#### **OPERATIVE ASSEMBLY MANUAL**











THE CONSTRUCTION SYSTEM WHICH MARRIES REINFORCED CONCRETE, THE MOST SOLID STRUCTURE, WITH MINERALIZED WOOD, A NATURAL MATERIAL FROM A THOUSAND RESOURCES.



The Isotex establishment

In 1985, ISOTEX started to produce and market wood-concrete blocks in Italy, after this construction system had been already used in Germany since 1946.

From that day on, some 400.000 dwellings have been built with ISOTEX all over Europe, of which some 80.000 in Italy alone, meeting with the approval of specialists, builders and end users.





The residential district of Fidenza (PR)



The Capo Coda Cavallo Hotel Project (NU)



Multi-floor buildings in Bologna



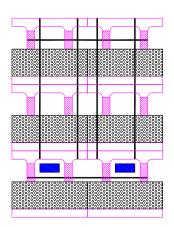
Transfer of floor slabs	
DIUCK 1 YPC3 AIIU (UICI AIICC3	
Standard blocks (NS)	
Special blocks and complementary blocks	
Dimensions, tolerances and cutting of blocks	
Method for requesting/ordering blocks	- 
Correct laying of blocks - Perimeter walls	
Correct location of the reinforcement steel bars	
Correct laying of the first course	
Correct laying of subsequent courses (external view)	
Correct laying of CORREA block for floor slabs laying (external view)	
Correct laying of CORREA block and lintel for doors and windows (internal view)	
Correct laying of blocks - Internal walls	
3-4 way junction	
SHOULDER realization	
Construction Particular	20-2 <sup>2</sup>
Lintels, shoulders and internal walls	20
Block cutting for rebates	2
Procedure for pouring concrete	22
Elimination of thermal bridges	
Floor bond beam	23
Balconies	
Eeaves section	
Pillar block or traditional pillar connector	
Optimization of Acoustic performance	
How to make channels in Isotex walls	
Example of an assembly floor plan	
Example of assembly scheme for Isotex floor	
Isotex floor slabs range	
Correct laying of Isotex floor slabs	
Recommendation for correct application of plasters e and traction test	
Certificates	3

# CORRECT TRANSFER OF PACKS FROM THE VEHICLE TO THE GROUND

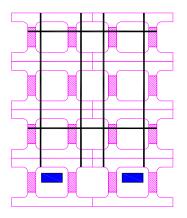
- 1. The packs are transferred one at a time, using equipment and procedures in full compliance with current applicable Standards on safety;
- 2. The packs are moved by insertion of the appropriate equipment into the first row of blocks through the whole depth of the pack itself (see figure);
- 3. The movement is carried out while avoiding brusque and sudden displacements;
- 4. The packs are rested on the ground, on a flat surface without changes of level or roughness;
- 5. Do not stack more than 2 packs on the ground;
- 6. Movement of packs on the ground within the yard must comply with the safety provisions of Legislative Decree 81/2008 Heading IV;
- 7. Before moving the packs, check that the supports are in good condition.

#### CORRECT POSITION FOR UNLOADING

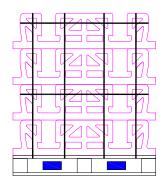
PACK OF "HDIII WITH INSULATOR" BLOCKS



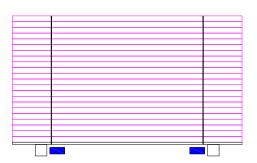
PACK OF "HB/HD WITHOUT INSULATOR" BLOCKS



PACK OF BLOCKS ON PALLET "CORNER BLOCK - ANGLED AS REQUIRED - FLOORING PANEL ELEMENTS"



PACK OF PANELS

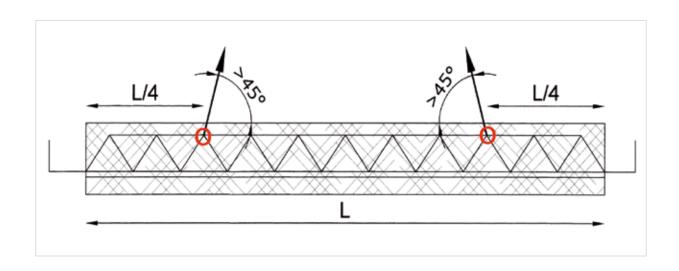




### MOVEMENT OF FLOOR SLABS

The lifting points of flooring panels are identified in red on the panels themselves, and lifting must be carried out with four chains of suitable length (as in the illustration).

Movement operations must always comply with current applicable safety Standards.





### **STANDARD BLOCKS (NS)**







Block HB 20

Block HB 25/16

Block HB 30/19



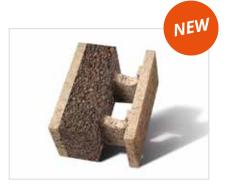
Block HB 44/15 - 2



Block HDIII 30/7 graphite (BASF-NEOPOR\*)



Block HDIII 33/10 graphite (BASF-NEOPOR\*)



Block HDIII 38/14 cork



Block HDIII 38/14 graphite (BASF-NEOPOR°)



Block HDIII 44/20 graphite (BASF-NEOPOR\*)



## SPECIAL BLOCKS AND COMPLEMENTARY BLOCKS



PASS block of 30 - 33 - 38 - 44 cm



Shoulder block of 38 - 44 cm



Universal block (UNI) of 38-44 cm for external corners



Universal block (UNI) of 30-33 cm for external corners and shoulders



Block for internal corners of 30-33-38-44 cm



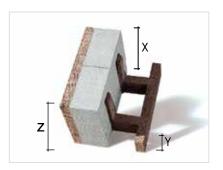
Wall pillar block of 33 cm section CLS 25x38 cm \*38 cm section CLS 30x38 cm \*44 cm section CLS 33x39 cm \*Possibility of inserting 5 cm insulator \*\*Possibility of inserting 8 cm insulator



Half block shoulder of 44 cm



Block with angle at will of 25-30-33-38-44 cm (special blocks)

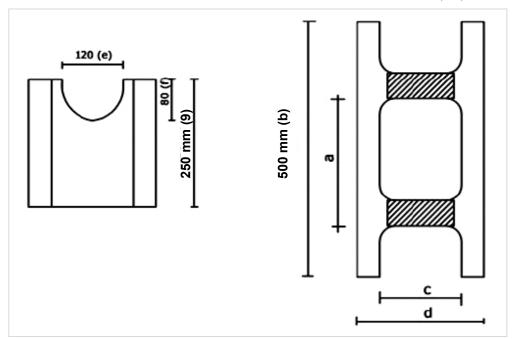


Correa slab block
x = as required
y = as required
z = x + y
(special blocks)

### BLOCK DIMENSIONS AND TOLERANCES

PLEASE NOTE: all Isotex blocks are 500 mm length and 250 mm high. 1 square meter corresponds to 8 blocks

Length (b) and width (d)  $\pm$  5mm Height (G)  $\pm$  2 mm Holes for concrete + 5 mm/ -2 mm Horizontal lunettes (e-f) + 10 mm/ -3 mm



#### **CUTTING OF BLOCKS**

The blocks are easily cut using the following devices which will attach as utensils to the Widia tool:

- a. Multifunction saw;
- b. Band saw;
- c. Electric chain saw;
- d. Other appropriate equipment.









### METHOD FOR REQUESTING MATERIAL

- Applications for material must be forwarded by fax or e-mail at least 5 working days before the consignment date.
- Un an articulated lorry carries 52 packs
- A lorry carries 24 packs

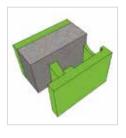
#### **BLOCKS WITHIN A PACK**

- QUANTITY (in m²) OF BLOCKS WITHIN A PACK:
- 1 pack of 20 cm blocks measures 6 m<sup>2</sup>
- 1 pack of 25 cm blocks measures 5 m<sup>2</sup>
- 1 pack of 30 cm blocks measures 4 m<sup>2</sup>
- 1 pack of 33 cm blocks measures 4 m<sup>2</sup>
- 1 pack of 38 cm blocks measures 3 m<sup>2</sup>
- 1 pack of 44 cm blocks measures 3 m<sup>2</sup>

#### **BLOCK PALLETS**

#### • PACKS OF BLOCKS ARE SUPPORTED ON:

PASS blocks (length 45-42-37-31 cm) = green supports



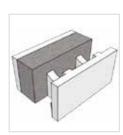
SHOULDER blocks (for doors and windows) = blue supports



UNI blocks (for corners) = orange support



NS (standard) blocks = black supports



Please note: NS (normal) blocks of 33 cm = white or white/black supports

#### SLABS ON ARTICULATED LORRY

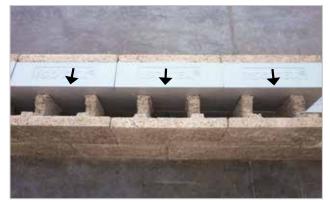
- ON AVERAGE, AN ARTICULATED LORRY CAN TRANSPORT:
- $S20 SLAB = 170 \div 180 \text{ m}^2$
- $S25 SLAB = 160 \div 170 \text{ m}^2$
- S25 + 5 SLAB = 140 ÷ 150 m<sup>2</sup>
- $S39 SLAB = 110 \div 120 \text{ m}^2$

# QUALITY CONTROL WHILE WORKING FOR THE LOCATION OF THE REINFORCEMENT



#### Location of the individual horizontal bars:

Rest the individual horizontal bars in the lunettes with spacers at every course of blocks. Overlapping must be 50% greater than that required by current applicable technical Standards.



#### Location of the vertical bars:

Position the vertical bar into the central position of the pillar, aligned with the vertical mark inscribed on the polystyrene, which operation is carried out at the same time as pouring the concrete. The above note on overlapping is also valid in this case.



#### Location of the horizontal bars:

In the event that double horizontal bars should be required, locate the same in the lunettes with distancers, fixed to the blocks with screws. The above note on overlapping is also valid in this case.



### CORRECT LAYING OF THE FIRST COURSE

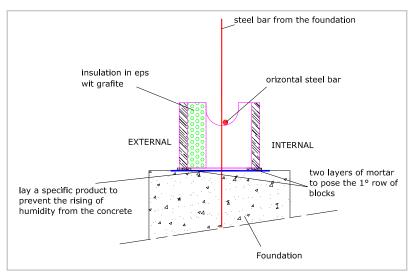
While laying the foundations, insertion of the vertical reinforcement should be taken into account with a width of 25 cm (the width of the hole in blocks).

The anchoring length conforming with technical standards must be indicated by the designer. The other possibility, once the foundation has been laid, is the insertion of this vertical reinforcement with resin on the first course of blocks laid (on the indication of the structure's designer).

Laying of the first course is carried out onto

two layers of mortar positioned only in correspondence with the walls of the blocks in order to achieve a good level (use of a spirit level is advised). A layer of mortar over the whole width of the block is to be avoided. The mortar has a much lower resistance to compression to that of the concrete Rck  $\geq$  30 N/mm². Position the corners with a plumb line and stretch the line between them. While laying the blocks, it is important to keep to the distance from the line to guarantee not straying from the vertical, the horizontal line of the courses and levelness.

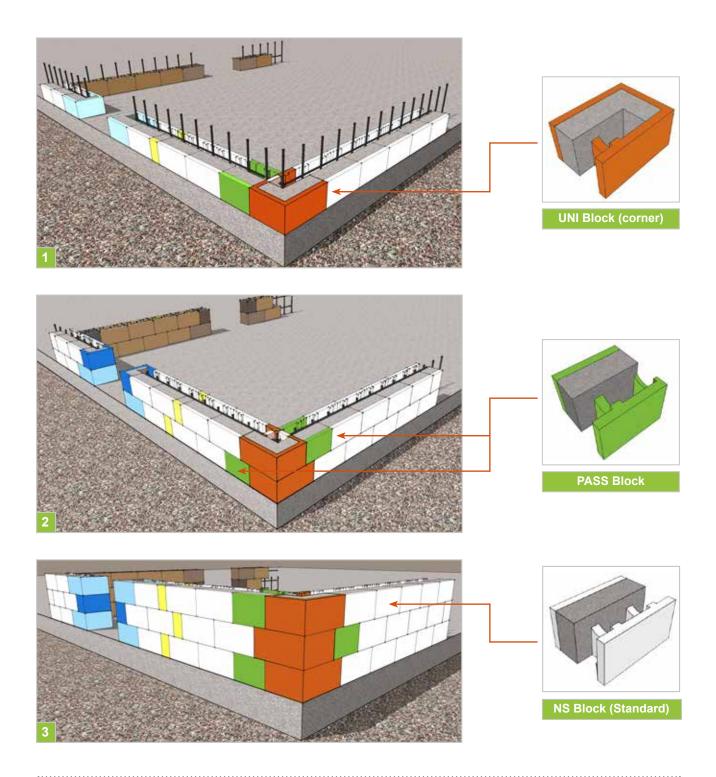




## CORRECT LAYING OF SUBSEQUENT COURSES

Arranged well at the level of the first course, starting from the corner blocks (UNI), we proceed with the laying of the subsequent courses completely dry having the foresight to keep the blocks

tightly closed to avoid thermal and acoustic bridges. In this way, given the precision of the blocks, the use of insulating foams is avoided which ISOTEX does not recommend the use of.





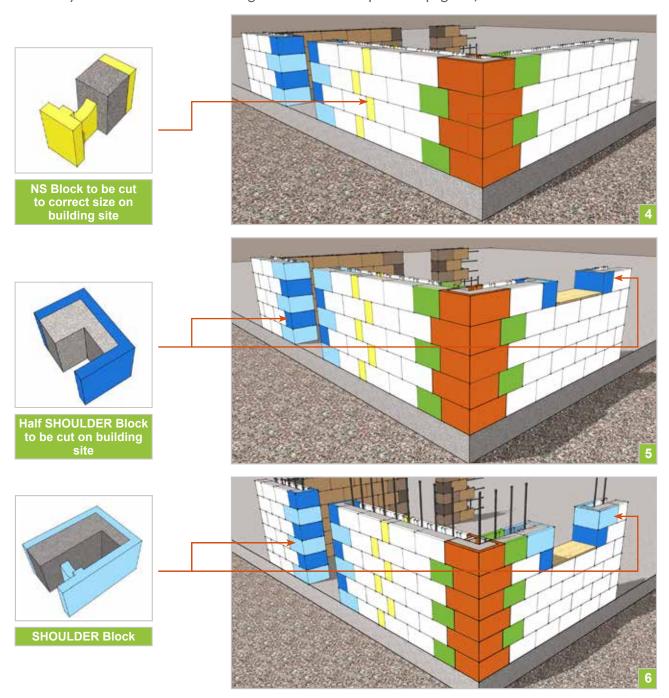
### CORRECT LAYING OF SUBSEQUENT COURSES

It is very important to stagger subsequent courses by half a block, using the special pieces in order to obtain the maximum volume to concrete within the forms, as is necessary to achieve the wall's load bearing capacity.

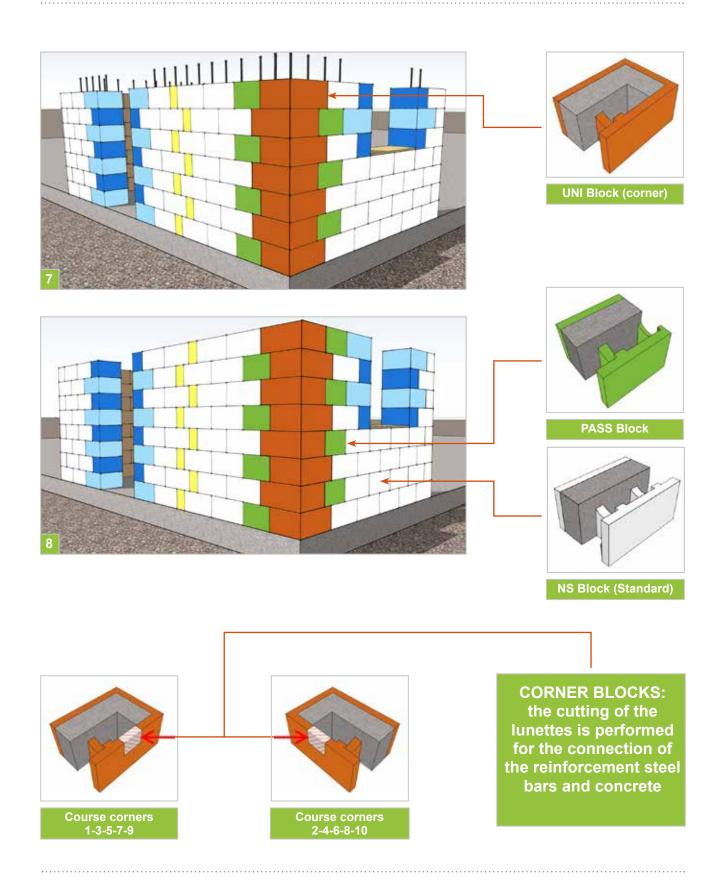
The blocks are always laid with the lunettes facing upwards, for connection of the reinforcement and the concrete. The parts with insulation towards the outside (see the illustration on page 15) and any necessary cut to the block for building the wall to

the design measurements, is done at the centre of the wall. The cut is kept in the same position over subsequent courses to avoid staggering of the pillars within the blocks, with the consequent reduction of load bearing and the difficulty of filling the forms with concrete.

The horizontal reinforcement will be inserted into the appropriate block lunettes at every course, taking care to safeguard the reinforcement cover (see the photo on page 11).



## CORRECT LAYING OF SUBSEQUENT COURSES

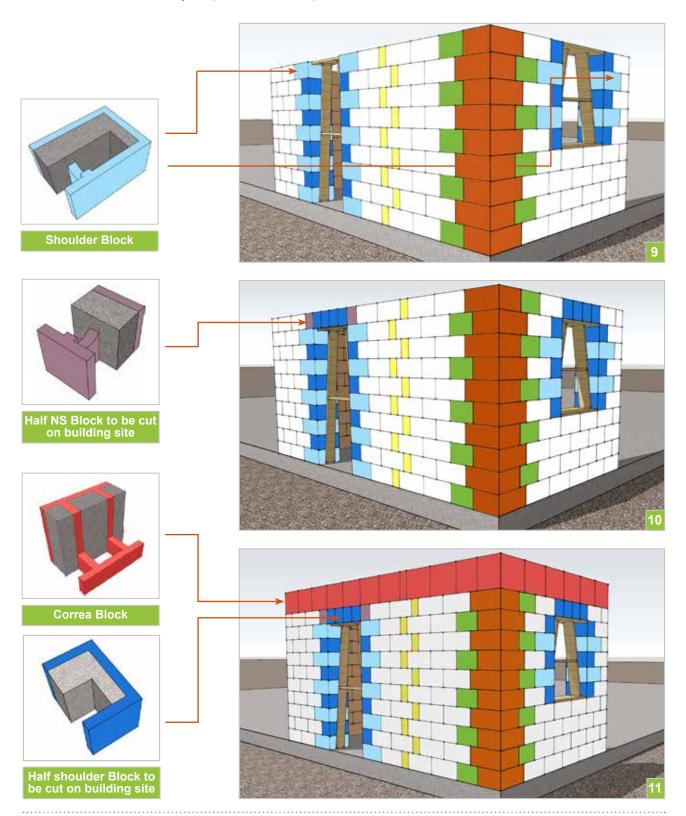




## CORRECT LAYING OF CORREA BLOCK FOR FLOOR SLABS LAYING

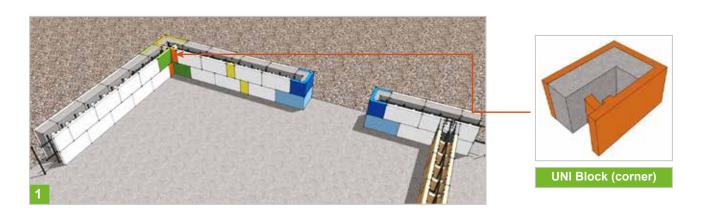
The door and window frames are formed by alternating SHOULDER blocks while laying the blocks. Door and window lintels are made by cutting the SHOULDER blocks at the yard (of 30 and 38 cm) or

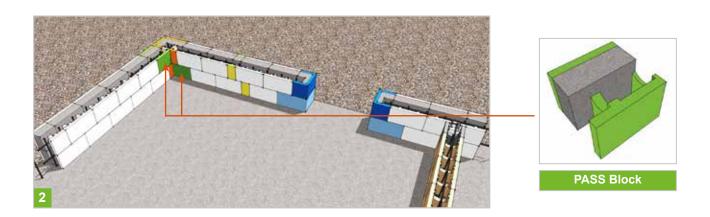
the laying of 44 cm blocks. In this manner, thermal bridges are eliminated. The lintel reinforcement must by indicated by the structure designer.

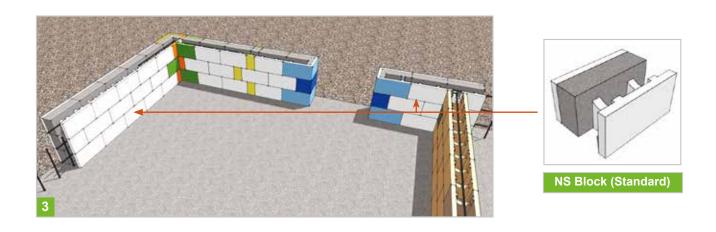


# CORRECT LAYING OF SUBSEQUENT COURSES (INTERNAL VIEW)

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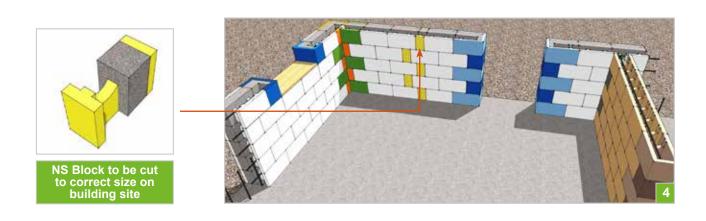


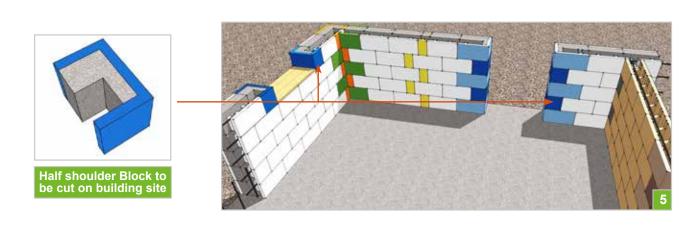


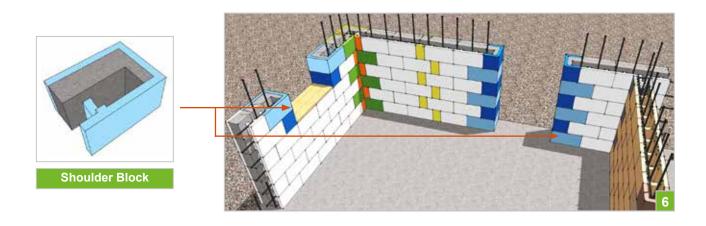




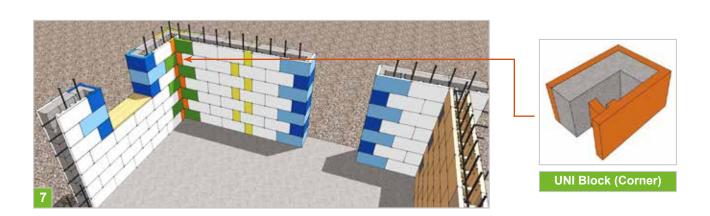
# CORRECT LAYING OF SUBSEQUENT COURSES (INTERNAL VIEW)

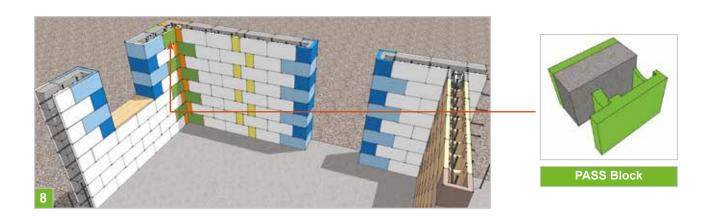


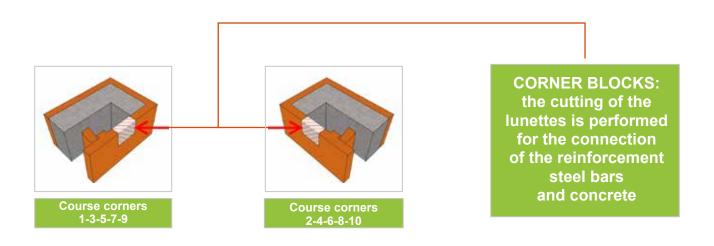




# CORRECT LAYING OF SUBSEQUENT COURSES WITH OPENINGS (INTERNAL VIEW)

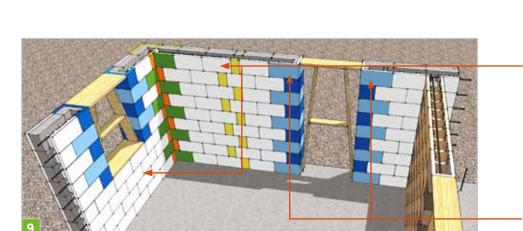


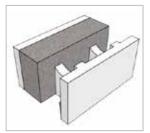




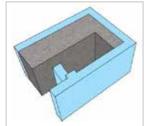


### CORRECT LAYING OF CORREA BLOCK AND LINTEL FOR DOORS AND WINDOWS (INTERNAL VIEW)

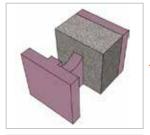




**NS Block (Standard)** 



Shoulder Block



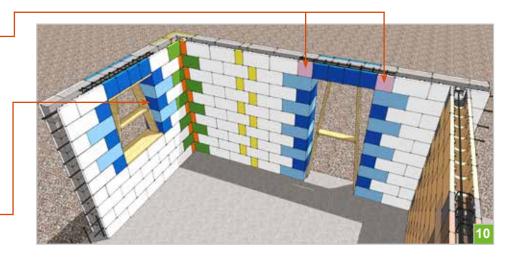
Half NS Block to be cut on building site

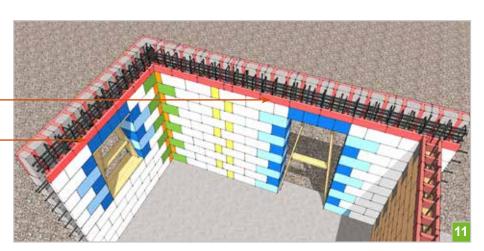


Half shoulder Block to be cut on building site



CORREA Block

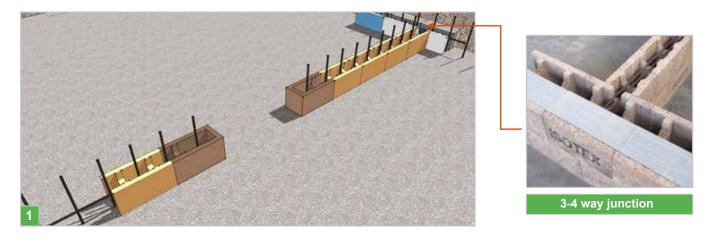


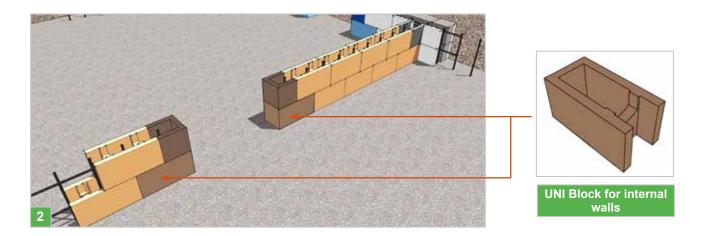


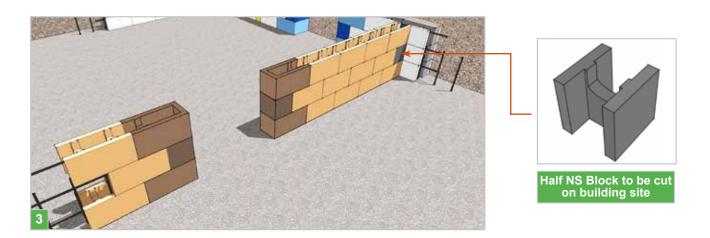
### **INTERNAL WALL:** 3-4 WAY JUNCTION

For making three or four way nodes, proceed with laying the internal wall, arriving at abutting the external wall, creating an aperture at the point of contact with that external wall to permit

the lodging and connection of the horizontal reinforcement and the concrete.





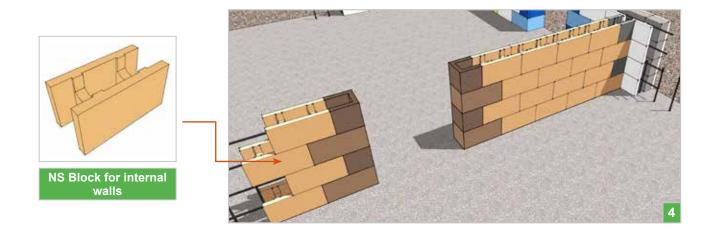


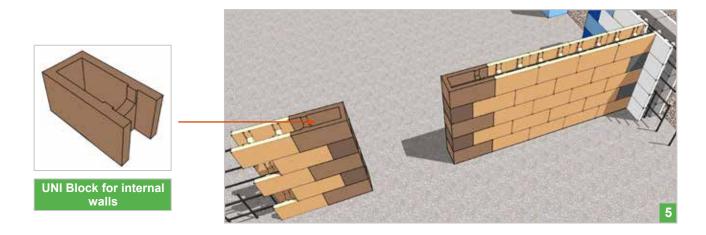


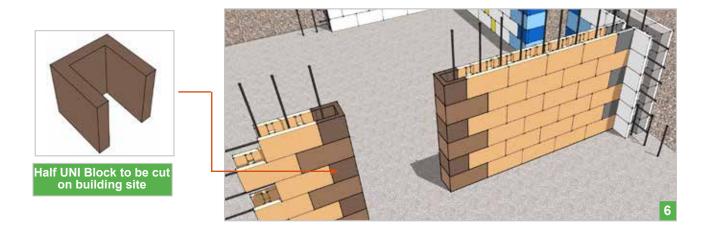
#### INTERNAL WALL: SHOULDER REALIZATION

To be avoided on the other hand, as is otherwise usual with traditional blocks, are the "ties" because, with the ISOTEX system, connection be-

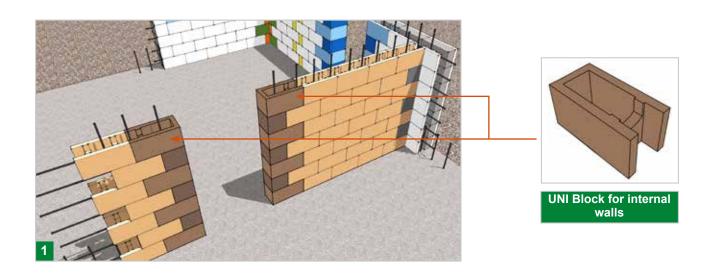
tween the three or four way nodes is made with the steel reinforcement and the concrete.

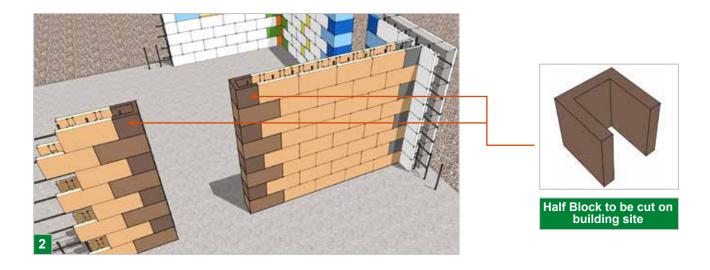


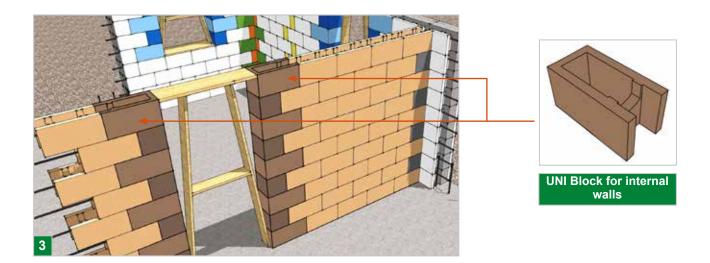




# LINTELS, SHOULDERS AND INTERNAL WALLS

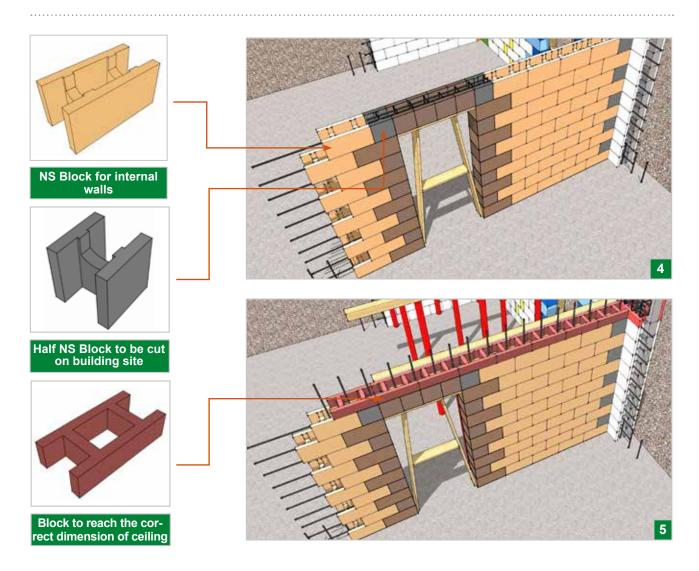








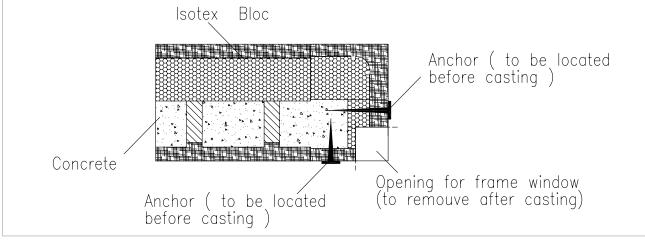
### LINTELS, INTERNAL WALLS, WINDOW FRAMES AND BLOCKS TO REACH THE FLOOR



#### **BLOCK CUTTING FOR REBATES**

When rebates are required, these can be cut into the SHOULDER blocks after pouring the concrete. Plastic anchors must nevertheless must be inserted (as in the diagram) before the pour in

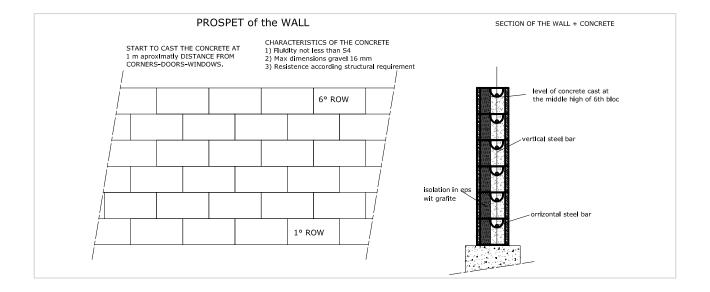
order to avoid possible detachments while cutting. Proceed in the same manner for rebates in the lintels above doors and windows.



### PROCEDURE FOR POURING THE CONCRETE

Having reached a height of 6 courses, equivalent to 1.5 m, complete refilling of the walls with concrete is carried out, possibly by bucket or pump, taking care not to apply excessive pressure which might shift the alignment of the blocks. The concrete must

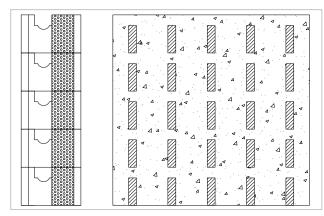
have a class of consistency (fluidity) of not less than S4 with a class of resistance taken from the calculated requirements and the granulometry of the aggregates (<16 mm), in order to ensure a complete filling of the blocks.



It is essential to start filling the perimeter walls with concrete at a distance of approximately one metre from the corners as well as the door and window shoulders, in order that the concrete, passing from the block lunettes, applies a lesser pressure and thereby does not shift the blocks. Having completed the perimeter walls, the internal walls are then filled.

SOLEY

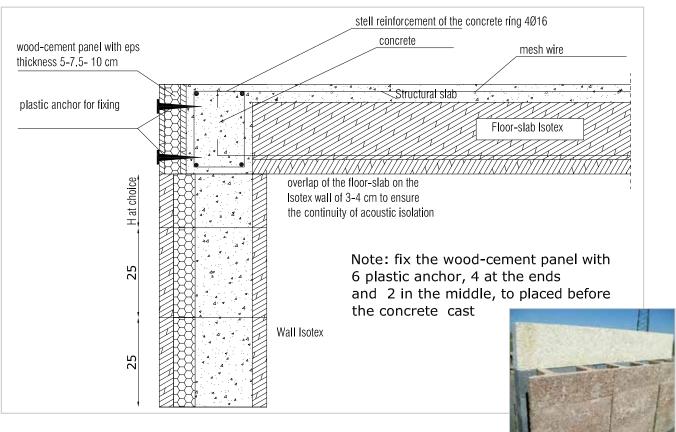
At the first pouring of the 6 courses, it is very important to keep the concrete level at mid-level of the sixth course. Subsequently, insert the vertical reinforcement to a height of 2 m, inserting it at the centre of the pillar at the same time as the pour (see the photograph on page 11), and vibrate this last with a small bodkin to ensure filling the walls.

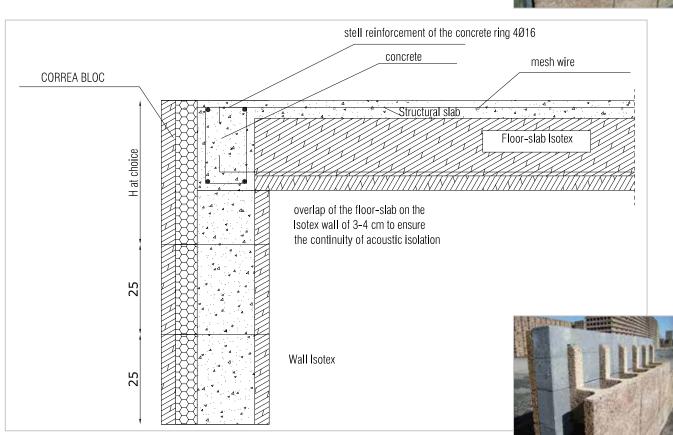


Distribution of the concrete within the blocks.

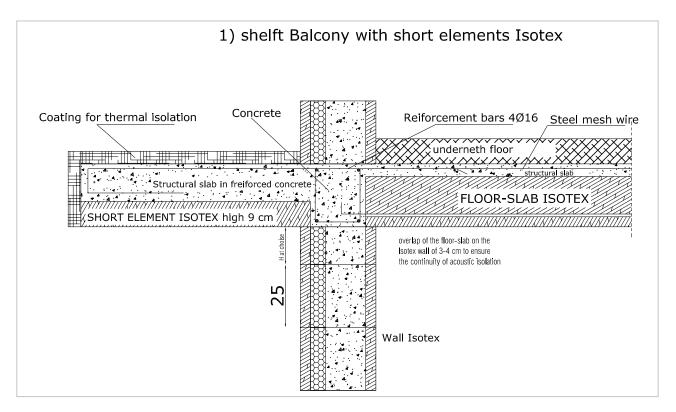


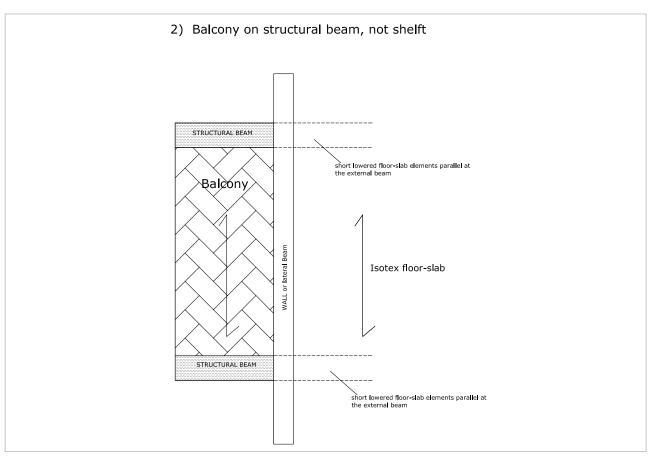
### Floor panel beam detail





#### Balcony detail



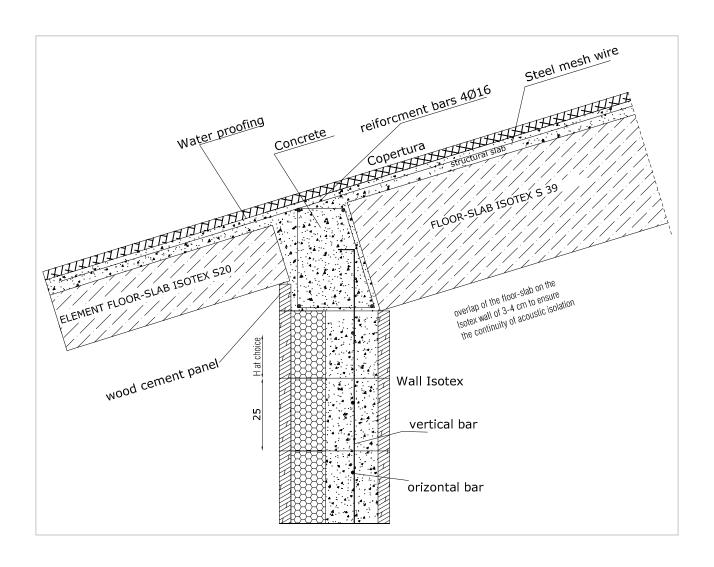




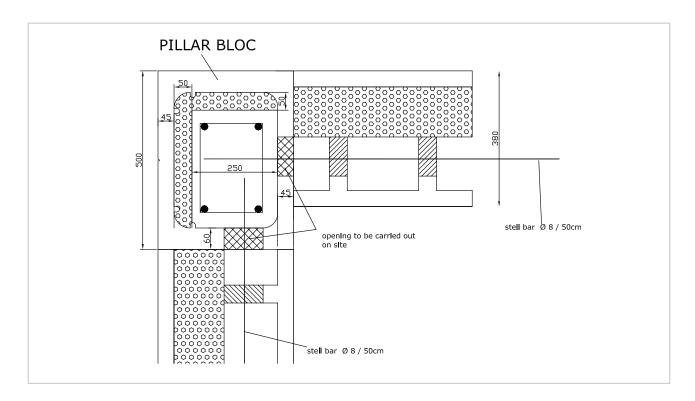
### Proposals for eaves ...

ISOTEX makes available detailed documentation for the solution to these and other thermal

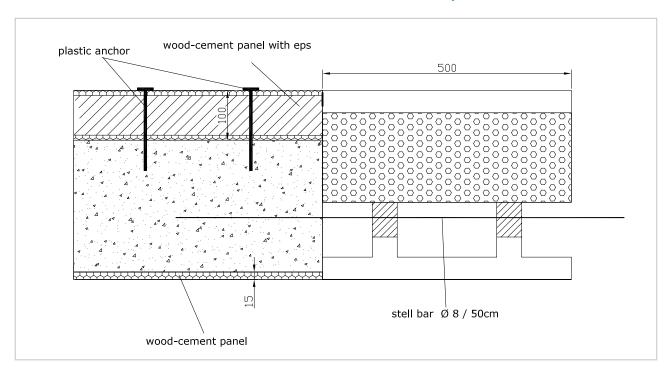
bridges present in the structure of the building.



### Attachment to pillar blocks



### Attachment to traditional pillars



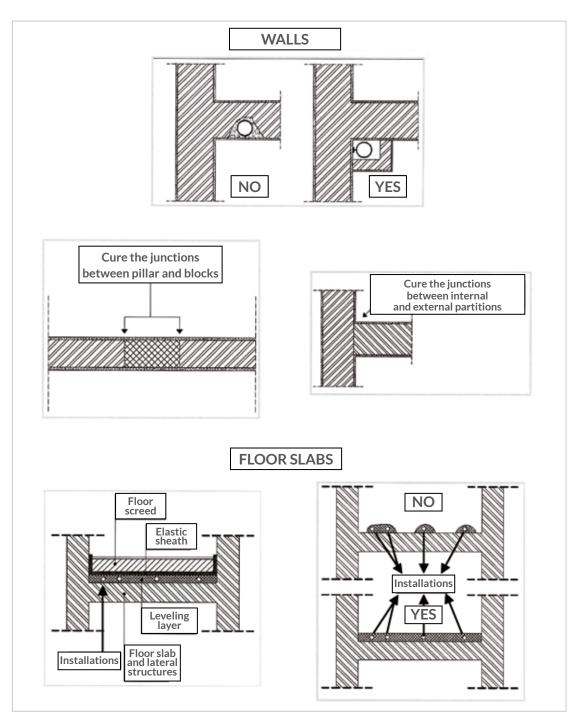


### OPTIMIZATION OF ACOUSTIC PERFORMANCE

### Construction details to be complied with

It is important to use construction materials whose certification comes within the values of regulations and correct building procedures.

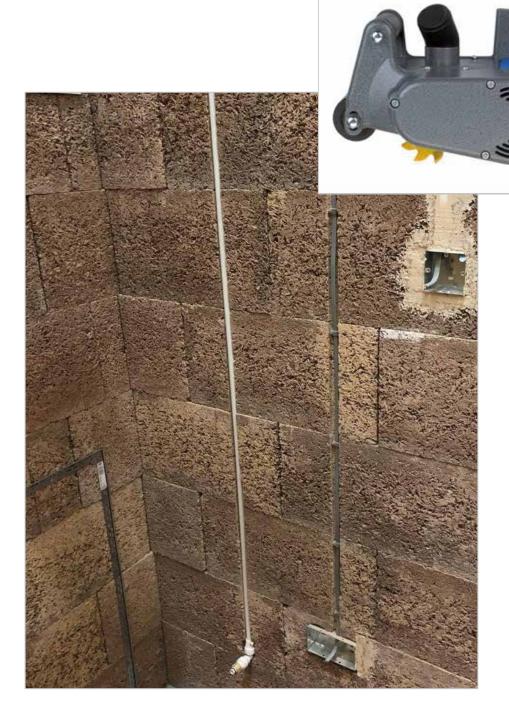
To avoid incurring problems with the purchaser (there are thousands of them), it is important to use construction materials whose certification fall within the values of regulations and correct building procedures.



## HOW TO MAKE CHANNELS IN ISOTEX WALLS

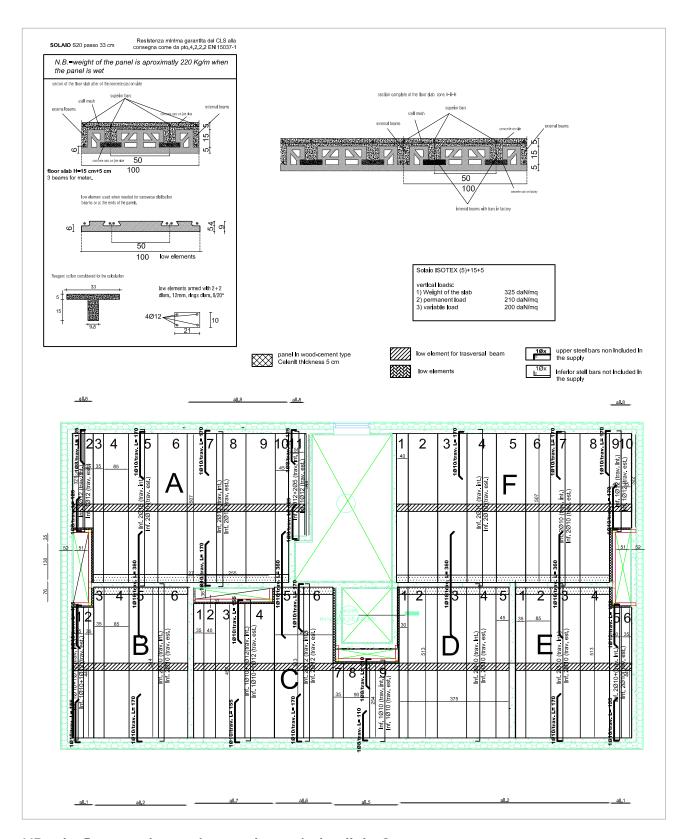
In order to make channels for plant, it is advised that, over the 4-5 cm of wood chip cement, a wall chaser is used which allows for adjusting the

width and depth in order to obtain the required dimensions rapidly and precisely.





### **EXAMPLE OF ASSEMBLY SCHEME FOR ISOTEX FLOOR**



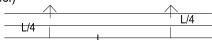
NB = the floor panels superimpose the vertical walls by 3 cm

### EXAMPLE OF ASSEMBLY SCHEME FOR ISOTEX FLOOR

### Example of assembly scheme

#### Laying Method for floor-planks

1) Positions where to lift the panels as in the picture ( are marked red on the panel)

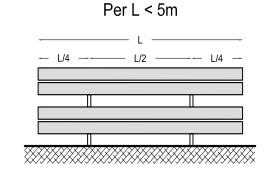


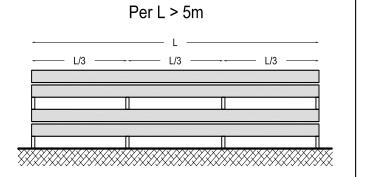
2) Start the pose of a zone respecting the numbers and starting from number 1,2 3,... ( Dont reverse the panel according the position of the numbers on the drawing)

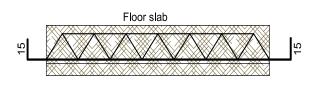
Prescriptions in charge of the Executing Company on job site

- 1) Beton-Concrete C25/30
- 2) Steel B500B.
- 3) Collaborating compression slab h=5 cm
- 4) Integration steel bars at upper for each beam
- (3 beams per meter) to pose 2 cm under the top of the finished slab over the wire mesh.
- 5) In the collaborating compression slab collocate wire mesh diam. 8mm/20x20, to overlap only in the middle of the length of the panel and never at the ends of the panel.
- 6) Elements for the support of the panels every 1,5 m maximum.
- 7) precamber of 1 cm for panels lenght of 4-5 m, of 2 cm for panels lenght of 6 m
- 8) Not included in the supply:
  - Steel bars for upper positionig;
  - Wire steel mesh according to law codes:
  - Steel bars for transverse ripartition beams.
- 9) Isotex reccomende, to improve the thermal-acoustic isolationton to overlap the panels of 3-4 cm on the Isotex walls.

#### storage methods on work site







Note= the carryng out of the works is subject at the approval of this drawing for the Structural Engineer of the building and of the Executing Company.

It is in charge at the Structural Engineer of the building to indicate the reinforcement steel bars of balcony and cantilever slabs.

#### ISOTEX S.R.L.

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## ISOTEX FLOOR SLABS RANGE



Floor slab S20



Floor slab S25



Floor slab S30



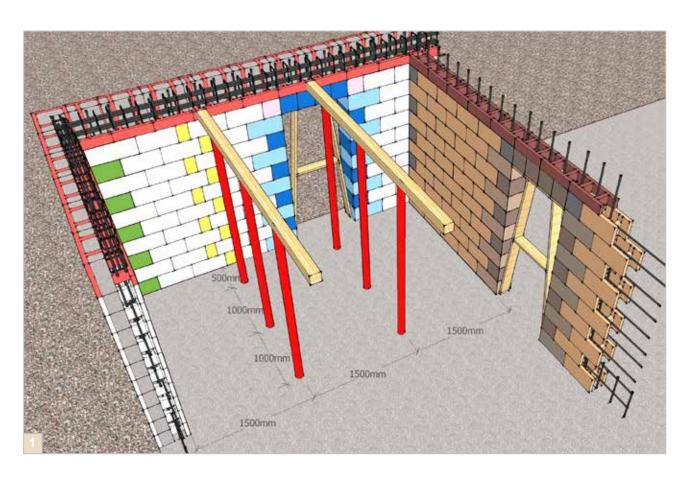
Floor slab S39

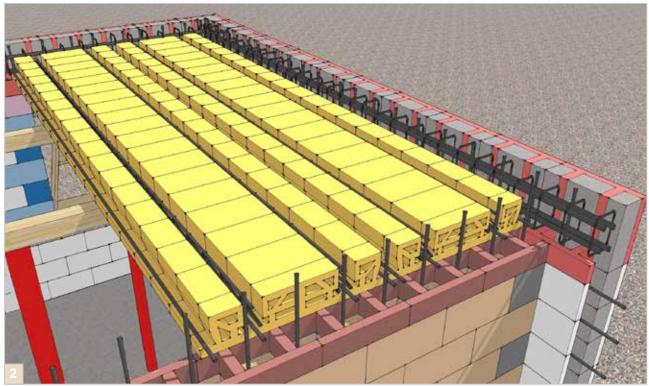




[ pag. 31 ]

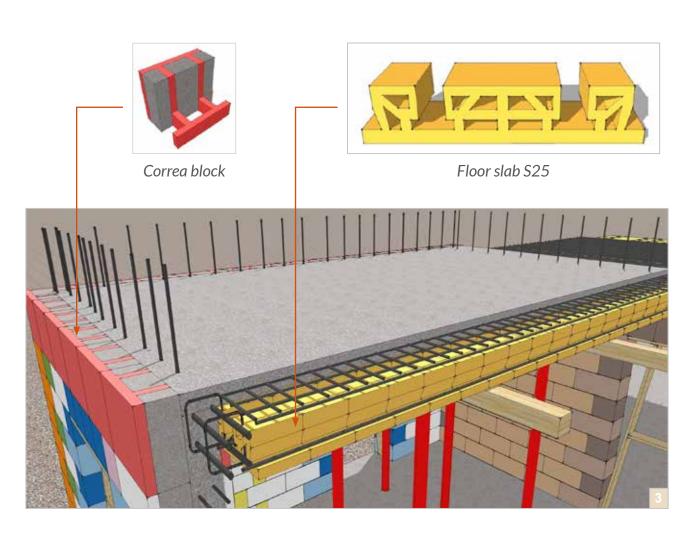
## CORRECT LAYING OF ISOTEX FLOOR SLABS

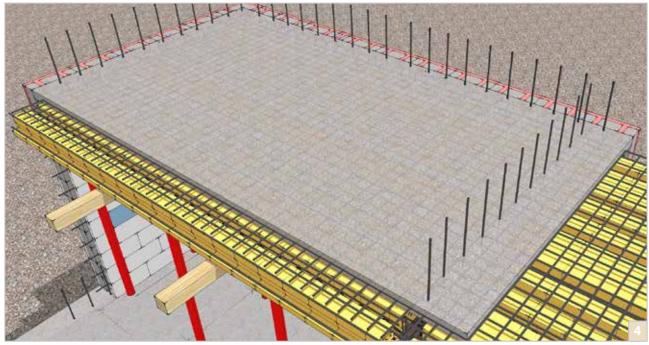






## CORRECT LAYING OF ISOTEX FLOOR SLABS





# RECOMMENDATION FOR CORRECT APPLICATION OF PLASTERS AND COLOURED FINISHES

The application of the plaster must be performed only on dry surfaces. Avoid, therefore, application on walling wet from rain, frozen or with unset concrete. Do not apply the plaster with temperatures less than 4°C as this can delay significantly the hardening of the plaster and, consequently, the application of finishings.

The week before applying plaster, close any gaps caused by incorrect laying with mortar in order to avoid notable thicknesses of plaster which might result in areas of crazing. The walls should be adequately levelled and squared during installation as the application of thicknesses of plaster to straighten and square off walling is inconceivable and ineffective.

A thicknesses of plaster greater of 2 cm may lead to the formation of cracks and crazing. Where it is necessary to apply plaster thicker than 2 cm, it is essential that it is applied in two coats separated by at least 28 days.

With these important premises, the plaster can be applied, pre-mixed or traditionally prepared, considering the fact that it must protect the walling from weather and wear and that its thickness must be as uniform as possible at 15 mm, bearing in mind that a greater or lesser thickness can facilitate the formation of cracks. Over the last few years, insulation is becoming ever more efficient which makes it all the more important to consider inserting a suitable netting, in alkali-resistant fibre glass with CE marking, positioned half way through the plaster; that being 7-8 mm from the support. Finishings (e.g. fine mortar or other) should always be applied after a coat of adhesive of hardened plaster, generally at least 3-4 weeks



beforehand, depending on climatic conditions.

Isotex SrI does not recommend the use of this type of finish (for exteriors), which in order to work well must have a fully hardened base coat of about 15 mm so as avoid the formation of shrinkage cracks, given the enormous difficulties in verifying that application and timing conditions are met. From the experience gained since 1995 on various construction sites and considering that in recent years structural blocks have improved heat performance thus subjecting the plaster to greater stress, the solution we suggest consists in applying directly on the plaster base coat (15mm), levelled during application, a thick coloured finish after 4-6 weeks, thus obviating the need for fine mortar or other.

When applying the base coat and leveling with a straight edge it is important to maintain a uniform and consistent covering to avoid chalking the surface. Isotex Srl can provide information on the characteristics of these products for external finishes and methods of application to ensure waterproofing yet breathability. For interiors, we recommend an interval of 4-5 days between plaster foundation and fine mortar (or other finish) to ensure a good and thorough maturation of the plaster before applying the mortar.

Consider the particularities of the S39 panelling, which for thermal reasons has joints but not concrete between the panels. In correspondence with these junctions micro-cracks may form and therefore, to avoid this, it is recommended to use a plasterboard finish. For intermediate floors (S20-S25-S30), if a plaster finish with a thickness of 15 mm (no less) is chosen, the recommendation is to "embed" half way through the thickness, a reinforcing net in alkali-resistant fibre with CE marking. Then wait 4/5 days, depending on the season, before applying the finish and 4/6 weeks before painting.

Please note that, Isotex Srl, due to the fact that it is unable to physically monitor on a day to day basis compliance with these recommendations, the quality of materials used (plaster and coloured finishes) and timings between applications, disclaims any responsibility for issues that may occur in the future.

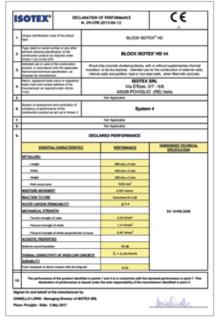


# TESTING OF ANCHORS SEAL AND TEAR STRENGTH ON ISOTEX WALL

On website <a href="https://www.blocchiisotex.com">www.blocchiisotex.com</a> you can find and download the reports of the complete tests and the technical data sheets of the different types of fixing.



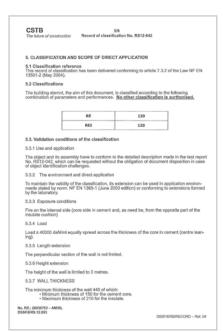
Partial extract of certification in the verbatim version on the site www.blocchiisotex.com



Example of DOP (Protected Designation of Origin)



Obligatory flooring EC marque dated 01.01.2011



REI120 - CSTB classification



Certification of quality ISO 9001:2008





EPD - Environmental Product Declaration

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The operational assembly manual contains and illustrates the particulars of applying ISOTEX® products with related recommendations. The document has been produced by ISOTEX Srl, and consequently must only and exclusively be used in relation to the ISOTEX® construction method.

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Maximum seismic safety & living comfort, always.





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