	-
5.75	20	5@9	5@11	4@8	5@7	5@8	5@9	5@6	5@7	5@8
	22	5@7	5@8	5@9	5@6	5@6	5@7	6@7	6@8	5@6
	24	5@6	5@7	5@8	-	6@7	5@6	-	-	6@7
	26	6@7	5@6	5@6	-	-	6@7	-	-	-
	27	-	6@7	5@6	-	-	-	-	-	-
	28	-	6@7	6@8	-	-	-	-	-	-
6	20	5@10	5@11	4@8	5@7	5@8	5@9	5@6	5@7	5@8
	22	5@8	5@9	5@10	5@6	5@7	5@7	6@7	5@6	5@6
	24	5@6	5@7	5@8	6@7	6@8	5@6	-	6@6	6@7
	25	5@6	5@7	5@7	-	6@7	6@8	-	-	6@7
	26	6@7	5@6	5@7	-	6@6	6@7	-	-	-
	27	6@7	6@8	5@6	-	-	6@6	-	-	-
	28	4@3	6@7	5@6	-	-	-	-	-	-
6.25	20	5@10	5@11	4@8	5@8	5@9	5@10	5@7	5@7	5@8
	22	5@8	5@9	5@10	5@6	5@7	5@8	6@7	5@6	5@7
	24	5@7	5@7	5@8	6@7	5@6	5@6	6@6	6@7	6@8
	25	5@6	5@7	5@8	6@6	6@7	5@6	-	6@6	6@7
	26	6@8	5@6	5@7	-	6@7	6@7	-	-	6@6
	27	6@7	5@6	5@6	-	6@6	6@7	-	-	-
	28	6@6	6@7	5@6	-	-	6@6	-	-	-
6.5	20	5@10	4@7	4@8	5@8	5@9	5@10	5@7	5@8	5@9
	22	5@8	5@9	5@11	5@6	5@7	5@8	6@8	5@6	5@7
	24	5@7	5@8	5@9	6@7	5@6	5@7	6@6	6@7	5@6
	25	5@6	5@7	5@8	6@7	6@8	5@6	6@6	6@6	6@7
	26	5@6	5@6	5@7	6@6	6@7	6@8	-	6@6	6@7
	27	6@7	5@6	5@7	-	6@6	6@7	-	-	6@6
	28	6@7	6@8	5@6	-	6@6	6@6	-	-	-
7	20	5@11	4@8	4@9	5@9	5@10	5@11	5@7	5@8	5@9
	22	5@9	5@10	5@11	5@7	5@8	5@9	5@6	5@7	5@7
	24	5@7	5@8	5@9	5@6	5@6	5@7	6@7	6@8	5@6
	25	5@7	5@8	5@8	6@7	5@6	5@6	6@6	6@7	5@6
	26	5@6	5@7	5@8	6@7	6@8	5@6	6@6	6@6	6@7
	27	5@6	5@6	5@7	6@6	6@7	6@8	6@5	6@6	6@7
	28	6@7	5@6	5@6	6@5	6@6	6@7	-	6@5	6@6
7.25	20	5@11	4@8	4@9	5@9	5@10	5@11	5@8	5@9	5@10
	22	5@9	5@10	5@11	5@7	5@8	5@9	5@6	5@7	5@8
	24	5@8	5@8	5@9	5@6	5@7	5@7	6@7	5@6	5@6
	25	5@7	5@8	5@9	6@8	5@6	5@7	6@6	6@7	5@6
	26	5@6	5@7	5@8	6@7	6@8	5@6	6@6	6@7	6@7
	27	5@6	5@6	5@7	6@6	6@7	5@6	6@5	6@6	6@7
	28	6@7	5@6	5@7	6@6	6@7	6@7	-	6@6	6@6
7.5	20	4@7	4@8	4@9	5@9	5@10	5@11	5@8	5@9	5@10
	22	5@9	5@11	4@7	5@7	5@8	5@9	5@6	5@7	5@8
	24	5@8	5@9	5@10	5@6	5@7	5@8	6@7	5@6	5@7
	25	5@7	5@8	5@9	6@8	5@6	5@7	6@7	6@8	5@6
	26	5@6	5@7	5@8	6@7	5@6	5@6	6@6	6@7	6@8
	27	5@6	5@7	5@7	6@6	6@7	5@6	6@6	6@6	6@7
	28	6@8	5@6	5@7	6@6	6@7	6@8	6@5	6@6	6@6
8	20	4@8	4@8	4@8	5@10	5@11	4@8	5@8	5@9	5@11
	22	5@10	5@11	4@8	5@8	5@9	5@10	5@7	5@8	5@9
	24	5@8	5@9	5@10	5@6	5@7	5@8	6@8	5@6	5@7
	25	5@7	5@8	5@9	5@6	5@7	5@7	6@7	5@6	5@6
	26	5@7	5@8	5@8	6@8	5@6	5@7	6@7	6@7	5@6
	27	5@6	5@7	5@8	6@7	6@8	5@6	6@6	6@7	6@8
	28	5@6	5@6	5@7	6@6	6@7	5@6	6@5	6@6	6@7

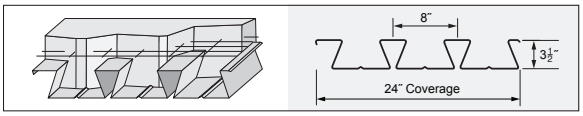
NOTES

1. Reinforcing bars are required over interior supports for continuous spans. Reinforcing bars shall extend a minimum of 0.3L on each side of support.
2. Table is based on reinforcing bars with Fy=60 ksi installed with 3/4" clear concrete cover over supports.
3. Continuous spans should be approximately equal with the larger of the two adjacent spans not greater than the shorter by more than 20%. See *Custom Slab Designs* discussion (page 19) for guidance on unequal span design.
4. The $-WL^2/9$ columns apply to the interior support of the slab continuous over two spans; the $-WL^2/10$ columns apply to the first interior support of the slab continuous over more than two spans; the $-WL^2/11$ columns apply to other interior supports of the slab continuous over more than two spans.

For the complete selection of load tables, visit: **www.newmill.com**

Versa-Dek® 3.5 LS Composite

4000 PSI NORMAL-WEIGHT AND LIGHTWEIGHT CONCRETE



MAXIMUM DESIGN NEGATIVE MOMENT CAPACITY OF COMPOSITE SLABS

	Rebar	ϕM_n (ft-kips/ft) Total Slab Thickness (in.)					
		5.5	5.75	6	6.5	7	7.5
4000 PSI of Any Density	4@12	3.874	4.099	4.324	-	-	-
	4@10	4.606	4.876	5.146	5.686	6.226	-
	4@8	5.678	6.015	6.353	7.028	7.703	8.378
	4@6	7.394	7.844	8.294	9.194	10.094	10.994
	5@12	5.766	6.115	6.464	7.161	7.859	8.556
	5@10	6.818	7.236	7.655	8.492	9.329	10.166
	5@8	8.332	8.855	9.378	10.424	11.470	12.517
	5@6	10.685	11.382	12.080	13.475	14.870	16.265
	6@12	7.808	8.303	8.798	9.788	10.778	11.768
	6@10	9.165	9.759	10.353	11.541	12.729	13.917
	6@8	11.072	11.814	12.557	14.042	15.527	17.012
	6@6	-	-	-	-	19.849	21.829

	Rebar	ϕM_n (ft-kips/ft) Total Slab Thickness (in.)					
		7.75	8	8.25	8.5	9	9.5
4000 PSI of Any Density	4@12	-	-	-	-	-	-
	4@10	-	-	-	-	-	-
	4@8	8.715	9.053	9.390	9.728	10.403	-
	4@6	11.444	11.894	12.344	12.794	13.694	14.594
	5@12	8.905	9.254	9.603	9.951	10.649	-
	5@10	10.584	11.003	11.421	11.840	12.677	13.514
	5@8	13.040	13.563	14.086	14.609	15.655	16.702
	5@6	16.962	17.660	18.357	19.055	20.450	21.845
	6@12	12.263	12.758	13.253	13.748	14.738	15.728
	6@10	14.511	15.105	15.699	16.293	17.481	18.669
	6@8	17.754	18.497	19.239	19.982	21.467	22.952
	6@6	22.819	23.809	24.799	25.789	27.769	29.749

NOTES

[1] Table is based on Grade 60 ASTM A615 reinforcing bars with 3/4" concrete cover over supports.
[2] Slab self-weight has not been accounted for in the tabulated moment capacities. It should be included into the loads applied to the slab.

INSTRUCTIONS ON HOW TO SELECT A REINFORCEMENT PATTERN:

Step 1 – Calculate required negative moment capacity, Mreq, as follows:
$M_{req,LRFD}=[1.2(w_{slab}+w_D)+1.6w_L]L^2/C$ (LRFD)
Where: w_D = superimposed dead load, psf; w_L = live load, psf; w_{slab} = slab weight, psf; L = span length taken as the average of the adjacent span lengths (spans shall be approximately equal with the larger of two adjacent spans not greater than the shorter by more than 20%), ft; $M_{req,LRFD}$ = required LRFD factored negative moment capacity, lb-ft/ft deck width; C = negative bending coefficient (9 for interior support of two span continuous composite slab; 10 for first interior support of composite slab continuous over more than two spans; 11 for other interior supports of composite slab continuous over more than two spans).
Step 2 – Select reinforcement size and spacing from table where $\phi M_n \geq M_{req,LRFD}$ (LRFD).

For the complete selection of load tables, visit: **www.newmill.com**

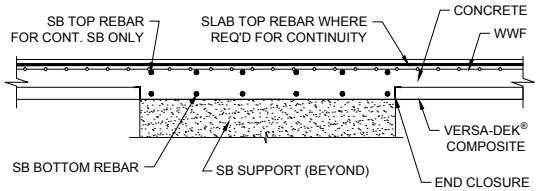
CONTINUOUS SPAN SLAB BEAMS FOR VERSA-DEK® COMPOSITE SLABS

Slab Depth (in.)	Tributary Slab Span (ft)	Slab Beam Span (ft)	Reinforcing Steel Required				
			Bottom Reinforcing Between Supports		Top Reinforcing Over Supports		
			$+WL^2/11$	$+WL^2/16$	$-WL^2/9$	$-WL^2/10$	$-WL^2/11$
5"	18	10	6-#5	6-#4	CS	8-#5	7-#5
		9.5	8-#4	5-#4	8-#5	7-#5	7-#5
		9	7-#4	5-#4	7-#5	7-#5	6-#5
	16	10	5-#5	5-#4	8-#5	7-#5	7-#5
		9.5	7-#4	5-#4	7-#5	6-#5	6-#5
		9	6-#4	4-#4	6-#5	6-#5	5-#5
	14	10	7-#4	5-#4	7-#5	6-#5	8-#4
		9.5	6-#4	4-#4	6-#5	8-#4	7-#4
		9	5-#4	4-#4	8-#4	7-#4	7-#4
5.25"	18	10.25	6-#5	6-#4	7-#6	8-#5	7-#5
		9.5	7-#4	5-#4	8-#5	7-#5	6-#5
		9	7-#4	5-#4	7-#5	6-#5	6-#5
	16	10.5	8-#4	6-#4	8-#5	7-#5	7-#5
		10	7-#4	5-#4	8-#5	7-#5	6-#5
		9	6-#4	4-#4	6-#5	5-#5	7-#4
	14	10.5	7-#4	5-#4	7-#5	6-#5	6-#5
		10	6-#4	4-#4	7-#5	6-#5	8-#4
		9	5-#4	4-#4	5-#5	5-#5	6-#4
5.5"	18	10.75	6-#5	6-#4	7-#6	8-#5	8-#5
		10	8-#4	5-#4	8-#5	7-#5	7-#5
		9	6-#4	4-#4	6-#5	6-#5	5-#5
	16	11	8-#4	6-#4	6-#6	8-#5	7-#5
		10.5	8-#4	5-#4	8-#5	7-#5	6-#5
		10	7-#4	5-#4	7-#5	6-#5	6-#5
	14	11	7-#4	5-#4	8-#5	7-#5	6-#5
		10.5	7-#4	5-#4	7-#5	6-#5	8-#4
		10	6-#4	4-#4	6-#5	6-#5	7-#4
6"	18	11.5	7-#5	7-#4	7-#6	6-#6	8-#5
		11	6-#5	6-#4	7-#6	8-#5	7-#5
		10	5-#5	5-#4	7-#5	6-#5	6-#5
	16	12	6-#5	6-#4	7-#6	8-#5	8-#5
		11.5	6-#5	6-#4	6-#6	8-#5	7-#5
		11	8-#4	5-#4	8-#5	7-#5	6-#5
	14	12	8-#4	6-#4	8-#5	7-#5	7-#5
		11.5	8-#4	5-#4	7-#5	7-#5	6-#5
		11	7-#4	5-#4	7-#5	6-#5	8-#4
6.5"	20	10.75	6-#5	6-#4	6-#6	8-#5	7-#5
		10	5-#5	5-#4	7-#5	7-#5	6-#5
		9	4-#5	4-#4	6-#5	5-#5	7-#4
	18	12	7-#5	7-#4	7-#6	6-#6	8-#5
		11	6-#5	6-#4	8-#5	7-#5	7-#5
		10	5-#5	5-#4	7-#5	6-#5	5-#5
	16	13	7-#5	7-#4	7-#6	7-#6	8-#5
		12	6-#5	6-#4	6-#6	8-#5	7-#5
		11	7-#4	5-#4	7-#5	6-#5	6-#5
7"	20	11.5	6-#5	7-#4	7-#6	8-#5	7-#5
		11	6-#5	6-#4	8-#5	8-#5	7-#5
		10	5-#5	5-#4	7-#5	6-#5	6-#5
	18	12.75	7-#5	7-#4	7-#6	7-#6	8-#5
		12	6-#5	7-#4	7-#6	8-#5	7-#5
		11	5-#5	6-#4	8-#5	7-#5	6-#5
	16	14	8-#5	8-#4	8-#6	7-#6	7-#6
		13	7-#5	7-#4	7-#6	8-#5	8-#5
		12	6-#5	6-#4	6-#6	7-#5	6-#5

CS: Concrete shear strength is insufficient.

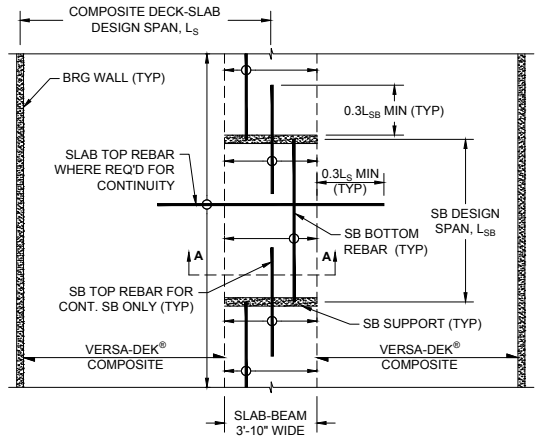
NOTES

1. Continuous spans should be approximately equal with the span length difference not exceeding 20%. Slab span can be taken as an average of the adjacent spans. Contact New Millennium for unequal span slab design.
2. If continuous Versa-Dek® Composite slabs are used, negative moment resisting reinforcing steel shall be placed in the top portion of the slab and extended into the slabs on each side of the slab beam.
3. Versa-Dek® Composite slab spans are measured from center of support to center of slab beam or from center-to-center of adjacent slab beams.
4. Table is based on superimposed loads of 40 psf live and 20 psf dead plus slab weight. Contact New Millennium for values based on alternative load combinations.
5. Concrete Type: Normal-Weight (145 pcf), f'c = 4,000 psi. Contact New Millennium for values based on alternative concrete properties.
6. Table is based on ACI 318 span-to-depth requirements for solid, one-way slabs with one continuous end, L/h ≤ 24 (per ACI 318-08 Table 9.5(a)).
7. Slab beam is 3'-10" wide. Top and bottom reinforcing bars shall be equally spaced along the 3'-10" width. Provide 1-1/2" and 3/4" concrete cover for top and bottom bars, respectively.
8. Slab beam spans shall be approximately equal with the larger of the two adjacent spans not greater than the shorter by more than 20 percent.
9. Slab beam reinforcing over supports shall extend minimum 0.3 x L on both sides of the supports.
10. Vertical shear strength calculations assume the slab beams are uniformly supported along each end (e.g. placed on beams or bearing walls). If columns and plates are used as supports instead, punching shear must be checked and the columns and plates must be sized accordingly.



SECTION A-A

NOTES:
1) SEE SLAB-BEAM TABLE NOTES FOR REBAR CONCRETE COVER REQUIREMENTS.
2) TERMINATION OF SLAB-BEAM TOP AND BOTTOM REINFORCEMENT SHALL BE IN ACCORDANCE WITH ACI 318 REQUIREMENTS.
3) THE MINIMUM TOP REBAR EXTENSIONS SHOWN ON PLAN ARE APPLICABLE TO EQUAL SPANS ONLY.
4) WHERE A SLAB-BEAM SUPPORT IS NOT CONTINUOUS ACROSS THE ENTIRE SLAB-BEAM WIDTH, WHICH IS THE CASE FOR A COLUMN, BENDING OF THE SLAB-BEAM IN THE TRANSVERSE DIRECTION AND SLAB-BEAM PUNCHING SHEAR STRENGTH SHALL BE CONSIDERED. ADDITIONAL SLAB-BEAM REINFORCING MAY BE REQUIRED.



PLAN VIEW OF SLAB BEAM (SB)

CONTINUOUS SPAN SLAB BEAMS

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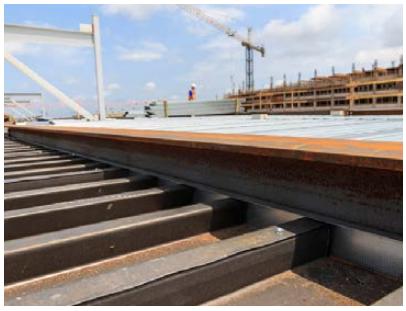
SINGLE SPAN SLAB BEAMS



ALTERNATE METHOD: STEEL BEAMS DECK BEARS ON BOTTOM FLANGE OR WEB MOUNTED LEDGER ANGLES

SINGLE SPAN SLAB BEAMS FOR VERSA-DEK® COMPOSITE SLABS

Slab Depth (in.)	Slab Span (ft)	Slab Beam Span (ft)	Bottom Reinforcing Steel	
			LL=40 psf SDL=20 psf (88 psf LRFD)	LL=100 psf SDL=5 psf (166 psf LRFD)
5	12	5	4-#4	4-#4
		6	4-#4	4-#4
		7	4-#4	6-#4
		8	5-#4	7-#4
	14	5	4-#4	4-#4
		6	4-#4	5-#4
		7	5-#4	7-#4
		8	6-#4	6-#5
	16	5	4-#4	4-#4
		6	4-#4	6-#4
		7	5-#4	8-#4
		8	7-#4	7-#5
	18	5	4-#4	4-#4
		6	4-#4	6-#4
		7	6-#4	8-#4
		8	7-#4	CS
5.25	12	5	4-#4	4-#4
		6	4-#4	4-#4
		7	4-#4	5-#4
		8	5-#4	7-#4
	14	5	4-#4	4-#4
		6	4-#4	5-#4
		7	4-#4	6-#4
		8	6-#4	8-#4
	16	5	4-#4	4-#4
		6	4-#4	5-#4
		7	5-#4	7-#4
		8	6-#4	6-#5
	18	5	4-#4	4-#4
		6	4-#4	6-#4
		7	6-#4	8-#4
		8	7-#4	7-#5
5.5	14	5	4-#4	4-#4
		6	4-#4	5-#4
		7	4-#4	6-#4
		8	5-#4	8-#4
	16	5	4-#4	4-#4
		6	4-#4	5-#4
		7	5-#4	7-#4
		8	6-#4	6-#5
	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	6-#4
		7	6-#4	6-#5
		8	8-#4	CS
6	16	5	4-#4	4-#4
		6	4-#4	5-#4
		7	4-#4	6-#4
		8	6-#4	8-#4
	18	5	4-#4	4-#4
		6	4-#4	5-#4
		7	5-#4	7-#4
		8	6-#4	6-#5
	20	5	4-#4	4-#4
		6	4-#4	6-#4
		7	6-#4	8-#4
		8	7-#4	7-#5
	22	5	4-#4	5-#4
		6	5-#4	6-#4
		7	6-#4	6-#5
		8	8-#4	CS
6.5"	16	6	4-#4	4-#4
		7	4-#4	6-#4
		8	5-#4	8-#4
		9	7-#4	7-#5
	18	6	4-#4	5-#4
		7	5-#4	7-#4
		8	6-#4	6-#5
		9	8-#4	7-#5
	20	6	4-#4	5-#4
		7	5-#4	7-#4
		8	7-#4	6-#5
		9	6-#5	8-#5
	22	6	4-#4	6-#4
		7	6-#4	8-#4
		8	7-#4	7-#5
		9	6-#5	CS
7"	18	6	5-#4	5-#4
		7	5-#4	6-#4
		8	6-#4	8-#4
		9	7-#4	7-#5
	20	6	5-#4	5-#4
		7	5-#4	7-#4
		8	6-#4	6-#5
		9	8-#4	8-#5
	22	6	5-#4	6-#4
		7	5-#4	8-#4
		8	7-#4	7-#5
		9	6-#5	CS
	24	6	5-#4	6-#4
		7	6-#4	8-#4
		8	8-#4	CS
		9	7-#5	CS
7.5"	20	7	5-#4	7-#4
		8	6-#4	8-#4
		9	8-#4	7-#5
		10	6-#5	CS
	22	7	5-#4	7-#4
		8	7-#4	6-#5
		9	6-#5	8-#5
		10	7-#5	CS
	24	6	5-#4	6-#4
		7	6-#4	8-#4
		8	7-#4	7-#5
		9	6-#5	CS
	26	6	5-#4	6-#4
		7	6-#4	8-#4
		8	8-#4	CS
		9	7-#5	CS
8"	20	8	6-#4	8-#4
		9	7-#4	7-#5
		10	6-#5	8-#5
		11	7-#5	CS
	22	8	7-#4	6-#5
		9	8-#4	8-#5
		10	7-#5	CS
		11	8-#5	CS
	24	7	6-#4	7-#4
		8	7-#4	6-#5
		9	6-#5	CS
		10	7-#5	CS
	26	7	6-#4	8-#4
		8	8-#4	7-#5
		9	6-#5	CS
		10	8-#5	CS

CS: Concrete shear strength is insufficient.

NOTES

1. Versa-Dek® Composite slabs supported by slab-beams must be separately checked against applicable load tables to ensure structural sufficiency.
2. If continuous Versa-Dek® Composite slabs are used, negative moment resisting reinforcing steel shall be placed in the top portion of the slab and extended into the slabs on each side of the slab beam.
3. Versa-Dek® Composite slab spans are measured from center of support to center of slab beam or from center-to-center of adjacent slab beams.
4. Concrete Type: Normal-Weight (145 pcf), f'c = 4,000 psi. Contact New Millennium for values based on alternative concrete properties.
5. Table is based on ACI 318 span-to-depth requirements for solid, simply supported one-way slabs, L/h ≤ 20 (per ACI 318-08 Table 9.5(a)).
6. Slab beam is 3'-10" wide. Bottom reinforcing bars shall be equally spaced along the 3'-10" width and placed 3/4" above the bottom of the beam.
7. Vertical shear strength calculations assume the slab beams are uniformly supported along each end (e.g. placed on beams or bearing walls) . If columns and plates are used as supports instead, punching shear must be checked and the columns and plates must be sized accordingly.

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