ENGINEERED SOLUTIONS™

DEEP-DEK® COMPOSITE

COMPOSITE LONG SPAN FLOOR DECK

www.metaldek.com
Deep-Dek® Composite® is a long-span composite steel floor Dek that spans up to 35’-0”.

Another Engineered Solution™ from the Metal Dek Group®

- Conforms to established engineering standards for fire, vibration and sound
- Compatible with all noncombustible structural support systems
- Eliminates need for filler beams
- Requires limited to no shoring
- Reduces volume and weight of concrete (compared to cast-in-place systems)
- Provides core drilling flexibility
- Provides exposed ceiling options
- Minimizes floor-to-floor heights
System Description

4.5" and 6" Deep-Dek® Profiles
- Permanent galvanized steel form
  - Provides positive bending reinforcement of composite slab
  - Unshored construction spans approaching 20 feet
  - In-service spans up to 35 feet
- Factory closed ends
  - Eliminate end closures and web stiffeners
  - Restrain wet concrete
- Dek-Knek® sidelap
  - Nests and aligns Deep-Dek® panels
  - Locks to concrete for vertical restraint
- Dek-Lok™ sidelap connector
  - Sheared and folded with Dek-Lok™ HSL Tool
  - Keys to concrete to resist horizontal shear

Supplemental Steel Reinforcement
- Provides negative reinforcement for continuous spans
- Resists long-term deflection
- Influences spontaneous deflection and vibration
- Controls thermal contraction
- Reinforces large openings

Concrete Cover
- Normal- or light-weight concrete
- Minimum 4,000 PSI concrete optimizes design

DEK-LOK™ HSL TOOL™
- Pneumatic drive tool grips, shears, and folds Dek-Lok™ connection
- Portable and adaptable for field installation or off-site prefabrication
- Provided by Metal Dek Group®

*U.S. Patent No. 7,353,584
**UL Fire Ratings**

<table>
<thead>
<tr>
<th>Ratings (Hr.)</th>
<th>Normal-Weight Concrete Cover Thickness</th>
<th>Normal-Weight Concrete Cover Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>5”</td>
<td>5”</td>
</tr>
<tr>
<td>1</td>
<td>4 1/4”</td>
<td>4 1/4”</td>
</tr>
</tbody>
</table>

(1) Unprotected, restrained assembly rating  
(2) Reference UL Design D951 / Reference ULc Design F914  
(3) Concrete Cover + Height of Deep-Dek® Profile = Slab Depth

**Acoustics**

- **Sound Transmission Class (STC)**
- **Impact Insulation Class (IIC)**

<table>
<thead>
<tr>
<th>Assembly</th>
<th>STC</th>
<th>IIC</th>
<th>STC</th>
<th>IIC</th>
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<tbody>
<tr>
<td>Base System (1)</td>
<td>54</td>
<td>31</td>
<td>57</td>
<td>35</td>
</tr>
<tr>
<td>Base System with Homasote® Comfort Base (2)</td>
<td>54</td>
<td>53</td>
<td>57</td>
<td>57</td>
</tr>
</tbody>
</table>

(1) NGC Testing Services, Buffalo, NY; August 2006  
(2) Base system: 3” (or 5”) normal-weight concrete cover over Deep-Dek® 4.5 Composite panel; ceiling finished with 1 5/8” stud furring spaced 24” O.C. and 1/2” gypsum board.  
(3) Homasote® Comfort Base™ is a 1/2” thick sound board with engineered ventilation grooves.

**Vibration**

- Independent testing confirms that Deep-Dek® Composite conforms to established vibration standards of AISC Steel Design Guide Series Eleven (DG-11): *Floor Vibrations Due To Human Activity.*

- DekVibe™ is an engineering analytical tool the Metal Dek Group uses to evaluate vibration characteristics of composite floor slab systems in MDG’s family of floor systems. Contact the Dek Design Team for DekVibe design assistance.
## Span Guide for 2-Hr. Restrained Fire-Rated Floor Assemblies

### 2 Span Continuous Slab Design

#### Normal Weight Concrete (NWT)

<table>
<thead>
<tr>
<th>Application/Superimposed Service Loads</th>
<th>No Shoring</th>
<th>1 Row</th>
<th>2 Rows</th>
<th>3 Rows</th>
<th>No Shoring</th>
<th>1 Row</th>
<th>2 Rows</th>
<th>3 Rows</th>
<th>No Shoring</th>
<th>1 Row</th>
<th>2 Rows</th>
<th>3 Rows</th>
<th>No Shoring</th>
<th>1 Row</th>
<th>2 Rows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residence Units 40 PSF LL + 25 PSF DL</td>
<td>12'-7&quot;</td>
<td>24'-6&quot;</td>
<td>31'-10&quot;</td>
<td>35'-0&quot;</td>
<td>14'-8&quot;</td>
<td>31'-10&quot;</td>
<td>35'-0&quot;</td>
<td>35'-0&quot;</td>
<td>15'-6&quot;</td>
<td>35'-0&quot;</td>
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<td></td>
</tr>
<tr>
<td>Classrooms (1) 1,000 Lb. Pt. Load over a 2.5 FT x 2.5 FT area or 40 PSF LL + 25 PSF DL</td>
<td>12'-7&quot;</td>
<td>24'-6&quot;</td>
<td>31'-10&quot;</td>
<td>35'-0&quot;</td>
<td>14'-8&quot;</td>
<td>31'-10&quot;</td>
<td>35'-0&quot;</td>
<td>35'-0&quot;</td>
<td>15'-6&quot;</td>
<td>35'-0&quot;</td>
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<td></td>
</tr>
<tr>
<td>Office Units (2) 2,000 Lb. Pt. Load over a 2.5 FT x 2.5 FT area OR 50 PSF LL + 20 PSF DL</td>
<td>12'-7&quot;</td>
<td>24'-6&quot;</td>
<td>31'-2&quot;</td>
<td>33'-3&quot;</td>
<td>14'-8&quot;</td>
<td>31'-10&quot;</td>
<td>35'-0&quot;</td>
<td>35'-0&quot;</td>
<td>15'-6&quot;</td>
<td>35'-0&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corridors 100 PSF LL + 10 PSF DL</td>
<td>12'-7&quot;</td>
<td>24'-6&quot;</td>
<td>24'-9&quot;</td>
<td>N/A</td>
<td>14'-8&quot;</td>
<td>30'-6&quot;</td>
<td>31'-1&quot;</td>
<td>32'-9&quot;</td>
<td>15'-6&quot;</td>
<td>35'-0&quot;</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passenger Vehicle Parking Structure (3) (4) 3000 LB. Pt. Load over a 4.5 Ft x 4.5 IN area OR 40 PSF LL</td>
<td>12'-7&quot;</td>
<td>24'-6&quot;</td>
<td>34'-0&quot;</td>
<td>35'-0&quot;</td>
<td>14'-8&quot;</td>
<td>31'-10&quot;</td>
<td>35'-0&quot;</td>
<td>35'-0&quot;</td>
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</tbody>
</table>

### 6" Deep-Dek® w/ 5" NWT Concrete Topping (Total Depth: 11-1/4")

<table>
<thead>
<tr>
<th>Application/Superimposed Service Loads</th>
<th>No Shoring</th>
<th>1 Row</th>
<th>2 Rows</th>
<th>3 Rows</th>
<th>No Shoring</th>
<th>1 Row</th>
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<td>34'-6&quot;</td>
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<td>17'-0&quot;</td>
<td>35'-0&quot;</td>
<td>18'-0&quot;</td>
<td>35'-0&quot;</td>
<td>18'-1&quot;</td>
<td>35'-0&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classrooms (1) 1,000 Lb. Pt. Load over a 2.5 FT x 2.5 FT area or 40 PSF LL + 25 PSF DL</td>
<td>14'-7&quot;</td>
<td>24'-10&quot;</td>
<td>34'-6&quot;</td>
<td>35'-0&quot;</td>
<td>17'-0&quot;</td>
<td>35'-0&quot;</td>
<td>18'-0&quot;</td>
<td>35'-0&quot;</td>
<td>18'-1&quot;</td>
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<td>Office Units (2) 2,000 Lb. Pt. Load over a 2.5 FT x 2.5 FT area OR 50 PSF LL + 20 PSF DL</td>
<td>14'-7&quot;</td>
<td>24'-10&quot;</td>
<td>33'-8&quot;</td>
<td>35'-0&quot;</td>
<td>17'-0&quot;</td>
<td>35'-0&quot;</td>
<td>18'-0&quot;</td>
<td>35'-0&quot;</td>
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<td>Passenger Vehicle Parking Structure (3) (4) 3000 LB. Pt. Load over a 4.5 Ft x 4.5 IN area OR 40 PSF LL</td>
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<td>35'-0&quot;</td>
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<td></td>
</tr>
</tbody>
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1. (1) Span - 0" application limit set by Metal Dek Group Engineering.
2. (2) Slabs exceeding the long-term deflection service limits shall be reinforced with compression steel. Contact Metal Dek Group Engineering for reinforcement size & spacing. Evaluation of floor system vibration characteristics per AISC D011 also advisable.
3. (3) Unless noted otherwise, span limits are based on shoring constraints. Shoring shall be placed at equal distances over the length of span. Web crippling capacity increased 33% during construction phase per SDI Design Manual Pub.31. Minimum detailing beam width = 4 IN.
4. (4) Span limited due to IBC 2006 service load requirements. Service stage span limits are based on a failure mode of the composite slab. Failure modes include deck yielding, concrete failure, shear-bond and deflection.
5. (5) Span limits based on 2 Span Continuous Slab design shall be approximately equal length with the larger of the two adjacent spans not greater than the shorter by more than 20%. (per ACI 318-02/8.3.3b), Sufficient negative reinforcement shall be provided for slab continuity.
6. (6) Span limits based on application of either a concentrated (Pt.) load or uniform LL + uniform superimposed DL (where applicable). The concentrated load is distributed over the stated area per IBC 2006 and further distributed using methodology presented in the SDI Composite Deck Design Handbook.
8. (8) Deflection limit: L/240 superimposed total load, L/360 superimposed live load (per IBC Table 1604.3)
9. (9) Minimum end bearing width = 2 IN. Deck sections furnished with closed ends.
10. (10) Temperature/ shrinkage reinforcement, full field: WWF 6x6 - W2.9 x W2.9 or equivalent fiber reinforced concrete per SDI Design Manual Pub.31.
11. (11) Attention shall be given to applications, like parking structures, where the concrete surface is left exposed. Items to consider include service stage crack width limitations, control joint sizes and locations, and their influence on surface coatings.

For more information about span limits, call 1-888-DEK-DSGN
Deep-Dek® Composite
CEILINGS

Exposed Options

Versa-Steel® Painted Metal Systems
- Versa-Cote™ — Primer systems
- Versa-Clad™ and Versa-Shield™ — Finished systems
- Versa-Steel® Advantages
  - Standardized specifications
  - Uniform factory-applied coatings
  - Consistent color
  - Dependable performance

Deep-Dek® Composite Cellular Acoustical with Access Panel and Dek-Strut™
- Concealed Sprinkler Lines and Wiring/Conduit
- Noise Reduction Coefficient (NRC) of 1.00
- Versa-Steel® Painted Metal Systems
- Dek-Strut™ Accommodates Threaded Rod Hangers

Unexposed Options

Deep-Dek® Composite is compatible with conventional furred drywall, plaster and suspended ceiling applications.

For more information about ceiling options, call 1-888-DEK-DSGN
Dek-Design Team® (888-DEK-DSGN)
Contact the Metal Dek Group’s Dek Design Team® for Deep-Dek® Composite design assistance and technical information. Visit metaldek.com for 24/7 information about the Metal Dek Group.