

MAXROOF™



MAX DECK™  
Smart Construction

## MxDeck54



### MxDeck54 - Steel Decking Systems

**MxDeck54** is an innovative steel decking profile, which is an ultimate lightweight system for all multirise buildings. **MxDeck54** acts as a form for the concrete and is designed so that no or minimum propping is required.

**MxDeck54** is designed for the use with structural concrete and is manufactured with mechanical embossments in the webs to create mechanical and chemical bond between the steel deck and the concrete. The composite action allows the deck to serve as the tensile reinforcement for positive bending in the slab, which is significantly reduces or eliminates the need for rebars in the slab and lowers material and labor costs. The strength and durability of the steel provides a solid platform for construction on top of open web joists, structural steel, light gauge framing or masonry walls.

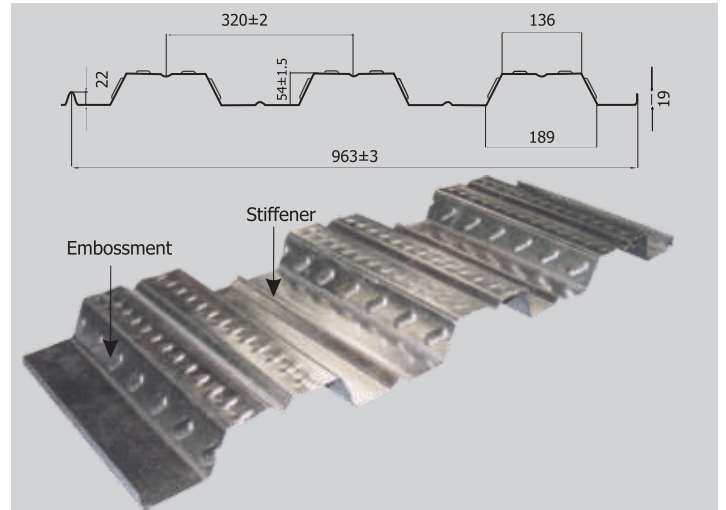


Fig - 01



### Material Specifications

**MxDeck54** steel profile is manufactured from hot dipped zinc coated high strength with minimum 245/345 MPa yield strength and coating mass of Z120/ Z275 (min 120/275 g/m<sup>2</sup> total of zinc coating on both sides).

The available thickness ranges from 0.70 mm to 1.2 mm BMT (Base Metal Thickness). The steel conforms to AS1397 and BS EN 10147:2000.

### MxDeck Span Table Formwork Stage\*

| Span Type           | Single |      |      | Continuous End |      |      | Continuous Interior |      |      |      |
|---------------------|--------|------|------|----------------|------|------|---------------------|------|------|------|
|                     | 0.7    | 1    | 1.2  | 0.7            | 1    | 1.2  | 0.7                 | 1    | 1.2  |      |
| BMT                 | 0.7    | 1    | 1.2  | 0.7            | 1    | 1.2  | 0.7                 | 1    | 1.2  |      |
| Slab Thickness (mm) | 100    | 1860 | 2100 | 2150           | 1880 | 2270 | 2320                | 2050 | 2500 | 2550 |
|                     | 125    | 1700 | 1950 | 2050           | 1730 | 2180 | 2270                | 1900 | 2400 | 2500 |
|                     | 150    | 1610 | 1850 | 1950           | 1630 | 2090 | 2180                | 1770 | 2300 | 2400 |
|                     | 175    | 1500 | 1750 | 1900           | 1540 | 1950 | 2090                | 1650 | 2150 | 2300 |
|                     | 200    | 1280 | 1720 | 1820           | 1330 | 1850 | 1940                | 1400 | 2000 | 2100 |

Table 01

#### Note to Table 01

- 0.50 kPa live load considered for stacked wet concrete during construction.
- Spans are calculated on the basis of limiting deflection of L/180 and ration of 2 adjacent spans is considered as 1.
- The above design is performed considering no supports of the props.
- BMT stands for Base Metal Thickness.
- Please contact Maxroof before adopting the design.

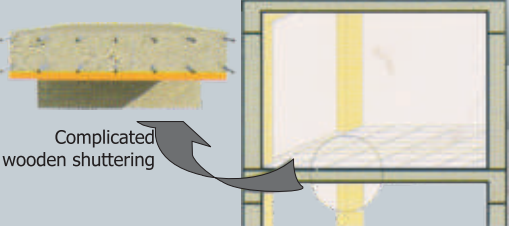
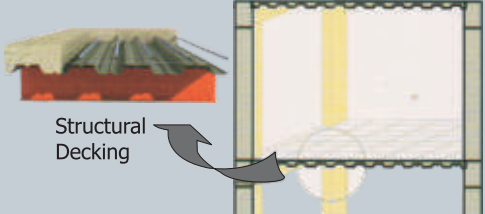

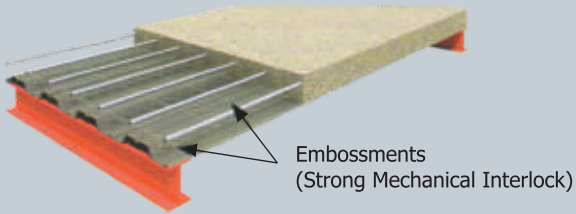
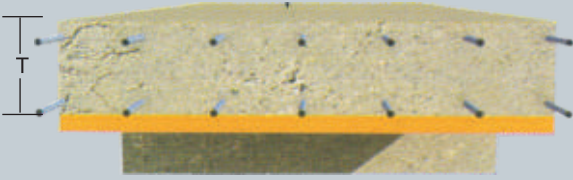
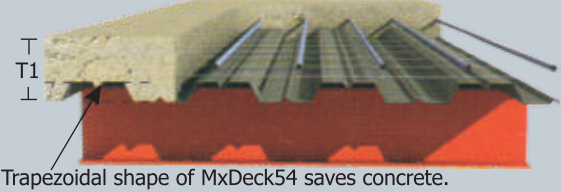
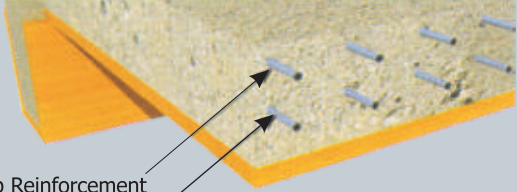
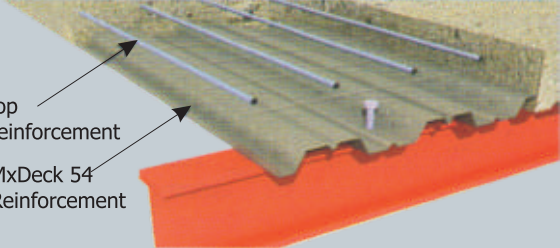
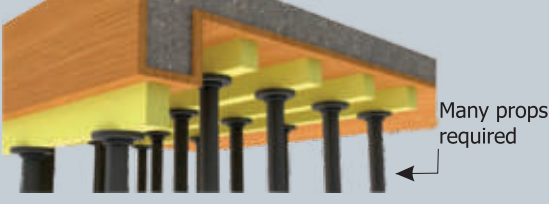
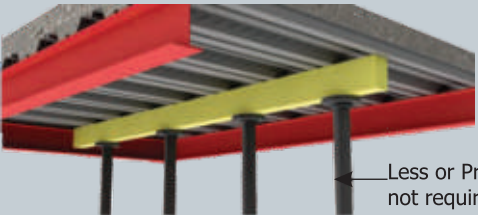
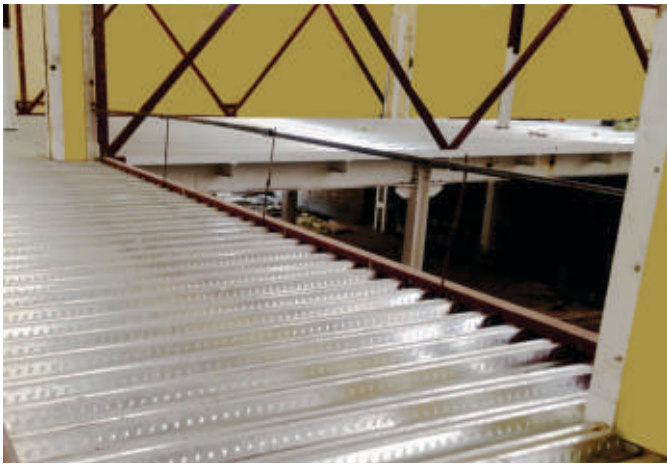
|                    | Conventional RCC Slab   | Structural Decking Slab  |
|--------------------|---|--|
| Structural Element | <p>Wood Shuttering are removed after concrete curing period.</p>  <p>Complicated wooden shuttering</p> | <p>Becomes a part of slab and makes it structurally strong.</p>  <p>Structural Decking</p>   |
| Composite Action   | <p>Wooden shuttering removed after slab is cured.</p>  <p>Temporary Shuttering</p>                    | <p>Embossment provide shear bond between steel &amp; concrete</p>  <p>Embossments (Strong Mechanical Interlock)</p>                             |
| Concrete Saving    | <p>Volume of Concrete as per slab depth</p>  <p>T = More thickness of concrete</p>                   | <p>Concrete saving makes construction economical</p>  <p>Trapezoidal shape of MxDeck54 saves concrete.<br/>T1 = Less thickness of concrete</p> |
| Steel Saving       | <p>Reinforcement steel as required</p>  <p>Top Reinforcement<br/>Bottom Reinforcement</p>            | <p>Act as bottom tensile reinforcement-steel saving</p>  <p>Top Reinforcement<br/>MxDeck 54 Reinforcement</p>                                  |
| Prop Arrangement   | <p>Complicated prop arrangement</p>  <p>Many props required</p>                                      | <p>High tensile steel provides large unpropped spans</p>  <p>Less or Props not required</p>  |

Fig - 02

Fig - 03

## MxDeck54 - Advantages



- **Lightweight** : Concrete floor weight reduces by almost 50%.
- **Economical** : Doesn't require additional support, reduces use of concrete, reduces slab thickness, savings in reinforcement steel.
- **Time Saving** : Easy and rapid installation to major reinforcement required.
- **Material and sectional properties** impart additional strength to finished concrete slab during service period.
- **Practically propless**, giving space for parallel activities & simultaneous casting of multiple floor possible.
- **Multipurpose** : Widely used in multistory buildings, malls, markets, storage facilities mezzanines, bridges, walkways, platforms, warehouses industrial sheds, control rooms.
- **Aesthetics** : Offers internal polished look available in a variety of colors. So no need for internal plastering of roofs.

## MxDeck54 Sectional Properties

| Sr.No. | Thickness (mm) | Unit Wt (kg/m) | Sectional Area (mm <sup>2</sup> /m) | Section Modulus (mm <sup>3</sup> ) | Moment of Inertia (mm <sup>4</sup> ) |
|--------|----------------|----------------|-------------------------------------|------------------------------------|--------------------------------------|
| 1      | 0.7            | 7.35           | 867.21                              | 17108.14                           | 461919.69                            |
| 2      | 1.0            | 10.34          | 1238.87                             | 24442.92                           | 659958.97                            |
| 3      | 1.2            | 12.33          | 1486.64                             | 29334.34                           | 792027.05                            |

Table 01



## MxDeck54 - Shear Stud Welding



Shear studs welded through **MxDeck54** to main steel support are recognised as the most efficient method of achieving the necessary interactions between steel beams and concrete slabs in composite floor construction.

Shear stud welding also known as stud arc welding, joins a stud and another piece of metal together. The stud is usually joined to the structural member along with **MxDeck54**, by using stud as one of the electrodes.

Shear stud welding uses a type of flux called a ferrule, a cermaic ring which concentrates the heat generated, prevents oxidation and retains the molten metal in the weld zone. The ferrule is broken off of the stud after the weld is completed.

The shear studs used are of 16mm or 19mm diameter headed shear studs of varying lengths, depending on the size of slab. These are manufactured in low carbon steel, and have a minimum yield point of 350 Mpa and an ultimate tensile strength of 450 Mpa. Portable stud welding machinery is available for the above application. Maxroof has inhouse machines and trained staff for such welding.

### Allowable Loads in kg/m<sup>2</sup> for 245 Mpa Yield Strength of Material \*

| No | Thickness (mm) | SPAN IN METERS |      |      |      |      |      |      |      |      |
|----|----------------|----------------|------|------|------|------|------|------|------|------|
|    |                | 1.0            | 1.25 | 1.5  | 1.75 | 2.0  | 2.25 | 2.5  | 2.75 | 3.0  |
| 1  | 0.70           | 2304           | 1475 | 1024 | 752  | 576  | 455  | NA** | NA** | NA** |
| 2  | 0.80           | 2633           | 1685 | 1170 | 860  | 658  | 520  | NA** | NA** | NA** |
| 3  | 1.00           | 3277           | 2097 | 1456 | 1070 | 819  | 647  | 524  | NA** | NA** |
| 4  | 1.25           | 4100           | 2624 | 1822 | 1339 | 1025 | 810  | 656  | 452  | 456  |

### Allowable Loads in kg/m<sup>2</sup> for 345 Mpa Yield Strength of Material \*

| No | Thickness (mm) | SPAN IN METERS |      |      |      |      |      |     |      |      |
|----|----------------|----------------|------|------|------|------|------|-----|------|------|
|    |                | 1.0            | 1.25 | 1.5  | 1.75 | 2.0  | 2.25 | 2.5 | 2.75 | 3.0  |
| 1  | 0.70           | 3246           | 2077 | 1443 | 1060 | 811  | 641  | 519 | NA** | NA** |
| 2  | 0.80           | 3709           | 2374 | 1649 | 1211 | 927  | 733  | 594 | 491  | NA** |
| 3  | 1.00           | 4616           | 2954 | 2052 | 1507 | 1154 | 912  | 739 | 610  | 513  |
| 4  | 1.25           | 5775           | 3696 | 2567 | 1886 | 1444 | 1141 | 924 | 764  | 642  |

\* The above table is indicative only. Please contact Maxroof before adopting for design.  
**NA\*\*** Not Advised



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## MAXROOF CORPORATION PVT. LTD.

**Corporate Office :**  
B-414, 4th Floor, Pride Purple  
Square, Kalewadi Phata,  
Kaspate Wasti, Wakad,  
Pune - 411 057.  
Maharashtra , INDIA.

T. : + 91 20 2727 6330  
F. : + 91 20 6410 2618  
w. : [maxroof.in](http://maxroof.in)  
E. : [sales@maxroof.in](mailto:sales@maxroof.in)  
[contact@maxroof.in](mailto:contact@maxroof.in)