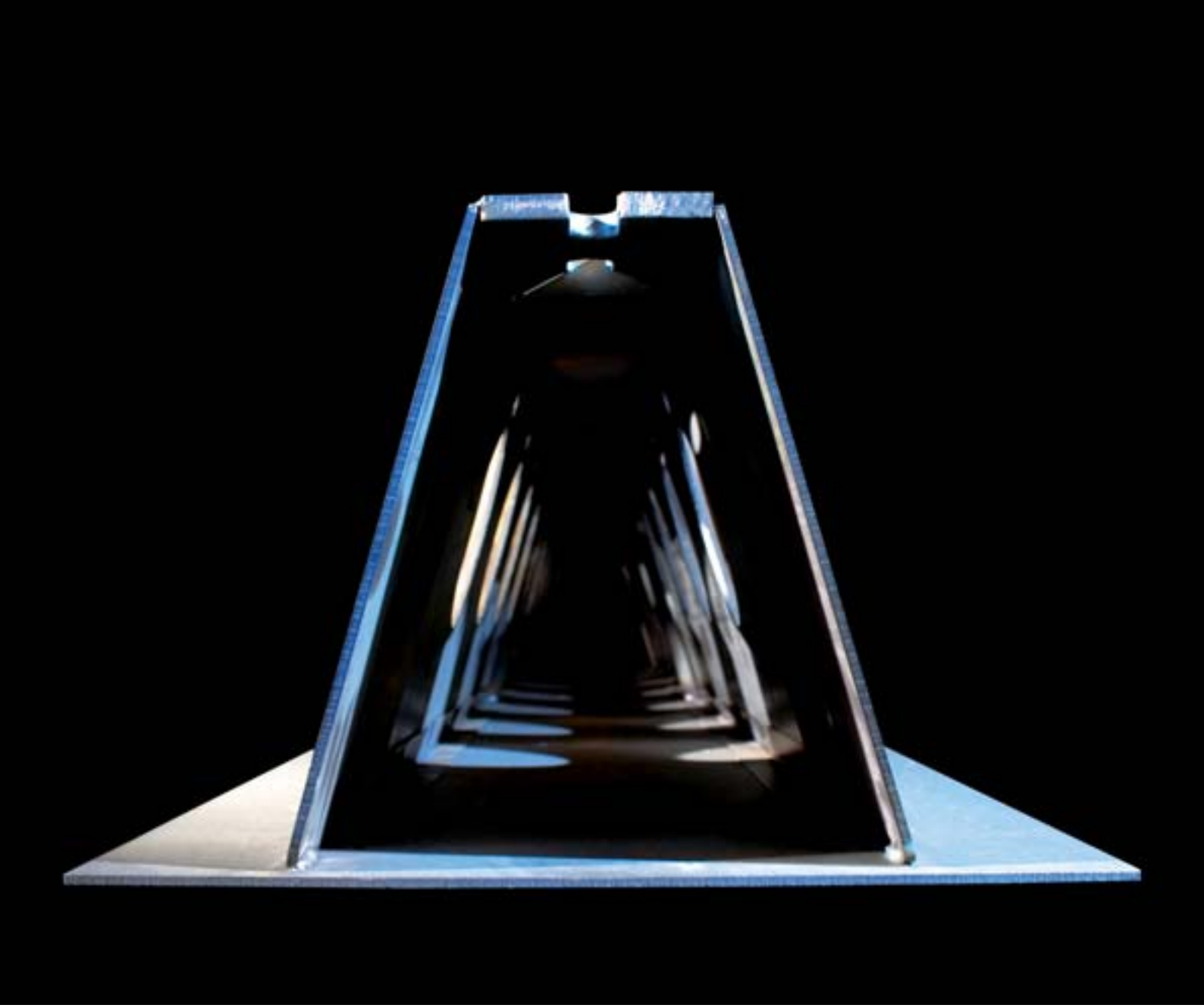


DELTABEAM
COMPOSITE BEAM

EN 729-2

Type approval
Finland: VTT-RTH-03040-07, Germany: Z-26.2-49,
UK: BBA 05/4204, Russia: РОСС FI.СЛ19.Н00323,
Czech Republic: 204/C5/2006/060-025293
Replaces the brochure 10/03 • 4/2007

DELTABEAM

Benefits of Deltabeam

- EVEN CEILINGS: allows flexible layouts through the whole life cycle of the building and easy HVAC installations below or inside the floor.
- COMPOSITE ACTION: no additional work at site, achieved by the infill concrete
- HIGH FIRE RESISTANCE: no additional work at site, achieved by the infill concrete
- MAJOR SAVINGS IN MULTI STOREY BUILDINGS: due to shallow structure, the total height of the building can be reduced or extra floor can be built: savings in facade material costs and maintenance (air-condition, heating)
- TECHNICAL APPROVALS: Finland, UK, Czech Republic, Russia and Germany
- INTENSIVE RESEARCH: ongoing research program with University of Oulu, dozens of loading test, including fire tests
- TECHNICAL SUPPORT: with short response time at every stage of the project
- DESIGN CALCULATIONS: design calculations and fabrication drawings for each beam will be delivered to the client
- EXPERIENCED TEAM: impressive reference list starting from 1989, more than 4000 projects
- HIGH PRODUCTION CAPACITY: high quality from multiple factories around the Europe
- EASY AND FAST INSTALLATION: light and easy hoisting, simple to assemble
- SHORT TOTAL ASSEMBLY TIME: hollow core - Deltabeam construction reduces total assembly time compared to traditional methods
- FREE FLOOR BELOW: no obstacles to work on floor below, minimum amount of propping if any
- FLEXIBLE PRODUCT RANGE: flexible beam types and details, composite columns, erection work and auxiliary tools for erection groups
- COMMON MATERIALS: basic structural steel, reinforcement and concrete used
- MODERN PRODUCTION TECHNOLOGY: robots weld and paint, modern plasma cutting
- QUALITY AND ENVIROMENT SERTIFICATES: ISO9001, ISO14001 and EN729-2

delta® beam

CONCRETE CONNECTIONS

Peikko benefits

- reliable: passed demanding test program
- competitive price and delivery time
- economical and easy to use in designing, manufacturing and installation of the elements

CONTENTS

DELTABEAM

1. DESCRIPTION OF THE SYSTEM

Deltabeam is a hollow steel-concrete composite beam made from welded steel plates with holes in the sides. It is completely filled with concrete after installation on site. Deltabeam acts as a composite beam with either hollow-core, composite, or thin shell slabs, and in-situ casting. Deltabeam can have a fire class rating as high as R120 without additional fire protection.

Figure 1. Deltabeam with thin shell and hollow-core slabs

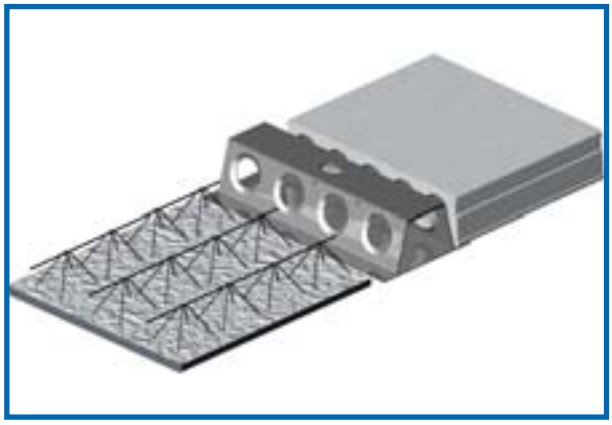


Figure 2. Deltabeam with light weight pre-cast concrete element and in-situ casting.

2. DIMENSIONS AND MATERIALS

Materials and standards:

Plates	S420	EN 10025-3, EN 10149-2	
	S355J2+N	EN 10025-2	
Rebars	A500HW	SFS 1215	(yield limit 500 MPa)

Figure 3. Deltabeam

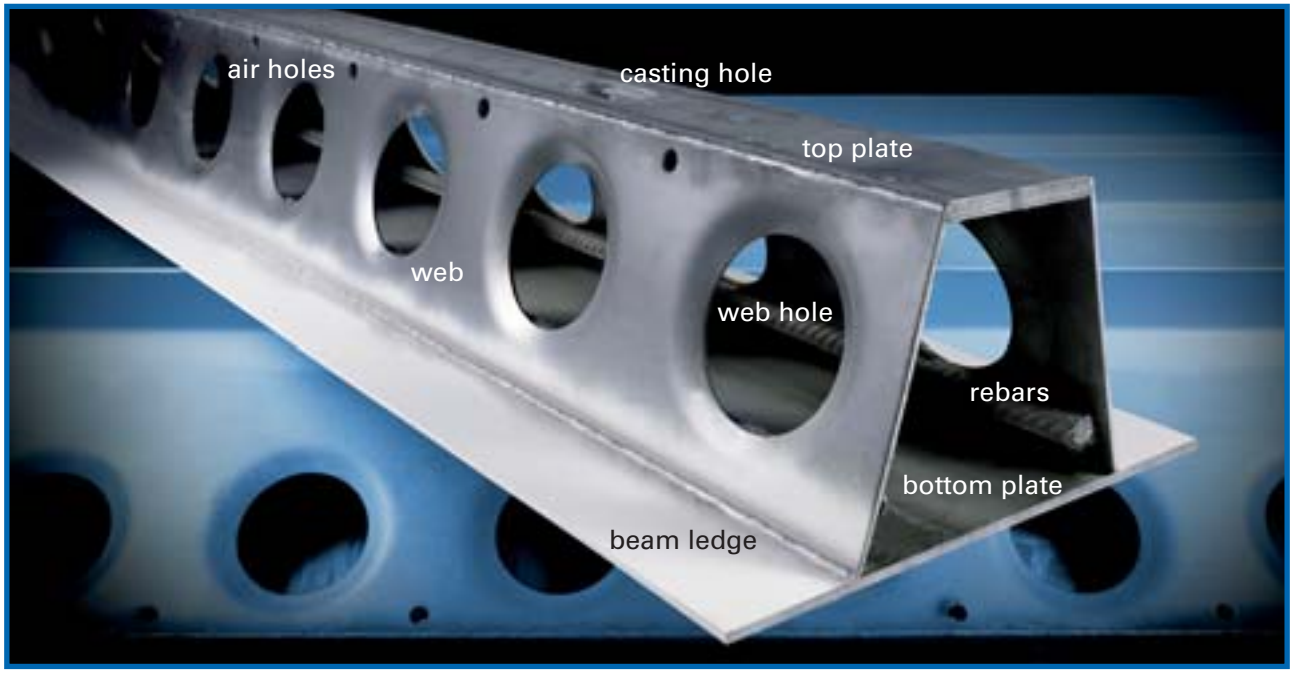
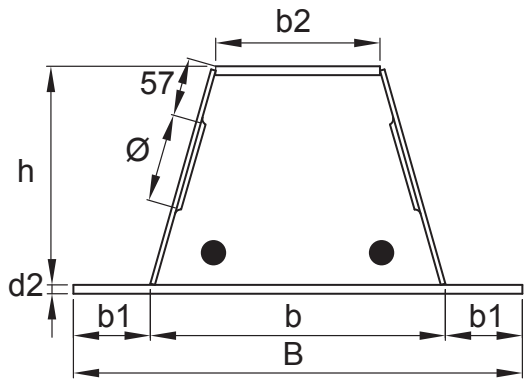


Table 1. Dimensions of Deltabeam [mm]

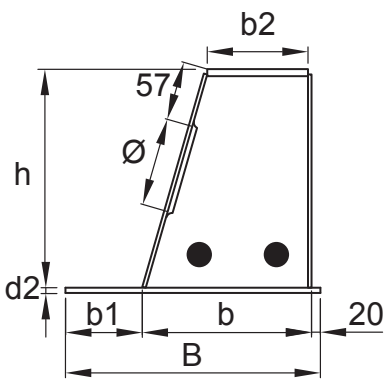


	b	B	b1*	b2	d2	h	Ø**
D20-200	395	97.5	100	5-25	200	80
D20-300	495	97.5	180	5 - 25	200	80
D20-400	660	130	278	5 - 25	200	80
D22-300	495	97.5	170	5 - 25	220	80
D22-400	660	130	270	5 - 25	220	80
D25-300	495	97.5	155	5 - 25	250	150
D25-400	660	130	255	5 - 25	250	150
D26-300	495	97.5	148	5 - 25	265	150
D26-400	660	130	245	5 - 25	265	150
D30-300	495	97.5	130	5 - 25	300	150
D30-400	660	130	230	5 - 25	300	150
D32-300	495	97.5	110	5 - 25	320	150
D32-400	660	130	210	5 - 25	320	150
D37-400	660	130	180	5 - 25	370	150
D37-500	760	130	278	5 - 25	370	150
D40-400	660	130	180	5 - 25	400	150
D40-500	760	130	278	5 - 25	400	150
D50-500	760	130	230	5 - 25	500	150
D50-600	860	130	330	5 - 25	500	150

*standard size unless the customer otherwise defines (minimum 20 mm)

**c/c distribution for web holes is always 300mm

Table 2. Dimensions of edge beams [mm]



	b	B	b1*	b2	d2	h	Ø**
DR20-215	335	100	148	5 - 25	200	80
DR20-245	365	100	180	5 - 25	200	80
DR22-250	370	100	180	5 - 25	220	80
DR25-260	380	100	180	5 - 25	250	150
DR26-230	350	100	148	5 - 25	265	150
DR26-260	380	100	180	5 - 25	265	150
DR26-290	410	100	210	5 - 25	265	150
DR26-325	445	100	245	5 - 25	265	150
DR30-270	390	100	180	5 - 25	300	150
DR32-250	370	100	148	5 - 25	320	150
DR32-285	405	100	180	5 - 25	320	150
DR32-310	430	100	210	5 - 25	320	150
DR32-365	465	100	245	5 - 25	320	150
DR37-325	475	130	210	5 - 25	370	150
DR40-295	445	130	180	5 - 25	400	150
DR50-350	500	130	210	5 - 25	500	150

*standard size unless the customer otherwise defines (minimum 20 mm)

**c/c distribution for web holes is always 300mm

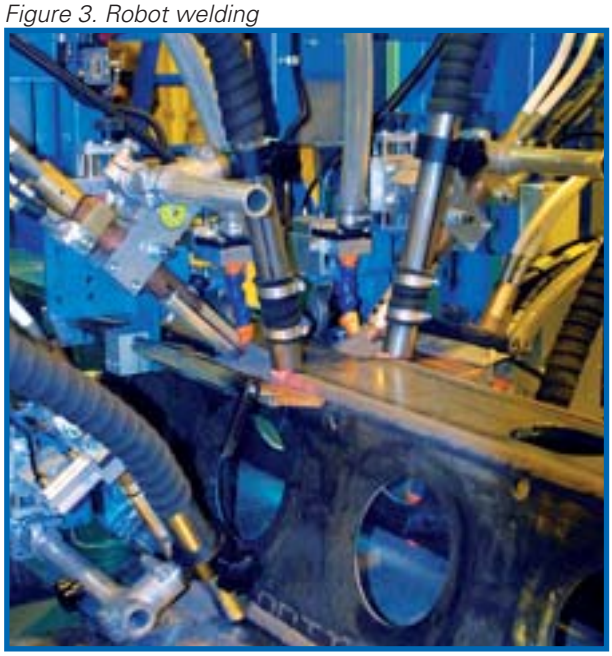
Beam's height and width can also be customized by customer within the maximum and minimum range in these tables. Minimum delivery for custom sizes is 200m.

3. MANUFACTURING

3.1 Manufacturing method

Plates	Plasma, flame and mechanical cutting
Rebars	Mechanical cutting
Welding	MAG by hand or with robot
Welding calss	C (SFS-EN 25817)

Figure 3. Robot welding



3.2 Manufacturing tolerances

Length L	± 5 mm
Width B	± 5 mm
Height h	± 3 mm
Lateral flexure f_p	$f_p \leq L / 650$ (measured from the ledge and web angle)
Flexure f_n	± L / 650 (in relation to the intended pre-cambering)

Size and location of holes	± 5 mm
Location of couplings	± 5 mm
Location of supp. parts (c-profile, cambers, formwork sheets)	± 5 mm

3.3 Painting

The lower surface of the beam primed to SA2.5 40 µm. Other painting and surface treatment are agreed upon separately with the customer. For example, when the beams are exposed to weather at the sites, it is recommendable to consider a thicker paint coating.

The customer must do the final painting on site.

3.4 Manufacturing markings

The name of the site, beam type, weight and type approval are marked on the beam.

3.5 Quality control

Quality control is being carried out according to the requirements of the National Building Code of Finland. Peikko Finland Oy Deltabeam has a quality control agreement with the VTT Technical Research Centre of Finland.

Deltabeam has the type approval VTT-RTH-03040-07 granted by the VTT Technical Research Centre of Finland, British certificate 05/4204 granted by BBA, German type approval Z-26.2-49, Czech approval 204/C5/2006/060-025293, Russian approval № РОСС FI.СЛ19.Н00323 and quality standard for welding EN 729-2 granted by Inspecta.

4. CAPACITY CURVES

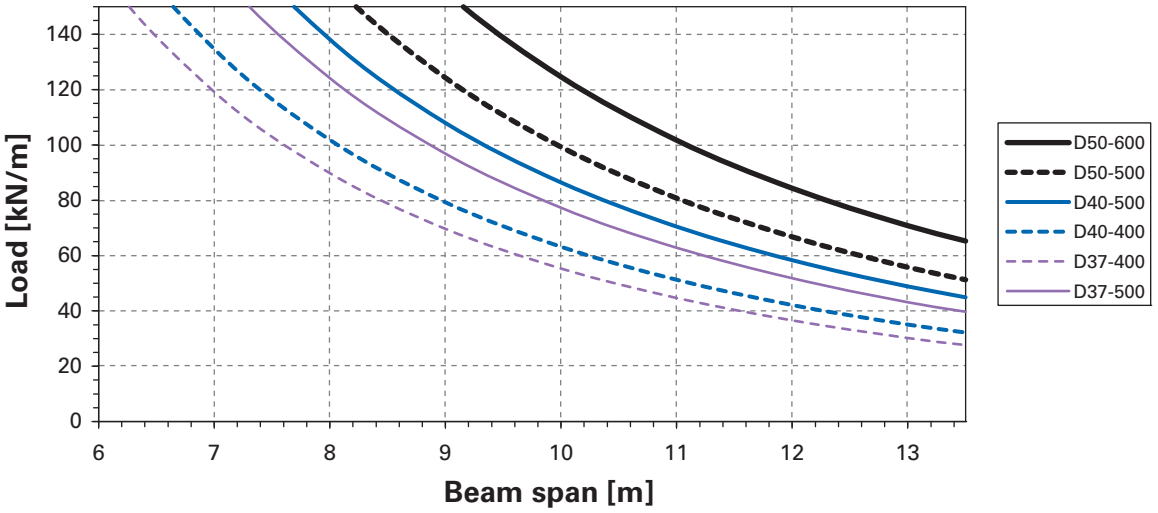
The allowable load-bearing capacity [kN/m] is presented for single-span beams according to the type of the beam.

The following defaults have been used when calculating the curves:

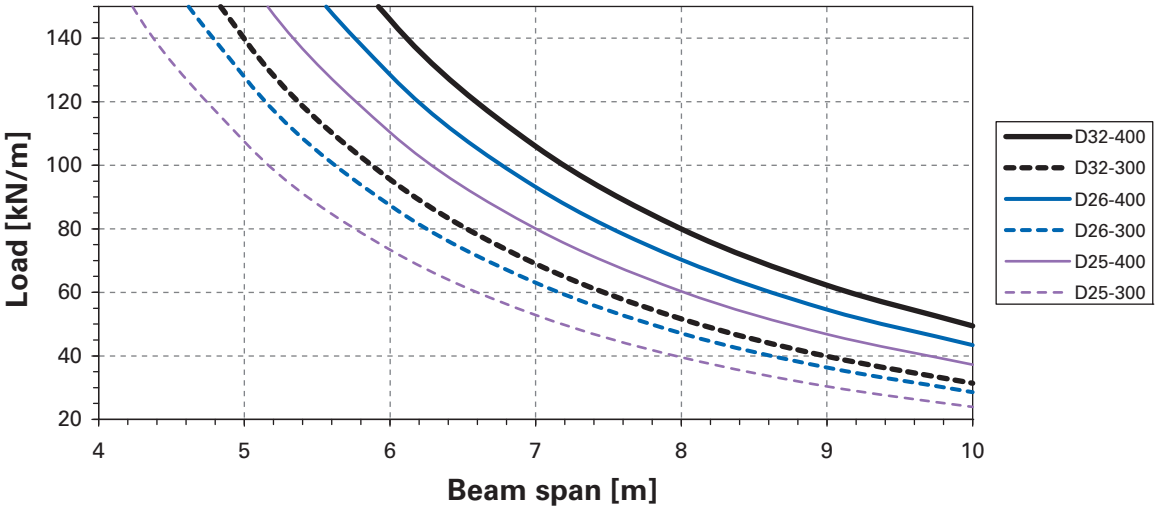
- Steel beam S355J2+N
- Concrete grade C25/30 (K30-2)
- 30% of live load is static
- Temporary surface loading during construction is 0,5 kN/m^2
- Flexure caused by static load is eliminated by precambering
- Surface casting 50mm (not structural), weight included

Note! Hollow-core slab and beam interaction requirements are not taken in bearing capacity values

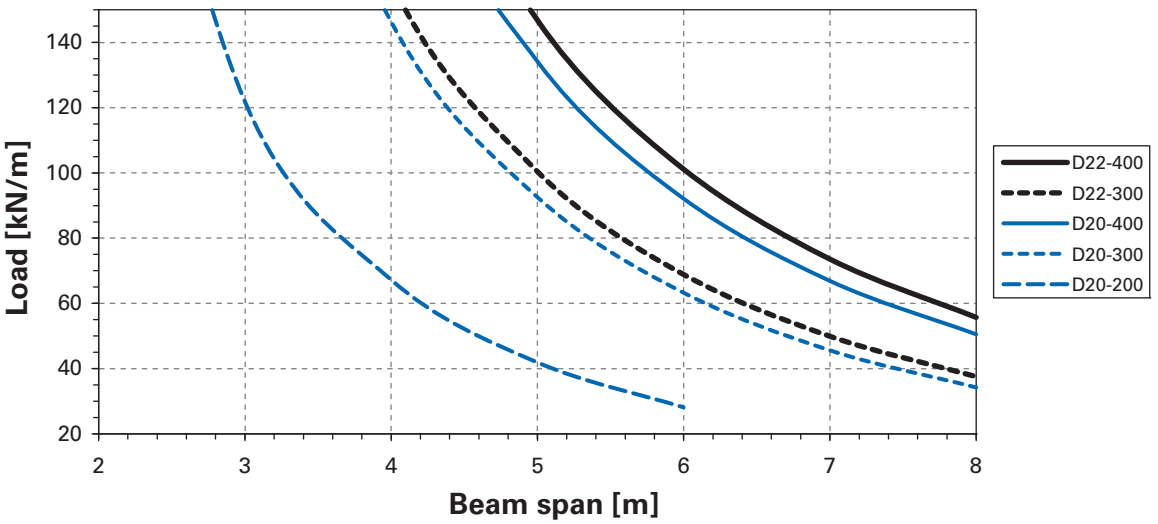
Deltabeams D50, D40 and D37



Deltabeams D32, D26 and D25

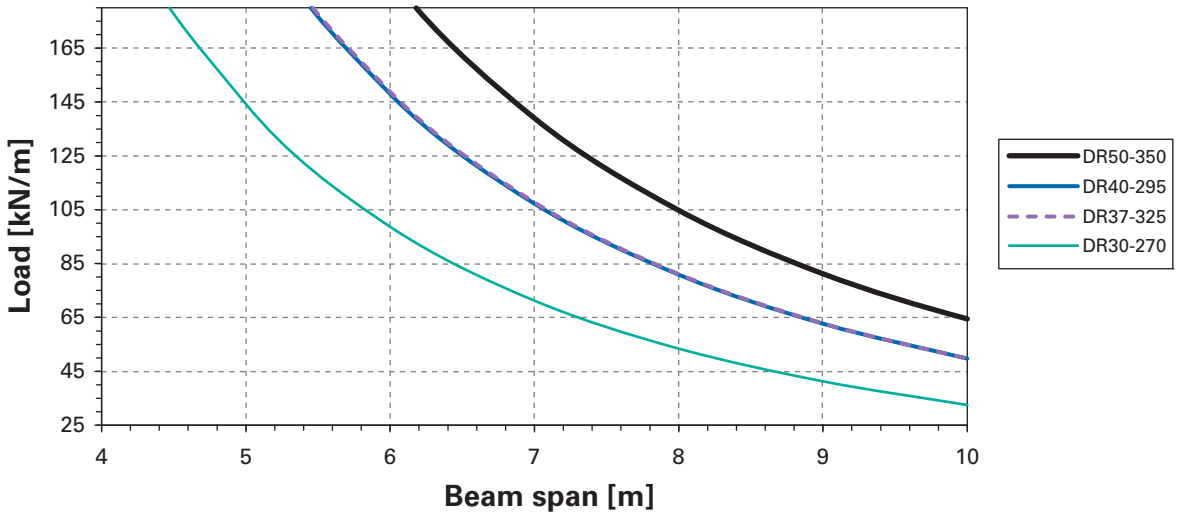


Deltabeams D22 and D20

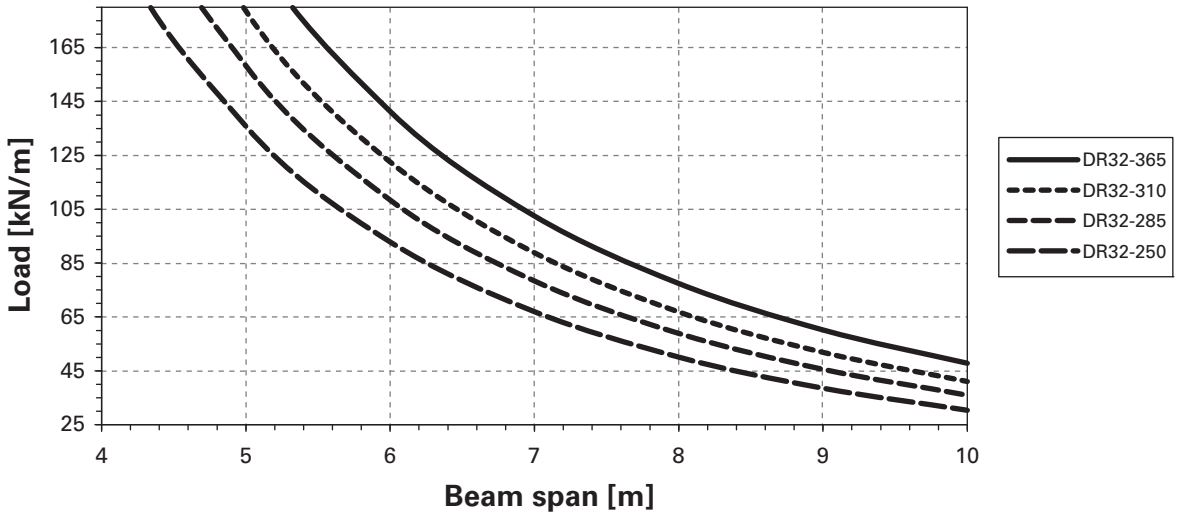


Note! Hollow-core slab and beam interaction requirements are not taken in bearing capacity values

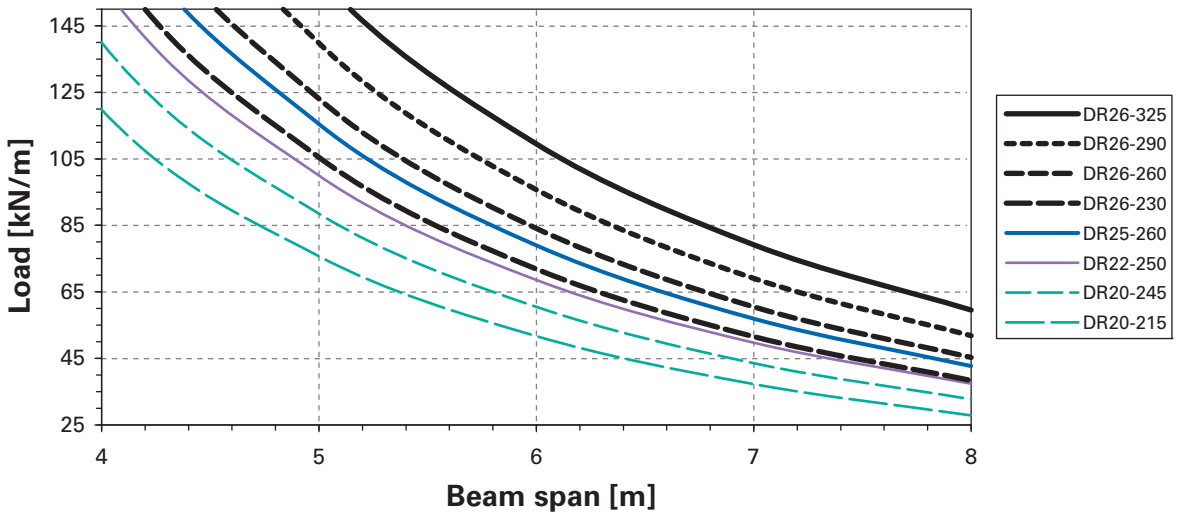
Deltabeams DR50, DR40, DR37 and DR30



Deltabeam DR32



Deltabeams DR26, DR25, DR22 and DR20



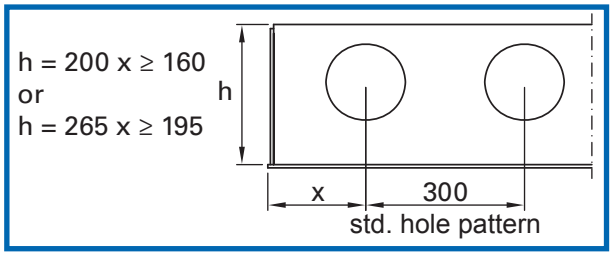
5. APPLICATION

5.1 Limitations for application

The bearing capacities of the Deltabeams have been calculated for static loads. Greater partial safety factors must be used for dynamic loads and fatigue loads on a case by case basis.

5.2 Design principles

Figure 4. Minimum distance of web holes from the end of the beam



The shear joint between concrete and steel beam is formed by the dowel action of the web holes located in the web of the beam. Static loading tests have proven that the interaction rate is complete. The filling cast functions as cross-section compression components in the final structure. Transverse reinforcement is described in figure 5, the reinforcement is anchored from the end of the slab over the length of the anchoring zone of the beam. With hollow-core slabs, the location of web holes is adjusted to the joints between the slab elements.

Figure 5. Minimum transverse reinforcement

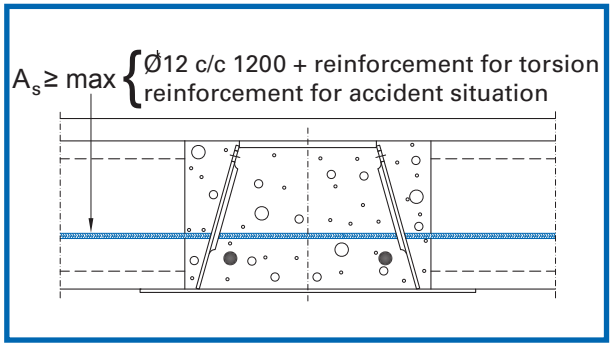
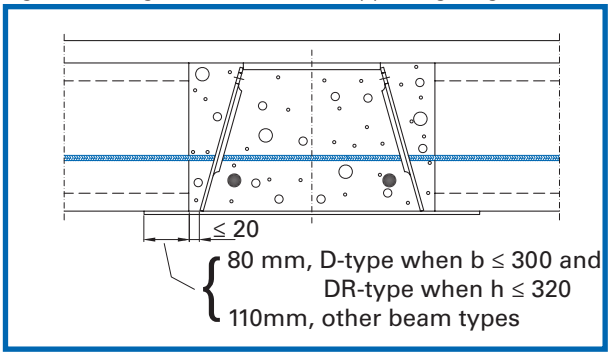
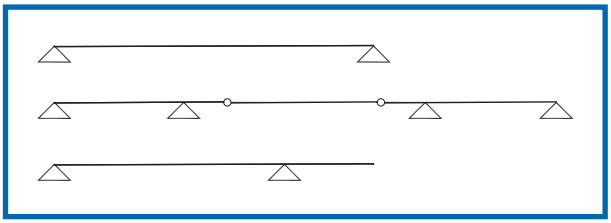


Figure 6. Length of Deltabeam supporting ledge.



The bearing support distance (to hollow-core slab or other deck) may vary from standard requirement, see figure 6. If the bearing support distance is shorter than shown in figure 6, Peikko Finland Oy must be consulted. Using smaller bearing surface impacts the design, dimensioning and cost of Deltabeam.

Figure 7. Deltabeam can also be made as either a single-span or a cantilever.



5.2.1 Design phases and delivery processes

Phases of designing a standard delivery:

<table>
<tr><th>Chief structural engineer</th><th>Peikko Finland Oy Deltabeam</th></tr>
<tr><td colspan="2">1. Preliminary design</td></tr>
<tr><td>Selection of framework alternatives</td><td rowspan="5">Technical consulting</td></tr>
<tr><td>Selection of floor structure</td></tr>
<tr><td>Cost comparison</td></tr>
<tr><td>Selection of beam type and joint details</td></tr>
<tr><td>Floorplans with load data and cross-sectional drawings</td></tr>
<tr><td colspan="2">2. Quotation phase</td></tr>
<tr><td rowspan="3">Basic data: project floorplans and quotation for the project (loads, perforations, fire protection rating, flexural limits, surface treatments)</td><td>Preliminary dimensioning of beams to the project</td></tr>
<tr><td>Checking the interaction rate between the hollow-core slab and the beam</td></tr>
<tr><td>Quotation calculation</td></tr>
<tr><td colspan="2">3. Actual design</td></tr>
<tr><td>Design meeting</td><td rowspan="5">Technical consulting</td></tr>
<tr><td>Beam dimension data sheet</td></tr>
<tr><td>Specification of joint details</td></tr>
<tr><td>Implementation plans</td></tr>
<tr><td>Marking of beam identification codes to floor drawings*</td></tr>
<tr><td>Installation plan (including supporting plan)</td><td></td></tr>
<tr><td colspan="2">4. Beam strength calculation</td></tr>
<tr><td rowspan="3">Complete basic project in paperwork is copied and sent or e-mailed to Peikko Finland Oy Deltabeam</td><td>Beam strength calculations and structural drawings to the chief structural engineer/customer</td></tr>
<tr><td>Beam data for the hollow-core slab designer</td></tr>
<tr><td>Installation instructions of the beams to the customer</td></tr>
</table>

*each beam has unique identification code

Peikko Finland Oy Deltabeam will carry out detailed project-specific measuring in the implementation phase. Then, the functional and ultimate strength properties even in case of fire are checked. Also the required pre-cambering of the beam is defined. Composite functioning between the hollow-core slab and Deltabeam are checked according to *Concrete Association of Finland official concrete code chart no. 18*. Deltabeam is designed to ensure hollow-core slabs require no additional support or props during installation.

5.2.2 Selecting the Deltabeam profile

The preliminary selection of beam type is made on the basis of tables 1 and 2 (page 5) and the bearing capacity curves / pre-selection software. The pre-selecting software can be downloaded from Peikko's website www.peikko.com.

The height of the Deltabeam can be 185 - 500 mm. Maximum length is 12,9 - 13,4 m depending on used plate material.

It is more economical to use Deltabeam for the short chord and slabs in the direction of long chords.

Intermediate beams (D)

A site-specific special type can be used if necessary. The width and/or height of the special type departs from the normal dimensions. If Intermediate beams are used as edge beams with formwork sheet, then the fire protection of the free side is covered with concrete.

Edge beams (DR)

The Delta edge beam is designed to serve as a slab edge beam when a narrower Deltabeam is needed and the vertical side is protected from fire by other structures. The edge beam can also be used on aperture edges, which usually require separate fire protection for the vertical web. The need for fire protection must be determined on a case-by-case basis. Width is determined on a case-by-case basis.

Beam ledge height may be varied to accommodate differing slab profiles (see figure 8).

Figure 8. Deltabeam with elevated ledge (left) and with formwork sheet (right).

5.2.3 Connection details of Deltabeam

The structural engineer designs the connection details of the beam. The connection must be designed in a way that the support reactions of the beam are transferred to the supportive structure (e.g. column, wall or another beam). This supportive structure must be designed to bear the forces from the beam. In column–beam joints, it is recommended to use the PCs corbel designed especially for the steel beam.

Stress and torsion during installation must be taken into account when designing the joint detail and supportive structure.

Indicative connection details are described in the Deltabeam design folder and on Peikko's home page at www.peikko.com.

The bottom plate can be cut at the end of the beam according to the joint detail of the project and the data sheet of the beam to be, e.g. skewed or arched. This way, the appearance of the connections will be finished.

Peikko Finland Oy Deltabeam sizes the beam according to the joint details. Peikko Finland Oy Deltabeam also designs the internal beam connections (cantilever and side joints).

Figure 9. Deltabeam with round column

5.2.4 Expansion and working joints of the slabs

A transverse expansion joint is built into the console coupling by encasing the inside of the beam end joint to it so that there is room for movement after casting. A longitudinal expansion joint is placed at the beam ledge.

Working joints are placed on a case-by-case basis so that they can be taken into account when performing strength calculations.

5.2.5 Voids and joints

It is preferable to have all perforations and voids made at the factory. Machining of the beam is performed by flame cutting or drilling. The structural engineer marks the information on voids and joints to the data sheets. Peikko Finland Oy Deltabeam must always be contacted if any changes are to be made.

All on-site connections in the beam are to be installed in compliance with the instructions given by the structural engineer. If additional connections are required, Peikko Finland Oy Deltabeam must be contacted.

5.2.6 Supporting beams during installation

The structural engineer makes the installation and supporting plans for beams. Due to its box-like structure, the Deltabeam is capable of transferring the stresses of an eccentric load back to the column. If the installation plans don't tell otherwise, Deltabeam has to be always supported.

The installation support is located at the end of the beam on the load side, near the web and bottom plate joint. Supports can only be removed when the slab cast and beam infill is cast have fully hardened.

If a Deltabeam is bearing on the end of a wall, the beam must always be propped until the concrete has been matured.

When the Deltabeam is used to transfer floor loads to a wall-type beam, the beam must be kept free from loading until the installation/casting of the intersecting floor is complete. Installation supports cannot be removed until the upper wall is capable of bearing the full floor load.

5.2.7 Fire protection and environmental classes

Rebars installed inside the beams at the works and webs act as load-bearing structure in the event of a fire. In the design phase, the beam is dimensioned in compliance with the fire class rating of the building, and rebars are used when needed. The fire rating of Deltabeam is based on combustion tests and the dimensioning guidelines obtained from them. Deltabeam can have a fire class rating as high as R120 / R180.

Edge beams (DR)

The vertical side of the edge beam must be protected from fire by other structures or materials/finishes.

5.2.8 Surface finishings

The Deltabeam is rust-proofed or hot-dip galvanised. State-of-the-art surface coating techniques also ensure surface durability during transport and installation. When the underside of the beam is finished in the same way as the slab, the Deltabeam can also be left exposed, if desired.

5.2.9 Basic design information

The basic information needed for the fastest manufacturing and strength calculation of Deltabeams:

- Floorplans with beam codes and load data, and all information affecting loading, e.g. continuity of slabs. Note: The beams are installed in such a way that the identification codes read in the correct way (as marked in the element chart).
- Connection details of the beams.
- A4 data sheets. **Note**: the data sheets must be made in such a way that the codes read in the correct way. See the instructions on page 10.
- List of beams.

If the basic information is provided as described above, and connection details are standard, delivery time is 6 working weeks from receiving of the basic information. In other cases delivery time varies from 6 to 12 weeks depending on the accuracy of basic information provided and difficulty of details. Instructions for filling in the data sheet and an example sheet on pages 17–18. The data sheet pictures, beam list form and stadard details can also be downloaded from Peikko's website at www.peikko.com.

6. INSTALLATION

6.1 Deliveries

Deltabeams are delivered to the site according to agreed project schedule. Beams of different lengths cannot be loaded at the factory in order of installation. The beams are marked with identification codes in accordance with the drawings.

6.2 Storage on site

Deltabeam parts that remain exposed are painted with corrosion protective primer. In long-term storage, the beams must be covered. Struts are used under the beams to protect the painted surfaces. When storing beams in piles, the load-bearing capacity of the foundation must be checked.

6.3 Lifting and moving

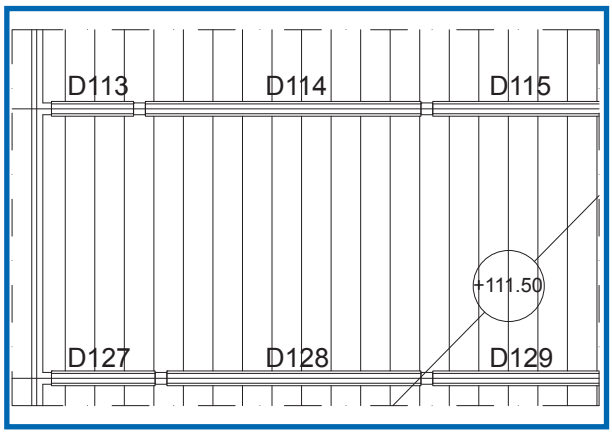
When erecting, it has to be observed that the beams are installed in the same direction as marked on element chart.

Beams can be lifted and moved using ordinary lifting equipment, cranes or forklifts. The beam's web holes serve as attachment points for lifting lugs. The weight of the beam is marked on the beam label.

6.4 Installation

Beams are installed according to appropriate installation plan. The beams are installed in a way that the identification codes read in the same direction as marked in element chart.

Figure 10. Element chart



6.4.1 Beam fixing

Connection details are specified in the structural plan in a project-specific way. The supplies needed for internal beam connections (cantilever and side connections) are included in the delivery.

All beams must be fixed before slabs can be installed. This way movements of the beams can be prevented. Beam's weight is not effective enough to stabilize the frame during installation of the slabs.

6.4.2 Supporting the beams

The beams are supported before installing the slabs in compliance with the installation and supporting plan made by the engineer. See chapter 5.2.6.

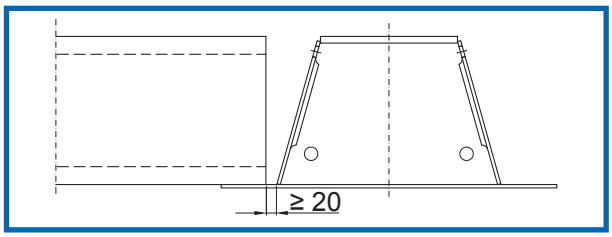
6.4.3 Installing the slabs

All beam support and fasteners indicated in the plans must be securely installed, tightened or welded before the installation of the slabs. After the slabs are installed, the necessary formwork, edge forming and slab reinforcement will be carried out.

Every join between the slabs must be reinforced with minimum of Ø12 rebar.

The width of the supporting surface is in compliance with the instructions of the supplier of the hollow-core slabs.

Figure 11. Position of the end of a hollow-core slab in relation to Deltabeam



Hollow-core slabs

The elements are installed directly onto the beam ledge.

Thin-shell, composite and in-situ cast slabs

The composite steel sheet and thin-shell slab are installed directly onto the beam ledge. The composite sheet is supported at the same elevation as the beam. No room for settlement should be

allowed. Thin-shell slabs are supported at the same nominal camber as the floor. Deltabeam's pre-cambering ensures the straightness of the beam

after casting. In-situ cast slabs are formed at the nominal level. The base of the beam is at the same level as the underside of the slab. The formwork is installed under the beam ledge

6.4.4 Concreting

Deltabeams are concreted in conjunction with slab casting or the joint casting of hollow-core slabs. Deltabeam's filling casts are usually dimensioned at the same strength rating as the joint casts. The usual concrete grade is C25/30 (K30-2). The properties of mixed concrete are determined according to the project and methods used in compliance with the concreting plan. The Deltabeam must be cast completely in order for it to possess the properties of a composite beam. Casting must be performed in one pour.

Steps in concreting:

1. Ensure that the formwork and reinforcement are in place and clean.

2. Filling is performed by inserting a pipe into the beam through casting ports. Begin filling the beam from the centre of the beam. The fill level of the beam can be checked through the air holes. Fill consistency can be checked using a vibrating poker.

3. If there are any formwork sheets on the edge beams, extreme caution must be taken during casting to avoid damaging or buckling the sheets when using a vibrating poker.

7. THINGS TO DO WHEN TOLERANCES ARE EXCEEDED

Chief structural engineer or element designer must be contacted, and correction has to be always done according to correction plan done by chief structural engineer or element designer.

7.1 When the corbel is on too low level

- Chief structural engineer or element designer does the plan for correction with the consultation from Peikko Finland Oy. Without a proper correction plan the beam's end plate can not be altered or changed.
- Corbel's height can be increased with steel plate or beam's end plate can be changed.
    - If the beam can be fixed according to original plans (bolts, welding), small (max 10mm) height differences can be leveled by welding plates on the top of the console tube.
        - If corbel's height is increased with steel plate, the corbel's supporting surface must remain identical to original.
        - Additional steel plates must be fixed by welding.
    - If the difference in height level is greater than 10mm, the beam's end plate must be changed.

7.2 When the corbel is on too high level

- Chief structural engineer or element designer does the plan for correction with the consultation from Peikko Finland Oy. Without a proper correction plan the beam's end plate can not be altered or changed.
- There are few alternatives to fix this kind of problem. The link in the beam's end plate can be cut higher, or the end plate can be changed.
    1. If the new end plate needs to be thicker than the original, Deltabeam may have to be shortened.
    2. It is also possible to design end plate, that is as thick as the original, but greater in height. This way shortening of the Deltabeam can be avoided.

7.3 When the beam doesn't reach support point

- Deltabeam requires supporting surface defined in construction design.
- Chief structural engineer or element designer does the plan for correction with the consultation from Peikko Finland Oy. Without a proper correction plan the beam can not be extented.
- If the required extension is 150mm or less, the extension can be made directly to the end plate, or new, stronger end plate can be made.
- If extending of the beam is not possible, a new Deltabeam with accurate length has to be made.

7.4 When anchoring bolts don't meet bolt holes of the beam

- The bolt holes in top and bottom plate of the beam can be expanded in the direction of length, with the maximum factor of 1.5 (for example: 50mm to 75mm).
- The bolt holes cannot be expanded in the direction of width without permission from Peikko Finland Oy. Doing this may require the beam to be strenghtened.
- To expand bolt holes located in the beam's web, a permission has to be asked from Peikko Finland Oy.

7.5 When transverse reinforcement doesn't meet web holes

- The web holes (Ø150 or Ø80) of the Deltabeam connot be expanded.
- Transverse reinforcement cannot be omitted, and they must be anchored inside Deltabeam.
- Chief structural engineer or element designer does the plan for correction with the consultation from Peikko Finland Oy. Without a proper correction plan new holes cannot be made to Deltabeam's web.

7.6 When tolerances of Gerber-joint are exceeded

- The tolerance in beam's length for Gerber and side joint is +5 / -10mm. The connection is designed so that 5mm shim plate is set to every joint after the Deltabeam is installed, but before tightening of the bolts.
- Check if the shim plate is used in other joints of the beam line.
    1. By adding or removing the number of shim plates from other joints within the allowed tolerances, it may be possible to solve the problem.
    2. The shim plates can be used for maximum thickness of 15mm.
- If the problem can not be resolved with the use of shim plates, the joint has to be re-designed, and the end plate of the corresponding Deltabeam must be changed.

7.7 When the Deltabeam is too long

- The correction plan is always done by Peikko Finland Oy.
- Typical procedure is the following: the end plate of Deltabeam is removed, beam is shortened and the end plate is welded to the beam according the instructions from Peikko Finland Oy.

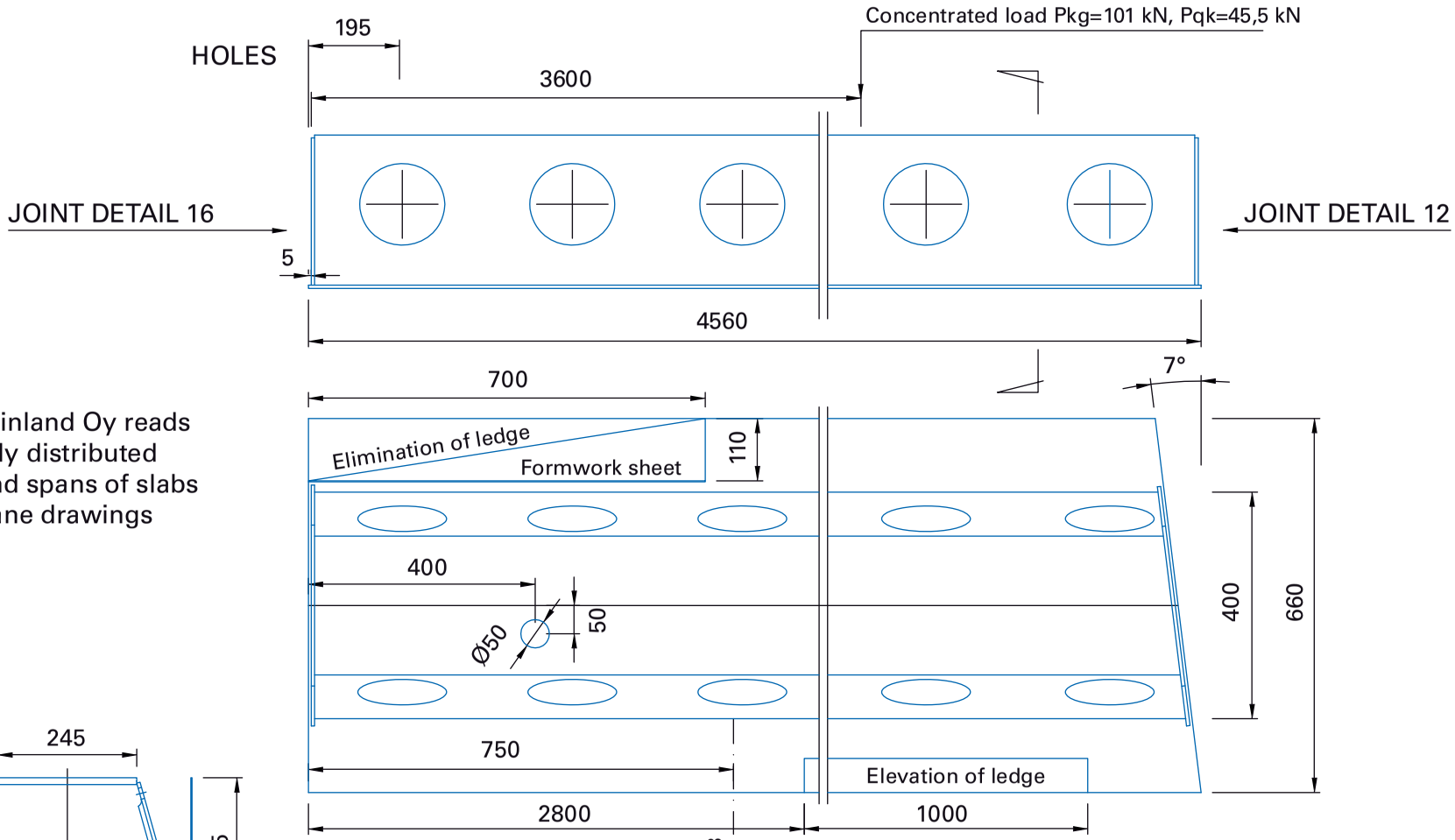
7.8 When the length or position tolerances of hollow-core slabs fall below or are exceeded

- The correction plan is always done by Peikko Finland Oy.
- The situation concerns the strength of the Deltabeam during installation, because the stress differs from planned.
- Also the strength of the beam connections must be checked, because of possibly greater torsion.

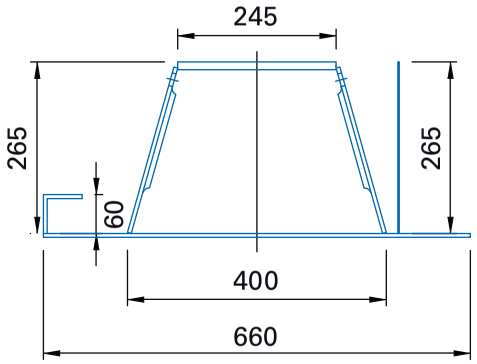
INSTRUCTIONS FOR FILLING IN THE DATA SHEETS

The data sheet must be made so that the beam code in the floorplan reads in the correct way.

- Beam ID (characters allowed: alphabets, numbers, dashes and underscores) without beam type
- DR edge beam is read on slanting edge's side - take this into account when marking the beam IDs to the data sheet
- Beam code
- Beam length
- Fire class rating
- Location of web holes adjusted to the joints between the hollow-core slabs, measurement from the left end of the beam
- Numbered joint details of the beam
- Degrees of angle of the possible skew of the ends of the beam
- Location of possible intermediate supports
- Furnishing of the beam when necessary:
    - Formwork sheets; height, length and location
    - Elevation of the ledge; height, total length and location of the profile
    - Elimination of ledges; width, length and location of the eliminated ledge
    - Edge joints; measurement from the left end to the centre line of the joint
    - Other perforations; size and location
- Ordinate dimensioning starting from the left hand side of the beam (all distances measured from the left hand side end of the beam)



NOTE!!
Peikko Finland Oy reads uniformly distributed loads and spans of slabs from plane drawings



FILLED IN BY DELTABEAM:

UPPER FLANGE d1=
LOWER FLANGE d2=
PRECAMBERING f=

FILLED IN BY STRUCTURAL ENGINEER:

delta beam	SITE: MODEL SITE		PROJECT NO.
	TYPE: D26-400	CODE: D101	PCS: 1
FIRE CLASS RATING: R60	PREFERENCE DRAWING	DATE: 01.01.2007	DESIGNER
CONCENTRATED LOADS — YES: X / NO:	ADDITIONAL LINE LOAD	ADDITIONAL LINE LOAD	

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