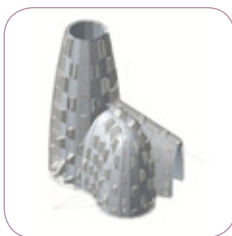
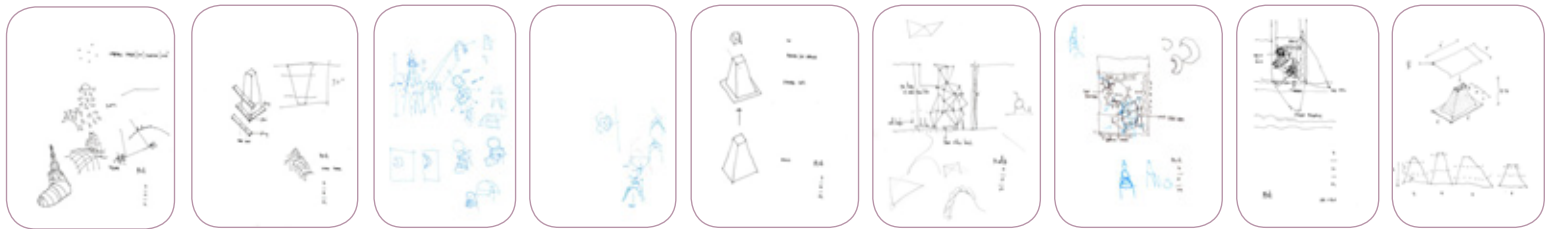




HELICOPTER VIEW



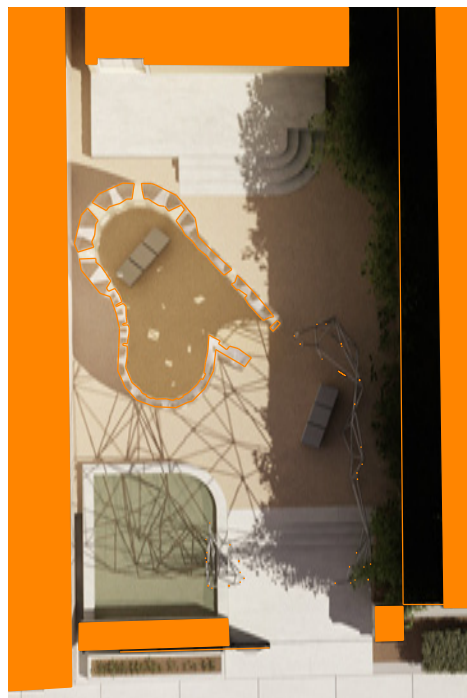
## LIGHT FRAMES

Los Angeles, California

Light Frames is a project founded in material. Beginning with the fundamentals of its capabilities, engaging with a distinct process for generating components, developing systems out of these components, deploying media and representation to confront, challenge and experiment with the formal capabilities, and ultimately deriving form, experience and effect from the collaboration of all of these systems, the methodology comes from an intrinsic dialogue with material making. The project consists of two materially formed structures. The front conduit tower is made of EMT and serves as a shadow generator. The back pneumatic chapel is made of PVC and uses surface geometry to project light. The two sit nestled in quiet conversation in the void of an infill site. The intricacy of the delicate frame replicates a three-dimensional line drawing in space. Two nested elements, create an inner figurative shape and an outer structural one. The doubled figure serves as an effectual generator. As an object, its intention is to produce a cloud of shadow in its wake. The galvanized color reflects the evaporative color of the sky as daylight slowly diminishes at sunset. The effect of light allows for the multiple readings of the figure as it evolves and changes throughout the day under varied light conditions. The result is an immaterial presence. The PVC figure is founded in descriptive geometries: a hybridization of a dome, a vault and an apse. The figure comes from the inter-relationships of each of the forms and the adaptive responses each geometry must make on the other. Embracing the capability of introducing depth to the material through pressure, the welded fabric provides an opportunity to choreograph a panelized, highly variable surface. The projected light effects are possible through the systematization of the material, methods of fabrication, and the effectual experience of the final composition.



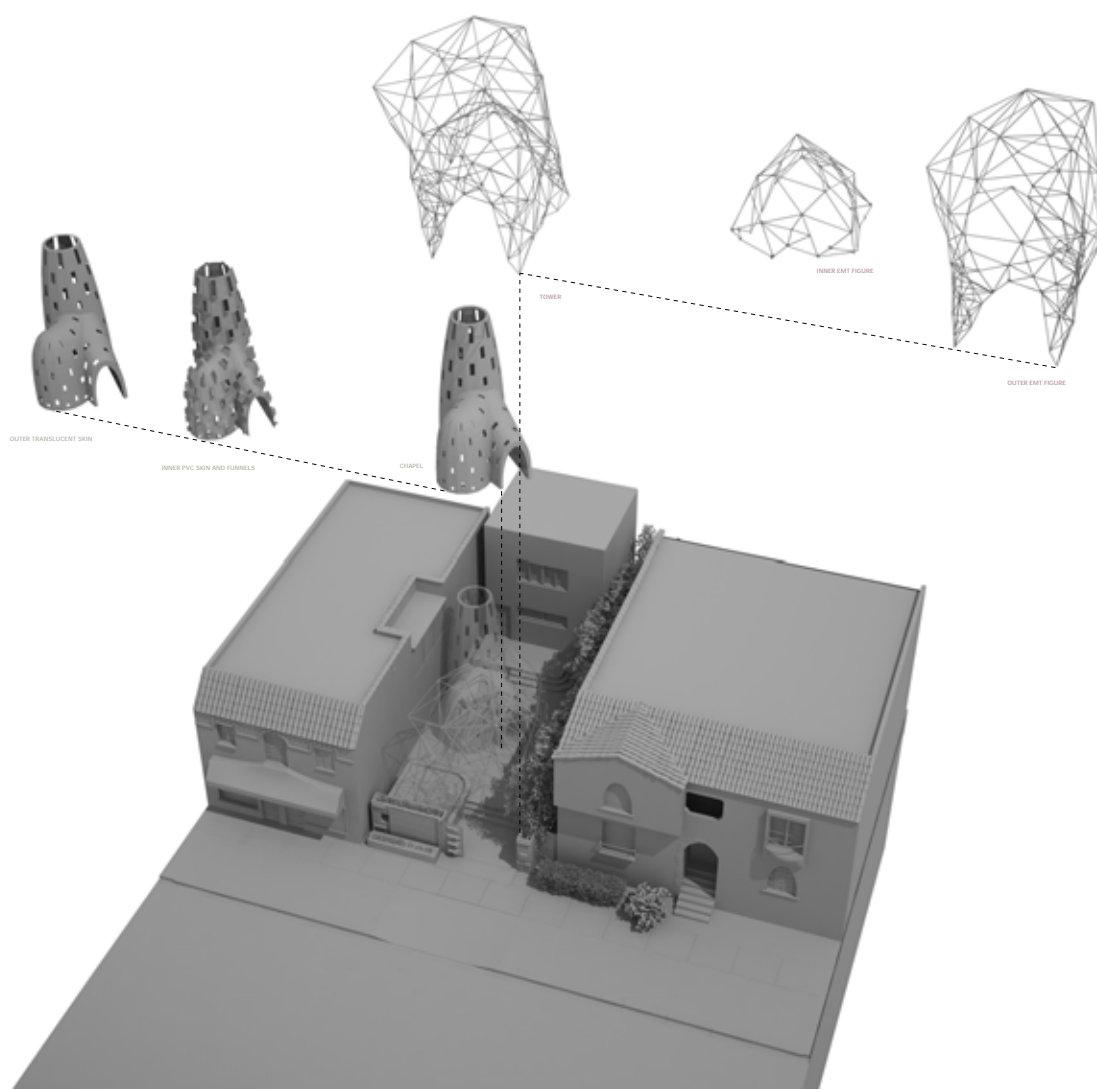
VIEW FROM STREET



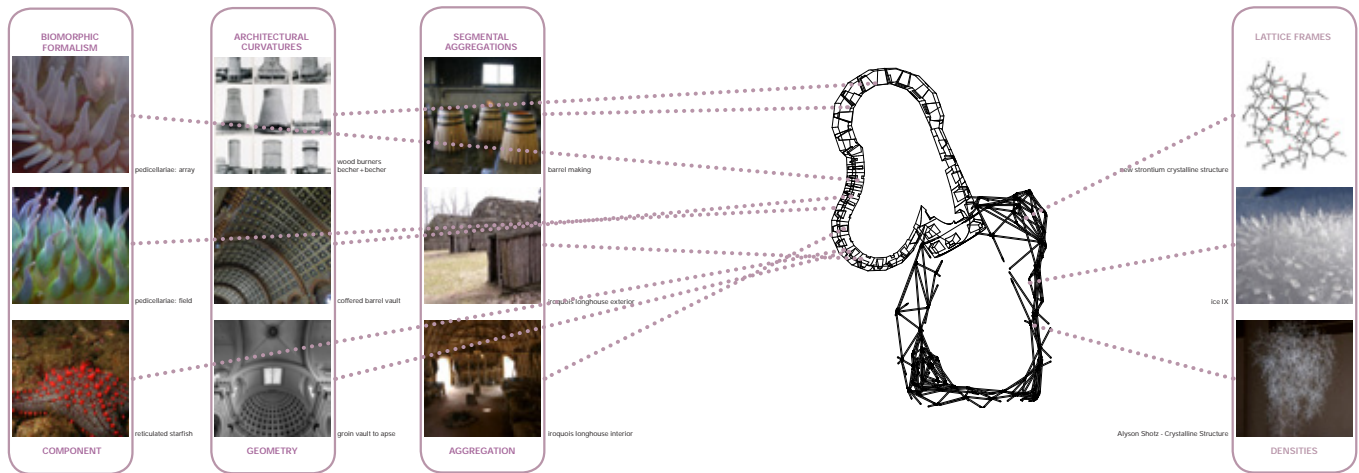
**SPECIFIC THINKING:**

[1] MATERIAL /// The doubling of the material arose from the individually desired expression of each pavilion piece as well as the interrelationship of the two. Chosen for their cultural identities and well as their effectual qualities, their existence in the realm between transparent and opaque began the conversation about their optical potential and light effects with an ambiguity between the two worlds and their ability to create even further ambiguity with their effectual results. The mode of plastic and conduit each deal with the idea of density. A density of the material that is neither solid nor void, but rides the edge between. Hiding in the realm of translucency and multiplicity, the intrinsically enigmatic nature of their material properties established them as fertile ground to accelerate these properties effectually and test their other formal, structural and functional capabilities. Plastic as a continuous surface material with translucent capabilities forms as a planar material and engages temperature based forming that lends itself to panelization. Conduit as a linear material woven into field configurations allows for the mesh effect of the line within the confines of the surface.

One with translucency intrinsic, the other with a translucency through the moiré effect of the density of the field the two meet to produce a dialogue through their light effects of emissivity, transmission and shadow. They compose the spaces bound within and refract and reflect to impact the spaces around.



EXPLODED AXONOMETRIC

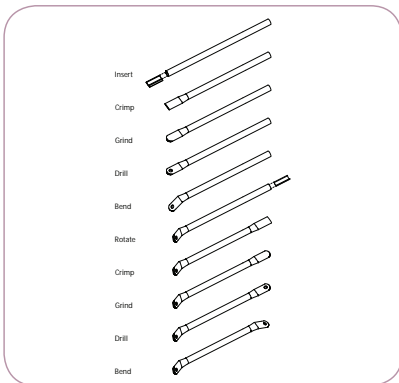
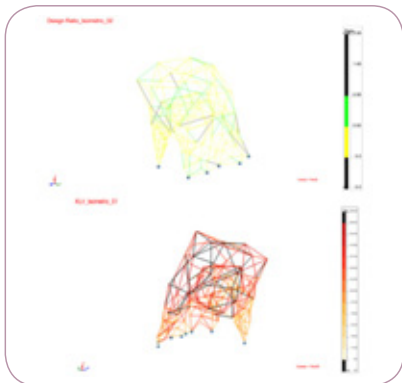
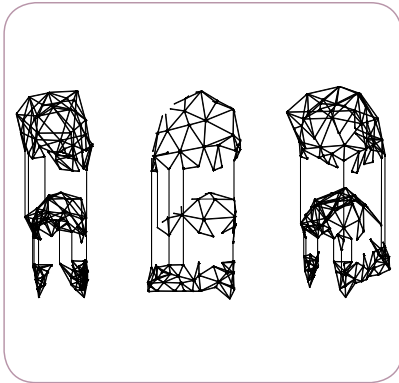
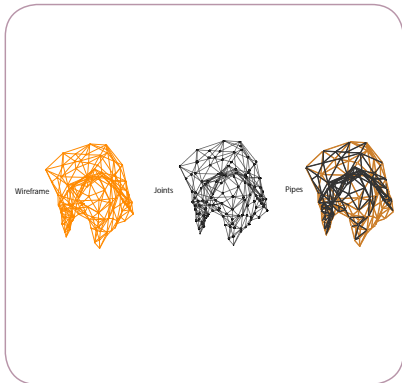


REFERENCES

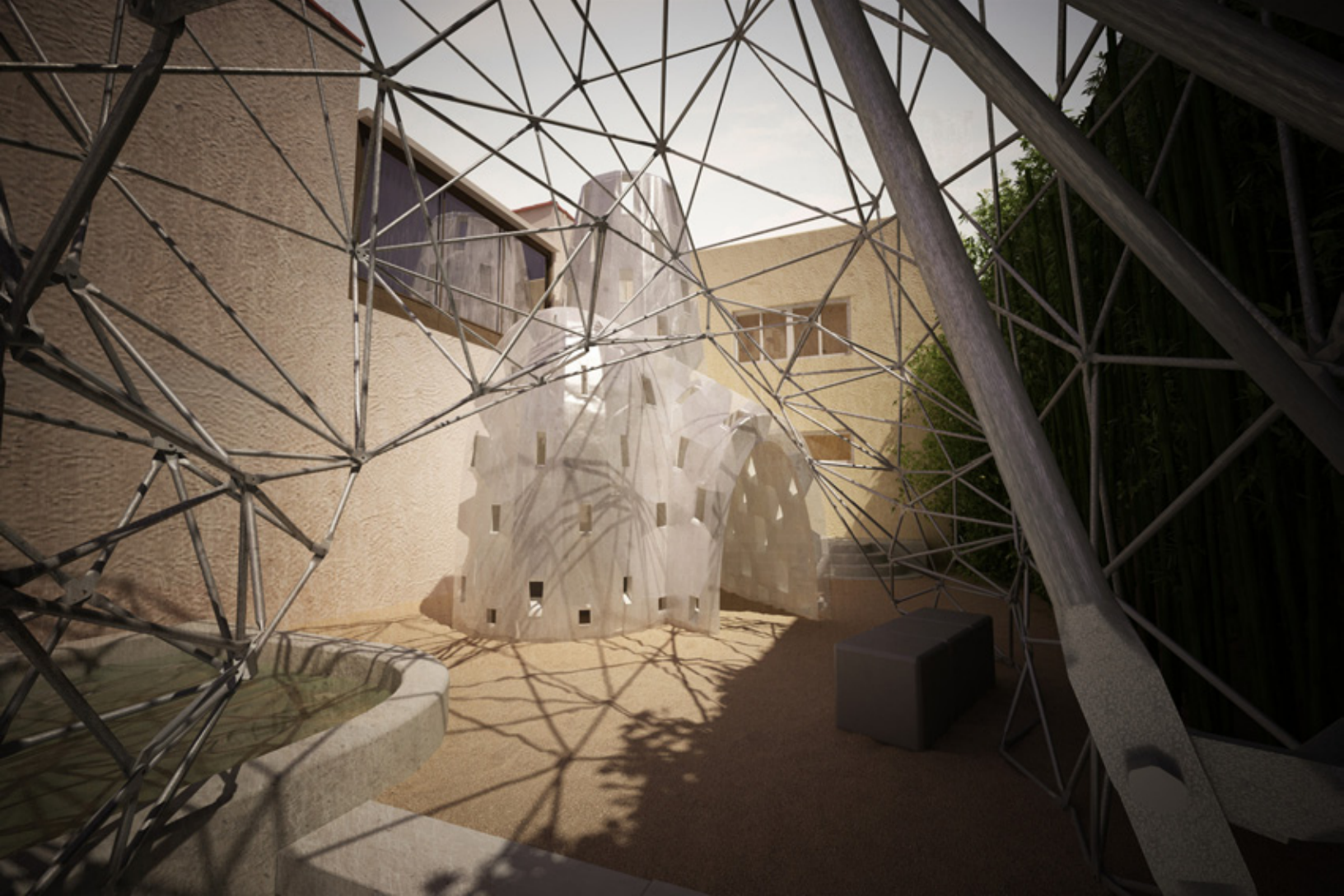
[2] MATERIAL TRANSLATION /// The action of fabrication and development of tectonic. From the intrinsic material properties, plastic as sheet and conduit as extruded section, the material properties introduce themselves to define the derivation of form. Plastic, used here as a laminated PVC fabric is available in a modular two-dimensional sheet material and welded under heat and pressure, provides specific formal opportunities. As a futuristic material, glossy and reflective, formally flexible and able to be a self supporting skin, the potential of plastic challenges the idea of two-dimensional surface. The limitation of factory dictated flat dimension with the organicism of an air-inflated structure allows for the framework of the formal system to engage with the flexibility of a natural system. Embracing the capability of introducing depth to the material through pressure, as a weldable fabric it provided an opportunity for a panelized, but choreographed depth and form to the surface. The galvanized conduit [EMT] evolved from the ubiquitous fencing material and the legacy of its use in Los Angeles architecture. Seen as a vertical liner surface, the dense figure produced through its implied surfaces allowed for opportunity to engage the density of field, the associated moiré effect of dynamically layered and performatively figuratively formed surfaces. The translation comes through the method of deployment and the density of its overlap.



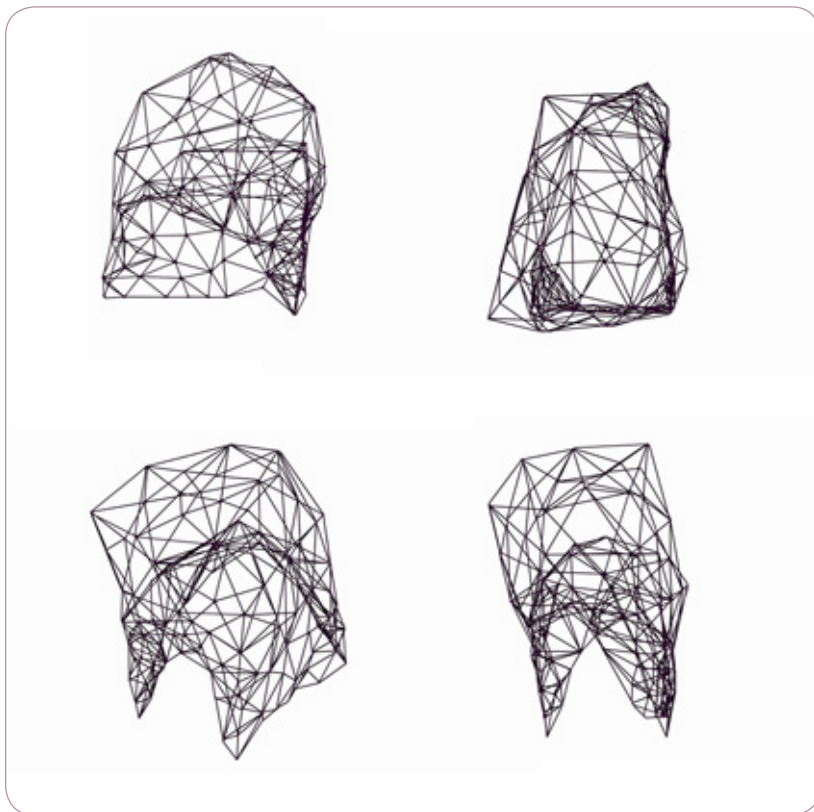
SECTION



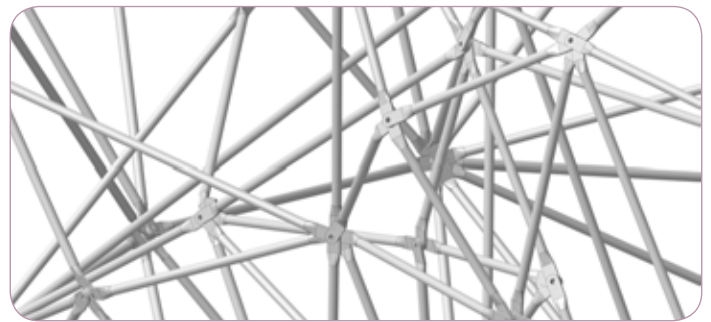
[3] SYSTEMIZATION /// The organization of the material comes through its panelization and effect. In the light cones chapel, the four sided truncated pyramid defines the individual units. Projecting out of the inner opaque surface, they act as accumulated variably figured forms that produce aggregated effects through their unitization as well as structural bridges. Modular in their construction and gradient effect, they link to generate the overarching forms: conical entry, taper conical open topped drum, and a bending barrel vault culminating in an apse. In the conduit tower, the panelization relies upon a triangulated three sided unit. A combination of structural requirements combined with the double domes [one shallow and one highly arced] produce the collective figuration of the whole. The localized composition is determined by the combination of the structural requirements and the tectonic regulation of the joint.



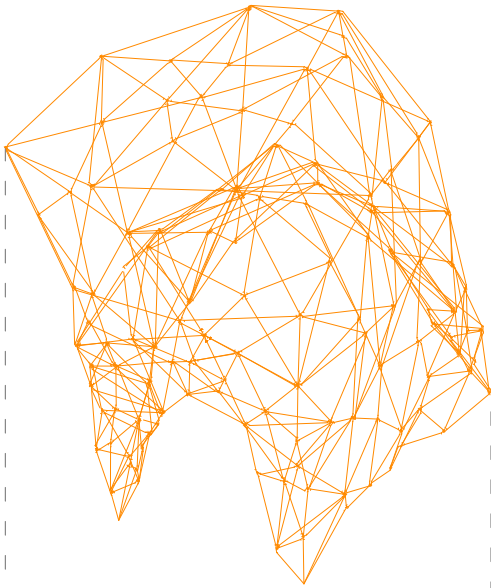
VIEW FROM CONDUIT TOWER TOWARDS PVC INFLATABLE



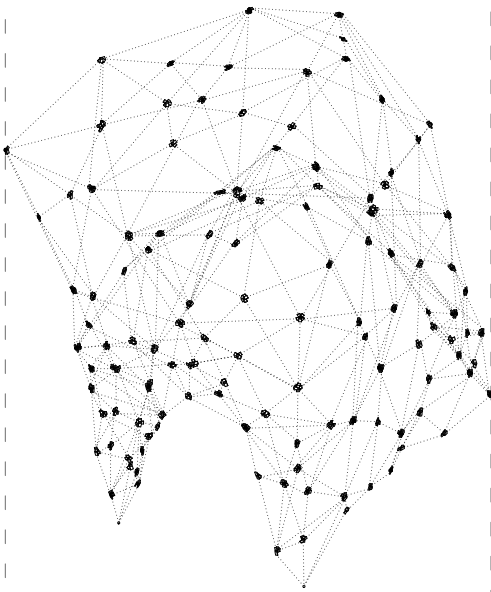
CONDUIT TOWER SYSTEMS



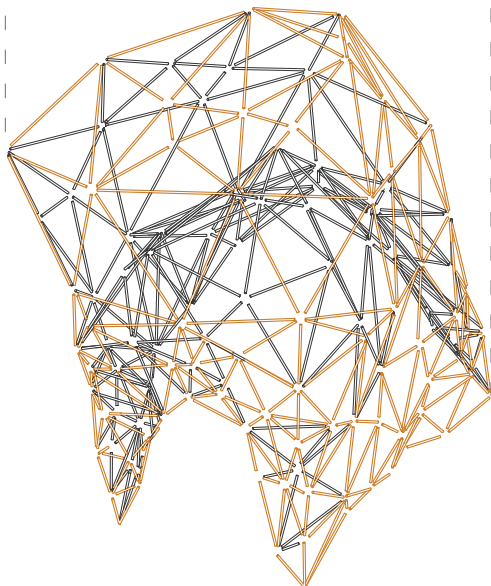
[4] GEOMETRIC GOVERNANCE + REPRESENTATIONAL METHODOLOGY /// The PVC light cone chapel was designed and fabricated through parametric models in CATIA. Using a regimented system to allow for diversity of form with a simplicity of fabrication, the system starts with a four sided flat sheet. Maintaining planarity with the inner and outer surface, the depth of each cone is determined by the structural taper of the wall and the overlap of descriptive geometries determining the overarching form. The variability of the cone angle and size gradients vertically from more to less wall [allowing a visual evaporation of the wall] and from more to less away from the structural overlaps of the primal geometric forms. To allow simultaneous flexibility built into the system of formal investigation, [a flexibility of allowing a formal variation without losing the standardization of the units and the template production], parametric digital control allowed for the simultaneous maintenance of the two. Similarly, on the conduit tower, the regulation of the three-sided faceted system occurs at the joint. This detail moment requires an engagement of the overall system to prevent an over complexity of any one connection. Defined by economy of fabrication and to minimize complexity, all joints were limited to crimped and bolted connections. Thus the gradient length density of the individual members illustrates the structural forces.



WIREFRAME

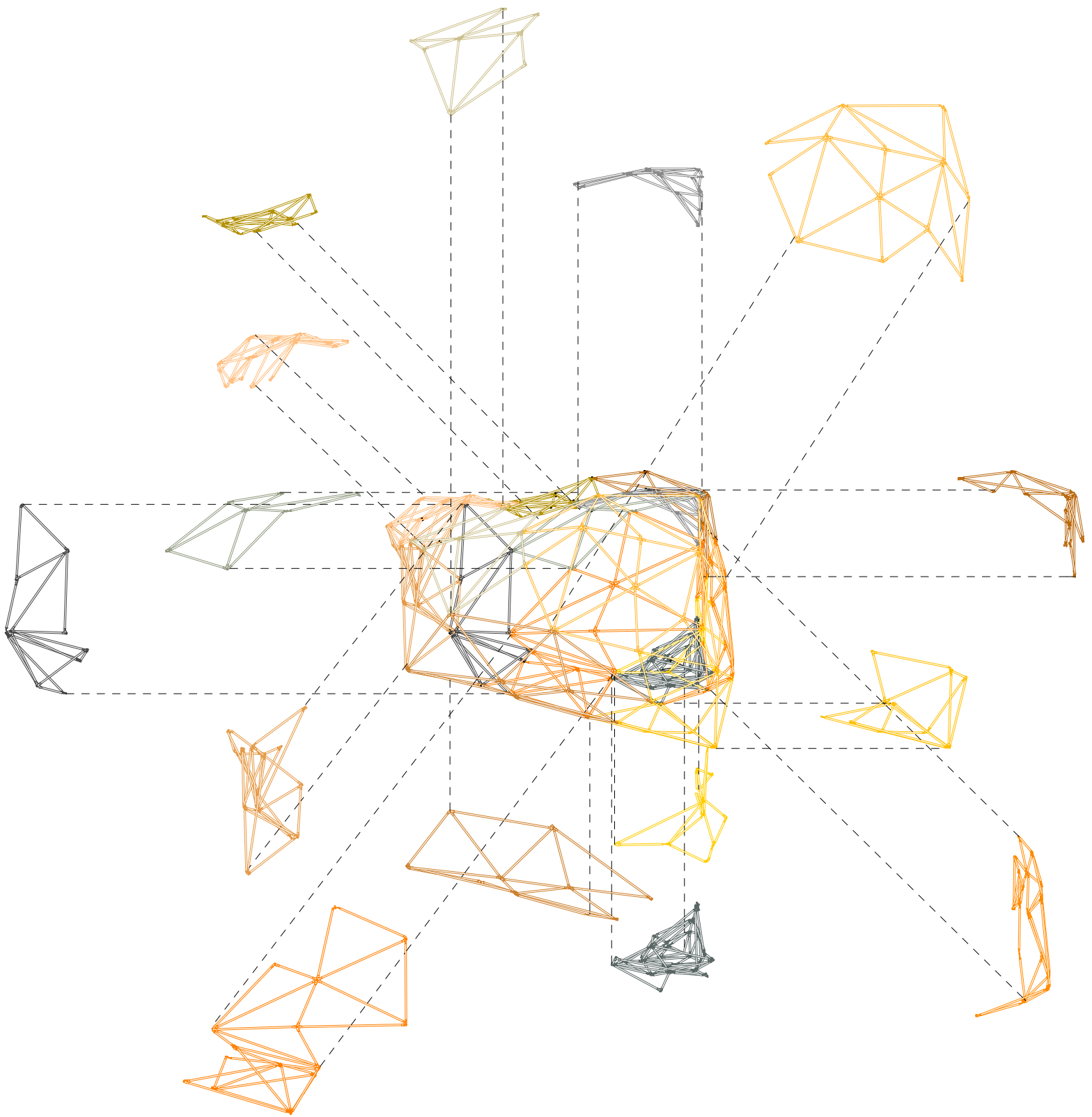


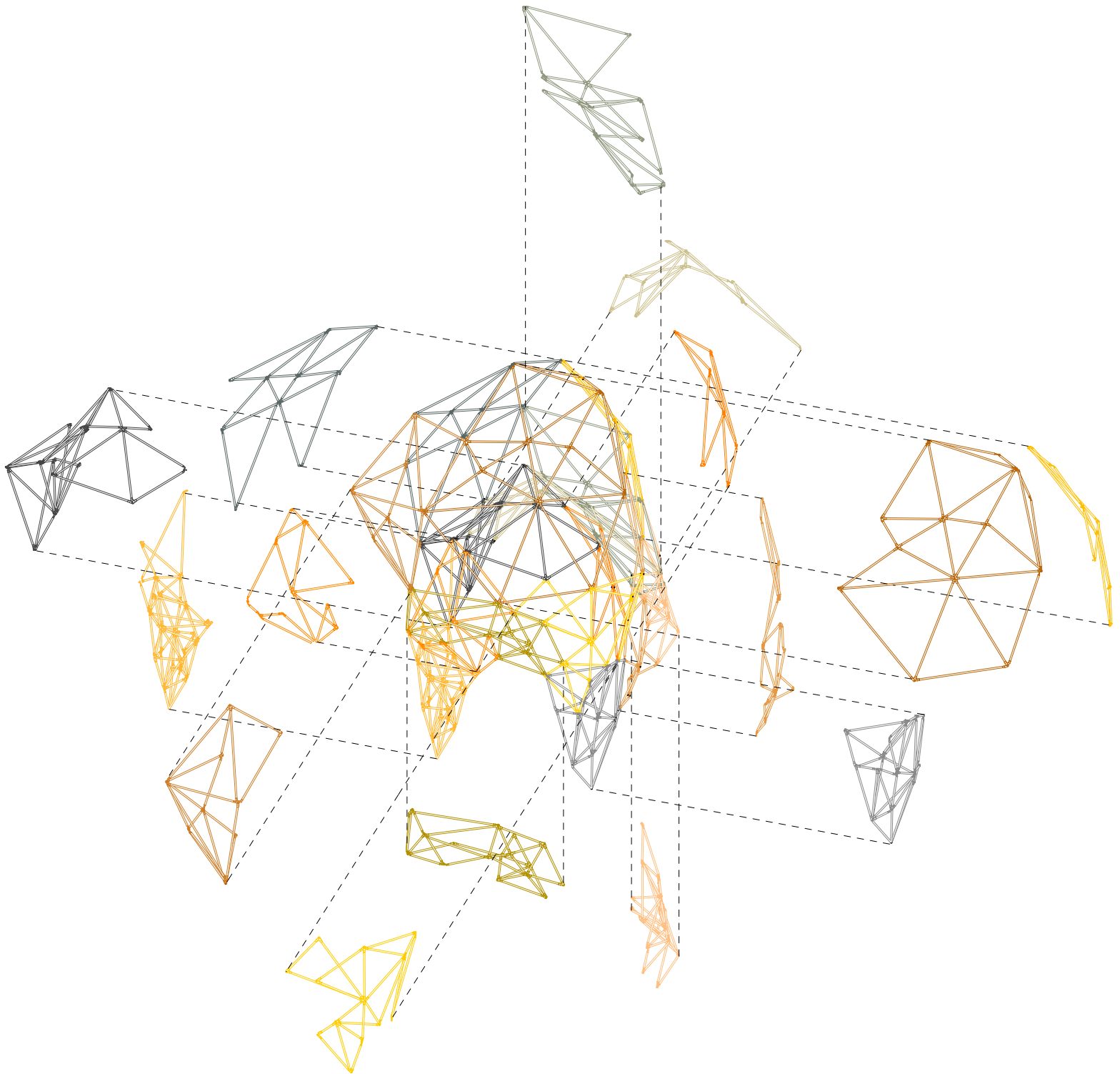
JOINTS



EMT PIPES

[5] PERFORMATIVE REQUIREMENTS /// The variable cones of the PVC chapel are governed by light. Creating a scalar dimension as they ascend, each of the panels varies in depth and perimeter frame size. The composition is based on experience of light. The conduit tower similarly works with light, but as opposed to framing, funneling and projecting, it works in the opposite direction, with the projection of shadow. The density of the frame and the pattern of the infill serve to project shadows. The effect is not generated from an emphasis on the form, but the projected figure resulting from its presence.

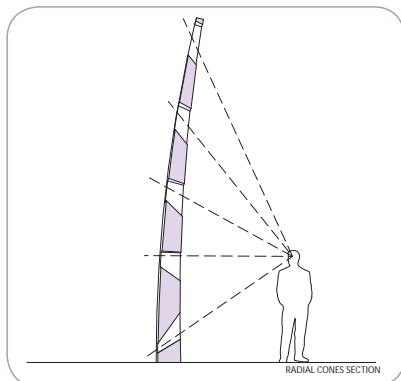
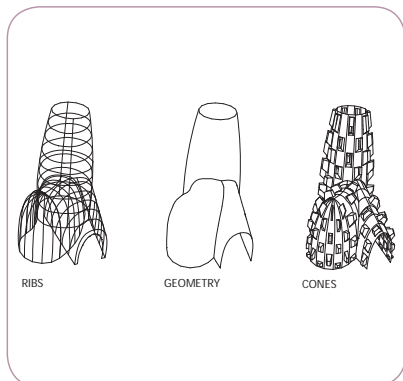
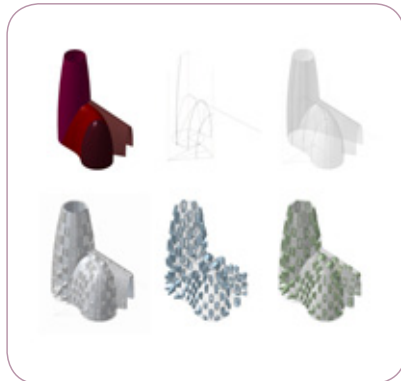
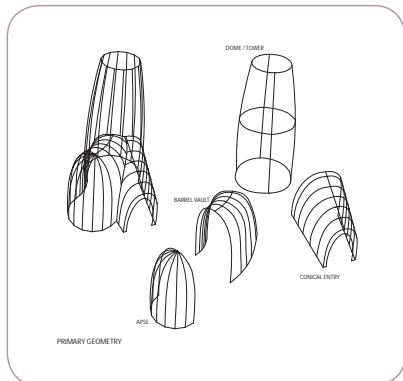








SECTION THROUGH PNEUMATIC LIGHT CHAPEL



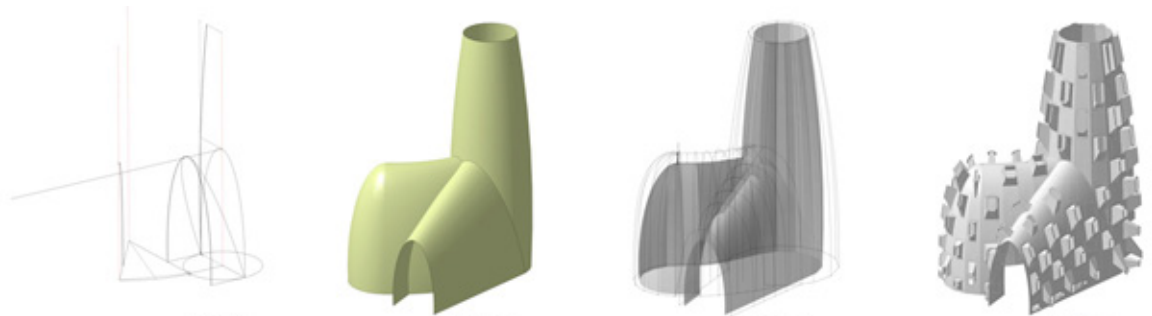
PVC CHAPEL GEOMETRIES AND COMPONENTS

[6] FABRICATION /// PROCESS /// TOOL /// Using standard controls and geometries derived from the CATIA model, the formal structure is derived from the varying wall thickness and the relative position of the cone in the field effect of the surface. Upon removal from the form they now have both the shape of their individuated conical body and flat skirt perimeters for welding. Each piece is cut from the fabric and then heat welded into place to develop the volume. The parabolic section creates vertical and lateral thrusts that are internally resolved by the cones linking the two faces. The lattice of the inner and outer surfaces with their varied wall thickness allows the production of the final form and light effect. The conduit tower uses simple fabrication techniques: crimping, bending and bolting. The system is calibrated digitally, fabricated in individual units, chunked for prefabrication then grouped for final installation. Base on a triangulated module, the structure generates its density through the double domed canopy.

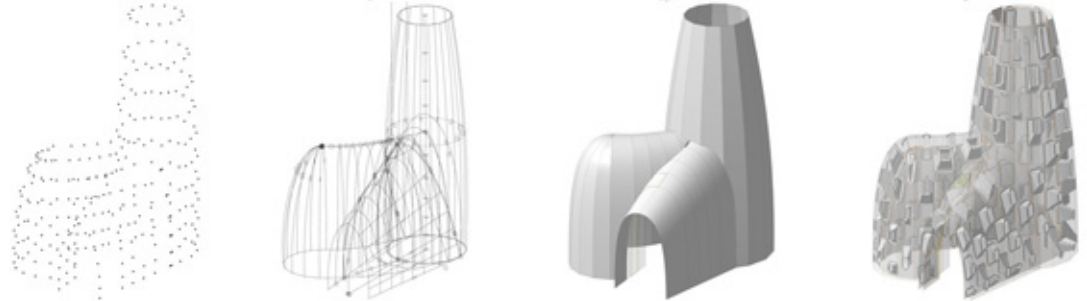


INTERIOR VIEW PVC CHAPEL

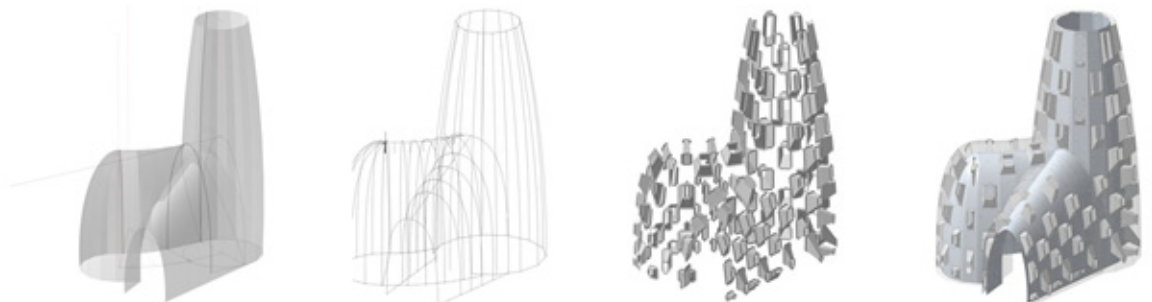
GEOMETRIES



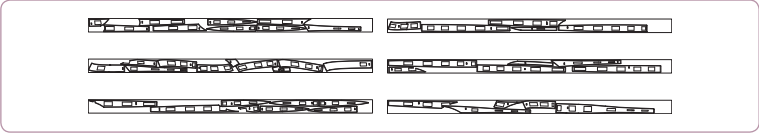
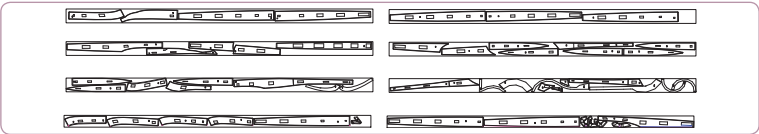
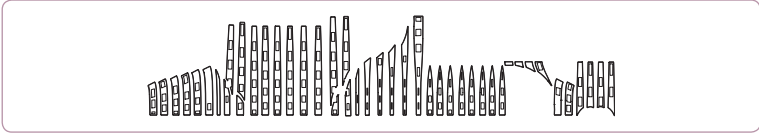
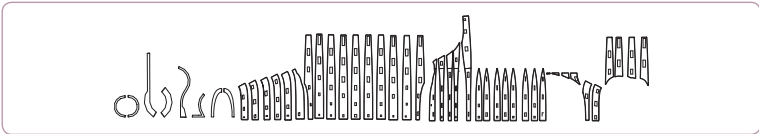
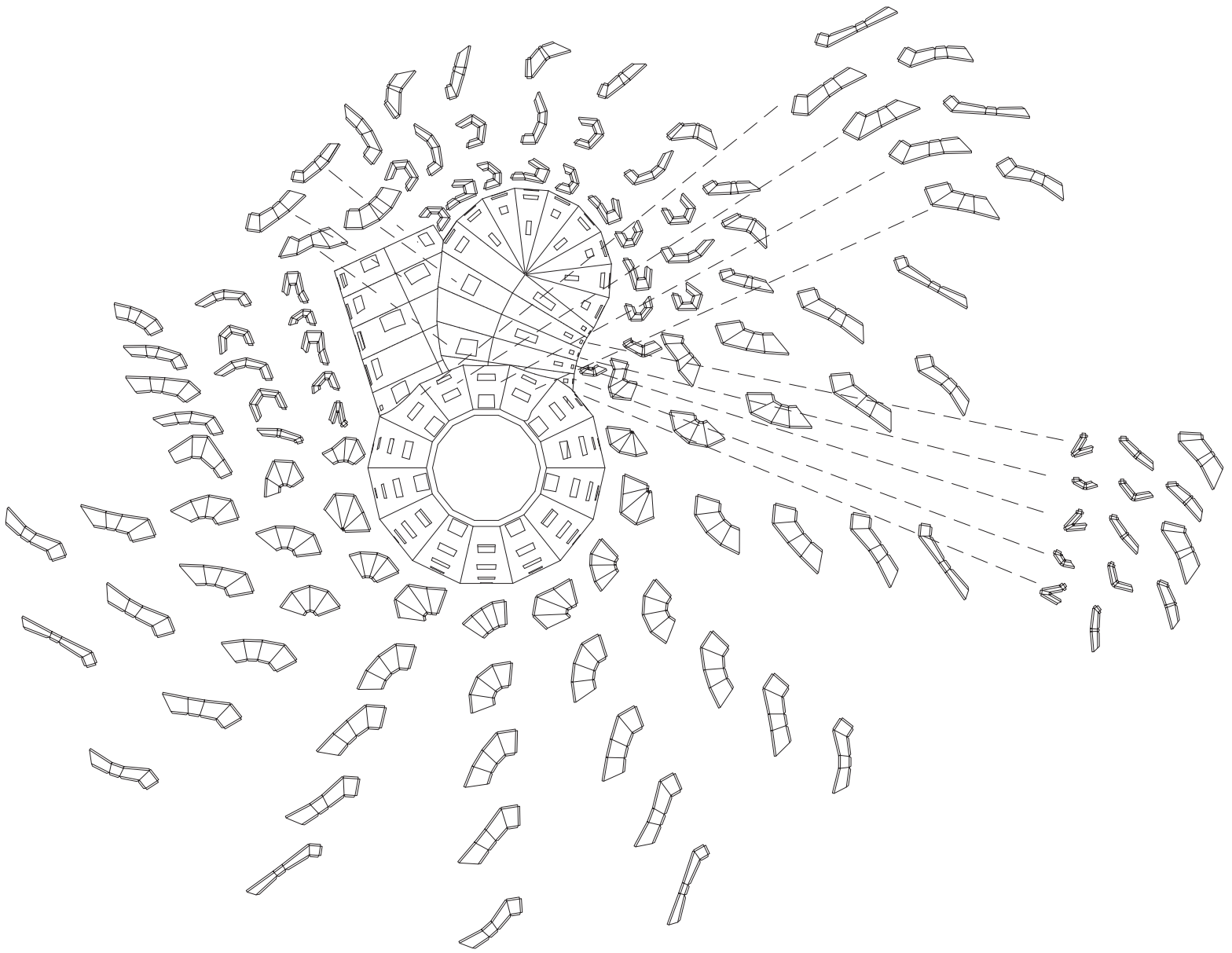
SURFACES



FORM



PVC CHAPEL SYSTEMS





VIEW INSIDE PNEUMATIC PVC CHAPEL LOOKING BACK TOWARD ENTRY



VIEW LOOKING UP TOWER TOWARDS OCULUS

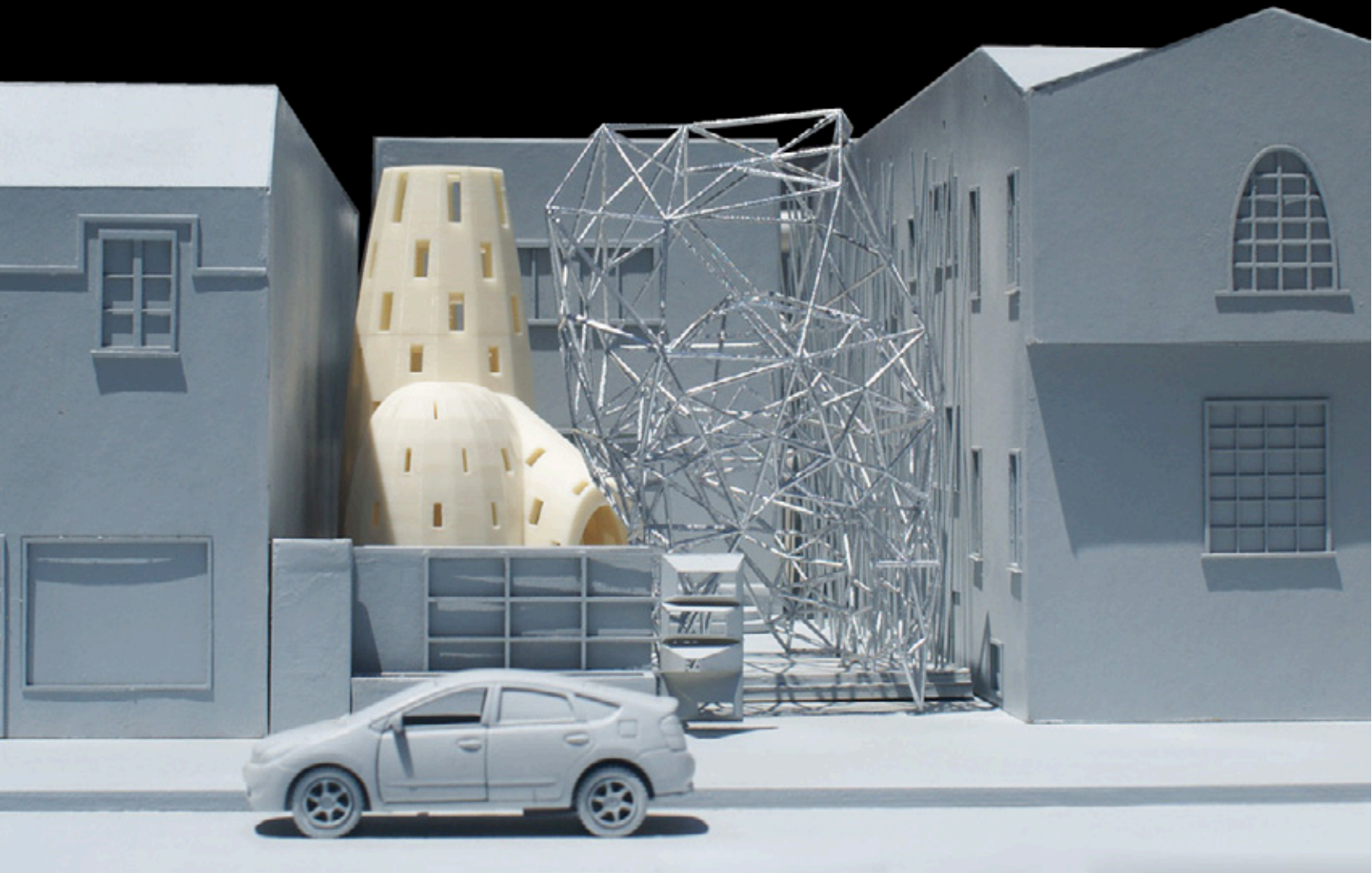


[7] INSTALLATION /// CONSTRUCTION /// The installation is the actualization of the units to define their relationship to the collective whole. The precision of the process permitted the translation of the digital model through templates and fabrication models. The accuracy of dimensional pieces all output to directly and accurately, cut the flat sheet material, and collectively weld the figure of the chapel. The conduit tower similarly relies upon the dimensional precision and output to allow for the component fabrication that then precisely regiments and allows for the tolerances and cohesion of the whole.



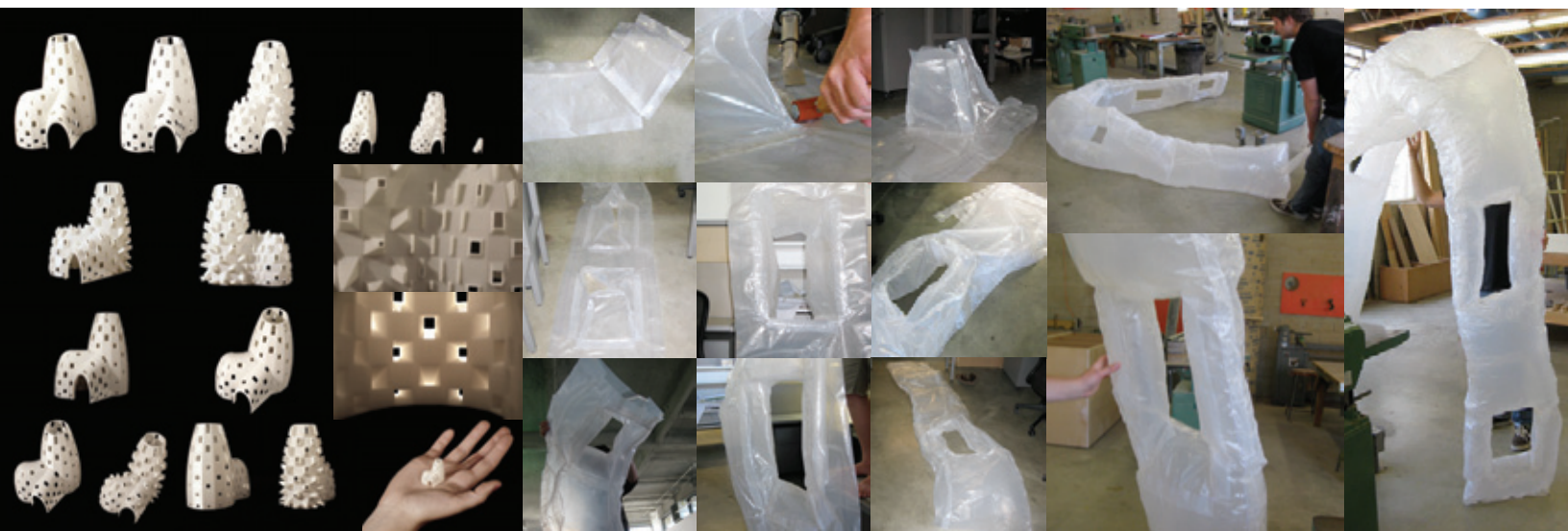
NIGHT VIEW: ILLUMINATION INVERSION

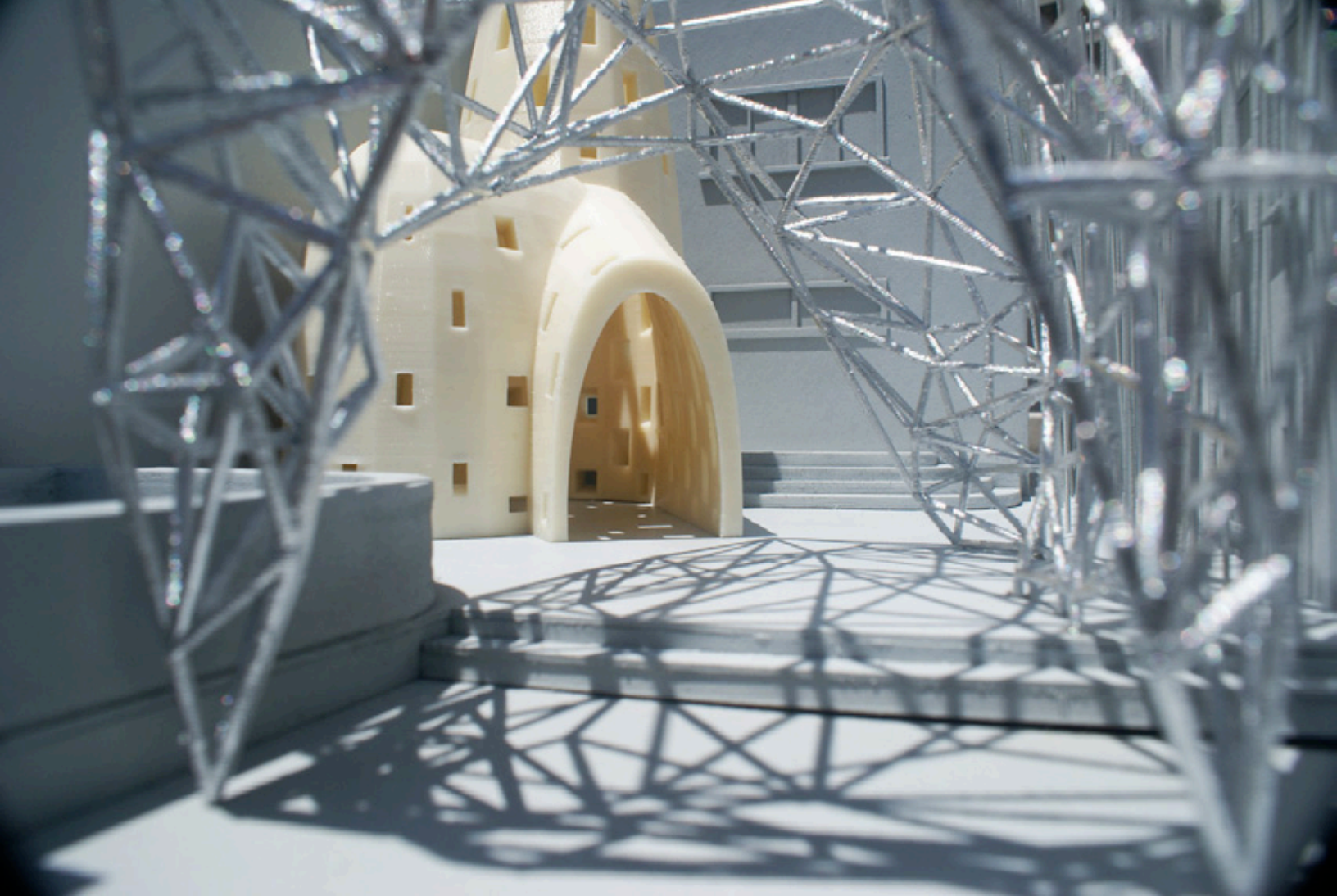
[8] EXPERIENCE /// The experience of the piece[s] comes through its engagement. The layering of light and shadow, the density of the projected light, funneled light, cast light, patterns of light and dark, and translucency of skin and surface all aggregate to allow for an array of visual affects. The individual effect of each of these systems allows for a transitional chamber. The result is a place that one can engage oneself and the ambient environment around oneself. The experience of light becomes a compositional interplay.



VIEW OF MODEL FROM STREET

PROTOTYPES

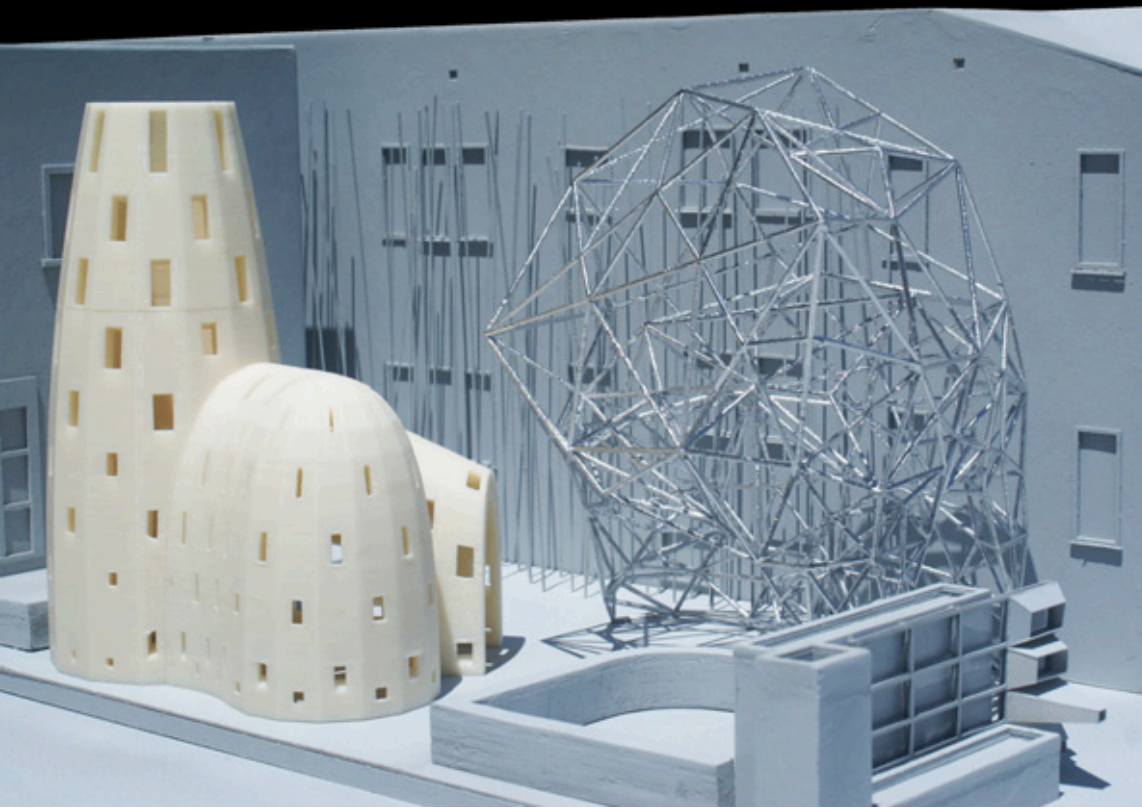




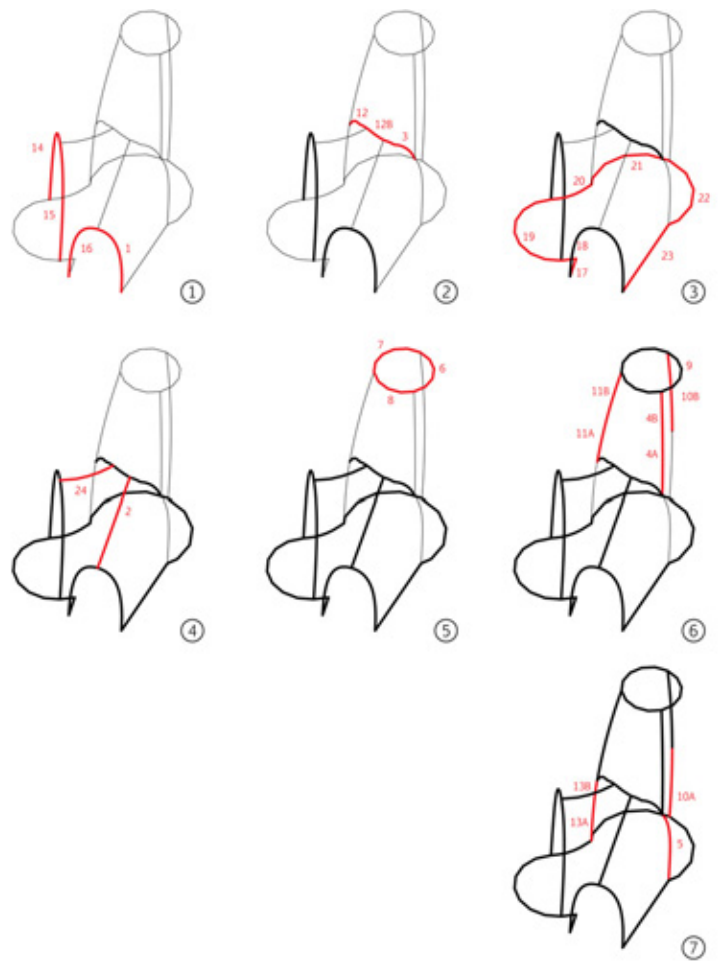
VIEW OF SHADOW CAST AND LIGHT PROJECTION

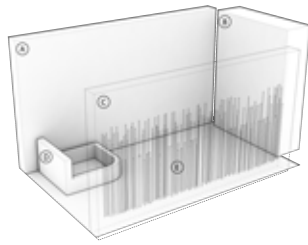
INFLATABLE PROTOTYPING



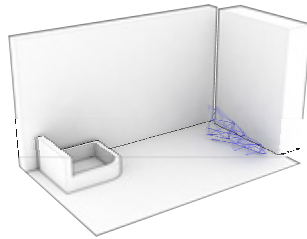




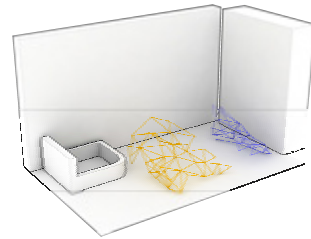




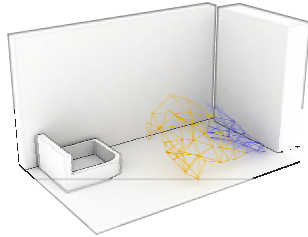
- ① SITE RESTRICTIONS
- (A) Building "A"
  - (B) Building "B"
  - (C) Building "C"
  - (D) Floorplan
  - (E) Bamboo Wall



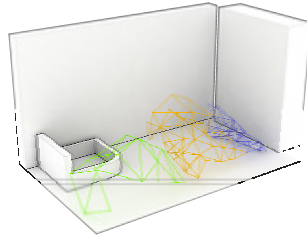
① CHUNK "A" ARRIVES ON SITE



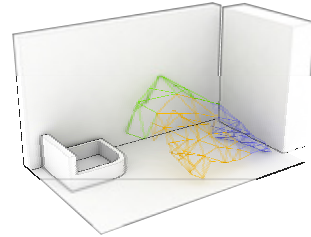
② CHUNK "B" ARRIVES ON SITE



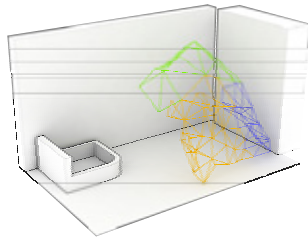
③ ATTACH CHUNK "A" TO CHUNK "B"



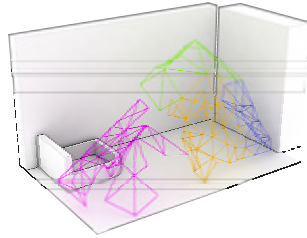
④ CHUNK "C" ARRIVES ON SITE



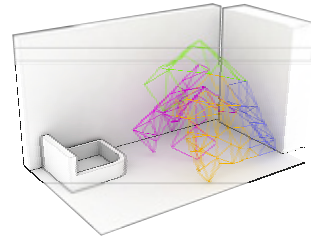
⑤ ATTACH CHUNK "C"



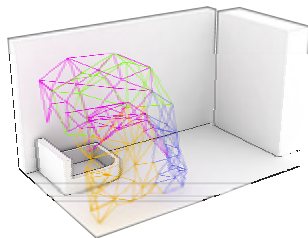
⑥ TILT ASSEMBLED PIECE UP AND BRACE



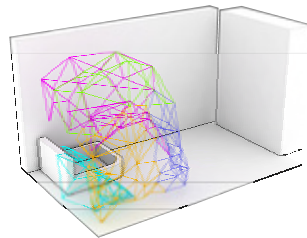
⑦ CHUNK "D" ARRIVES ON SITE



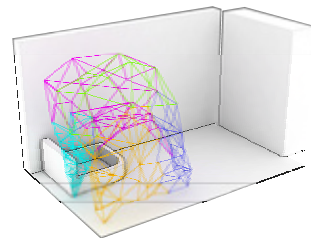
⑧ SLIDE CHUNK "D" UNDER ASSEMBLED PIECE



⑨ ATTACH CHUNK "D" AND MOVE INTO FINAL POSITION



⑩ CHUNK "E" ARRIVES ON SITE



⑪ ATTACH CHUNK "E"

INSTALLATION PLANNED PHASING AND MOCK-UP CONSTRUCTION: CONDUIT TOWER





PREFABRICATED CLUSTERS: CONDUIT TOWER





DOUBLE DOME ON SITE INSTALLATION WITH STUDENT VOLUNTEERS





INFLATABLE ON SITE INSTALLATION WITH STUDENT VOLUNTEERS





DETAILS OF INSTALLATION



DETAILS OF INSTALLATION



