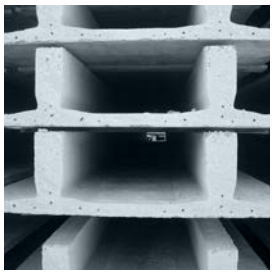
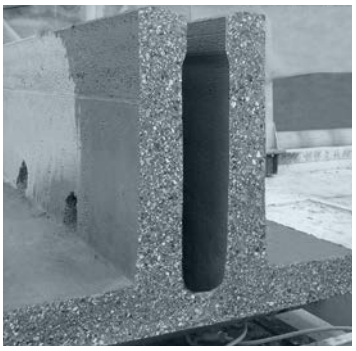
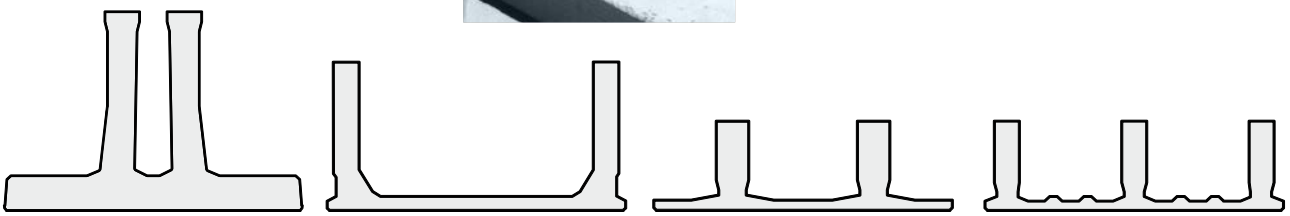
Concrete Experience





Inverted Double T BEAMS and SLABS

Applications



Inverted Double T Beams | U Panels | Inverted Double T Slabs | Inverted Triple T Slabs

Technology for the Precast and Prestressed Concrete Industry

nordimpianti

INVERTED DOUBLE T BEAMS AND SLABS

FIELD APPLICATIONS
SOCIAL, COMMERCIAL, INDUSTRIAL, INFRASTRUCTURE

PRODUCED BY
SLIPFORMER *sf*

ELEMENT DIMENSIONS
CAN BE CUSTOMISED

SLIPFORMER *sf*

Inverted double T panels are prestressed concrete elements that have a constant cross section. They are manufactured using high tensile strength prestressed strands, wires or single wire which are embedded within the element.

The production of these elements is achieved using our Slipformer machine that casts elements continuously on a long production bed without the need of any formwork.

INVERTED DOUBLE T BEAMS

U PANELS

INVERTED DOUBLE T SLABS

INVERTED TRIPLE T SLABS

Prestressed Inverted Double T Beams and Slabs

produced by the best quality casting machines available

Inverted Double T Beams produced using Slipformer Technology

Jumbo **Series**

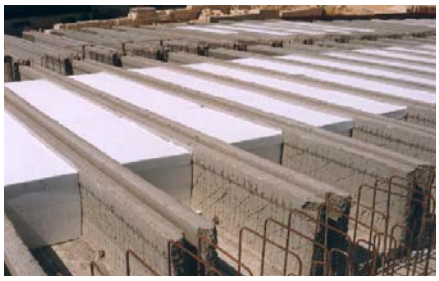
LARGE INVERTED DOUBLE T BEAMS h 1000

h 500 mm UP TO 1000 mm high

The inverted T beams have a particular constant cross section with a thicker lower part and two high vertical ribs. On site they are placed along side each other (to give a ready flat underside) or separated.

A lighter floor can be made by using polystyrene in-fill blocks and then a floor covering or by creating voids within the floor using corrugated steel sheets or thin concrete slabs over the elements.

Floor made with elements side by side



Lighter floor with polystyrene infils

Lighter floor with corrugated steel sheets

The ribs and lower part of the beams are also reinforced with steel mesh. The side profile is wedge shaped with a rough surface to allow the in-situ concrete to be easily applied.

The two ribs give the beam a high torsional rigidity and excellent transversal load distribution. This means that the element is self supporting during the transport and construction phases.

The main applications for these beams are:

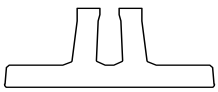
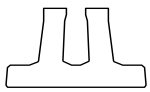
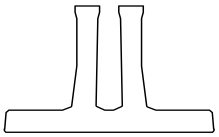
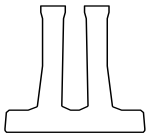
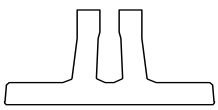
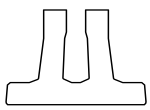
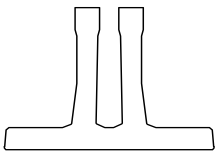
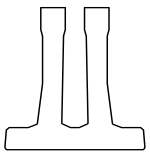
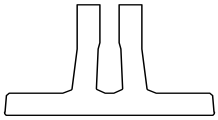
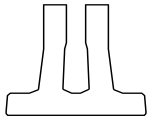
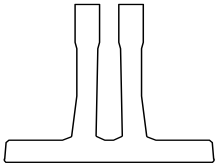
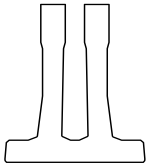
- Decking systems for road and railway viaducts and bridges
- Tunnels, anti-landslide and avalanche guards
- Industrial flooring systems
- Commercial flooring with high loading capacities and spans of more than 20 m

They can be used with a prefabricated structure or with an on-site cast structure with joints designed to meet the technical specifications required.

The beams can be manufactured with heights from 500 mm to 1000 mm and with a standard width of 1200 mm or, by using the same machine, in a width of 800 mm simply by changing the internal side formers of the Slipformer.

JUMBO SERIES BY SLIPFORMER TECHNOLOGY

1200 - 800 mm wide

1200 mm wide	**800** mm wide		**1200** mm wide	**800** mm wide	
 Kg/m **629**	 Kg/m **496**	h **500** mm	 Kg/m **797**	 Kg/m **664**	h **800** mm
 Kg/m **691**	 Kg/m **558**	h **600** mm	 Kg/m **864**	 Kg/m **731**	h **900** mm
 Kg/m **754**	 Kg/m **621**	h **700** mm	 Kg/m **932**	 Kg/m **799**	h **1000** mm

These concrete elements are produced using special Slipformer machines and without any fixed formworks thus making them more cost effective than other traditionally manufactured precast beams.

Extra steel reinforcement tied to the main reinforcement being mounted before casting. This gives extra strength to the ends to enable safe and low cost transport.

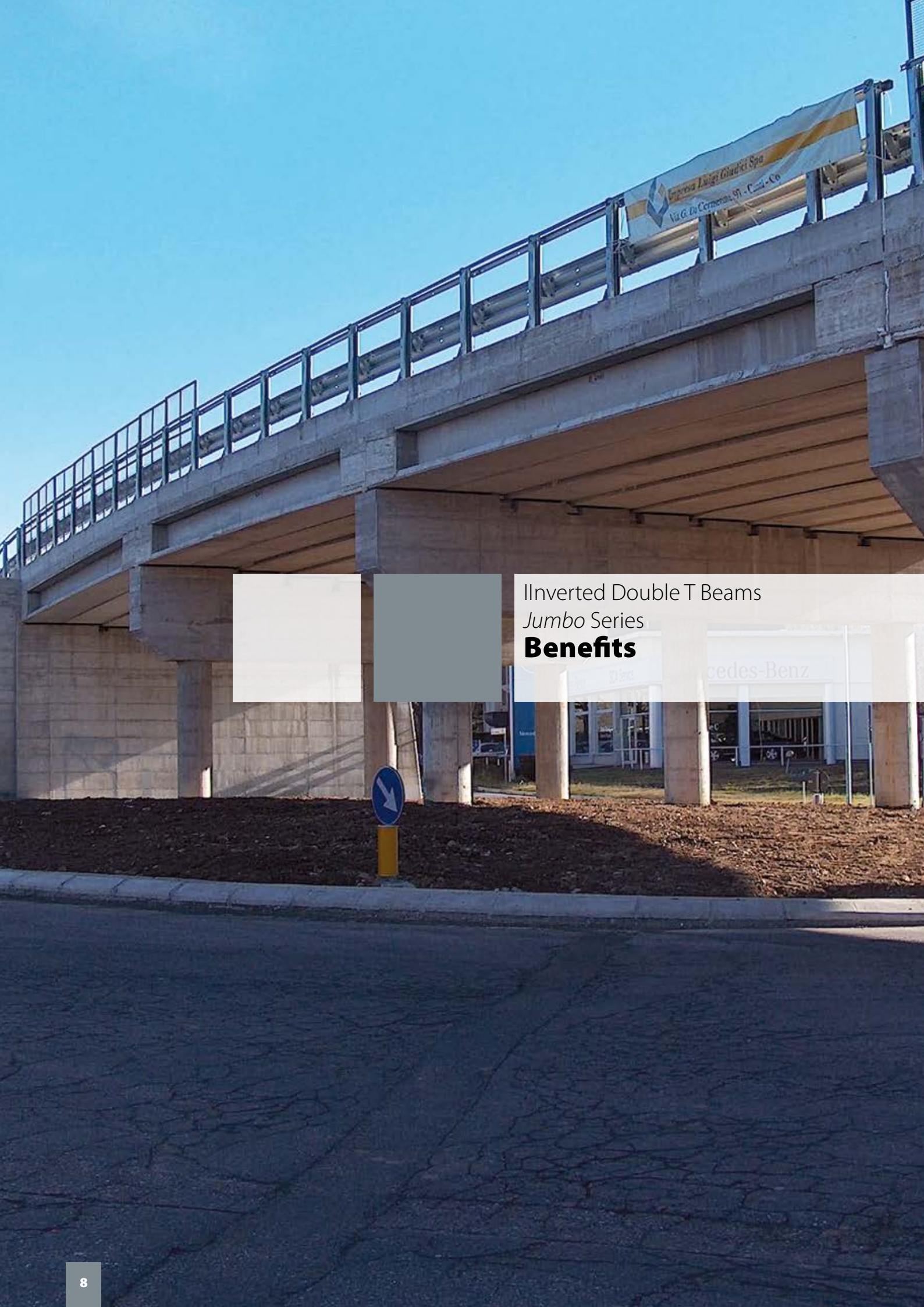
For the most demanding applications or when producing high concrete elements, the lower part of the element and the vertical ribs are reinforced with steel mesh and connection bars.

The beams can be manufactured with heights from 500 mm to 1000 mm and with a standard width of 1200 mm or, by using the same machine, with a width of 800 mm simply by changing the internal side formers of the Slipformer.

SPECIAL PROFILE h1000

ONLY WITH NORDIMPIANTI TECHNOLOGY

TO MEET ALL SPECIAL DEMANDS
FOR INDUSTRIAL AND COMMERCIAL BUILDINGS



IInverted Double T Beams
Jumbo Series
Benefits

BENEFITS OF INVERTED DOUBLE T BEAMS

- ASSURED QUALITY
- COMPLETELY SELF-SUPPORTING
- EASY PROJECT IMPLEMENTATION
- BIG COST SAVING
- EXCELLENT LOWER SURFACE FINISH
- PRODUCTION FLEXIBILITY
- QUICK AND EASY INSTALLATION
- HIGH DURABILITY AND LOAD RESISTANCE

QUICK AND EASY INSTALLATION

With only 3-4 workers it is possible to install more than 500-600 m2 of floor per day.

COMPLETELY SELF-SUPPORTING

For all loads and spans there is no need for supports during installation. To finish the floor it is only necessary to seal with a concrete topping.

The produced elements have high load resistances thanks to a low water/cement ratio of concrete from 0.32 to 0.38. In fact to produce the same profiles using traditional methods would require higher water/cement ratios and need expensive formworks.

Even though the low water/cement ratio employed makes the concrete hard to work, NORDIMPIANTI's machines have no difficulty producing particular element shapes with a high level of reliability.

EASY PROJECT IMPLEMENTATION

Inverted double T beams have a wide range of applications, they can be produced up to 20 m long.

They are very common in the traditional building sector, in prefabricated building construction and also in seismic zones. For this specific purpose the floor elements can be connected to each other using steel reinforcement during construction in order to create floor continuity. This gives the floor the correct static characteristics required for seismic zones.

Through the choice of a different thickness of the lower part of the element, floors can be produced with high fire resistances of up to 180 minutes.

BIG COST SAVING

These concrete elements are produced using special Slipformer machines without any fixed formworks thus making them more cost effective than other traditionally manufactured precast beams.

Large production volumes with uniform cross sections even with different cable reinforcement configurations are possible. Once the concrete elements have been produced they can be removed from the casting beds after just 8-10 hours.

EXCELLENT LOWER SURFACE FINISH

The lower surface of the element is smooth having been produced on a steel casting bed. Generally this surface can be left as seen or can be simply painted. In residential applications only final smoothing is required greatly reducing costs.

PRODUCTION FLEXIBILITY

The dimensions of the concrete elements and the prestressed steel wire configurations can be changed according to the element technical specifications required.

It is a quick and simple operation to change the necessary parts of the forming insert of the casting machine to vary the height and the thickness of the concrete elements.

For the most demanding applications or when producing high concrete elements, the lower part of the element and the vertical ribs are reinforced with steel mesh and connection bars.

ASSURED QUALITY

This is achieved using specific equipment for the manufacture of the concrete elements combined with a high end quality control system.

HIGH DURABILITY AND LOAD RESISTANCE

The Slipformer technology produces elements with guaranteed fire resistances which are further enhanced by the ability of the machines to work a concrete mix with a low water/cement ratio.

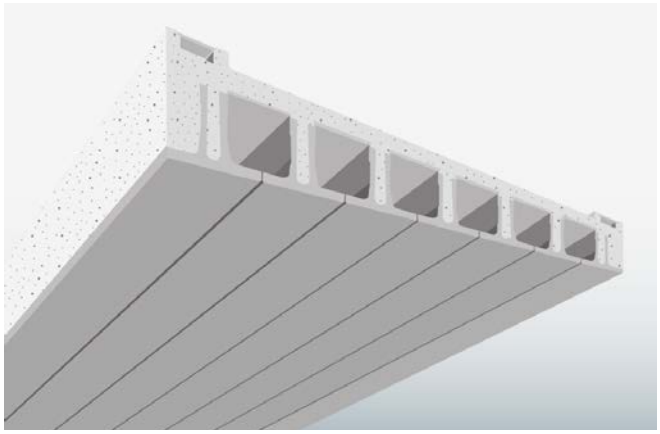
The quality of the casting machines ensures a high compaction level and impermeability combined with a high mechanical resistance.

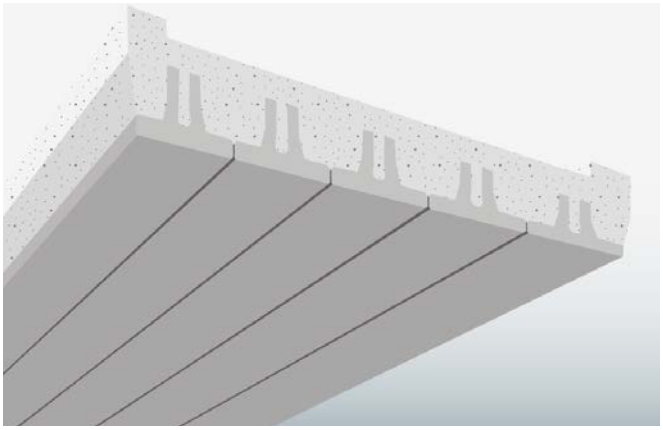
h1000 FIELD APPLICATIONS

INVERTED DOUBLE T BEAMS

The main applications for these beams are:

- Decking systems for road and railway viaducts and bridges.
- Tunnels, anti-landslide and avalanche guards
- Industrial flooring systems
- Commercial flooring with high loading capacities and spans of more than 20 m





ROAD WIDENING

BRIDGE DECKING SYSTEM

LARGE COMMERCIAL FLOORING SYSTEM

BRIDGE DECKING SYSTEM

U PANELS
TOP FLOOR AND TOP BRIDGE

FIELD APPLICATIONS
COMMERCIAL, INDUSTRIAL, INFRASTRUCTURE

PRODUCED BY
SLIPFORMER ***sf***

ELEMENT DIMENSIONS
width **1200** mm • overall slab height **500-1000** mm
height of lower part **75-140** mm

SLIPFORMER ***sf***

U Panels were developed to surpass the height and weight limits of traditional precast floors. It is the result of detailed market analysis to drive forward technical solutions and the implementation of advanced engineering being applied to Nordimpianti's casting machines.

Field Applications

The *TopFLOOR* and *TopBRIDGE* series floor elements are suitable for use in any structure where it is necessary to cover large spans with self supporting beams.

The product finds its natural application in the field of infrastructure (such as roofs, rockfall guards, underpasses and bridges) although it can also be effectively used for industrial and commercial structures.

KEY FEAUTURES

- Able to cover large spans and be self supporting during construction;
- Smooth underside appearance free of cracks for an excellent surface finish;
- Embedded steel reinforcement provides shear resistance and the ability to link with existing reinforcement before being cast on site, essential for bridge decks and general infrastructure;
- Ability to increase the shear strength of the panel by increasing the thickness off the beam especially at the reaction sections of greatest shear force;
- Ability to add additional reinforcement for increased anchorage during on site casting;
- The possibility to use lightweight Polystyrene (EPS) inserts to achieve a floor with the minimum of weight;
- High load capability due to concrete with a low water/cement ratio able to be compliant with even the toughest infrastructure requirements;
- Big potential savings thanks to the application of innovative Slipformer technology;
- Fast and Easy Transport and installation thanks to the quality of manufacture.

TOP FLOOR

TOP FLOOR **N** / TOP FLOOR **S**

The lower part of the slab and the vertical ribs are vibrated in one operation by NORDIMPIANTI's Slipformer Machine. Within of the lower part and the ribs there are the pre-stressed wires and steel mesh for the vertical and horizontal load distribution.

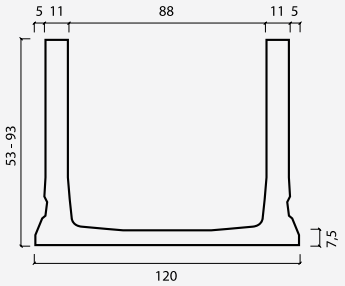
The N series is characterized by a U profile and by the concrete topping being cast at the construction site. Steel mesh protrudes from the top of the element in order to have a good key with the cast topping.

Polystyrene (EPS) blocks can be put within the U of the element and the on-site topping can have steel mesh to help withstand the loading.

The product in this version is very light making it very economic to handle and transport. The thickness of the lower part of the element can be adjusted if an increase in loading or fire resistance is required.

N version *TopFLOOR* elements come in standard heights of 53, 63, 73, 83, 93 mm. Every element is completed at the construction site with a concrete topping.

TOP FLOOR N	**53/120**	**63/120**	**73/120**	**83/120**	**93/120**
Height (cm)	53	63	73	83	93
Weight (Kg/m²)	5.08	5.63	6.18	6.7275	7.2775
Area (Kg/cm²)	2032	2252	2472	2691	2911

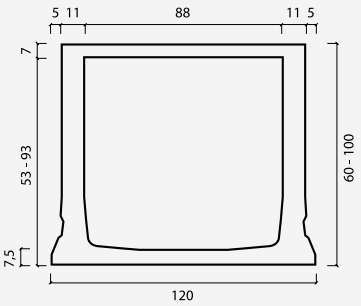


The S series has a box profile with the concrete topping cast directly at the element production site. After steel mesh is placed over the Polystyrene (EPS) the concrete topping is cast with another special slipformer machine.

This floor can be completed with either a concrete topping cast at the construction site or casting concrete between the sides of the element. This last solution gives side continuity from one slab and another. The thickness of the concrete topping as well as the lower part of the element can be adjusted depending on customer's needs.

S version *TopFLOOR* elements icome in standard heights of 60, 70, 80, 90, 100 mm but they can also be customized.

TOP FLOOR S	**53/120**	**63/120**	**73/120**	**83/120**	**93/120**
Height (cm)	60	70	80	90	100
Weight (Kg/m²)	7.005	7.555	8.1025	8.6525	9.2025
Area (Kg/cm²)	2802	3022	3241	3461	3681

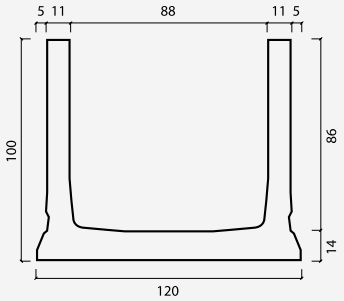


TOP BRIDGE

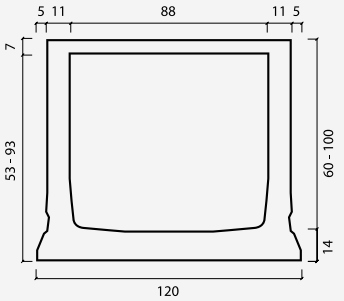
TOP BRIDGE **N** / TOP BRIDGE **S**

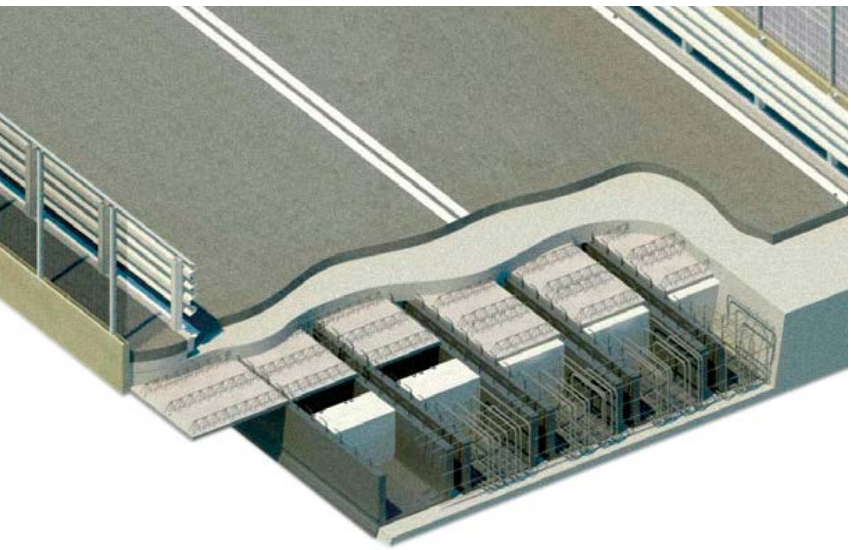
The *TopBRIDGE* series is characterized by having substantially larger sections able to accommodate a greater quantity of reinforcement to comply with category 1 Bridge regulations. Otherwise the manufacture is the same as that for TopFLOOR.

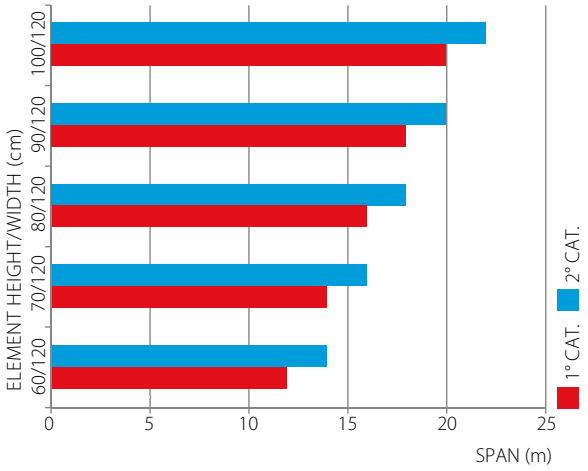
TOP BRIDGE N	**60/120**	**70/120**	**80/120**	**90/120**	**100/120**
Height (cm)	60	70	80	90	100
Weight (Kg/m²)	6.895	7.445	7.9925	8.5425	9.0925
Area (Kg/cm²)	2758	2978	3197	3417	3637



TOP BRIDGE S	**60/120**	**70/120**	**80/120**	**90/120**	**100/120**
Height (cm)	60	70	80	90	100
Weight (Kg/m²)	8.44	8.99	9.53	10.08	10.63
Area (Kg/cm²)	3374	3594	3813	4033	4523







Height/Span chart of 1st and 2nd category brige regulations with element lower part at least 20 cm and element centres at 120 cm.

INVERTED DOUBLE AND TRIPLE T SLABS

FIELD APPLICATIONS
COMMERCIAL, INDUSTRIAL

PRODUCED BY
SLIPFORMER ***sf***

ELEMENT DIMENSIONS
width **1200** mm • overall slab height **200-360** mm
height of lower part **40-60** mm

SLIPFORMER ***sf***

The double and triple T slabs have a particular constant cross section with a lower slab and two high vertical ribs. On site they are placed along side each other (to give a ready flat underside) or separated.

A lighter floor can be made by using polystyrene in-fill blocks and then a floor covering or by creating voids within the floor using corrugated steel sheets or thin concrete slabs over the elements.

They can be used with a prefabricated structure or with an on-site cast structure with joints designed to meet the technical specifications required.

The slabs can be manufactured in heights from 200 mm to 360 mm and with a standard width of 1200 mm.

INVERTED DOUBLE T SLABS

1200 mm wide

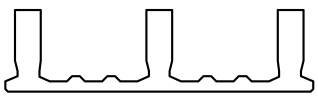
60 mm height of lower part

Height (mm)	**Weight** (Kg/m²)
h 200	203
h 240	219
h 280	235
h 320	250
h 360	266

INVERTED TRIPLE T SLABS

1200 mm wide

40 mm height of lower part



Height (mm)	**Weight** (Kg/m²)
h 200	198
h 240	222
h 280	246
h 320	270
h 360	294

The vertical ribs give the slabs a high torsional rigidity and excellent transversal load distribution.

This means that the element is self supporting during the transport and erection phase.

The lower part of the slab is reinforced with steel mesh.

FIELD APPLICATIONS

THE DIVERSE APPLICATIONS OF INVERTED DOUBLE T SLABS

Commercial roof coverings

EXCELLENT LOWER SURFACE FINISH

The lower surface of the element is smooth having been produced on a steel casting bed. Generally this surface can be left as seen or can be simply painted. In residential applications only final smoothing is required greatly reducing costs.

BENEFITS

- EXCELLENT LOWER SURFACE FINISH
- QUICK AND EASY INSTALLATION
- COMPLETELY SELF-SUPPORTING
- EASY PROJECT IMPLEMENTATION
- BIG COST SAVING
- ASSURED QUALITY
- PRODUCTION FLEXIBILITY
- HIGH DURABILITY AND LOAD RESISTANCE

nordimpianti Concrete Experience

Inverted Double T BEAMS and SLABS

Applications

NORDIMPIANTI SYSTEM SRL
Via Erasmo Piaggio, 19/A
66100 Chieti (CH) - Italy

Tel. +39 0871 540222
Fax +39 0871 562408

info@nordimpianti.com
www.nordimpianti.com