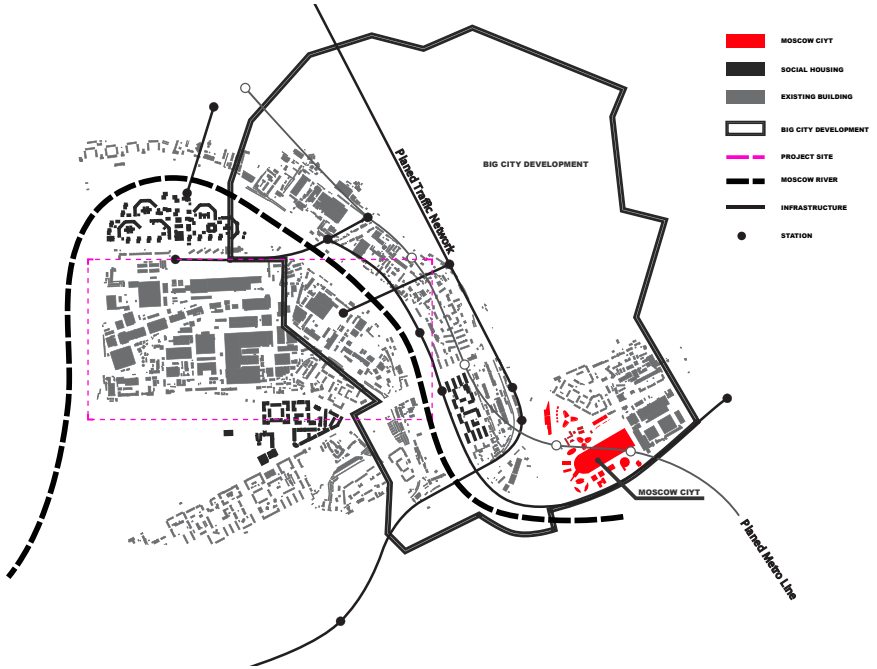
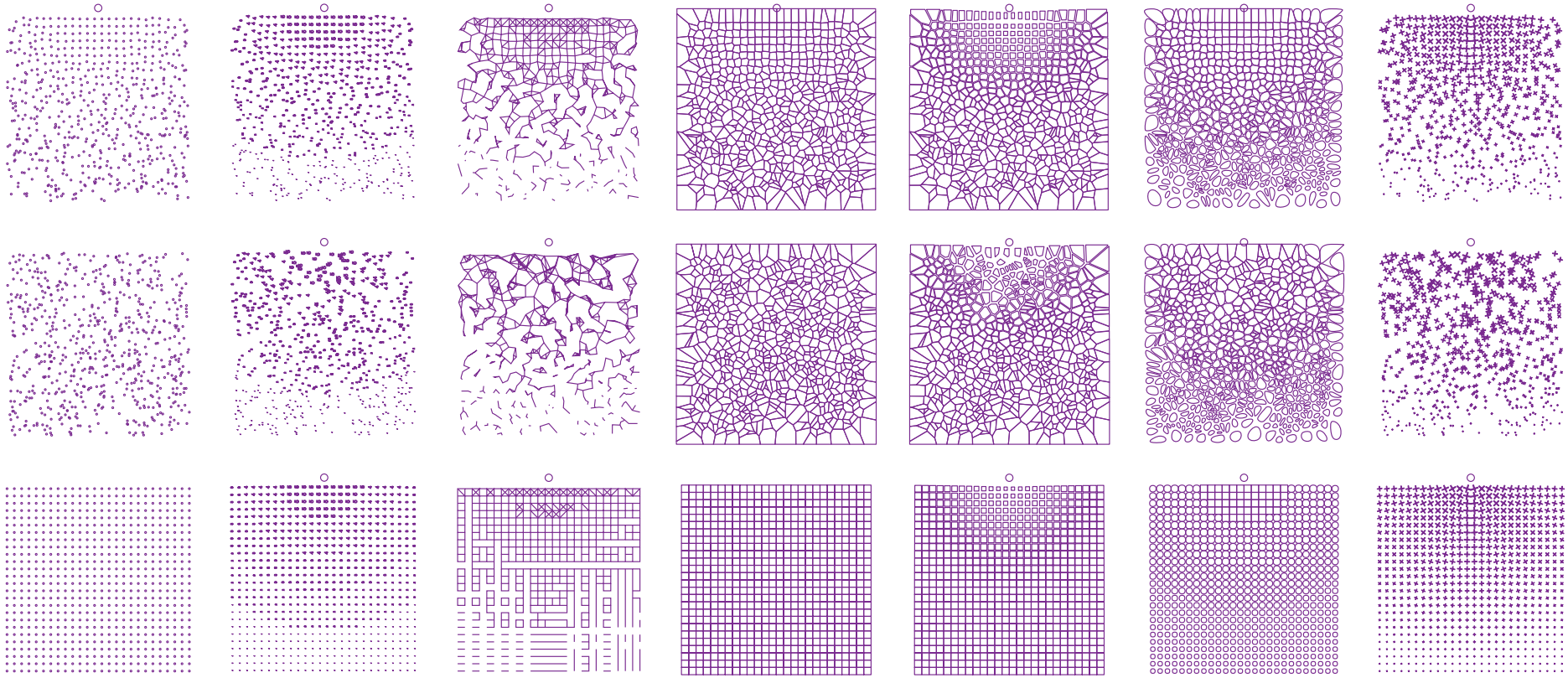
***::Moscow context::***

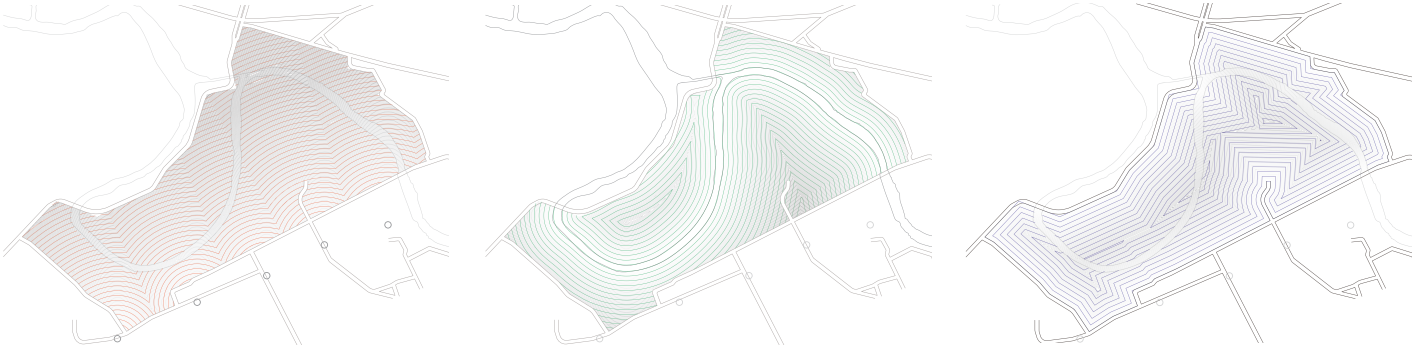
Moscow International Business Centre formerly Moscow-City is a projected part commercial district in central Moscow, Russia. Geographically situated in Presnensky District of western Moscow, along the Third Ring, the Moscow-City area is currently under intense development. The goal of Moscow IBC is to create the first zone in Russia (and in all of Eastern Europe), that will combine business activity, living space and entertainment. It will be a city within a city. The entire project takes up 1 square kilometre. This territory is the only spot in downtown Moscow that can accommodate a project of this magnitude. Today, most of the buildings there are old factories and industrial complexes. (Source : Wikipedia, the free encyclopedia)

The extent of proliferation of the Moscow City and its future plans of the Big City developments are similarly based upon the utilisation of abandoned industrial areas. This urban project also aims to boost the infrastructure facilities that would be made available to the area in the near future. Hence, looking at the development from the context of the site it is essential to address this proximity in order set forth an example of how this rapid urban growth meets the city fabric.

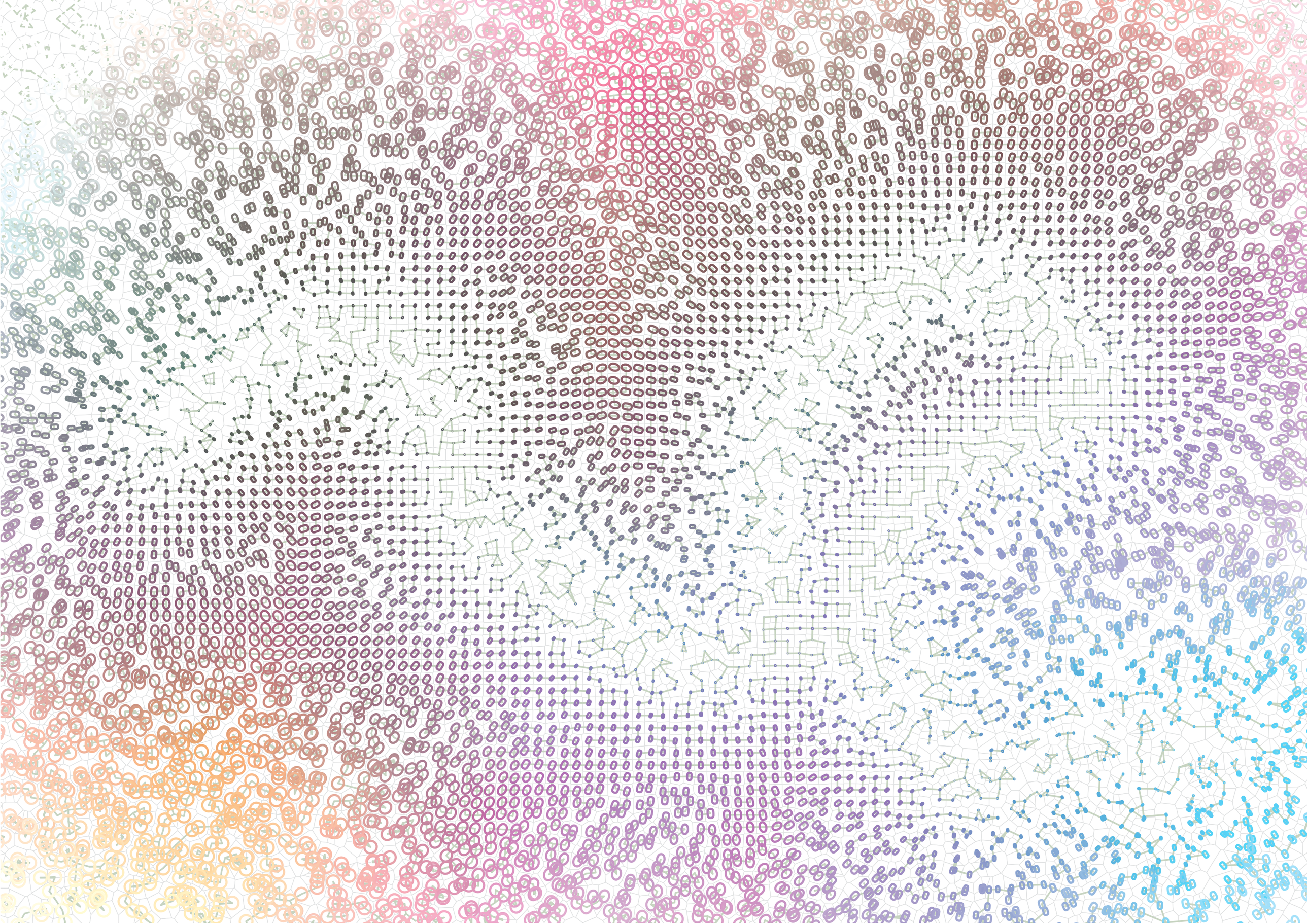


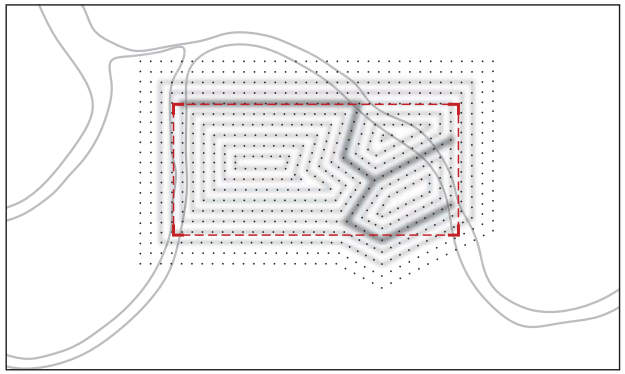

Location Moscow, Russia
on banks of river Moscow
Area 235 Hectares
Land use (site) Industrial
Land use (vicinity) Housing and international business



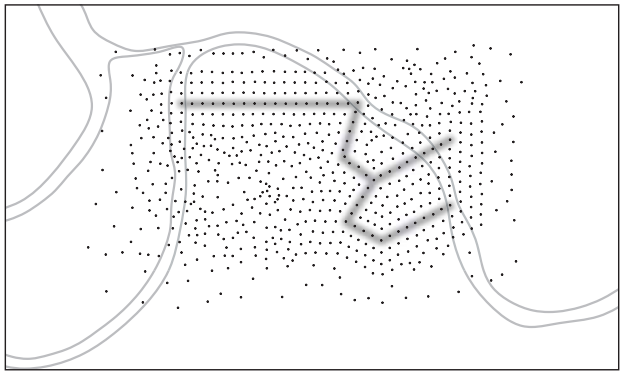



From the site surroundings the following elements are taken that govern the patterns on the site. These elements are the metro stations in the vicinity of the site, the river and the road patterns.

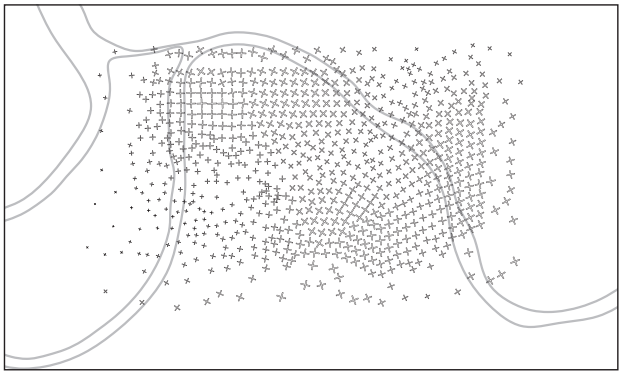




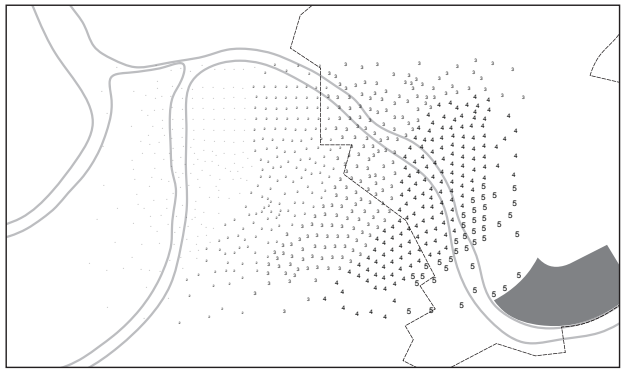
In order to test out the system on the site an this initial setup of a point grid that sketches out the current road network on site is created. Taking the points as offsets of this original line what follows is a catalogue that helps us understand the nature and grain of the existing pattern on site.



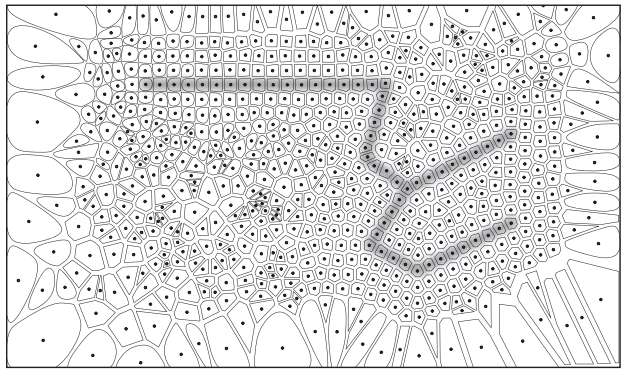
The series of differentiations that are aimed at begin by disturbing the original grid by shifting the position of points. The distance value of each point from the closest point on the curve (outlining the original road layout) decides the degree by which the point shifts from its original location. It is observed that the points closer to the road maintain their positions (min. shifting) whereas, as one moves away the pattern becomes more random (max. shifting).



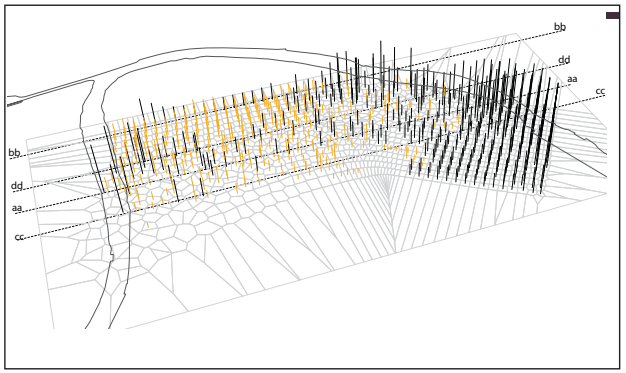
Shifting focus from the road network to the river frontages on site; this image explores the concept of orientation on site. The first effect observed here is rotation whereby every point is replaced by a component that rotates in a manner to orient towards the river whereas, the scaling of these components explains the degree of rotation they undergo. The output in a way expresses the bipolarity that is ingrained in the site.



From the pattern of individual cells a system of connectivity is developed that establishes a relationship between the cells. In this case, each figure relates to the degree of connectivity that each point is allowed i.e. each point connects with n number of nearest points. The pattern is informed by the Moscow city development and the points become more connected towards the development.



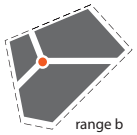
From the point set a packing of voronoid cells is developed using the given point set, where the density of the point reflects the size of each cell. The additional information that is inserted within this set of cells is a degree of smoothness. Hence, the edges of the cells tend to become more rounded as one moves away from the road while it retains its geometry closer to the road.



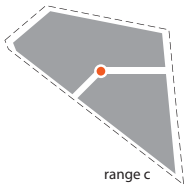

We generate a data set that dictates the height information on the site. This data set is created by taking into consideration all the previous information sets and additional proximetric data from the influencing elements within the site.

* number of neighbor / accessibility = cell value

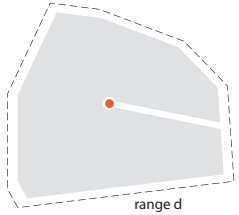
range a



range b

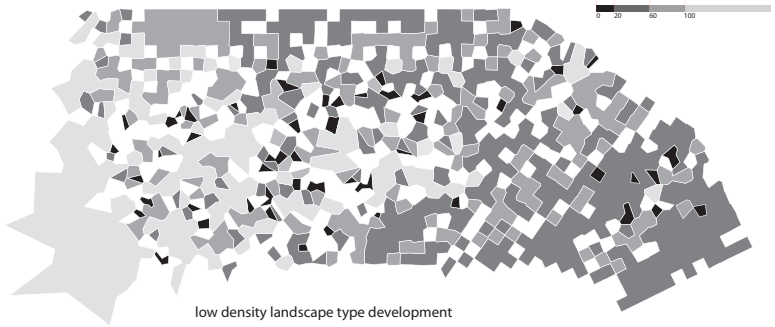


range c

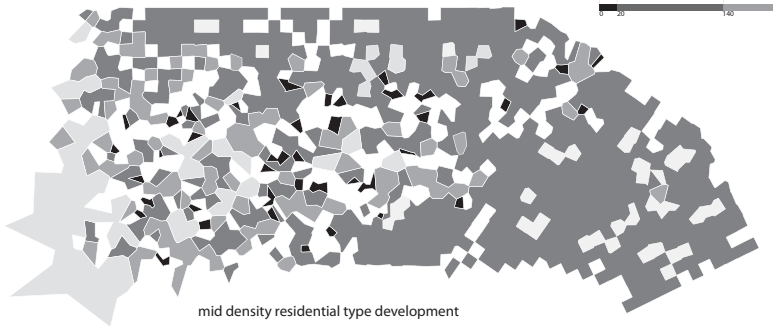


range d

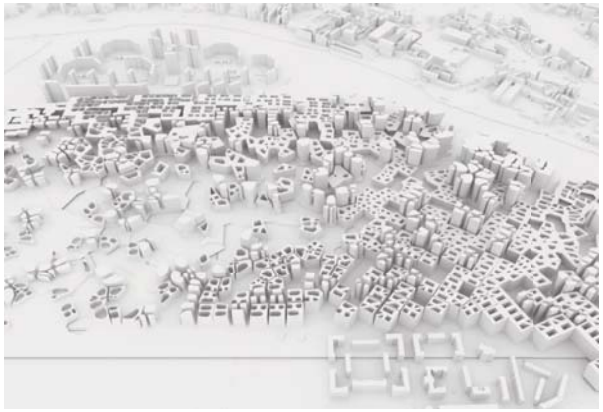

high density business type development




low density landscape type development

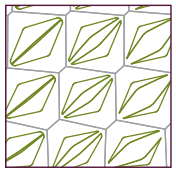


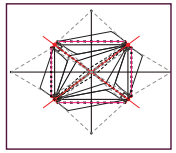

mid density residential type development

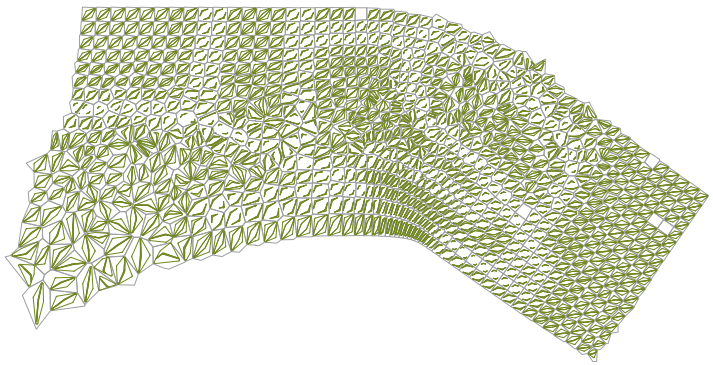


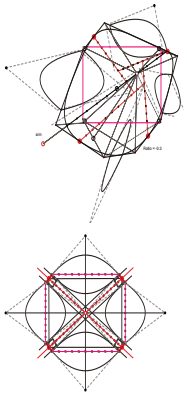
The former studies suggest that the point set becomes a measuring tool whereas the cell gives this information a spatial connotation. Delving further in to the anatomy of each cell it is observed that the cells differ from each other in terms of their area, number of sides and the degree of connectivity.

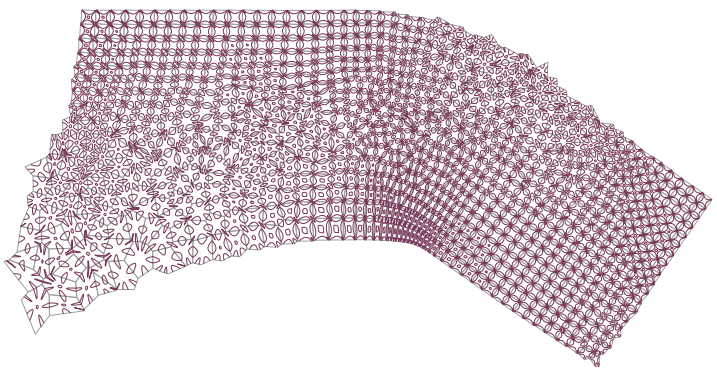
Based on these elements a data set is derived for every cell leading to the formation of categories that define the different urban conditions such as open public spaces, tower typologies, low rise typology and large landscaped areas. By controlling the range of values within these categories, multiple growth scenarios can be generated





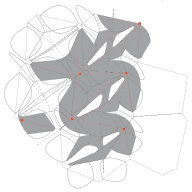


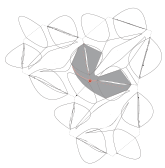




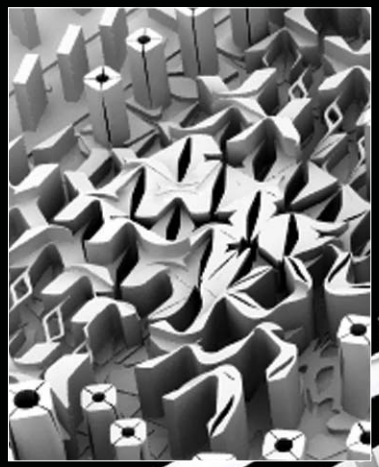
The cell so far exhibits a blank yet informative space, hence the focus now shifts to embedding formal information in the cell that reflects the original gradient of the voronoi pattern. Since each pattern assumes its geometric information from the anatomy of the cell, variation becomes a virtue that is built in to the system. The following few images further this informative drive to generate different pattern sets.

Based on these elements a data set is derived for every cell leading to the formation of categories that define the different urban conditions such as open public spaces, tower typologies, low rise typology and large landscaped areas. By controlling the range of values within these categories, multiple growth scenarios can be generated





Taking the former studies back to the urban plan, versions of the typology within the broad framework of urban guidelines are created. These versions create a transition from the singular to the plural mass. Taking the housing to the north of the site as an influencing element i.e. the building volume coalesces into singularity closer towards the housing blocks. From here it starts to disintegrate into individual elements that maintain a high degree of connectivity and eventually into single blocks.



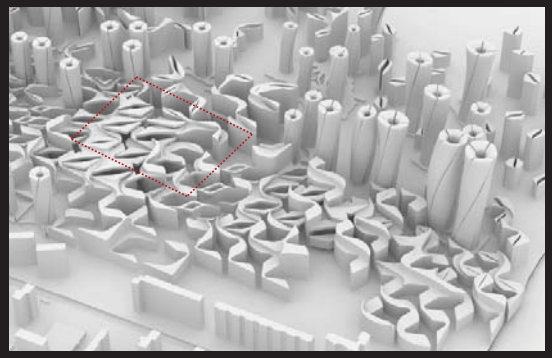
Mega-Structure_200% Enlargement

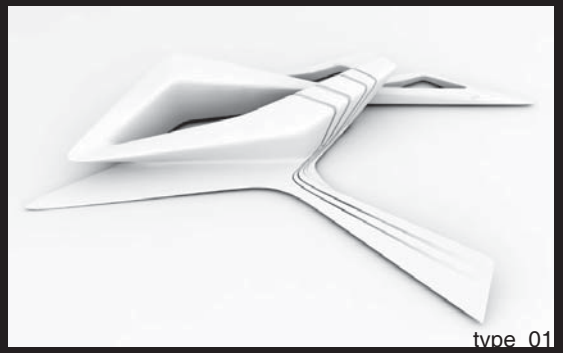
master plan bird-eyes view

::Master Plan::

The patterns from the computational base are translated to an urban realm and are realized in the form of urban subsystems. The challenge faced is of keeping intact the sensibilities of the digital pattern and evoke a similar sense of dynamics in the urban form. The urban proposal aims to set forth an example that can address the sectorial nature of development in Moscow and to bring together the two polarized conditions (housing blocks and Moscow city) into a harmonic urban coexistence.

Using numerous script based methods we generate iterations for the Master plan that further the same ideology.
Within this broad framework of the urban proposal a means of embedding component information that generates a varied urban fabric is developed. This begins a dialogue between the urban systems and the component information giving rise to the various iterations. The development of the component system is followed by a refinement of the computational system and the parameters controlling the output.

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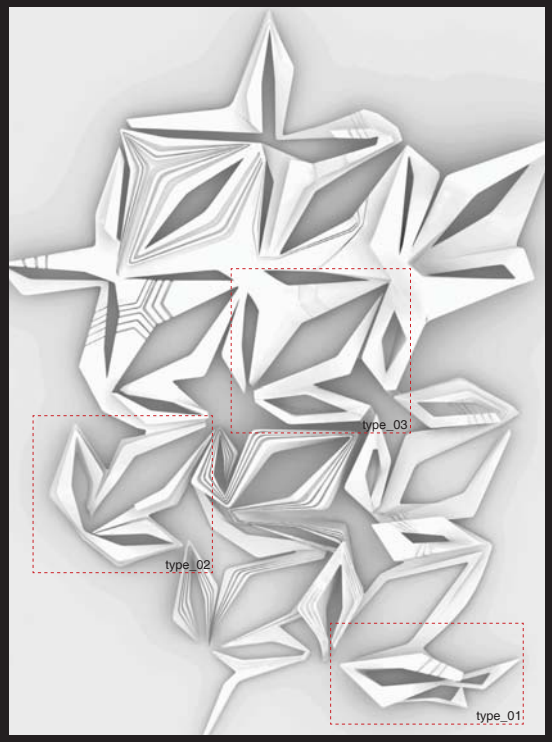
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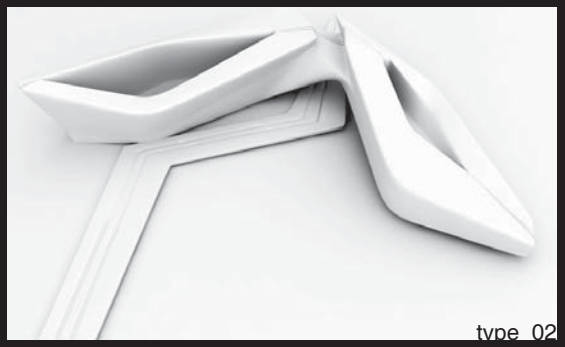
type_02
type_01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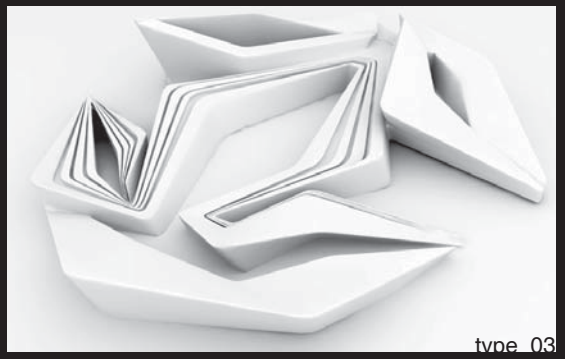
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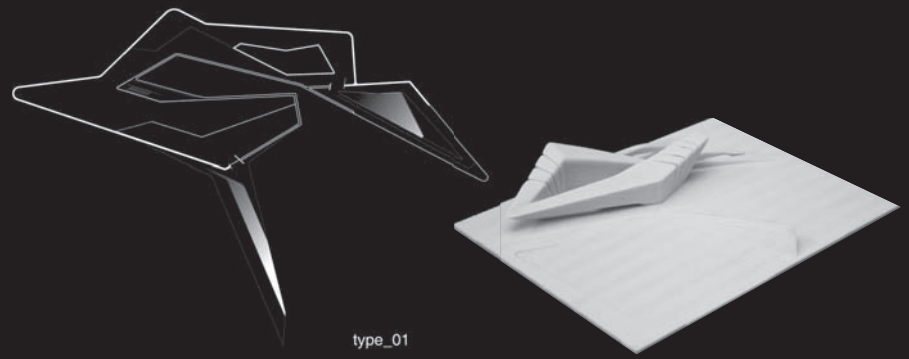
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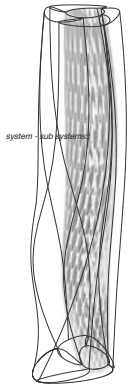
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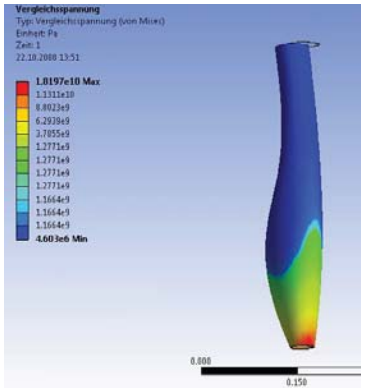
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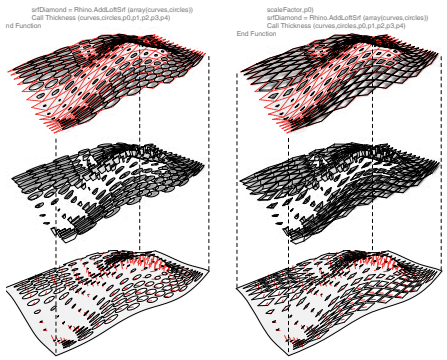

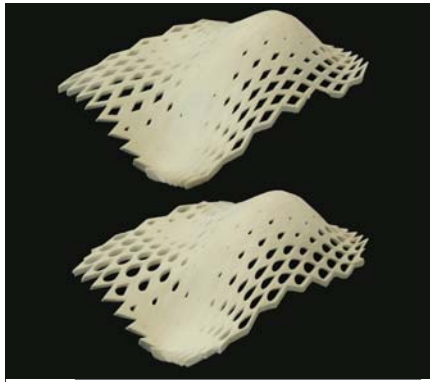

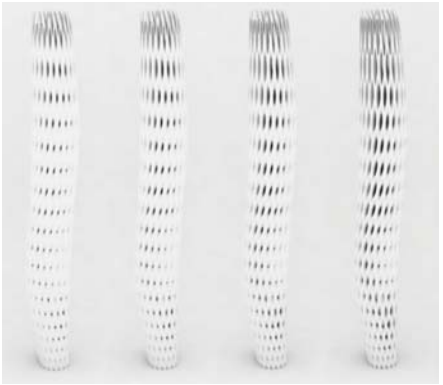

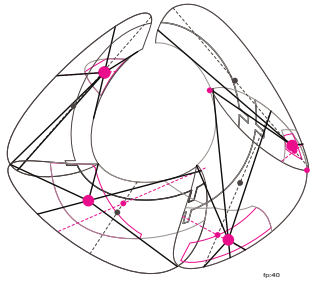
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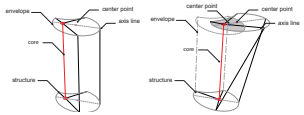
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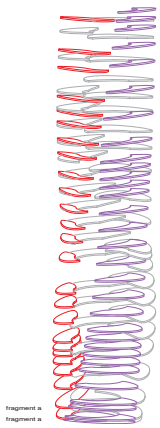
axis line
core
structure
envelope
center point
center point
axis line
core
structure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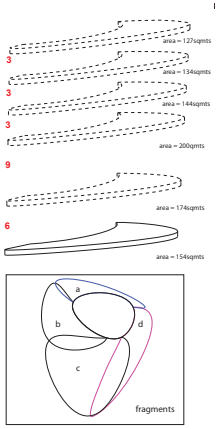
fragment a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c
d
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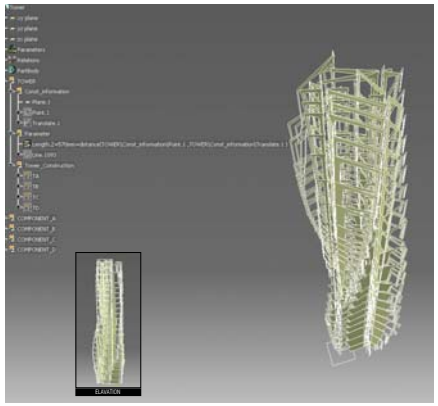
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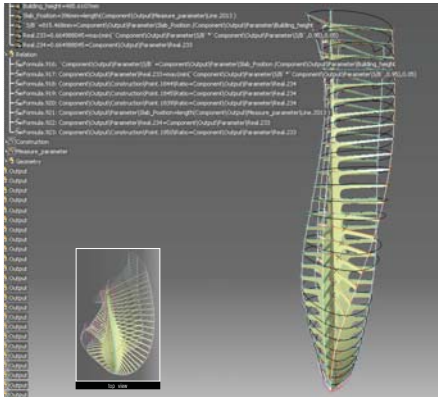
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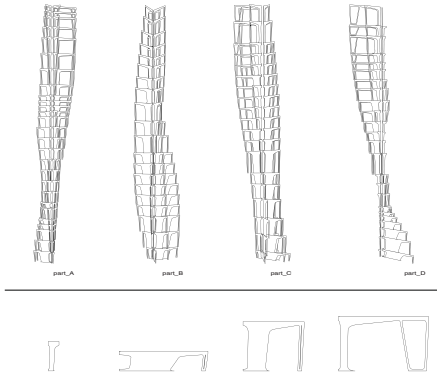
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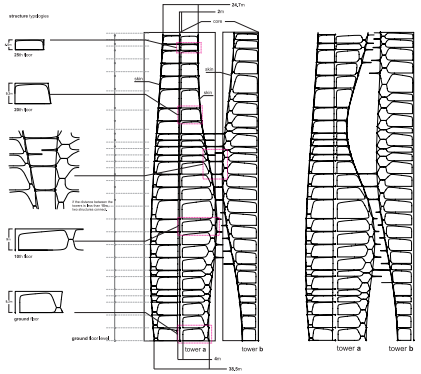
part_B
part_C
part_D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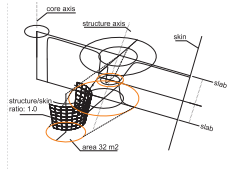
tower b
tower a
tower b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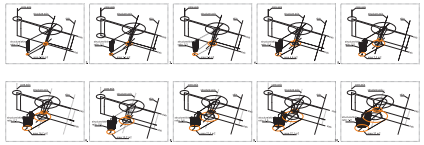
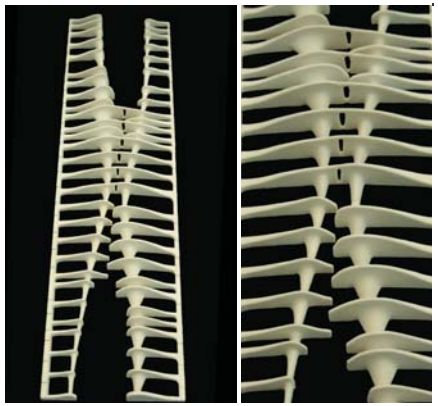
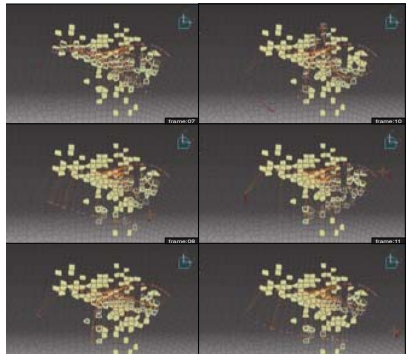
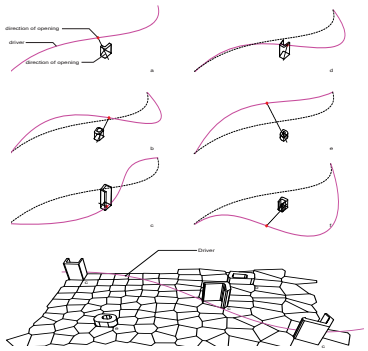
structure axis
skin
slab
slab
structure/skin ratio: 1.2
area 32 m2








direction of opening
driver
direction of opening
Driver