



## Tutorial TileACAD

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## 0.0 - Installation

### 0.0.1 – TileACAD Installation

TileACAD installation doesn't interact with Autocad® configuration, so it would't change any configurations and it has no start automatism so that users would't have any problems with other applications or personal settings.

To install TileACAD you just have to copy and paste the required files: this predispose all your future choices of start. All the possibilities listed below are easy, also for first users.

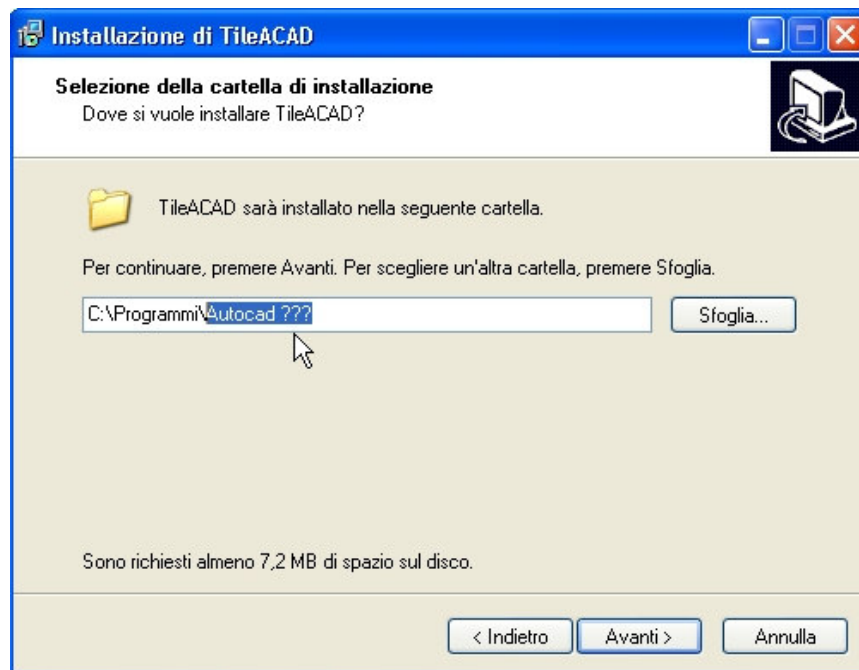
To begin TileACAD installation start the file

#### **TileACAD.exe**

*User needs to have an Autocad® licence V. 2000-2000i-2002-2004-2005-2006-2007-2008-2009-2010 or next and VBA installed.*

*ATTENTION!: in the versions Autocad® 2000 - 2000i and 2009-2010 and following the VBAs have to be installed apart and subsequently because more present in the standard installation of Autocad.*

Before starting the installation the program will ask you the directory in which Autocad® is installed (**ATTENTION!** : write the directory corretly, or the installation will stop).



The copy of the file allows the creation of a sub-directory /TileACAD inside the Autocad® directory /Support where you can copy the required files.

Also these auxiliar files will be inserted in the directory:

- TileACAD.dvb ( macro VBA )
- TileACAD.lsp ( file AutoLISP for start )
- TileACAD.mns / TileACAD.cui ( menu files with concernign icons ico\_1, ico\_2, ecc. )

At the end of installation launch Autocad® and progress you immediatly can be launched with the first start of TileACAD (in this case the toolbar of menù will be installed) automatically besides the activation of the program in formality **DEMO (EVALUATE)** or **REGISTERED** (with insertion of the code of activation).

### 0.0.2 - Start with AutoLISP

Open an Autocad® design and write this string in the Command line:  
**(load "TileACAD")**



Automatically he will be loaded and started TileACAD and created group menu and toolbar for the next start.



### 0.0.3 – Start: how to customised menu

During the installation the files for the menu and icon bar configuration.  
 Procedure:

- Select from the menù 'Tools', 'Customise', 'Menù'. Using the keyboard use

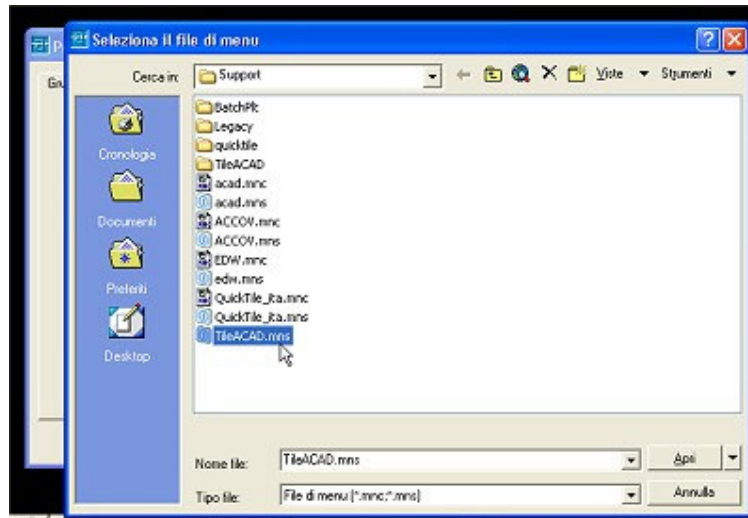
#### CARMENU

A window will appear:

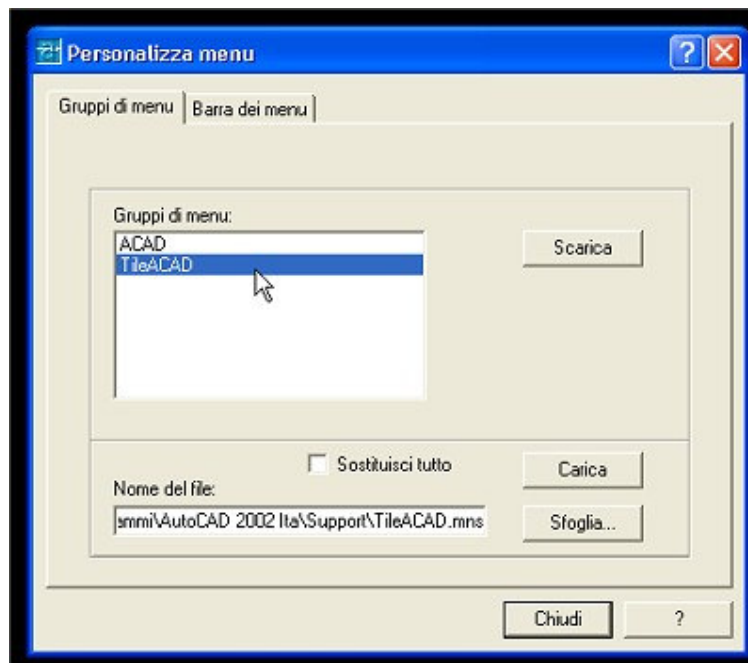


- from 'Customise Menù' with the command 'Flip' choose from standard /Support the file :

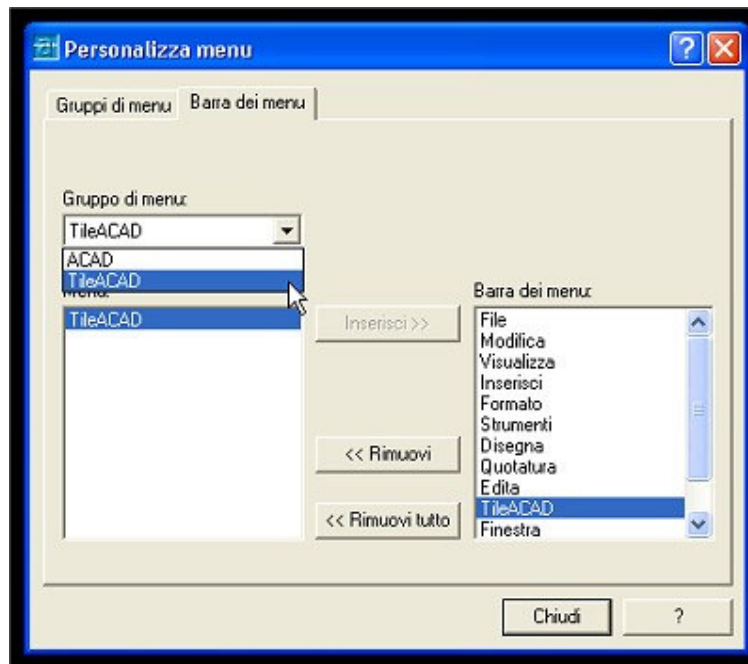
#### TileACAD.mns



c) 'Charge' :



d) Icon toolbar is now installed. If you want to install the window menu follow the option 'Menu Bar', select from 'Menu Groups' **TileACAD** , insert the desired level in the list 'Menu Bar'



- e) Now you have installed the icon toolbar and the window menù. Everytime that Autocad® is open this menus will be activated.

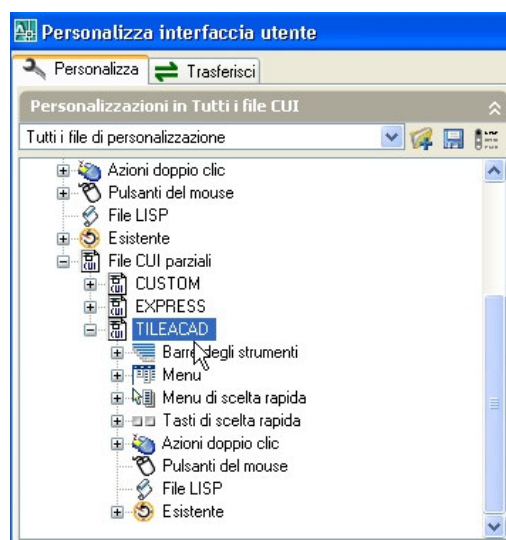


In the versions Autocad from the 2006 and next it is also possible to directly load the file of personalization:

### **TileACAD.cui**

always foresees in the dir / support.

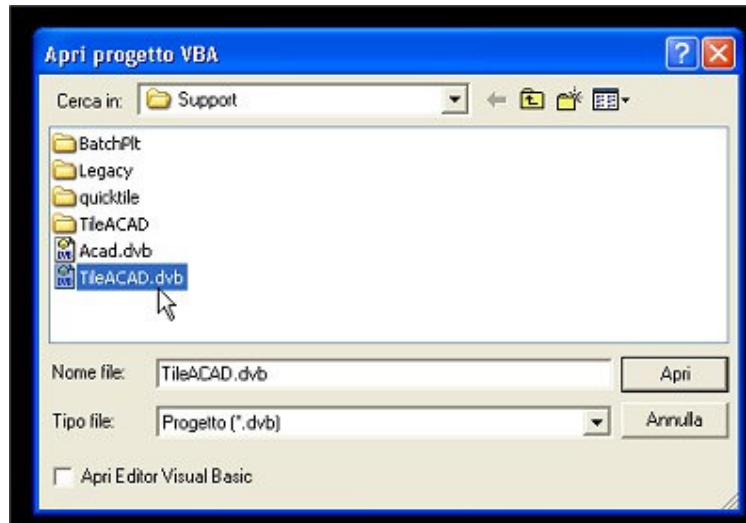
From the menu 'Tools' to select 'Personalizes' and therefore 'Interface' and from the tree of the personalizations to choose the to load the file of personalization in the branch 'File Which partial.':



#### 0.0.4 - Start with manual charge of macro VBA

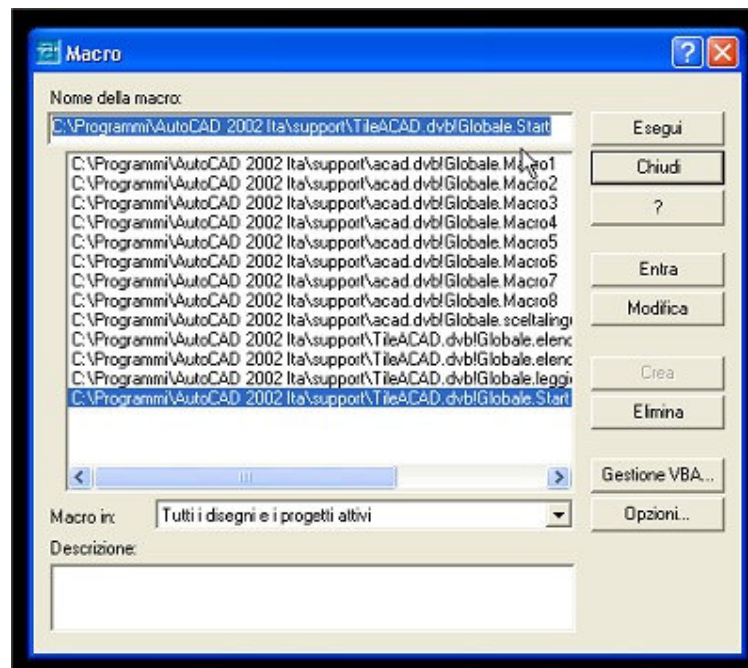
- a) The charging is like every other macro VBA: from 'Tools', 'Macro', charge the project:

##### TileACAD.dvb



- b) To start the macro activate it from the same menu by select 'Macro...' (ALT+F8) and select from the list:

##### ...\TileACAD.dvb!Globale.Start



'OK'.

As an alternative from the keyboard select:

Command: **-vbarun**

Macro name: **TileACAD.dvb!Globale.Start**

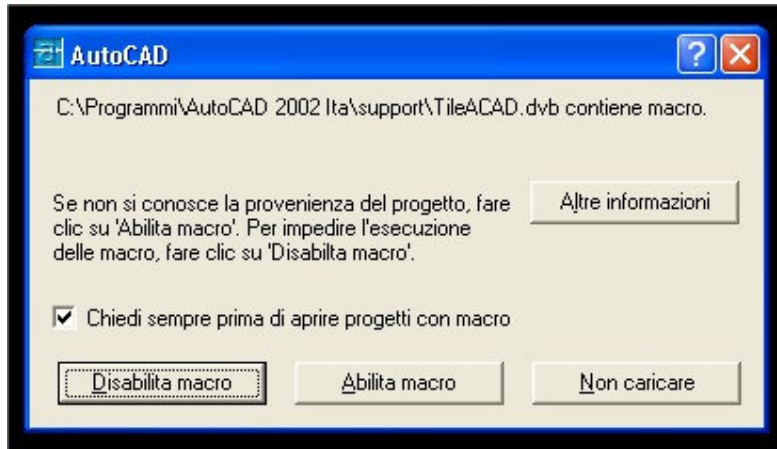
It is also possible to activate a keyboard script:

Command: **script**

and therefore to select the file existing **TileACAD.scr** within the dir / support of Autocad©

### 0.0.5 – Enable macro

When starting the application is possible that system produce an Autocad® informative about macro protections. To use TileACAD is required to enable these macro. This request will appear for every start, so is well-recommended to disable it with the option:



### 0.0.6 – Setup VBA

To the start of the application for some versions it can take place an informative Autocad® that concerns the lack of the plugins Microsoft® VBA.

To be able to use TileACAD it is necessary to OBLIGATORILY install this additional component following the indications of download.

Effectuated the installation him it will proceed without problems with any version.





## 0.1 - Generals

When starting, TileACAD will appear on the right of the screen over Autocad<sup>®</sup> work area, a vertical windows contains all the procedures.

Users can change the position of the windows as they prefer, but they can't reduce the sizes.

The window is divided into function areas:

The diagram illustrates the TileACAD window interface, which is divided into three main functional areas as indicated by the callout boxes:

- Utilities Area:** Search for database key, language and unit of measurement, images and informations administration.
- RASTER Area (laying by images):** Products and panels display, pannelli, laying insertion plans and colors management, input computation.
- VECTOR area (laying by vector):** laying insertion and options, plans and colors management, input computation.

The TileACAD window itself features the following components:

- Search Area:** Includes fields for 'Tipologie/Marchi', 'Serie', 'Lungh. X Largh.' (with a multiplier 'x' and a percentage tolerance '+/- 10%'), and 'Cod./Descrizione'.
- RASTER Section:** Contains a 'Minimali' tab and a 'Pannelli' section with a grid of product thumbnails.
- RASTER Settings:** Includes 'Geometria', 'Opzioni', 'Layout', 'Area', 'Gruppo', and 'Ritaglio' tabs. It features input fields for 'Posizione set point (X,Y)', 'Scala (1 = 1 cm = 0.394 in)', and 'Rotazione (0-90°)', along with 'Inserisci', 'Computo', and 'Reset' buttons.
- VECTOR Section:** Contains 'Geometria', 'Moduli (Tratteggi)', 'Moduli (Blocchi)', and 'Bordi' tabs. It includes input fields for 'Rotazione (0-90°)', 'Scala (1 = 1 cm = 0.394 in)', and 'Colore', along with 'Inserisci', 'Computo', and 'Reset' buttons.

To end TileACAD, and go back to Autocad<sup>®</sup>, use the 'x' button up on the right. All your Options will be saved and ready to use at the next Start of the application.

## 0.2 - Utilities

### 0.2.1 – Product Finder

To do a laying by images search in the products database with the suggested keyword search.

The hierarchical order of the database is organised as a logical tree:



Every typology can have more than one series and every series has more than one product associated.

After choosing in the mask a typology and a series all the products and panels available will be displayed in the RASTER area.

More Keys:

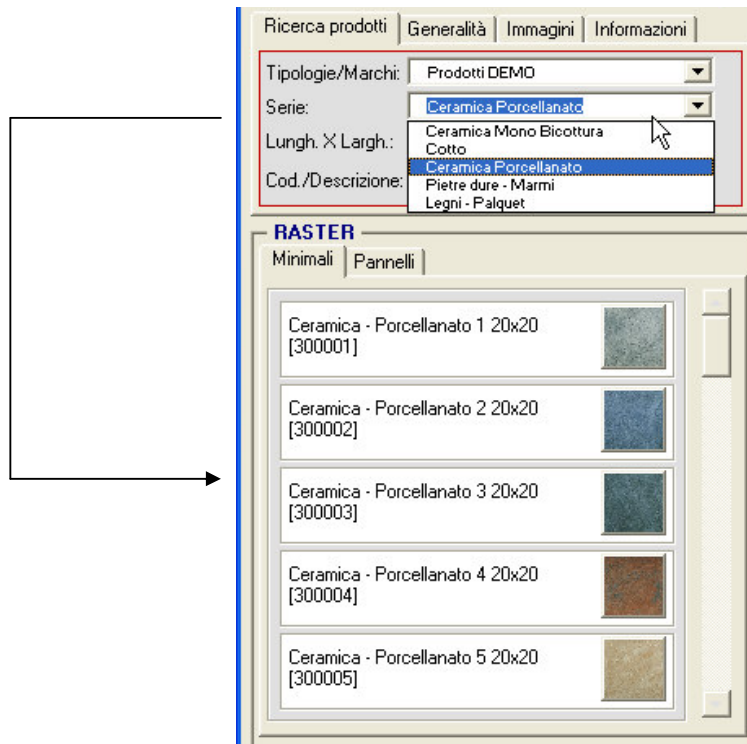
**Product geometry:** select by width and height ( +/- a 10% of tolerance. Eg: for the dimension 40x40 cm will be displayed all the products from 36x36 cm to 44x44 cm);

**Code/Description:** it is possible to insert the code (or a part of it) or the description (or a part of it).

Use these filters only for a search among the full database.

To delete your choice push 'RESET' or deleting manually the filters.

Automatically all the products and panels of the old search will be deleted from the windows.



### 0.2.2 – Generals

These personalisation Options are usually utilized at the first start of TileACAD and saved for next uses.



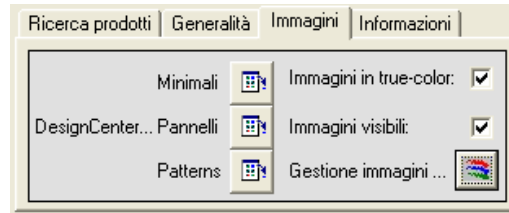
**Languages:** choose among english, italian, french, deutsch, spanish and portuguese.

**System of measurement:** ISO – metric (standard) and Anglo-Saxon (inch) are both available

**Unit of measurement:** facilitation to activate the function Autocad© of 'Unity' for further personalizations on the unities of measure, precision, direction angles, etc.

### 0.2.3 – Images

Here you can find all the Options for the management of raster images in Autocad®.



DesignCenter: enable the Autocad® procedure for a rapid research and display of the files in the TileACAD directory for materials images, panels and patterns.

Truecolor images: enable/disable the visualization in the work area of high and low quality raster images.

Command:

Command line: `qualitimm`

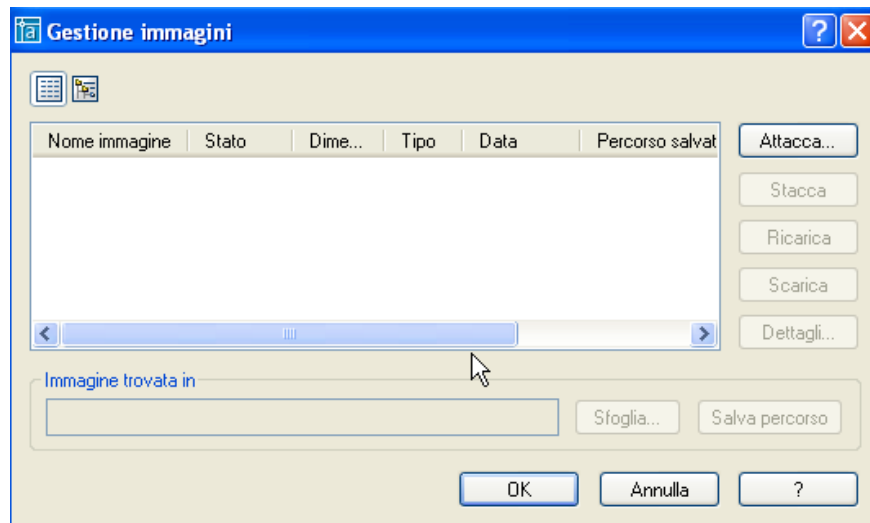
Visible images: enable/disable the RASTER visualization of the images.

Command:

Command line: `imagehlt`

Or in 'Options – Visualization': Highlight only the frame

Images management: activate the procedure Autocad® for the research and management of RASTER images out of the file



### 0.2.4 – Information

Information about TileACAD software properties, starting codes and links to the web site.

## 1.0 – General options (raster)

### 1.0.1 Geometry

It is possible to define position, scale and spin of the laying:

The laying position (set-point : first or single insertion downon the left) is define by inserting X,Y coordinate or by the option on the work area.

The scale is a free input (1:1 is considered as 1 cm = 1 pixel). Pay attention when choosing this value because the result depends on this scale and on the scale of the raster images defined in function of the sizes inserted in the database. Eg. The user is working on a work sheet in scale (considering 1 pixel = 1 mm) the scale will be 10 and so on.

The rotation corner can be selected from the list or indicated as the inclination of a vector that should be drawn on the work shhet with the right Option.

### 1.0.2 Options

It is possible to define specifications and general options for singular laying:

**Variant:** if there is more than one image for the product, activate this option and for the laying all the available materials will be employed for a more realistic effect.

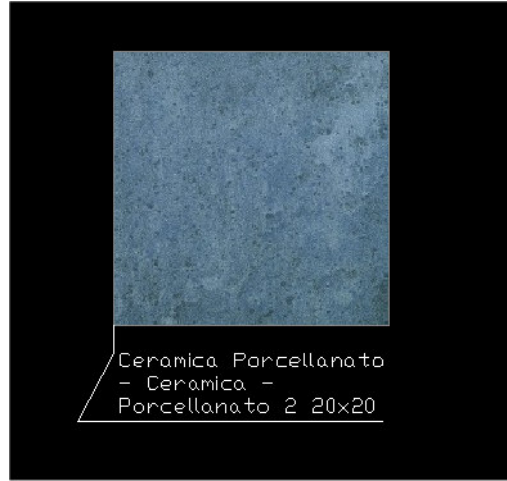


Variant

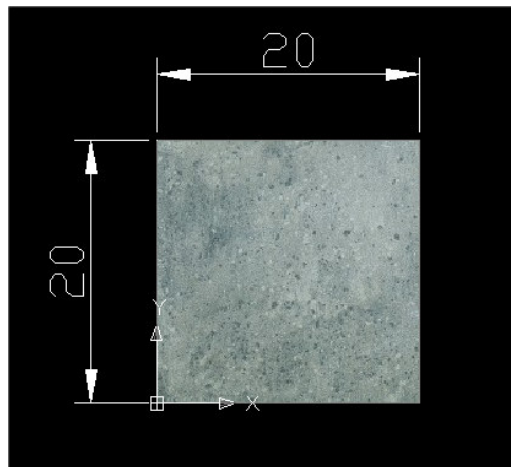


Without variant

**Caption:** an informative text is added. It contains name, serie, description and size of the product. The text can be modified as you prefer.



**Quotation:** automatically the quotation of width and length of the product.



**Border:** every single product will have a border with a white line.

Eg:



### 1.0.3 Layout

It is possible to define layout specifications for the work sheet and the laying done:



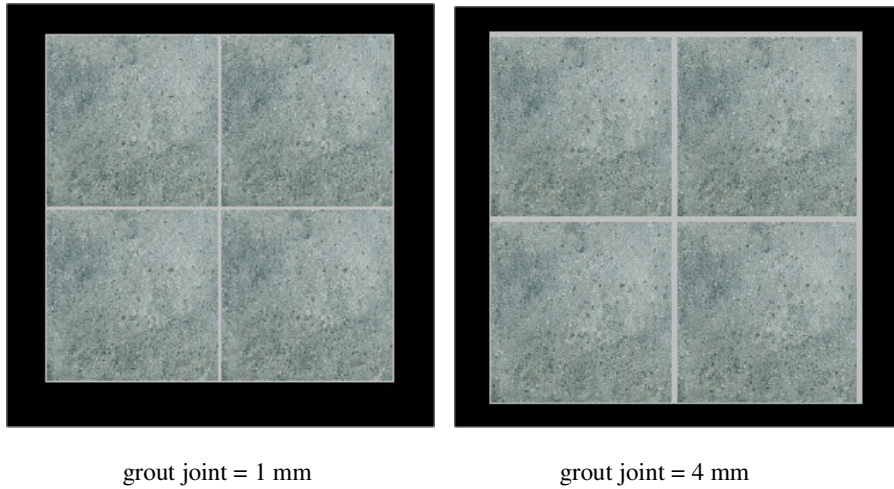
**Layer** : a new plan in the work sheet will be created to insert the new laying. Plane name, as default is 'Tiles', and you can modify it as you prefer.

The plan color is the same of the grout joint.



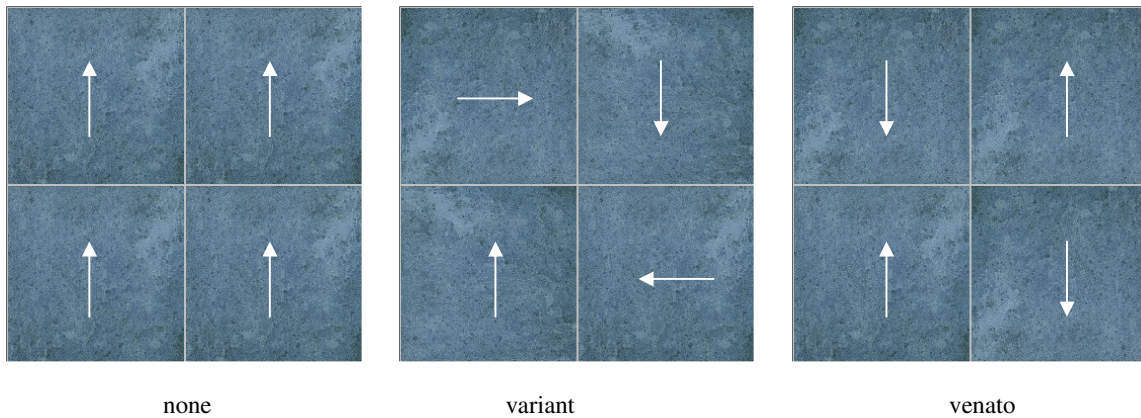
**Grout joint:** laying groups it's possible to modify the distance among the products. The value is selected by those in the option (= 0 is available, too). The grout joint color is selected by the options.

Eg:



**Random sampling:** it allows the user to automatically rotate the images during the multiple laying, with three possibilities: none, variant (90° casual rotation), venato (180° casual rotation).

Eg:



#### 1.0.4 Insert and Reset

The key 'Insert' activates the laying on the sheet.

The key 'Reset' deletes all the options and goes back to the default values of all the raster options.



## 1.1 – Areas Laying

This allows the user to make a laying in closed areas on the draw sheet following the selected options.

Before activate this function the user should have done:

- Drawn a poliline closed or a circumference/ellipse on the work sheet (border area)
- Selected a product
- Defined the geometrical parameters
- Verified layout options and customisations

After which choose among:



Laying inside polilinear outline ( if on the sheet there is an outline 2D poliline)

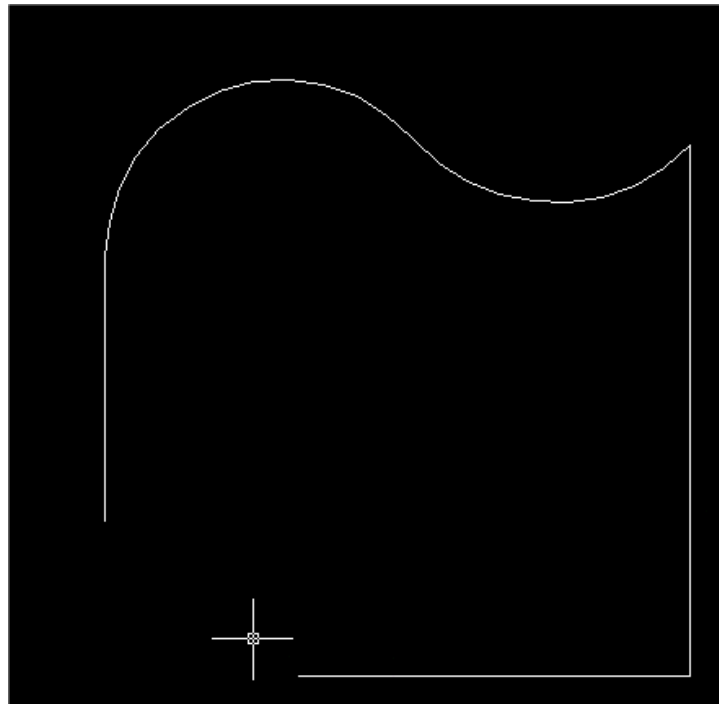
Laying inside circumferencial outline (if on the sheet there is a circumference or a ellipse)

Plus two options linked to the laying:

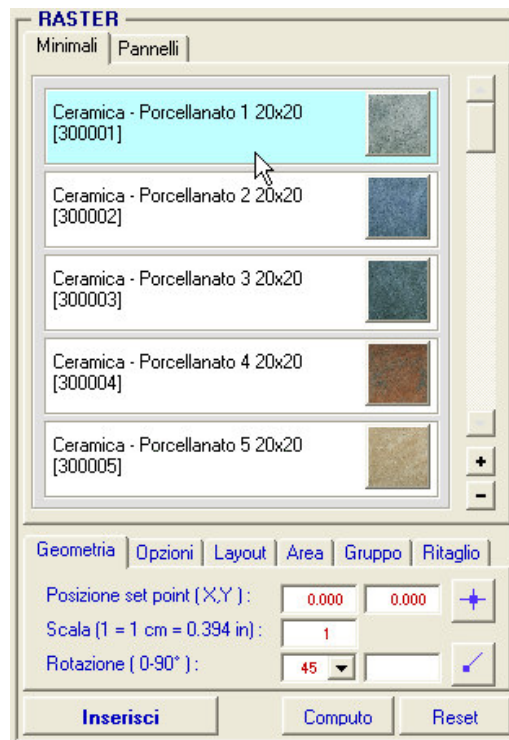
**Texture** : if active the laying is made following the texture (replenishment)

**Create Block + Computation**: the laying is associated to a single block to allow the metric computation.

Eg: laying inside a polilinear area (lines + arches ) :



Select the raster product and define scale and rotation (scale 1:1 and rotation 45°).



Define also in the layout the grout joint (eg: 1 mm), the color (standard grey), random sampling(eg: venies) and we ask for the creation of a new laying plan named 'Tiles'

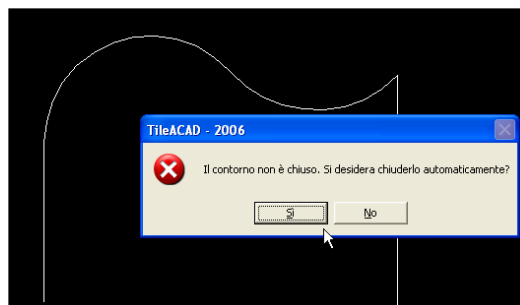


Deselect all other variables in the 'Options': variant, caption, quotation and border.

Now we are ready to activate the laying by select the first option.

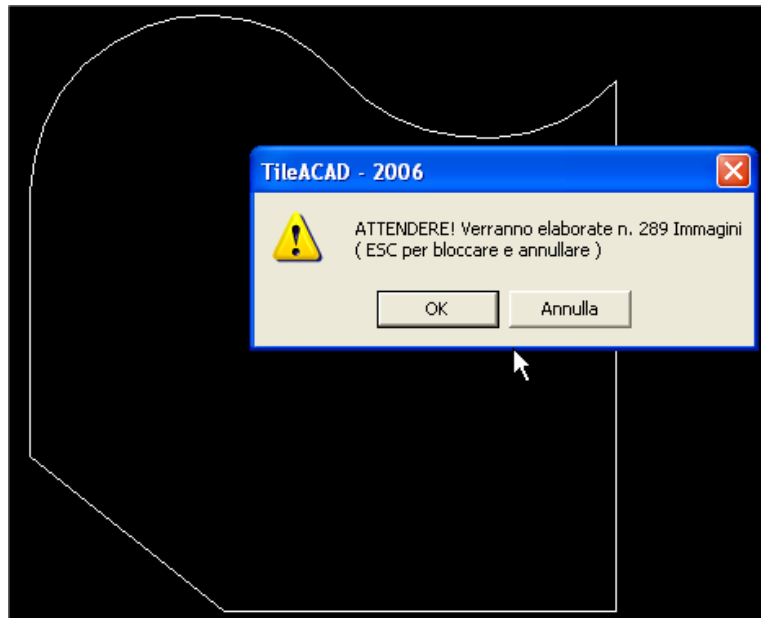
TileACAD windows disappears and is asked to select on the sheet the poliline inside which we want the laying.

If the poliline isn't closed the application ask you if you want to close it automatically or if you prefer to stop the application to correct manually the draw:

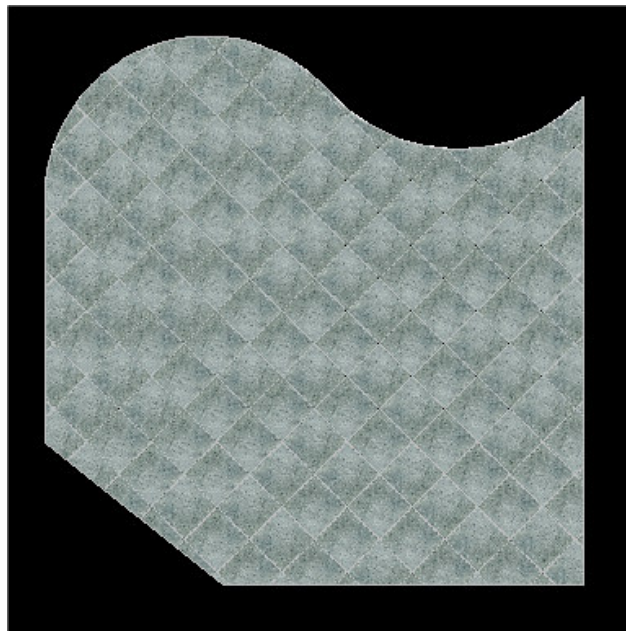


Let's suppose that we do the automatic closure and to go on.

If there aren't new attentions, TileACAD before starting the laying indicates how many images will be inserted in the sheet for the requested laying ( always active during the elaboration the ESC key to stuck the procedure and delete the work ) :



Accept to going on and after few minutes here's the result:



If you don't want to see the raster laying just deactivate the layer 'Tiles' or make visible the raster images by activate the border.

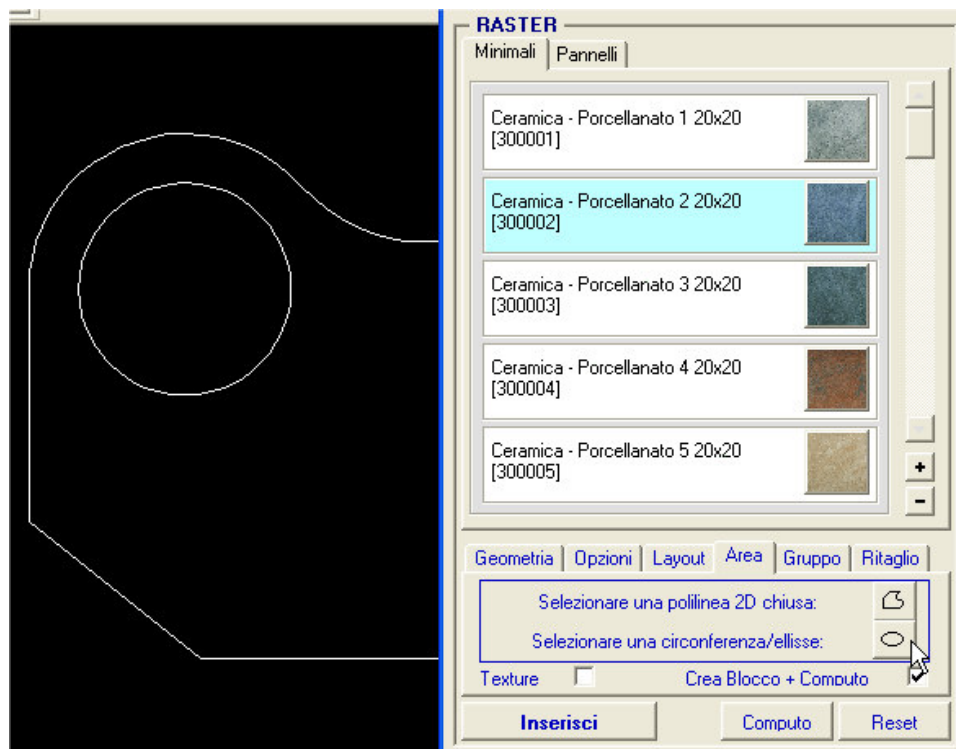
The graphic quality of the laying depends on the management of Autocad<sup>®</sup> that doesn't allow to define adhoc standards because it uses the specs of the screen.

The result could be completely different if we use a texture with the laying :

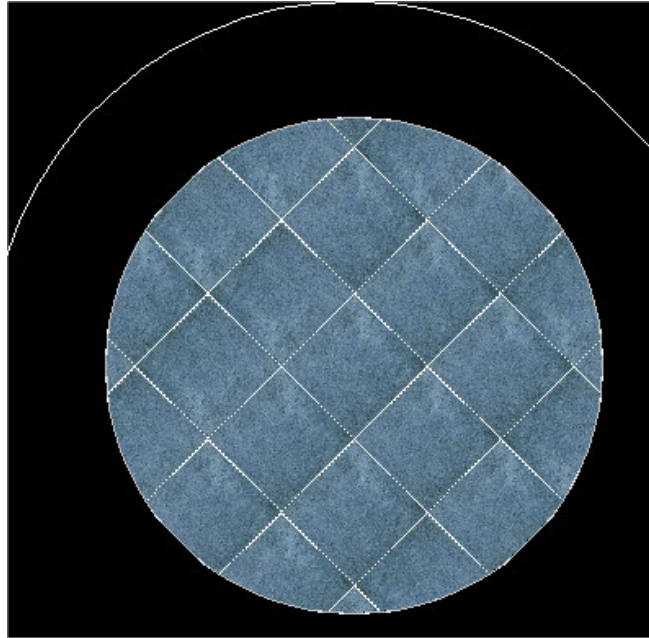


By using more than one outline and generating more than one layer of laying we can have overlap laying.

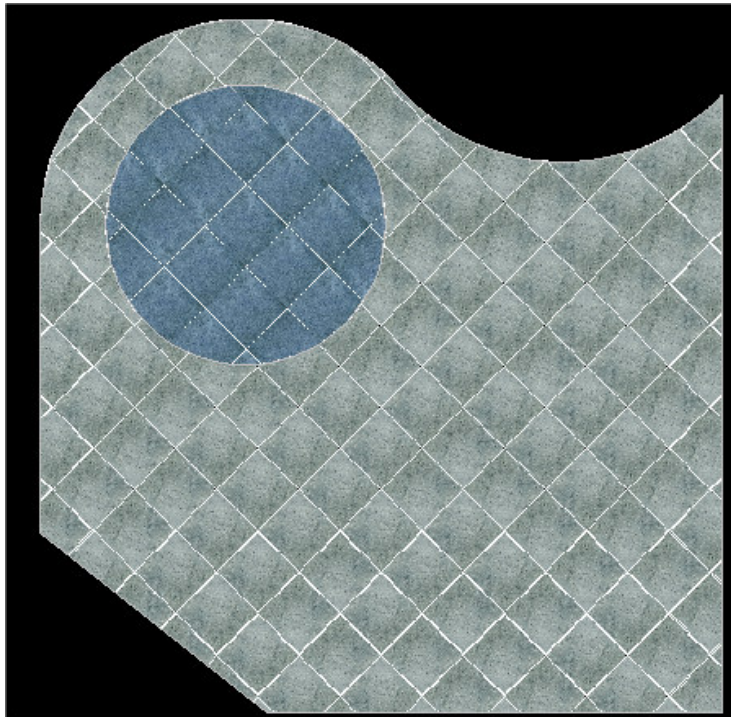
Eg: another outline, now circular, is drawn inside the area: we deactivate the layer Tiles and we create a new layer, Tiles2 and go on by doing a new laying with a different product.



The result is this new laying associated to the layer Tiles2:



now we reactivate the first layer Tiles to obtain the overlap of the laying:



Possibilities are endless to create whatever you need or prefer as your fantasy prefers.

**ATTENTION!**

The laying is centered in the rectangle of your area. This means that the laying of the first tile is not indicative and the geometrical value of the set-point position is not considered.

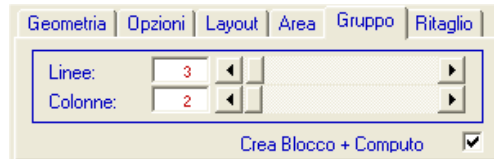
## 1.2 – Laying by groups

This procedure allow you to do the laying of a rectangle matrix of products on the work sheet following the options selected before.

Before activating this options user shoul have:

- Selected a products
- Defined the geometrical parameter
- Verified the options and the layout personalization

After which the procedure needs to indicate how many lines and columns you want to insert:



Eg. In the images we have indicate 3 lines x 2 columns fot a result of 6 insertions of the product.  
Now activate the laying with the key 'Insert'

The option 'Create Block + Computation' allows to associates the laying to a single block: this make easier the calculation of the metric computation.

Eg:



matrix of 3 lines x 2 columns



matrix of 2 linea x 3 columns

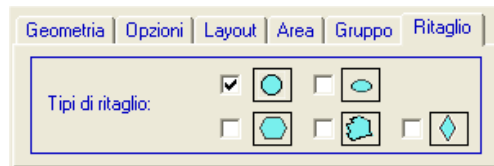
### 1.3 – Laying clipping

This procedure allows you to do a single laying of a product on the work sheet following the specs options and clipped according to a geometrical shape select among those suggested.

Before activating this option the user should have:

- a) Selected a product
- b) Defined the geometrical parameters
- c) Checked the options and the layout personalizations

Choose among the suggested clipping:



start the laying by the key 'Insert'.

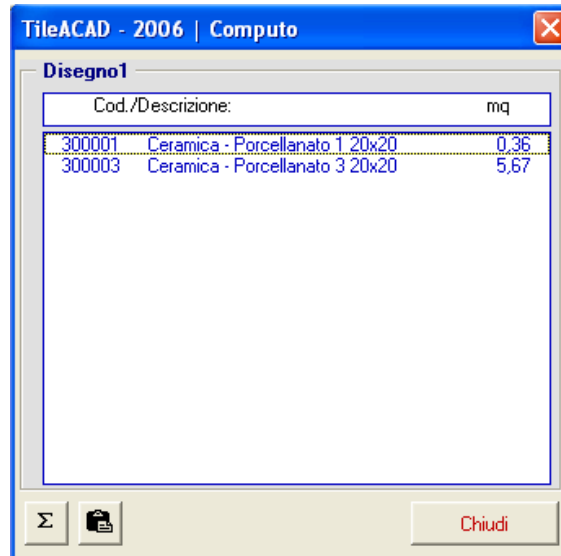
Eg.



Circula clip + caption

## 1.4 – Metric computation

To activate this procedure choose 'Computation': automatically all the computation will appear on the screen with the possibility of save them in the system clipboard.



The key 'Σ' is another option that allows to sum the same products to obtain a complete computation for the material and not for the single laying.

### ATTENTION

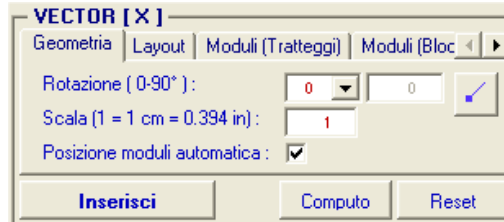
If during the laying you don't select the option 'Create Block + Computation', no blocks will be created and no metric computation will be calculated.



## 2.0 – General options (vector)

### 2.0.1 Geometry

It is possible to define the Rotation of the laying , its scale and the modality of insertion of the forms::



The rotation corner can be selected by the list or can be indicated as the inclination of a vector that should be drawn on the work sheet (precision : 0.00 )

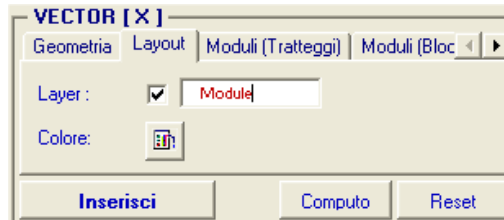
The scale is a free input considering the scale 1:1 as 1 cm = 1 pixel.

If it activates the option 'Position modulates automatic' to the action of the insertion of the moduls both patterns, he will proceed without other application leaving the choice of the point of positioning to TileACAD; if instead it is it disarms, the procedures of insertion will consult the consumer with application of definition on the worksheet of the set-point of departure of the layings.

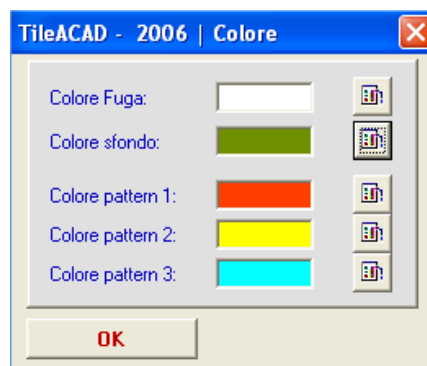
### 2.0.2 Layout

We can define here the name of layer of the current sheet on which the layings will be inserted.

If it is desired not to use this option and to force the laying on the current layer, deselect with the special ccheck, eliminating so the name.



The second options is the definition of the colors used during the laying of the form and borders



The options:

- 2.0.3 Grout joint color = perimetral vector color
- 2.0.4 Background color = prime color on which the laying are done and color of coverage of the islands in the layings moduls-blocks.
- 2.0.5 Pattern color 1,2,3 = secondary colors if the pattern has more than one color.

### 2.0.3 Insert and Reset

The key 'Insert' activates the procedures of laying on the draw for forms and borders

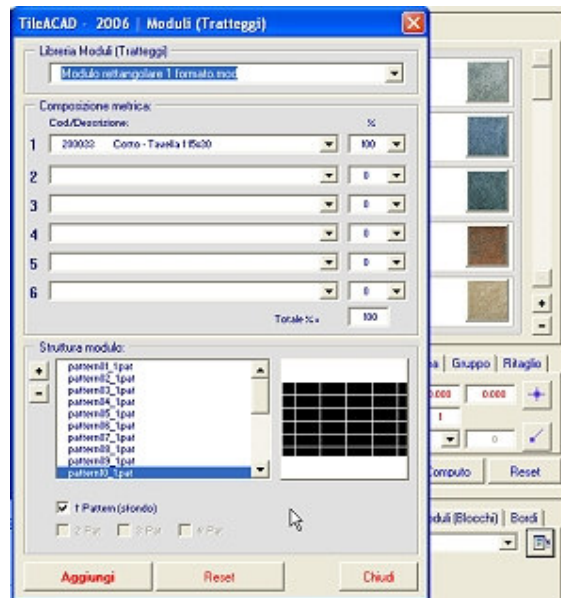
The key 'Reset' deletes all the options and goes back to the default values of the vector options.

## 2.1 – Forms management (cross hatching)

During this phase is possible to create/save/edit tiles forms.

The form is the repeatability inside a closed area of an Autocad® pattern (.pat) associated to a list of products calculate in percentage.

To activate the procedure click on the key near the forms list of the library.



To create a new form follow this steps:

- Give a name to the form (no special font as,.,!/\_).
- In 'Metric Computation' select the single product that are part of the form using the list
- For each product indicate a percentage of the same form by choosing the value in the list. The sum of the percentage must be = 100.
- After have defined the alphanumeric datum (name, products and percentage) is needed to define the geometry of the form with 'Form Structure'. The structure will be visualize in the beneath box. It is possible to choose the background color of the laying, ot to choose about three cross-hatching, to add color-contrast.
- Save the form defined with the option 'Add'.

It is also possible to read a pre-existing by select it from the 'Forms Library' and go on to modify it.

The geometry form is realised using cross-hatching modules by Autocad®.

To define a cross-hatching module create a text file with the extension (.pat) that defines the geometry. Put the file in the right subdirectory ...PatFiles.

The file (.pat) that defines the 'Form Structure' (it reproduces the grout joint geometry) must be called in this way: \*\_1.pat because only the file (.pat) ending with (\_1) are visualized in the box.

The user can create up to 3 cross-hatching files associated to the first one with the same name, but ending respectively with (\_2) (\_3) (\_4).

Eg: to a file named mod\_1.pat it is possible to associate these three files mod\_2.pat, mod\_3.pat, mod\_4.pat

These files allow the possibility to define further cross-hatching with different colors.

After creating a pattern insert it in the library using the key '+' in the side of the list (the key '-' deletes a pattern from the list).

A window will appear:



to indicate the cross-hatching to add to the list and the image.

The images can be .wmf, .bmp or .jpg and are visualized every time that you choose the pattern associated.

Then select 'Add' and the new pattern will be inserted in the list ready for use.

'Reset' deletes all the choices.

'Close' ends the procedure and returns to TileACAD.

## 2.2 – Forms management (Blocks)

It is possible to create/save/edit tiles forms. A form is the repeatability inside a closed area in a primitive group (Autocad® block saved in .DWG format) associated to a list of products.

To start the procedure click on the key near the forms list pre-existing.

To create a module:

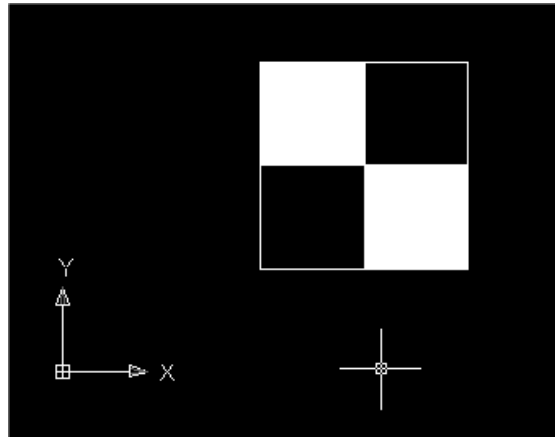
- Give a name to the block (no special fonts as  $\acute{e}/\%&\$£''!$ ).
- Select on the work sheet all the primitive vectors ( lines, circles, patterns, ecc.) that you want to associate to the block.
- Check and eventually correct the repeatability of the block proposed on X and Y. Values automatically repeated are considered as a simple repeatability of the area over the design.
- In 'Metric composition' select the minimal elements that composed the form in the list of the box
- For each product select a percentage in the form choosing in the box. Percentage sum must be = 100.
- laying, or select up to 3 cross-hatching to add more color contrast
- Save with the option 'Add'.

It is also possible to read a form pre-existing selecting it from the 'Forms Library (blocks)' and go on to modify it as we saw before.

The module geometry is realised using blocks from Autocad®.

To define a module of block create on a new sheet a design of the module with the primitive vectors.

Eg:



Use correctly the colors, the solid and the patterns to an easy interpretation of the combining.  
The form scale should be one to fit in the scale of the laying.  
Further considerate that the block should be repeatible on X and Y.

If you want to have a repeatability following different steps modifying the repetition values in X-Y.

Eg: size block 300x300

Repetition without spaces:	300	0	0	300
Repetition with horizontal space:	302	0	0	300
Repetition with vertical space:	300	0	0	302
Repetition with homogenous space:	302	0	0	302

The files (.dwg) shoul be in the right subdirectory ...\Blocks.

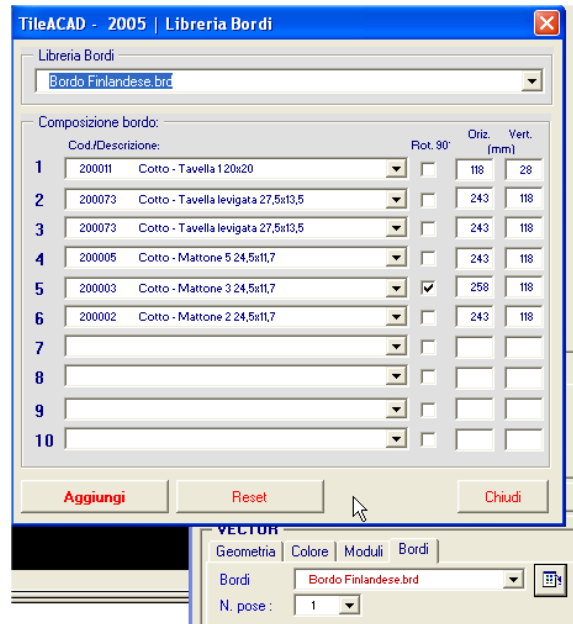
More info about the calculation of the repeatability-> APPENDIX A.

'Reset' deletes all the choices

'Close' ends the procedure and goes back to TileACAD.

## 2.3 - Borders management

It is possible to create/save/edit structure of the borders of the tiles, from the database. To start the procedure click on the key near the list of the pre-existing borders.



To create a border:

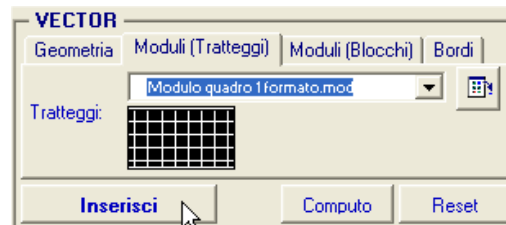
- Give a name to the block (no special fonts as  $\acute{e}/\%&\$f''!$ ).
- In 'Borders Composition' select the product of the border
- Indicate for each product if you want a 90° rotation
- Tiles size (horizontal and vertical, in mm) are visualized in the right text box. If the sizes aren't corrected modify them with new values and save. Eg: a 30x30 tiles figure as 316 (x and y) is more convenient to bring the value to 300.
- Save with the key 'Add'.

It is also possible to read a form pre-existing selecting it from the 'Border Library' and go on to modify it as we saw before.

## 2.4 – Forms Laying (cross-hatching)

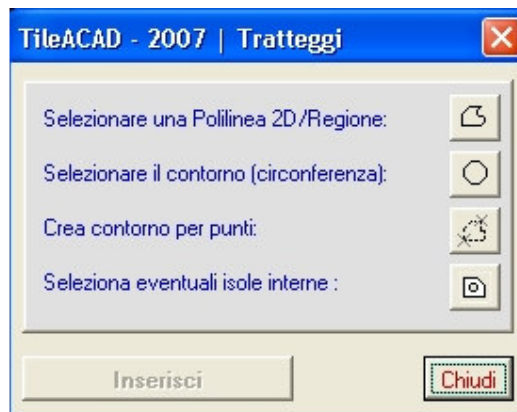
After having chosen a form from the library activate the procedure with **'Insert'** .

It is possible to do modular laying suign the forms creates with the fromr procedure. The laying can be done inside a closed area with the possibility of excluding internal area.



To do a modular laying:

- Choose a form from the box
- Select the outline (circle, rectangle, polygon, closed poliline, regions ) for the laying + Enter



- Select any area inside (circle, rectangle, or closed poliline) that you want to exclude from the laying + Invio to end.
- Confirm with **'Insert'** or delete with **'Close'**.

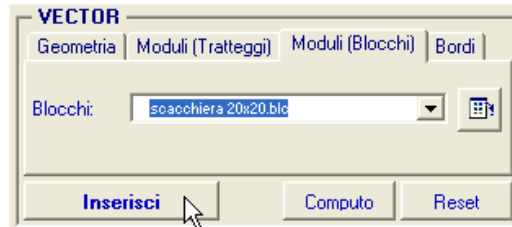
The begin of the laying coincide with the origin of Autocad<sup>®</sup> coordinate.

It is also possible to delete the perimeter.

## 2.5 – Forms Laying (Blocks)

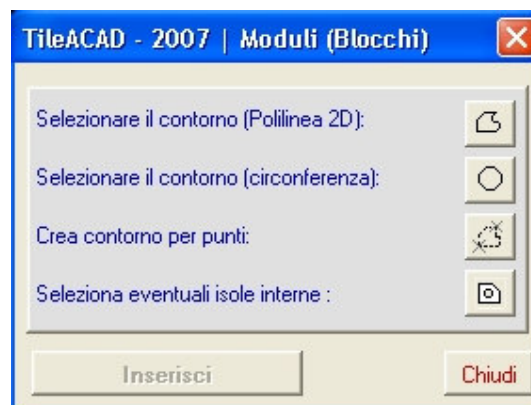
Choose 'Insert' .

In this phase it is possible to do a modular laying by using the forms created before. The laying can be made inside a close area defined by a poliline (if open it will be automatically closed) or a circumference.



to do a modular laying:

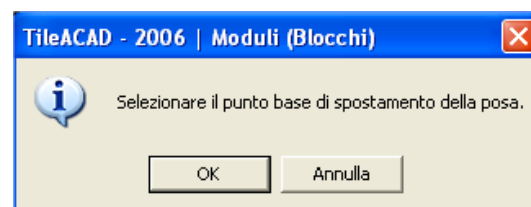
- Choose a form from the box .
- Select the outline inside which the laying should be done + Enter to end



- To choose possible 'islands' inside to the closed contour that they will be covered and eliminated by the calculation
- Confirm with 'Insert' or delete with 'Close'.

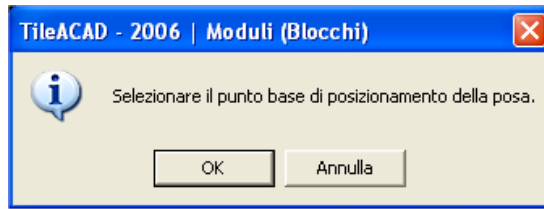
Arches and circumferences will be converted in polygon with rounded corners ( this number of sides should be enough to have a good precision with every kind of zoom).

In advance the general options can be defined as seen in the par. 2.0.1 and 2.0.2 (rotation, scale and colors). Particularly if it disarms the option 'Position modulates automatic', will be required before proceeding to the laying of the forms to directly point out the basic point of reference of the grate of laying as input on the worksheet:



and following the point of hookup on the contour:

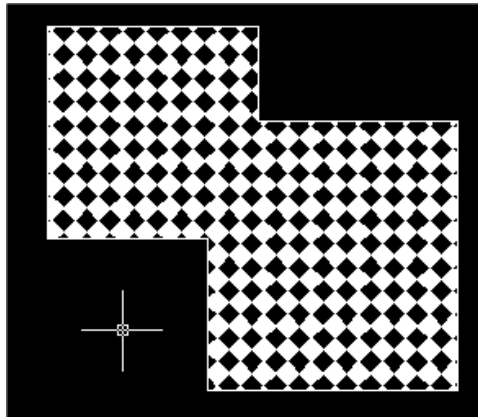




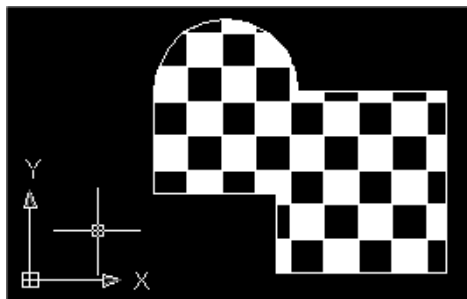
To facilitate the retrieval of the points, the select contour will be color of yellow and momentarily you disarms the visualizations of the possible solid fillings.

The islands will be filled with a solid outline of equal color to the color of the sheet.

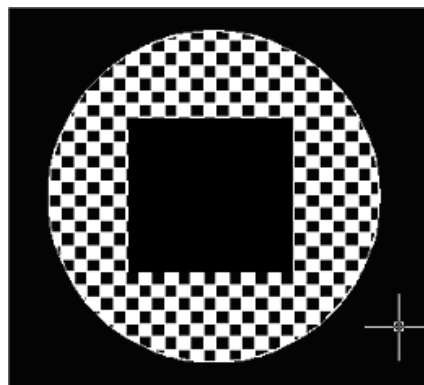
Eg. laying inside a back straight poliline:



Eg. laying inside a mixed poliline composed of straight lines and arches :



Es. laying inside a circumference with square island:



**ATTENTION:**

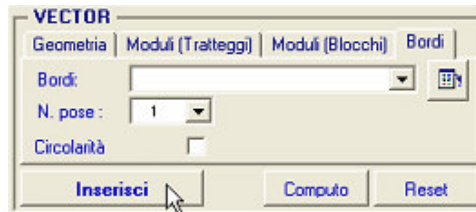
Autocad® clipping is not precise: it is possible to have see message on the screen:

*Clipping outline aren't right*

To go on don't close the poliline and let the program to close automatically (delete the last line linked to the first point of the poliline) or reduce the poliline by break up it.

## **2.6 – Border Laying (linear and circular)**

After choosing a form from the border library choose 'Insert' .



Now is possible to do automatical laying (choose from the database) of borders using the borders created before. The laying could be made along a path, close or open, linear or circular, composed by a poliline.

The draw of the border corners will be made following a cut line made by the line of the border corner. Besides it is possible to plan the 'number of layings' or progressive repetitions that it is desired to effect.

To perform the laying of a memorized edge to follow the following instructions:

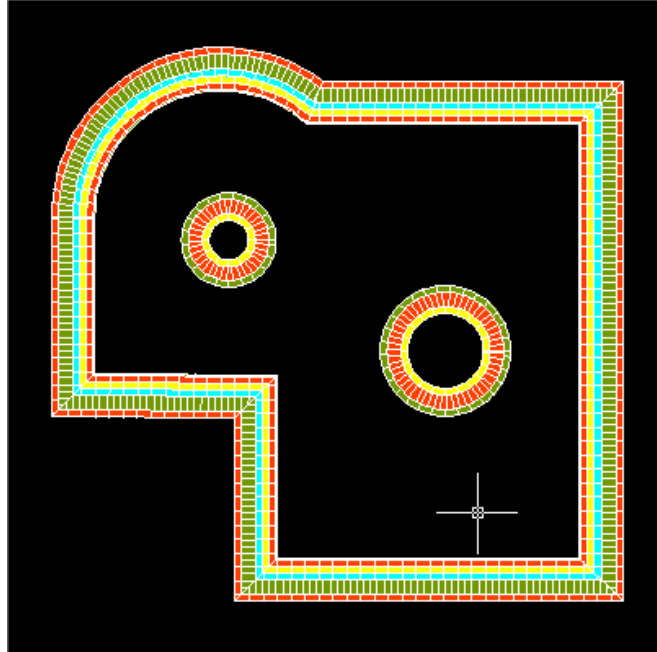
- To choose the edge desired , the number of layings and the typology (polyline or circle).



- The check box 'Invert offset' give the possibility to invert the laying side of the border regarding the path. If the laying border is a rectangle or a polygon the laying will be made out from the figure, and with the inversion will be made outside. If we have a poliline the laying will be made on the right side following the sense of the construction.
- Choose 'associative fill' or not associative according to necessity
- Select the path (rectangle, polygon, poliline open or close) along which you want to do the border laying.
- Confrim with 'Insert' or delete with 'Close' .

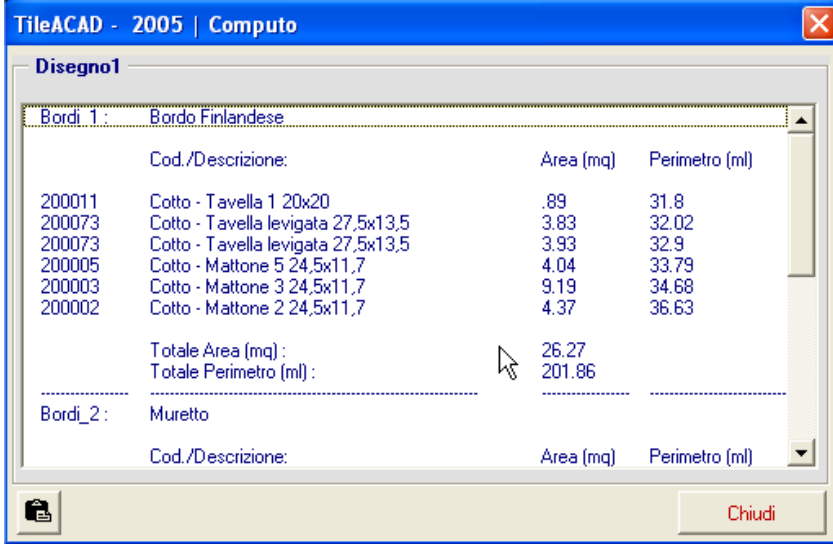
The origin of the laying of the rectilinear lines of the edge coincides with the origin current UCS of the coordinates of Autocad©, therefore to be able to correctly manage such parameter it is necessary to correctly position and pre-emptive the perimeter of laying in comparison to such origin.

Eg. Laying on a circular/linear border:



## 2.7 – Metric computation

To activate this procedure choose 'Computation' and automatically you'll have all the data for the metri computation of the laying divided in forms, borders, areas and perimeters with the possibility to save them in the clipboard of the system.



The screenshot shows a software window titled 'FileACAD - 2005 | Computo'. Inside, there is a section labeled 'Disegno1' containing a table of metric data. The table is divided into two sections: 'Bordi\_1' and 'Bordi\_2'. The 'Bordi\_1' section lists various tile types with their respective area and perimeter values. A mouse cursor is pointing at the 'Totale Area (mq)' row. The 'Bordi\_2' section is currently empty.

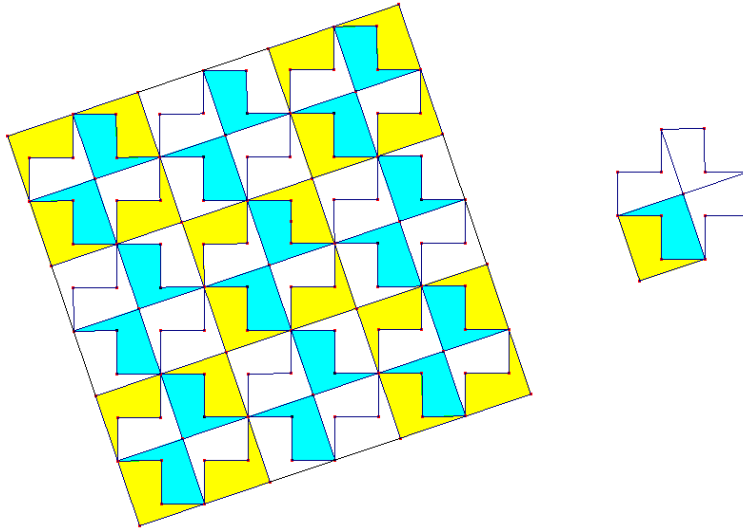
Bordi_1 : Bordo Finlandese			
	Cod./Descrizione:	Area (mq)	Perimetro (ml)
200011	Cotto - Tavella 1 20x20	.89	31.8
200073	Cotto - Tavella levigata 27,5x13,5	3.83	32.02
200073	Cotto - Tavella levigata 27,5x13,5	3.93	32.9
200005	Cotto - Mattone 5 24,5x11,7	4.04	33.79
200003	Cotto - Mattone 3 24,5x11,7	9.19	34.68
200002	Cotto - Mattone 2 24,5x11,7	4.37	36.63
	Totale Area (mq) :	26.27	
	Totale Perimetro (ml) :	201.86	
Bordi_2 : Muretto			
	Cod./Descrizione:	Area (mq)	Perimetro (ml)

## APPENDIX A : Forms creation (blocks)

TileACAD allows you to create, save and edit repeatable forms composed of one or more geometry of different sizes.

These structure are called FORMS.

The 'repeatability without empty spaces' in the planar space of a figure ( pattern - forms) is the condition to define a plug.



In the ceramic field this device is used to obtain a visual enrichment conditioning tiles size and laying. New elementar forms and complex forms are born with different size.

The general concept is the same for the elementar forms and for the complex ones. In the first case it's easy to arrange the parameters, more than for the second case (difficult from geometry)

Forms:



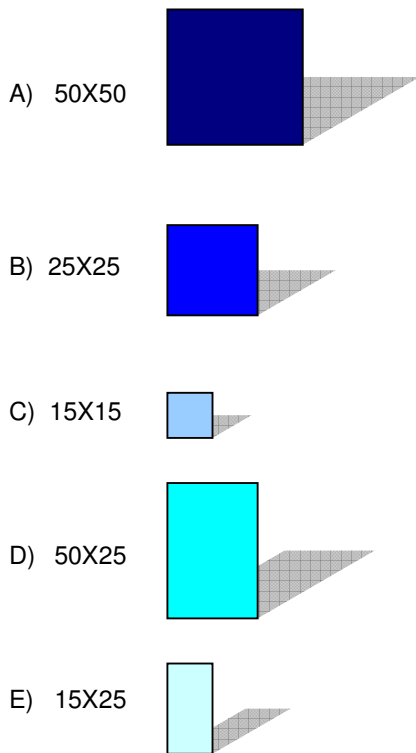
When the number of the tile format composing a form is  $> 3$  and the horizontal repeatability is different from the vertical one we have a complex form: it is better to do a study on the paper before going on with the fill in that in TileACAD is like this:

- 1) Graphic scale draw of the single form
- 2) Creation of the alphanumeric database (cap.3 ) with insertion of the repeatability parameter
- 3) Form laying inside a poliline to verify.

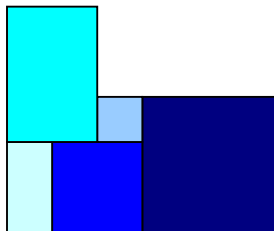
The critical point is the insertion of the parameter of space and repeatability.

Eg.

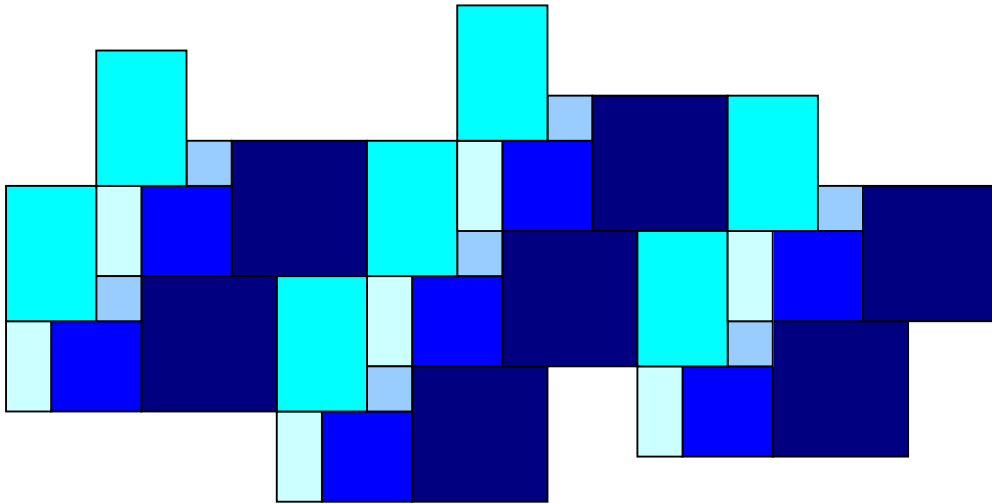
Let's suppose that we have to computerize a 5 format form:



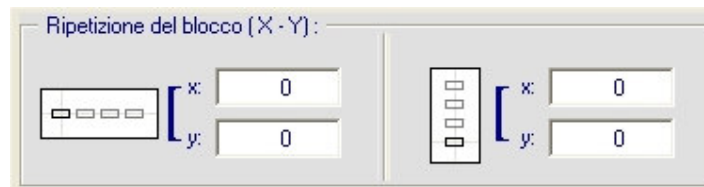
With these tiles we create a form scheme with a grout joint:



Horizontal and vertical repeatability is verified by the plug:

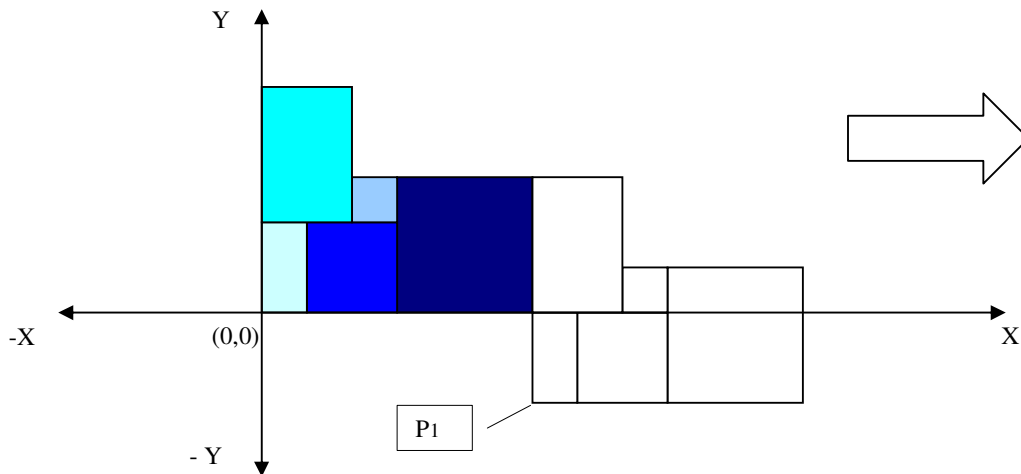


To Calculate the maths parameter that TileACAD needs when saving the form:



The forms must be repeatable for vertical and horizontal side (apart boiserie, wall coverings, ecc). That's why is requested to insert in (x,y) both horizontal and vertical movement.

Suppose to have defined the zero of the plane in the left side of the form:

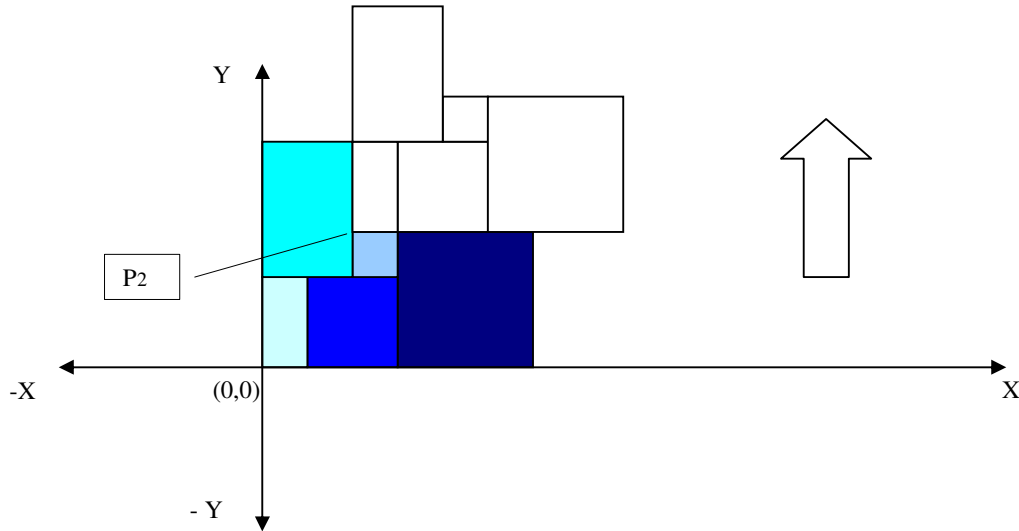


P1 represents the movement of the zero form during the repetition in horizontal. This point has Cartesian coordinate ( grout joint thickness 1 ) :

$$P1(x) = 150 + 1 + 250 + 1 + 500 + 1 = 903$$

$$P1(y) = - 250 - 1 = -251$$

Now let's go on with the count of the point P2 that represents the movement of the zero during the vertical repetition :



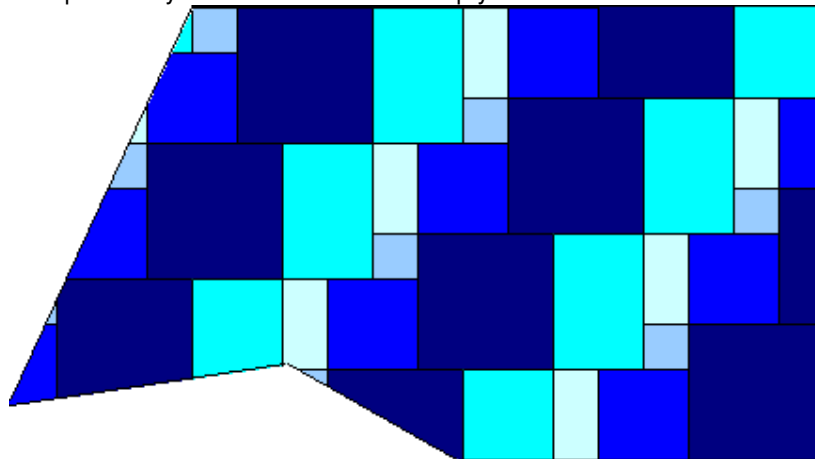
$$P2(x) = 150 + 1 + 250/2 + 1 = 302$$

$$P2(y) = 250 + 1 + 150 + 1 = 402$$

The parameter to insert in the form are:

Ripetizione del blocco [X - Y] :			
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	x:	903	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	y:	302	
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	x:	-251	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	y:	402	

and we'll obtain the repeatability inside a area without empty areas:





## **APPENDIX B : Creation of cross-hatching modules**

To develop the definition of cross-hatching modules for Autocad® you'll need to be patient and to use a text editor. It is possible to add a module to the file acad.pat of the library, or save the module in a new file (the file name must be the same of the module). Eg: the file name of the module PIT will be pit.pat.

Independently from where the definitions is saved, the format is always the same. The heading will be similar to the following:

```
*name-module [, description]
```

The module contains also one or more description of lines like this:

```
corner, origin-x, origin-y, delta-x, delta-y [, lineetta-1, linetta-2, ...]
```

Autocad® ignore empty line and the text on the right of the semicolon.

Eg: a module named L45 makes the cross hatching with lines 45° inclined separated by a 0.5 space is defined like this:

```
*L45, 45° lines
```

```
45, 0,0, 0,0.5
```

```
*end
```

This simply module specify that we have to draw a line with a corner of 45°, that the first cross-hatching line must pass from the origin (0,0) and that the space among the cross-hatching lines must be of 0.5 units. L45 is the module name and the description area is the optional description of the module visualized with the command LANDING NET. If there is no description don't specify any comma after the name of the module. Each line of the definition file for the module may contain 80 character.

A module is composed by one or more lines of module (Autocad® has no limits for number lines). Each line is considered as the first member of a family created with delta staggered in both directions to generate an endless family of parallel lines. The value delta-y give the space among the members of the family (this means that the space is measured plumb to the lines). Delta-x gives the break among the members of the family in the direction of the line, only in the case of cross-hatching lines. The length of a line is considered endless; a cross-hatched module is overlapping to the line.

Cross-hatching trial consist in expand each line present in the definition of the module to make its endless family of parallel lines. All the objects are controlled to verify the presence of crossing with the other lines, because crossings activate or deactivate cross-hatching lines. It depends all from the kind of cross-hatching. If the cross-hatching of the line is itself cross-hatched, the line is drawn with the module used in the respective areas.

Each family of cross-hatching lines is generated by a parallel trasposition of a line with an absolute origin, the areas cross hatching will result aligned in the right way.

To define modules of cross-hatching lines, add to the end of the definition lines elements with the same length of the short lines. Each element with the same length of the short line specify the length of a segment that compose the line. If the length is positive, a segment will be drawn with the low pen. If the length is negative, the segment is obtained with the condition of high pen, and it won't be drawn. The model begin in correspondance of the origin point with the first segment and goes on in circular direction. A length of a small line equal zero draws a point. For each line of the model is possible to specify till 6 length of small line.

For example modify a model for 45° inclined lines to draw cross hatched lines with a length of small line of 0.5 units and a space between marks of 0.5 units. This model would be define as follow:

```
*SHORTLINE45,cross hatched lines a 45 °
```

```
45, 0,0, 0,.5, .5,-.5
```

```
* end
```

This definition is the same of the original model with an inclination of  $45^\circ$ , but includes an ending small line. The length of the small line with low pen is of 0.5 units, as the one obtained with the condition of high pen, always 0.5 units of draw, meet with success the objectives. If you wish to draw a small line with length 0.5 units, space of 0.25 units, a point, a space of 0.25 units before the next small line, the definition would have been the following:

```
*LPOINT45,Motive short line point short line: 45 °
```

```
45, 0,0, 0,.5, .5,-.25,0,-.25
```

```
* end
```

Now, to considerate the effect of the specifications delta-x on the cross hatched line families. First of all, considerate the following definition.

```
*LSERIES
```

```
0, 0,0, 0,.5, .5,-.5
```

```
*end
```

This definition draws a family of lines separated by 0.5 units of drawing, with each line divided equally in small lines and spaces. As if the value delta-x is zero, the small lines of each member of the family will result aligned. A cross hatched area will appear similar to the following.

```
-----
-----
-----
```

Now change the model with

```
*STAGGERED
```

```
0, 0,0, .5,.5, .5,-.5
```

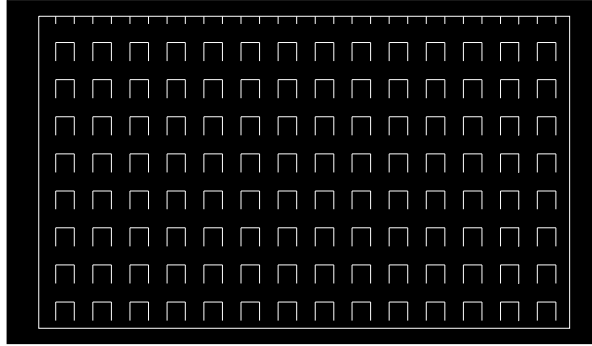
```
*end
```

The definition is the same of the former, with the exception that delta\_x has been arranged on 0.5. in this way each member of next family is staggered of 0.5 units of drawing in the direction of the line (in this case, parallel to the axis X). Because of the endless of the lines, the model is moved to the low of the quantity. The cross hatched area will be as the following.

```
-----
-----
-----
```

All the models described till now use the origin point (0,0); in this way a member of the lines family pass through the origin with the relative cross hatched model that start in that point. When we compose complex models, is necessary to specificate the beginning point, staggering and the cross hatched models of each family of lines to make correctly the cross hatched model.

Consider the following: let's suppose to draw a model composed of square U overruled (a line to the high, a horizontal one and a line to the low). In the following picture in the model is repeated each unit, with a 0.5 height and a width.



the model should be defined as follow:

```
*UCAP,U overruled
90, 0,0, 0,1, .5,-.5
0, 0,.5, 0,1, .5,-.5
270, .5,.5, 0,1, .5,-.5
*end
```

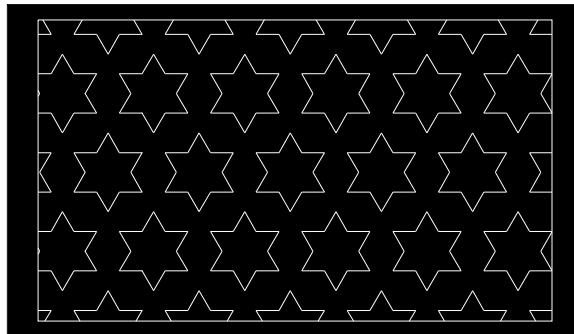
the first line, the one toward high , is simply a cross hatced line with origin (0,0). The second line, the superior one, must begin at the end of the toward high line, so its origin is (0,.5). the third line, the one toward low, must begin at the end of the superior one, al the point (.5,.5). the specification of the third line of the model may be the following.

```
90, .5,0, 0,1, .5,-.5
```

or

```
270, .5,1, 0,1, -.5,.5
```

the cross-hatching model start from the orign point and goes on in the direction of the vector from the spec of the corner. So the families of cross hatced lines opposite of 180 ° aren't equal, and the two families of full lines are equal. Let's considre the following module with 6 tips:

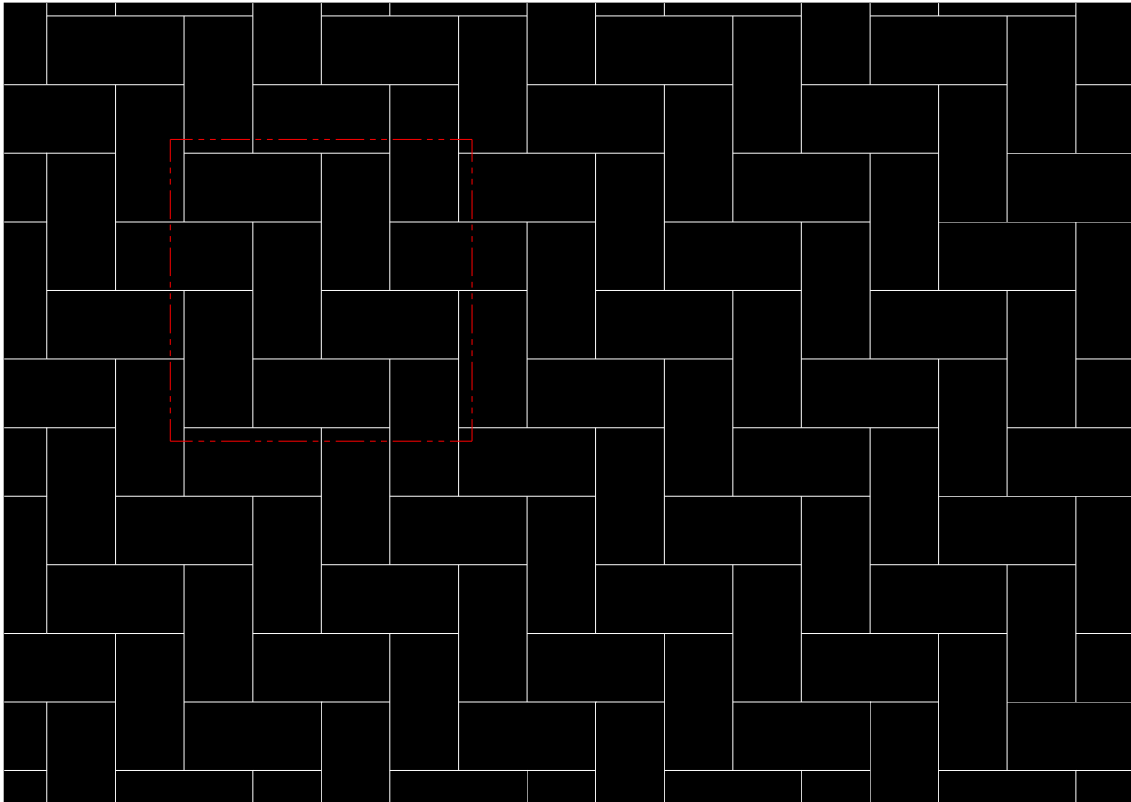


This example may be of help to encrease your own ability in defining modules (suggestion: 0.866 is the sine of 60°). Here's the Autocad<sup>®</sup> definition for this modules:

```
*STARS,star of David
0, 0,0, 0,.866, .5,-.5
60, 0,0, 0,.866, .5,-.5
120, .25,.433, 0,.866, .5,-.5
*end
```

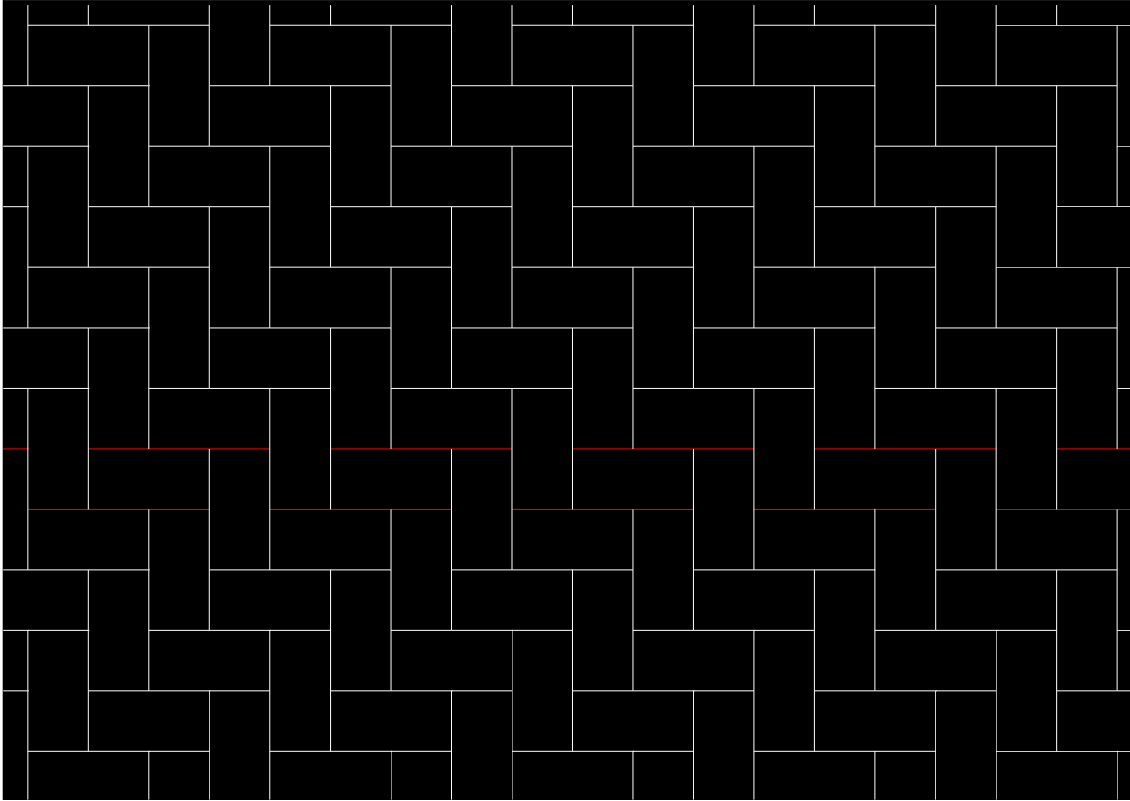
Eg:

A cross hatching module to reproduce the following laying must be employed (the laying is composed by 15x30 tiles).



If we take a look at the picture we note that the laying may be made joining repeatedly the area locked in the 60x60 cross-hatched square (it represent the laying module). We also can note that shifting over 60 cm (horizontally and vertically) the laying is the same. Moreover a horizontal line is overlapping to the overtopping with a traslation of relative coordinates 15,15 (the same for a horizontal line).

See the following picture:



To reproduce a horizontal line write the following code line (unit in meters):

```
0, 0, 0, 0, 0, 0, 6, 0, 45, - 0.1 5
```

to reproduce this line modify the origin of the line as follow:

```
0, 0.15, 0.15, 0, 0, 6, 0, 45, - 0.1 5
```

and so on.....

Then all the horizontal lines will be drawn with the following code:

```
0, 0, 0, 0, 0, 6, 0, 45, -0.15
0, 0.15, 0.15, 0, 0, 6, 0, 45, -0.15
0, 0.3, 0.3, 0, 0, 6, 0, 45, -0.15
0, 0.45, 0.45, 0, 0, 6, 0, 45, -0.15
```

Following the same logic to realize vertical lines just modify the rotation (90°) and pay attention to the correspondance between the two orders of lines, as follow:

```
90, 0.15, 0, 0, 0, 6, 0, 45, -0.15
90, 0.3, 0.15, 0, 0, 6, 0, 45, -0.15
90, 0.45, 0.3, 0, 0, 6, 0, 45, -0.15
90, 0, 0.45, 0, 0, 6, 0, 45, -0.15
```

Let's suppose to name module bone 30x15\_1.pat the cross hatching files, its content must be the following:

```
*module bone 30x15_1 , example of bone module
```

```
0 , 0 , 0 , 0 , 0.6 , 0.45 , -0.15
0 , 0.15 , 0.15 , 0 , 0.6 , 0.45 , -0.15
0 , 0.3 , 0.3 , 0 , 0.6 , 0.45 , -0.15
0 , 0.45 , 0.45 , 0 , 0.6 , 0.45 , -0.15
```

```
90 , 0.15 , 0 , 0 , 0.6 , 0.45 , -0.15
90 , 0.3 , 0.15 , 0 , 0.6 , 0.45 , -0.15
90 , 0.45 , 0.3 , 0 , 0.6 , 0.45 , -0.15
90 , 0 , 0.45 , 0 , 0.6 , 0.45 , -0.15
```

```
*end
```

The solution proposed to solve the exercise isn't the only solution, each user can try following his own logic.

To use the module of cross hatching created with TileACAD follow the instructions:

- the name of the cross-hatching files should end with characters (\_1).
- Insert the name of the cross-hatching files in the heading of the same.
- Create a graphic file (.wmf, .bmp or .jpg) that represents the structure to give the same name of the cross-hatching, for example: bone module 30x15\_1.wmf or bone module 30x15\_1.bmp or bone module 30x15\_1.jpg
- Copy the files in the path ..\PatFiles or use the fill-in procedure available in the mask of creation of the modules ( see chap. 2 ).

It is possible to create other three cross-hatching files with the following names:

```
bone module 30x15_2.pat
bone module 30x15_3.pat
bone module 30x15_4.pat
```

to associate to the former to add to the form cross-hatched replenishment with different colors. This modus operandi is necessary because each module can have just one color.