



COSMOS

PUBLIC ART PROPOSAL
1050 Kifer Road
Intuitive Surgical, Inc.
Sunnyvale, CA 94086

Submitted: 7 Jan 2019

Artists: Nataly Gattegno & Jason Kelly Johnson, Future Cities Lab
with Arup Engineers - Nick Sherrow Groves, P.E.

Art Consultant: Mary Hannah, Kay Hannah Associates



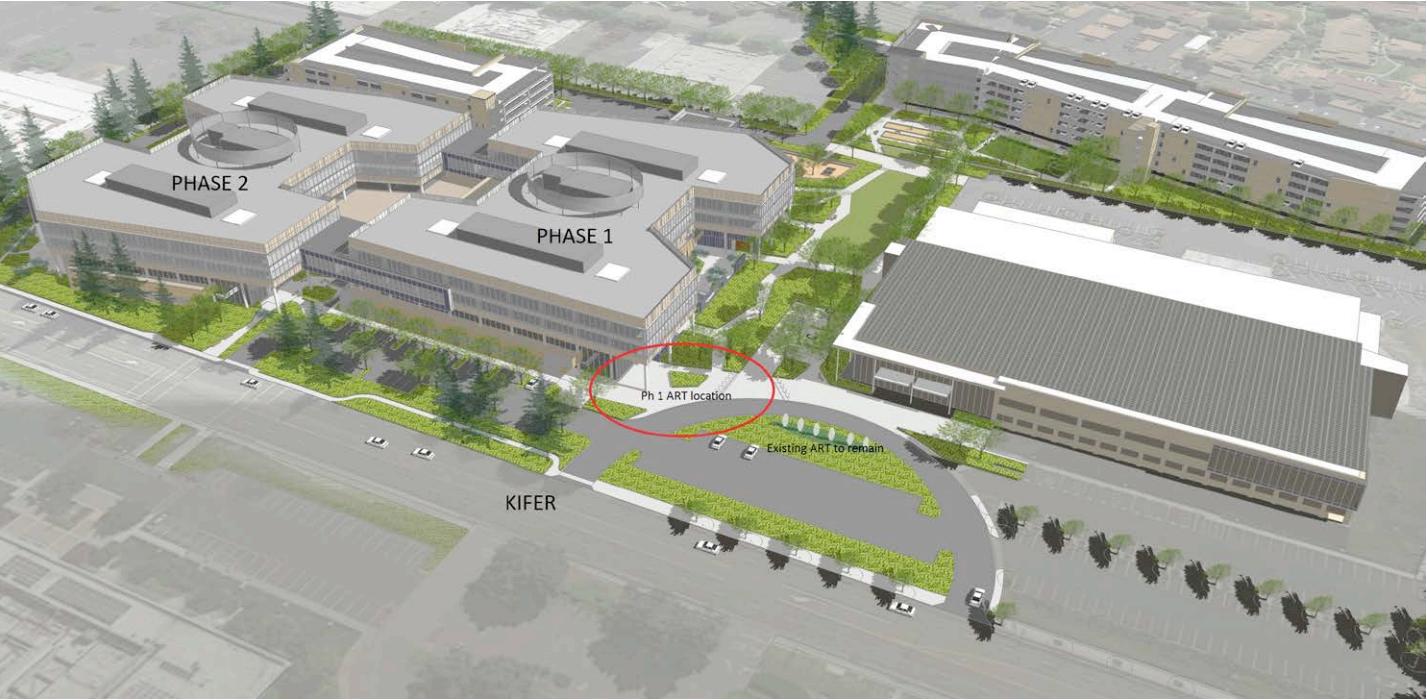


Figure 1

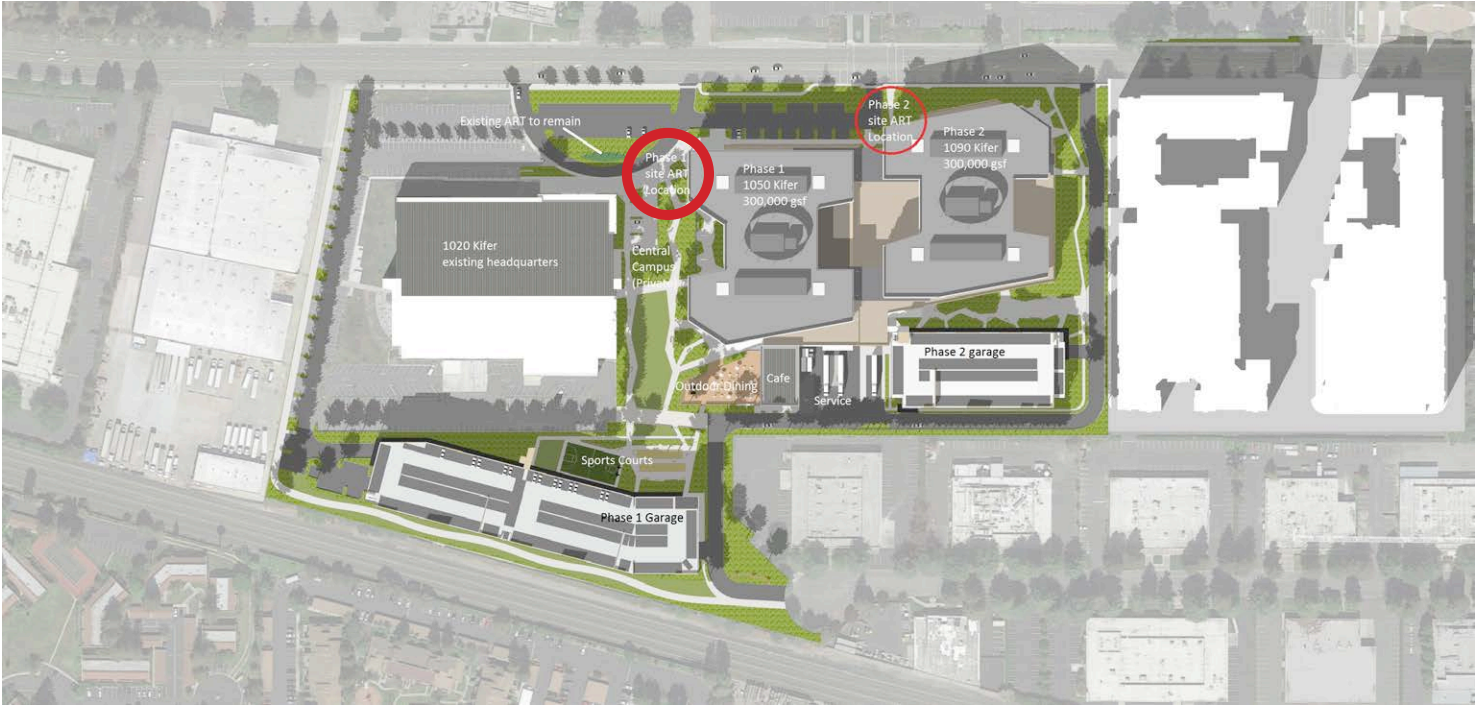


Figure 3

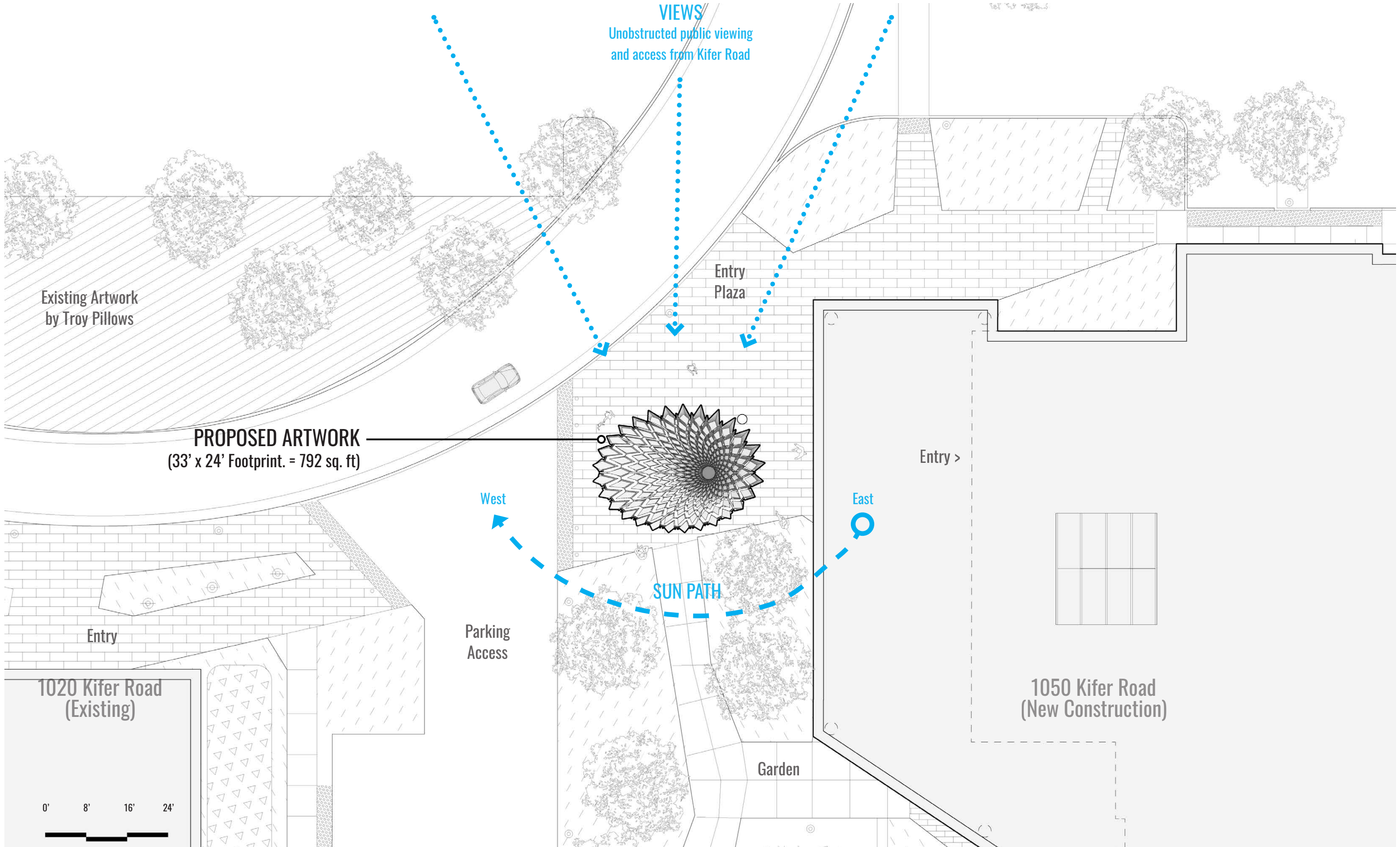


Figure 2

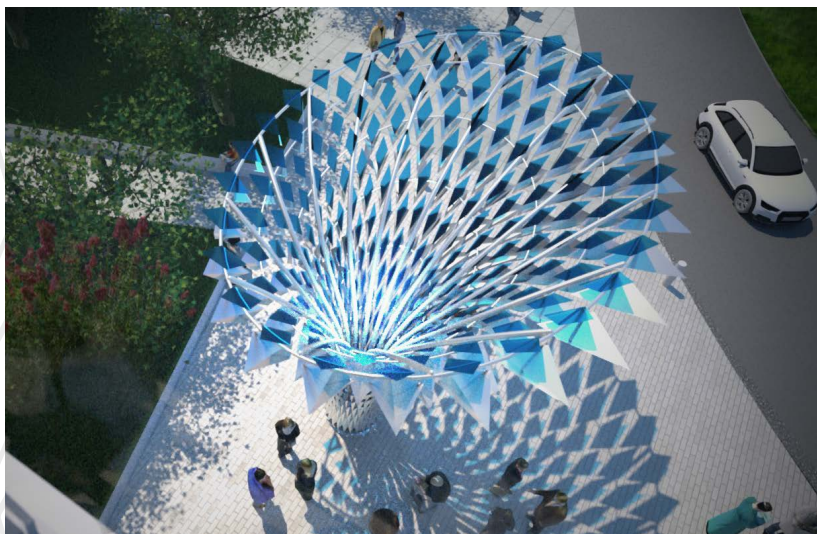


Figure 4

Troy Pillow, Alignment, Polished Stainless Steel, 2013







“Everything flows and nothing abides; everything gives way and nothing stays fixed. Cool things become warm, the warm grows cool; the moist dries, the parched becomes moist. It is in changing that things find repose.”

-Heraclitus, 540-480 BC

“We always live in the shadow of Sisyphus and Tantalus - everything around us moves, shifts, is in constant turmoil. We are not moving through an epoch of certainties: Cosmonauts in a swarm, we navigate in the provisional, we must reconsider each thought at every instant.”

-Iannis Xenakis

COSMOS

Cosmos is a dynamic shade canopy that fosters pedestrian interactions and establishes a lively collective focal point for the Intuitive Surgical campus. By supporting the artwork with a single cluster of arches, Cosmos creates an open, shaded and inviting space for people to fluidly move through on a daily basis. It also creates a dramatic backdrop for visitors and employees to congregate, sit and view the play of shadow and light from many vantage points. The faceted origami-like surfaces of the artwork are also meant to inspire spontaneous interactions and playfulness by both adults and children who might enjoy spending time underneath the artwork’s intricate organic structure and kaleidoscopic skin.

The geometry of the artwork is an exploration in translating mathematical principles into physical form. The Fibonacci Sequence informs the specific algorithm underlying the three-dimensional structure and skin of the artwork. While the form of the artwork would be fixed, the play of light, reflection and color would change throughout the day and season. The site specific installation invites visitors to experience the interplay of pattern, light, art and science in a way that is both playful and contemplative.

1,1,2,3,5,8,13,21,34,55,89,144,233,377...

1+1=2	13+21=34
1+2=3	21+34=55
2+3=5	34+55=89
3+5=8	55+89=144
5+8=13	89+144=233
8+13=21	144+233=377

Fig 1. Fibonacci Sequence (each subsequent number is the sum of the previous two).

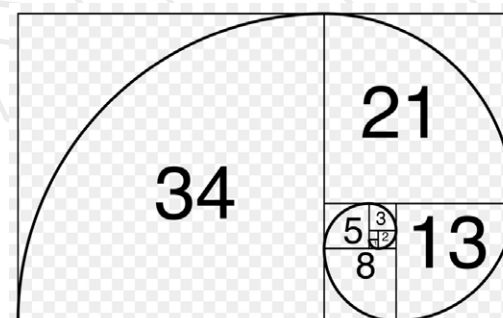


Fig 2. The Fibonacci Sequence drawn as a 2d curve (golden ratio diagram).

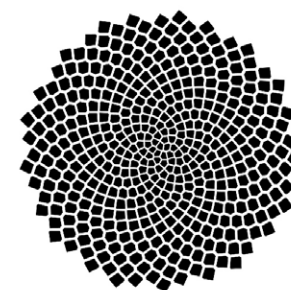


Fig 3. Multiple curves create a phyllotaxis spiral (137.5 degrees)

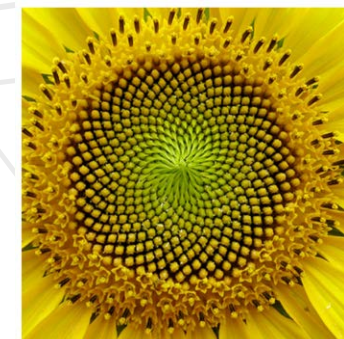
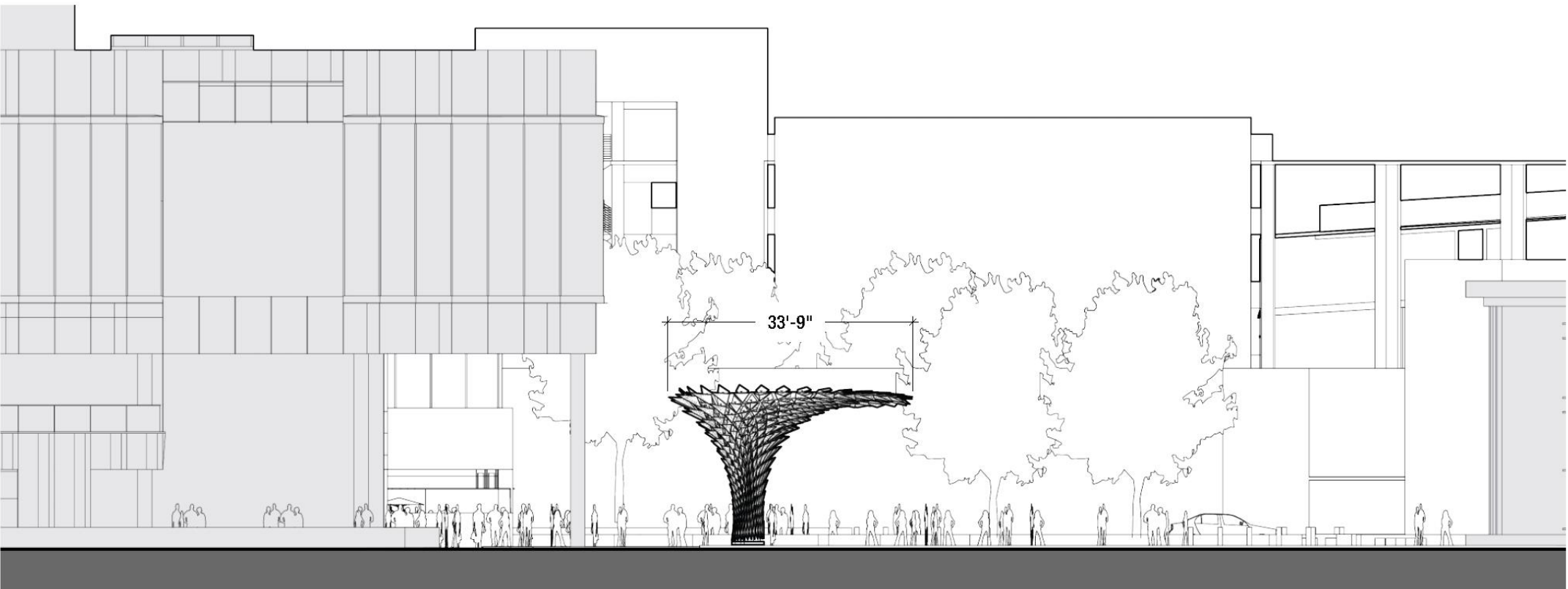


Fig 4. Spiral phyllotaxis can also be observed in complex 3d structures like sunflowers, sea shells and even pinwheel galaxies



2 SITE PERSPECTIVE
NTS



1 SITE ELEVATION
Scale: 1/8" = 1'

GENERAL NOTES

1. VERIFY ALL DIMENSIONS AND SITE DETAILS IN THE FIELD.
2. SHOP DRAWINGS SHOULD BE SUBMITTED BY CONTRACTOR FOR ALL TRACES INCLUDED BUT NOT LIMITED TO STRUCTURAL, ELECTRICAL AND DATA.

LEAD ARTIST

FUTURE CITIES LAB
2325 3rd Street, Suite 229
San Francisco, CA 94107
Contact: Jason K. Johnson
<info@future-cities-lab.net>
Phone: (415) 255-4879



GENERAL CONTRACTOR

STRUCTURAL ENGINEER

ARUP
NICK SHERROW-GROVES P.E.
560 MISSION ST STE 700
SAN FRANCISCO, CA 94105
<nick.sherrow-groves@arup.com>

ART FABRICATOR

MACHINIC
2325 3rd Street
San Francisco, CA 94107

LANDSCAPE ARCHITECT

RHAA
MEGHAN STORM, LANDSCAPE ARCHITECT, LEED AP
255 MILLER AVE, MILL VALLEY, CA 94041
415 383 7900

REVISION NOTES

01.07.2018 - ART COMMISSION REVIEW

**REVIEW SET
NOT FOR
CONSTRUCTION**

PROJECT NAME

COSMOS

PUBLIC ARTWORK
1050 KIEFER ROAD
INTUITIVE SURGICAL INC.
SUNNYVALE, CA 94086

SHEET TITLE

SITE ELEVATION

DRAWING SCALE

As noted on drawings
Sheet size: 24" X 36"

DATE ISSUED

01.07.2018

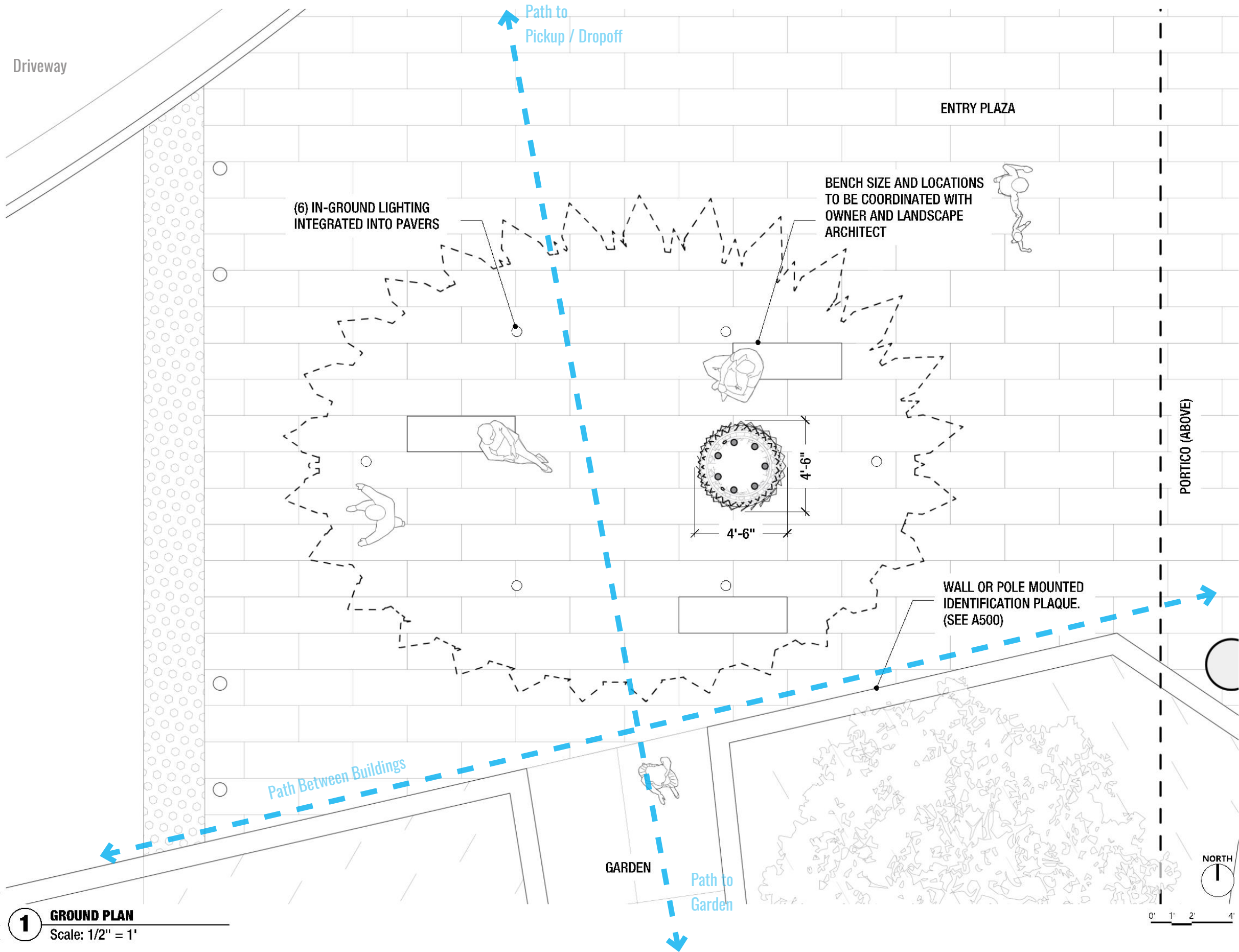
A200

ARTWORK TOP
22'-00"

GRADE
00'-00"

0' 4' 8' 16'





GENERAL NOTES

1. VERIFY ALL DIMENSIONS AND SITE DETAILS IN THE FIELD.
2. SHOP DRAWINGS SHOULD BE SUBMITTED BY CONTRACTOR FOR ALL TRACES INCLUDED BUT NOT LIMITED TO STRUCTURAL, ELECTRICAL AND DATA.

LEAD ARTIST

FUTURE CITIES LAB
2325 3rd Street, Suite 229
San Francisco, CA 94107
Contact: Jason K. Johnson
<info@future-cities-lab.net>
Phone: (415) 255-4879



GENERAL CONTRACTOR

STRUCTURAL ENGINEER

ARUP
NICK SHERROW-GROVES P.E.
560 MISSION ST STE 700
SAN FRANCISCO, CA 94105
<nick.sherrow-groves@arup.com>

ART FABRICATOR

MACHINIC
2325 3rd Street
San Francisco, CA 94107

LANDSCAPE ARCHITECT

RHAA
MEGHAN STORM, LANDSCAPE ARCHITECT, LEED AP
255 MILLER AVE, MILL VALLEY, CA 94041
415 383 7900

REVISION NOTES

01.07.2018 - ART COMMISSION REVIEW

**REVIEW SET
NOT FOR
CONSTRUCTION**

PROJECT NAME

COSMOS

PUBLIC ARTWORK

1050 KIFER ROAD
INTUITIVE SURGICAL INC.
SUNNYVALE, CA 94086

SHEET TITLE

TOP PLAN

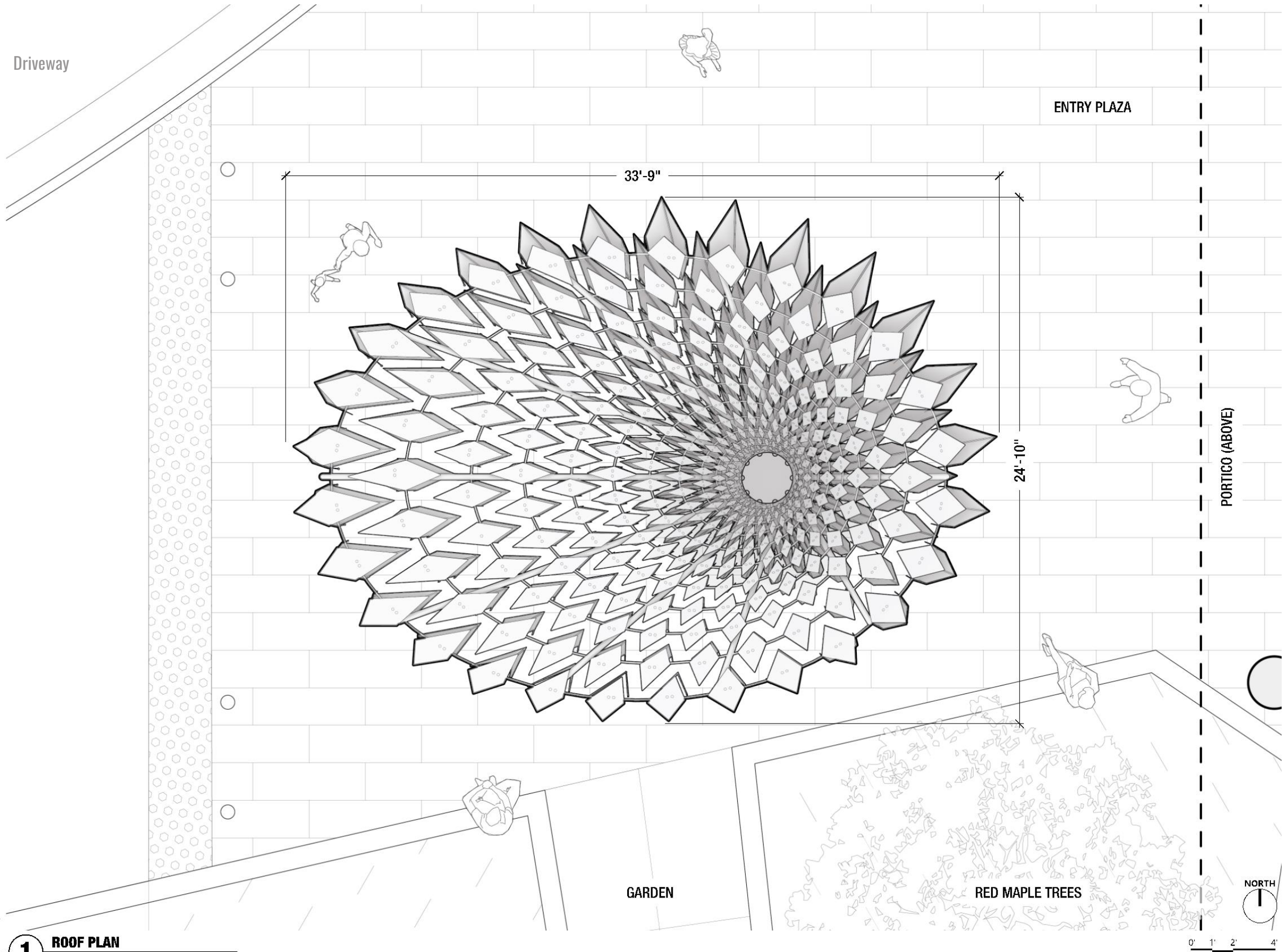
DRAWING SCALE

As noted on drawings
Sheet size: 24" X 36"

DATE ISSUED

01.07.2018

A103



GENERAL NOTES

1. VERIFY ALL DIMENSIONS AND SITE DETAILS IN THE FIELD.
2. SHOP DRAWINGS SHOULD BE SUBMITTED BY CONTRACTOR FOR ALL TRACES INCLUDED BUT NOT LIMITED TO STRUCTURAL, ELECTRICAL AND DATA.

LEAD ARTIST

FUTURE CITIES LAB
2325 3rd Street, Suite 229
San Francisco, CA 94107
Contact: Jason K. Johnson
<info@future-cities-lab.net>
Phone: (415) 255-4879



GENERAL CONTRACTOR

STRUCTURAL ENGINEER

ARUP
NICK SHERROW-GROVES P.E.
560 MISSION ST STE 700
SAN FRANCISCO, CA 94105
<nick.sherrow-groves@arup.com>

ART FABRICATOR

MACHINIC
2325 3rd Street
San Francisco, CA 94107

LANDSCAPE ARCHITECT

RHAA
MEGHAN STORM, LANDSCAPE ARCHITECT, LEED AP
255 MILLER AVE, MILL VALLEY, CA 94041
415 383 7900

REVISION NOTES

01.07.2018 - ART COMMISSION REVIEW

**REVIEW SET
NOT FOR
CONSTRUCTION**

PROJECT NAME

COSMOS

PUBLIC ARTWORK

1050 KIEFER ROAD
INTUITIVE SURGICAL INC.
SUNNYVALE, CA 94086

SHEET TITLE

TOP PLAN

DRAWING SCALE

As noted on drawings
Sheet size: 24" X 36"

DATE ISSUED

01.07.2018

A102

1050 Kifer Road
(New Construction)

26'-00" BOT. PORTICO

22'-6" ARTWORK TOP

20'-6" ARTWORK UNDERSIDE

0'-0" GRADE

Stainless steel folded perforated shade petals
(approximately 600 unique parametric shapes)

9'-00"

4'-00"

19'-00"

32'-00"

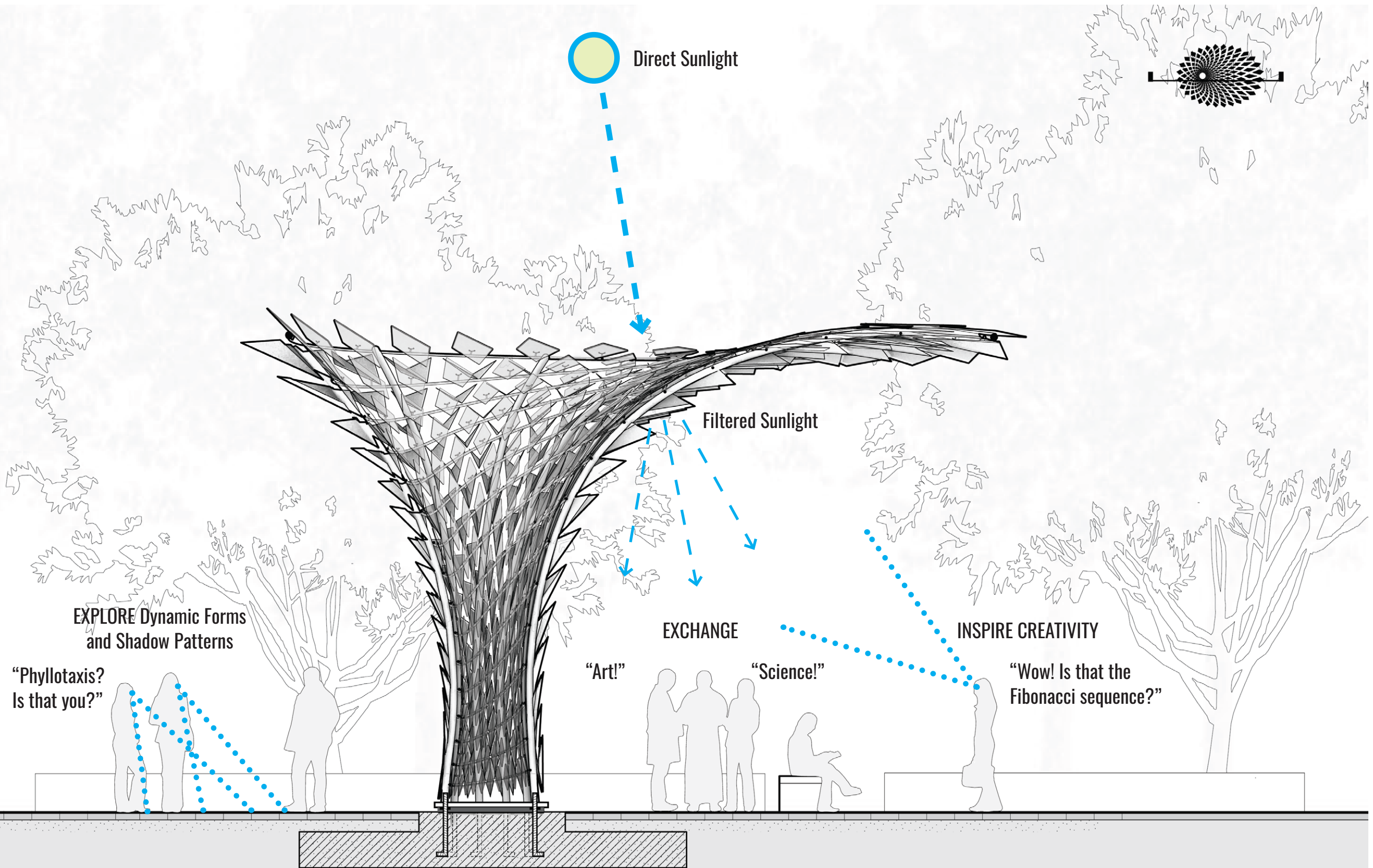
0' 2' 4' 8'

1050 Kifer Road
(New Construction)

26'-00" BOT. PORTICO

22'-6" ARTWORK TOP

20'-6" ARTWORK UNDERSIDE



EXPLORE Dynamic Forms
and Shadow Patterns

"Phyllotaxis?
Is that you?"

"Art!"

EXCHANGE

"Science!"

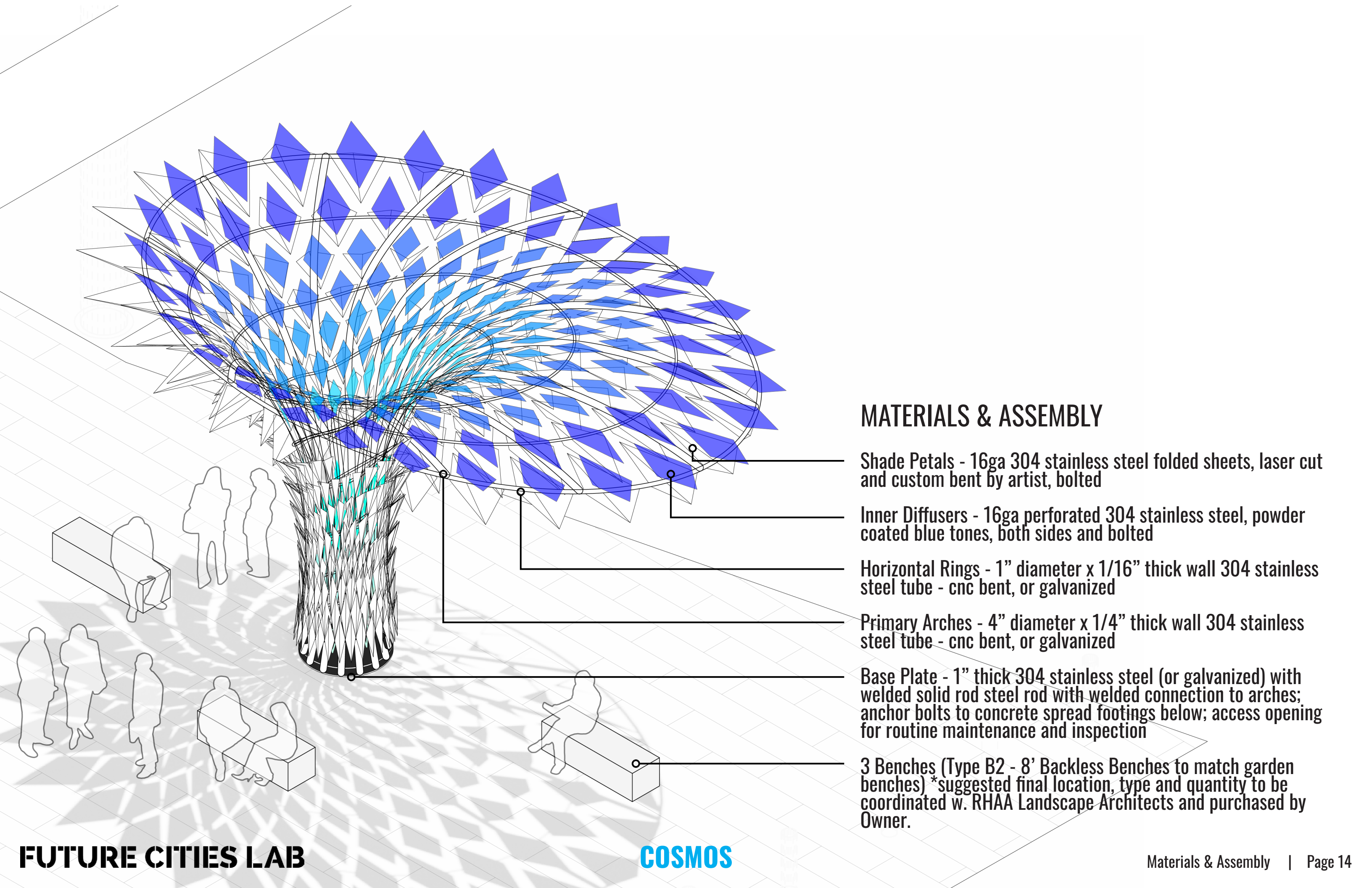
INSPIRE CREATIVITY

"Wow! Is that the
Fibonacci sequence?"

0'-0" GRADE

-1'-10" FOOTING BOTTOM

0' 2' 4' 8'



MATERIALS & ASSEMBLY

Shade Petals - 16ga 304 stainless steel folded sheets, laser cut and custom bent by artist, bolted

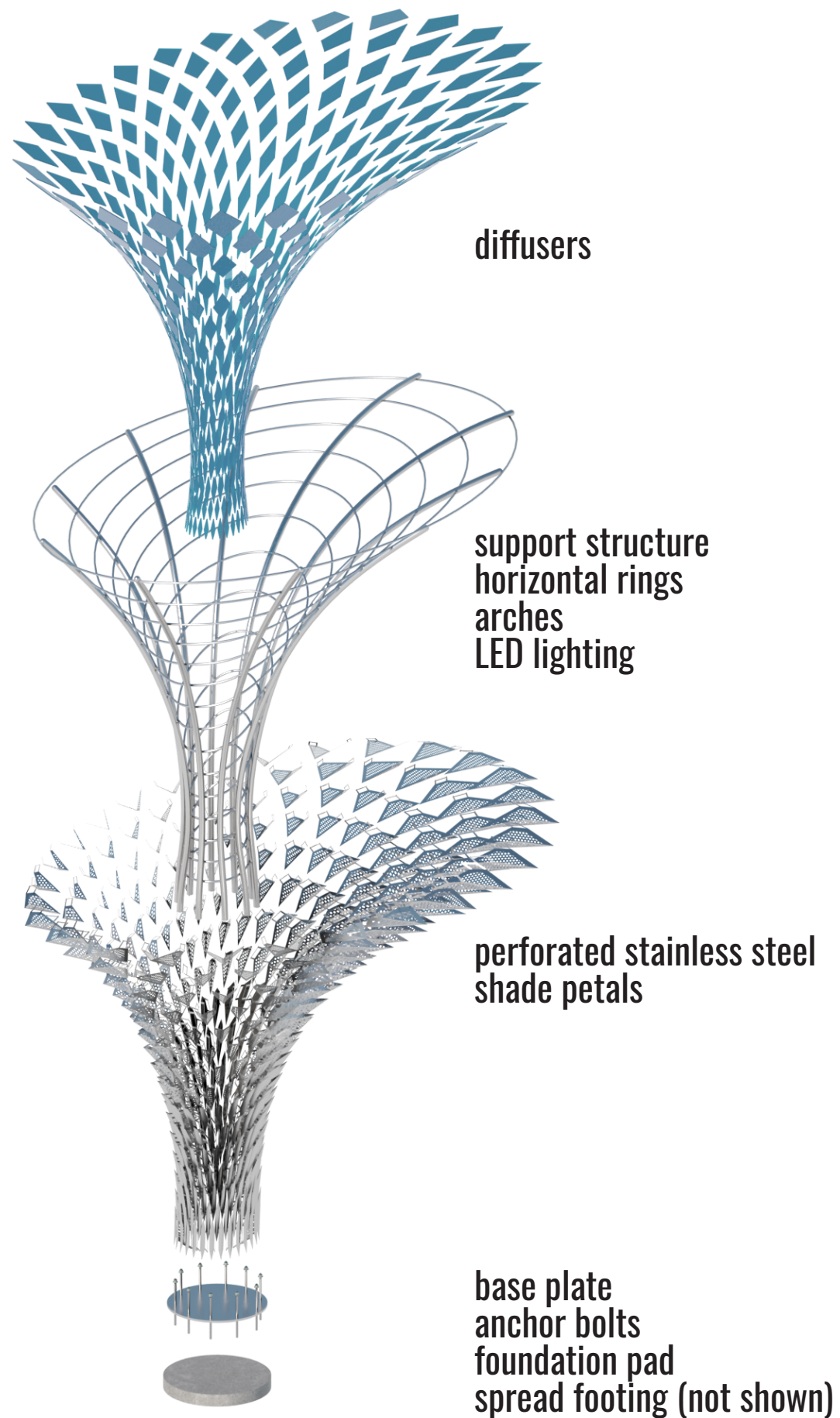
Inner Diffusers - 16ga perforated 304 stainless steel, powder coated blue tones, both sides and bolted

Horizontal Rings - 1" diameter x 1/16" thick wall 304 stainless steel tube - cnc bent, or galvanized

Primary Arches - 4" diameter x 1/4" thick wall 304 stainless steel tube - cnc bent, or galvanized

Base Plate - 1" thick 304 stainless steel (or galvanized) with welded solid rod steel rod with welded connection to arches; anchor bolts to concrete spread footings below; access opening for routine maintenance and inspection

3 Benches (Type B2 - 8' Backless Benches to match garden benches) *suggested final location, type and quantity to be coordinated w. RHAA Landscape Architects and purchased by Owner.



DURABILITY & MAINTENANCE

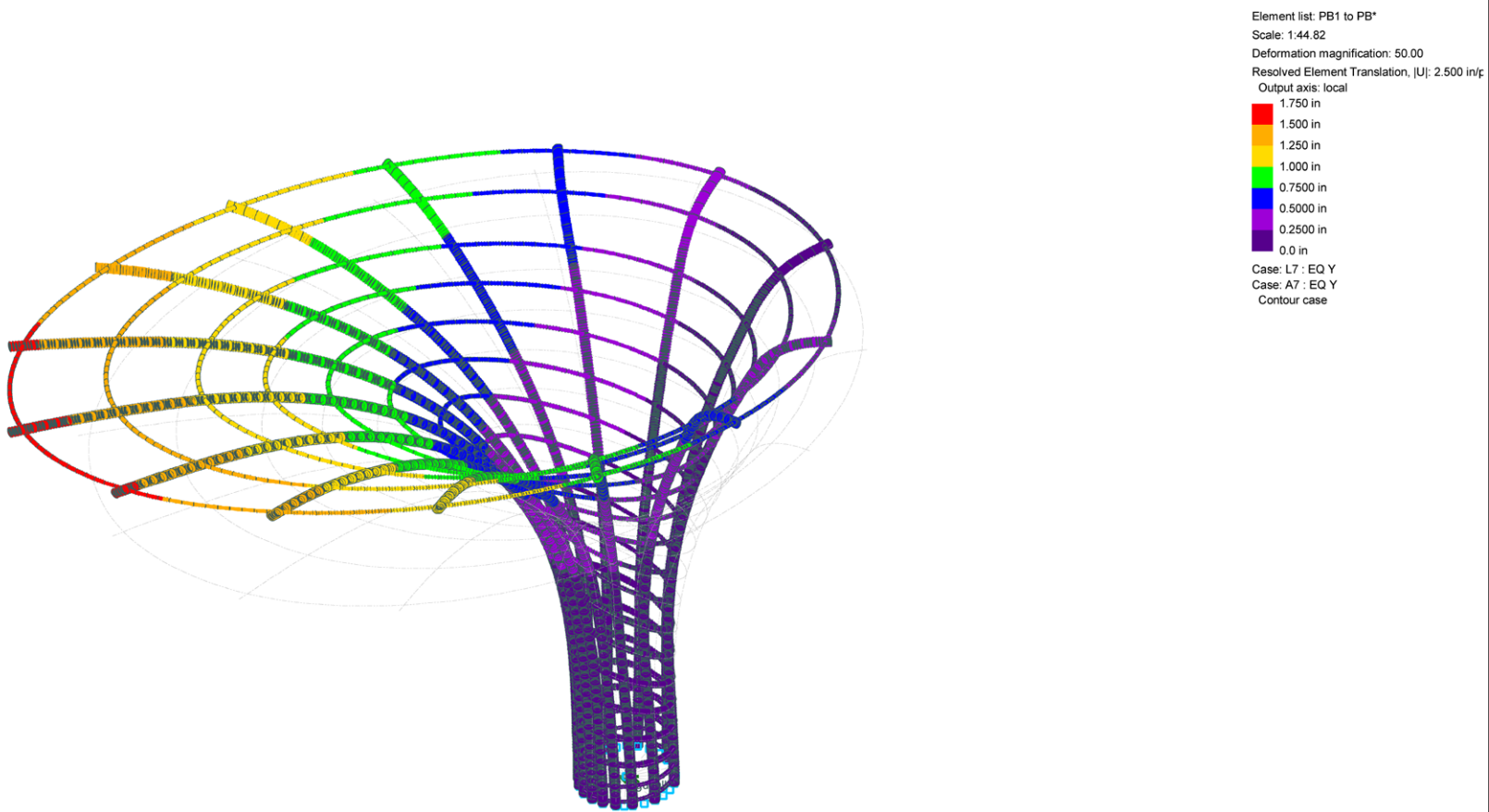
Cosmos would be fabricated in the Bay Area using marine grade stainless steel panels, galvanized carbon steel, and hardware. The steel pipes would be CNC bent by digital craftspeople in our San Francisco-based shop. All connections would be welded. The perforated 16 and 8 gauge perforated stainless steel shade petals are both extremely durable and maintenance free. Gaps between the petals ensure easy visible inspection.

The lower shade petals circling the base plate are connected into four larger hinged modules and can be opened easily. This allows the foundation connections to be easily inspected and cleaned when necessary. The LED lighting fixtures are also accessible through the base.

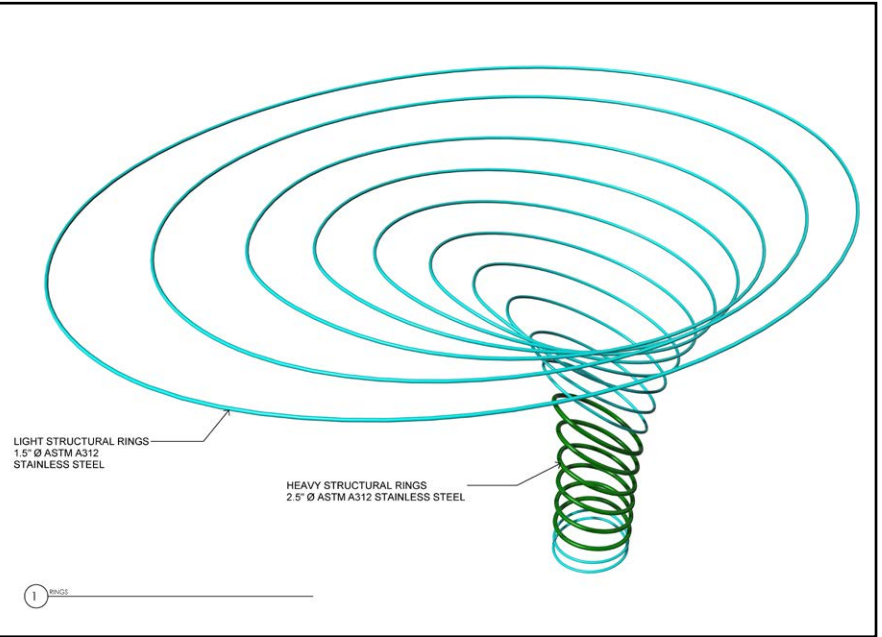
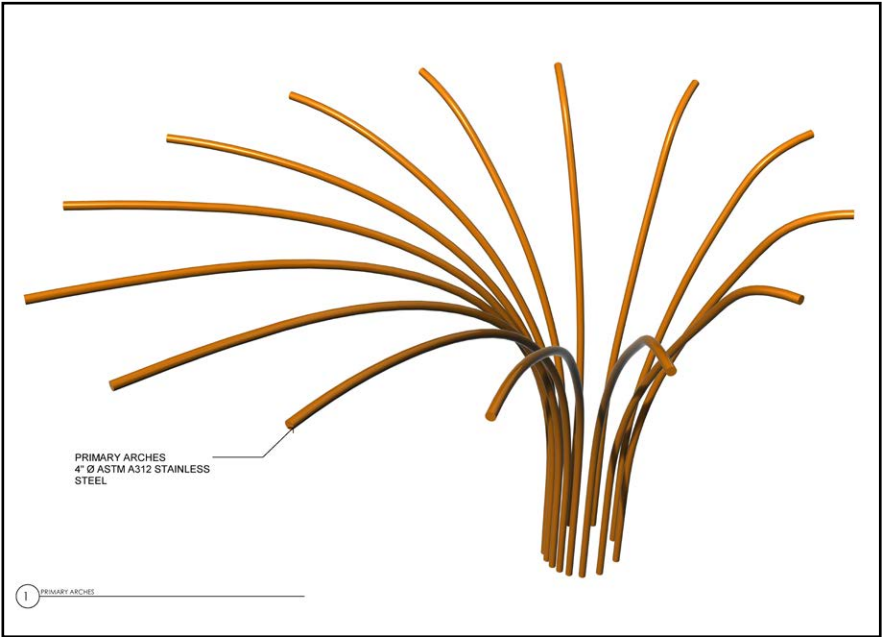
Additional Notes:

1. Birds: Stainless steel bird spikes to be integrated into the edge of the uppermost horizontal ring. This would impede landing and roosting near the overhang, and would have minimal visual impact. The majority of the colored panels are angled over 45 degrees which will deter nest building. Two panel rows near the end of the arch are angled between ~30 and 5 degrees. Panels to be to create a pitch that would impede roosting and encourage water flow.
2. Panel Maintenance: Similar to any roof or skylight, bird droppings will occur. In general, exposed bird droppings will naturally breakdown in sunlight, wind and rain. As noted in #1, colored panel manufacturers recommended angle of +5 degrees to be followed to encourage self-cleaning. All portions of the artwork can also be power-washed if necessary. Will work with facilities to ensure the completed artwork is easy to inspect and maintain when necessary.
3. Water and Drainage: While some rain would be channeled towards the middle, rain falling on the artwork would behave similar to rain falling on a large tree canopy. The stainless steel petals are perforated and therefore the rain would be slowed down, channeled and dispersed. People standing under the artwork during light would therefore be partially protected.

Job No.	Sheet No.	Rev.
Drg. Ref.		
Made by	Date 24-Nov-2018	Checked



Program GSA Version 8.7 Copyright © Oasys 1985-2017
C:\Users\nick.sherrow-groves\Desktop\Working\Local Files...\Basic Model - v1.0.gwb
Printed 24-Nov-2018 Page 1 Time 22:40



STRUCTURAL NARRATIVE + ANALYSIS

The structure would be pre-fabricated with three sizes of steel CNC bent tubes. The structure and lightweight petals would be shop welded in smaller modules, transported to the site and ultimately bolted together in situ.

ARUP Engineers Structural Analysis Outcomes:

1. The primary arches would be slender 4" diameter tubes. Cantilever deflections would be resolved with some optimization of the placement of the internal tubing and refining the loading numbers. The foundation of this sculpture will need to be ~16' square and 36" deep.
2. The horizontal tubes in the bottom third of the sculpture need to be 2.5" diameter instead of your original 1.5" (mostly b/c of earthquake forces). The helical spiral configuration was not analyzed here but we expect that it would perform in a similar fashion.

4 IN-GROUND LIGHTING

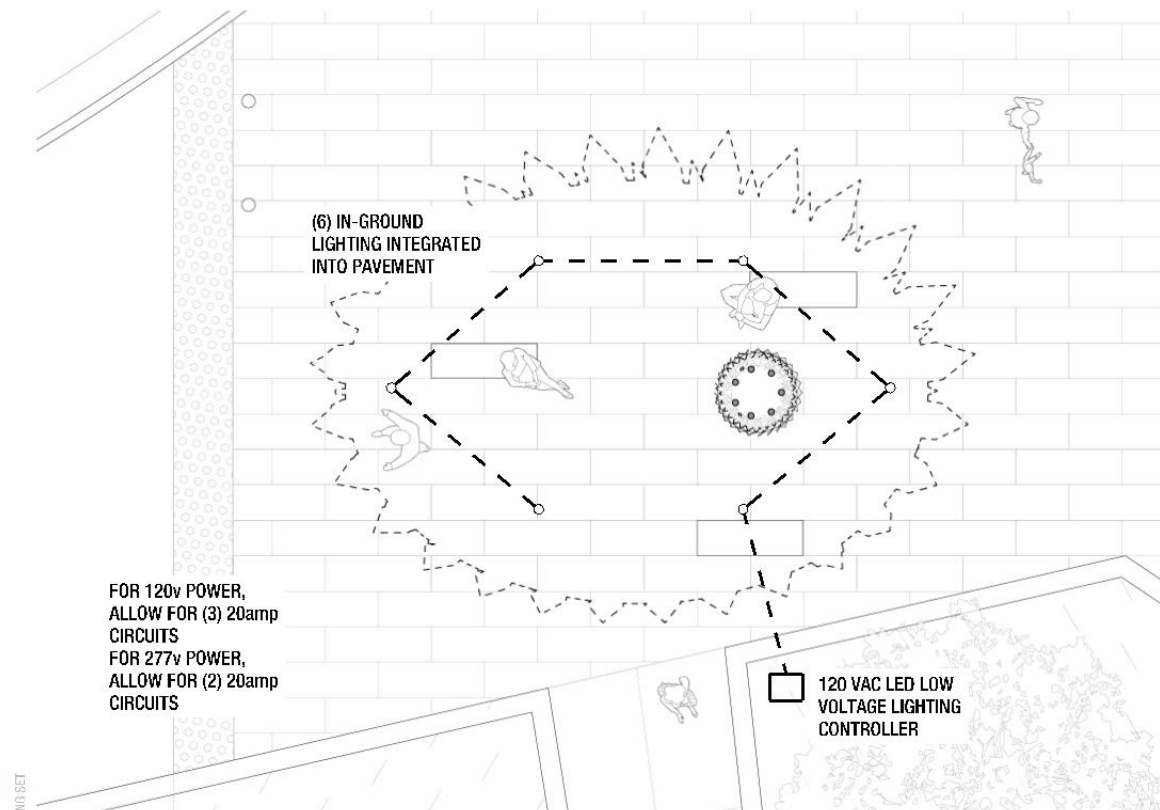


Durable thermoplastic composite resin housing
Tempered convex glass lens - fully sealed for watertight outdoor use

Light can be angled up to 25° and rotated 358°

Dimensions:
Height: 8.25" Width: 7"

Bulb Type: Halogen
Voltage: 120 (Line Voltage)



181219 DRAWING SET

2 ELECTRICAL DIAGRAM
Scale: 1/4" = 1'

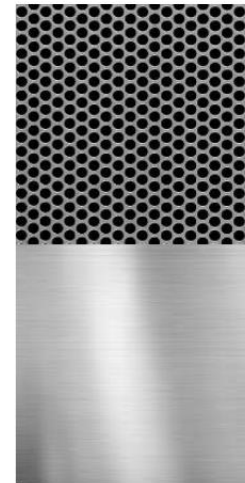
3 MATERIAL FINISHES



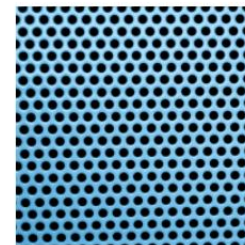
STRUCTURAL LOOPS TO BE 304 STAINLESS STEEL TUBE 1" AND 2" DIAMETER



STRUCTURAL STEMS TO BE 4" DIAMETER CARBON STEEL, GALVANIZED



PETALS TO VARY INCREMENTALLY FROM SOLID TO PERFORATED STAINLESS STEEL



INTERIOR PETALS TO BE PERFORATED STAINLESS STEEL, POWDER COATED

1 IDENTIFICATION PLAQUE
Scale: 1 : 1



NOTE: The artist will provide an appropriate identification plaque measuring at least eight inches by eight inches. The plaque shall be made of cast metal and be placed near the art piece. Information is limited to the date, title and artist.

GENERAL NOTES

1. VERIFY ALL DIMENSIONS AND SITE DETAILS IN THE FIELD.
2. SHOP DRAWINGS SHOULD BE SUBMITTED BY CONTRACTOR FOR ALL TRACES INCLUDED BUT NOT LIMITED TO STRUCTURAL, ELECTRICAL AND DATA.

LEAD ARTIST

FUTURE CITIES LAB
2325 3rd Street, Suite 229
San Francisco, CA 94107
Contact: Jason K. Johnson
<info@future-cities-lab.net>
Phone: (415) 255-4879



GENERAL CONTRACTOR

STRUCTURAL ENGINEER

ARUP
NICK SHERROW-GROVES P.E.
560 MISSION ST STE 700
SAN FRANCISCO, CA 94105
<nicks.sherrow-groves@arup.com>

ART FABRICATOR

MACHINIC
2325 3rd Street
San Francisco, CA 94107

LANDSCAPE ARCHITECT

RHAA
MEGHAN STORM, LANDSCAPE ARCHITECT, LEED AP
255 MILLER AVE, MILL VALLEY, CA 94041
415 383 7900

REVISION NOTES

01.07.2018 - ART COMMISSION REVIEW



PROJECT NAME

COSMOS

PUBLIC ARTWORK

1050 KIEFER ROAD
INTUITIVE SURGICAL INC.
SUNNYVALE, CA 94086

SHEET TITLE

DETAILS

DRAWING SCALE

As noted on drawings
Sheet size: 24" X 36"

DATE ISSUED

01.07.2018

A500







Fig 1. Anemone Canopy, Albany CA / UC Berkeley, CA



Fig 2. Lightweave, NOMA District, Washington DC

FUTURE CITIES LAB was founded by artists Nataly Gattegno and Jason Kelly Johnson. Their approach to art and design, which has been described as “high performance craft”, is deeply experiential, interactive and materially rich. Their artworks, sculptures, light installations and pavilion structures have been exhibited and installed internationally. Gattegno and Johnson were previously awarded the prestigious Architecture League Prize and the Van Alen Institutes’s New York Prize. Their studio and fabrication shop is located in the Dogpatch neighborhood of San Francisco.

Commentary > Bill Morrish, the former Dean of Parson New School of Design: *“Their work involves crossing disciplinary boundaries in a hungry search for understanding the basic premise of systems as well as their cultural poetry. They turn utility systems, biological processes, capital flows and information lines into networked architecture and public activities.”*

www.future-cities-lab.net



Fig 3. St. James Park, Levitt Pavilion, Downtown San Jose CA



Fig 4. Trilux Pavilion, Museum of Craft and Design, Proxy / Hayes Valley, SF, CA



Fig 5. Lightstream, King’s Highway MTA Subway Station, MTA Arts & Design, Brooklyn, NY



Fig 6. Murmur Wall, Yerba Buena Center for the Arts / YBCA, San Francisco, CA



Fig 1. Nataly Gattegno & Jason Kelly Johnson



Fig 2. Lightswarm, YBCA, San Francisco



Fig 3. Datagrove, Zero1, San Jose

NATALY GATTEGNO is an artist and founding managing partner of Future Cities Lab. She brings to the team an expertise in design research and urban speculation, through the lens of architecture, design theory and urban design. Nataly [b.1977] was born and raised in Athens, Greece. She received a MA from Cambridge University, St. John's College, UK, and a Masters of Architecture from Princeton University where she received the Thesis Prize and the AIA Henry Adams Medal in 2002.

JASON KELLY JOHNSON is an artist and founding design partner of Future Cities Lab. He brings to the team an expertise in parametric design and advanced digital fabrication, through the lens of critical art production and interactive technologies. Jason [b.1973] was born and raised in Canada. He received a Bachelor of Science from the University of Virginia, and a Masters of Architecture from Princeton University where he received the Thesis Prize in 2001. He has lectured and exhibited internationally.

#natalygattegno #jasonkellyjohnson #futurecitieslab www.future-cities-lab.net



Fig 4. Fabricating Waveform, Denver, CO

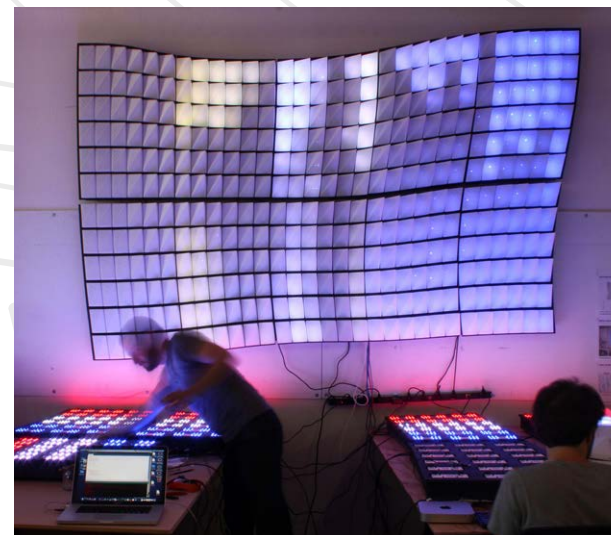


Fig 5. Fabricating Bitly Wall, New York, NY



Fig 6. Fabricating Prototypes



Fig 7. Fabricating Anemone Canopy, Berkeley, CA



Fig 1. Idea Tree, San Jose, Ca



Fig 2. Levitt Pavilion, San Jose Ca



Fig 3. King's Cross, London UK

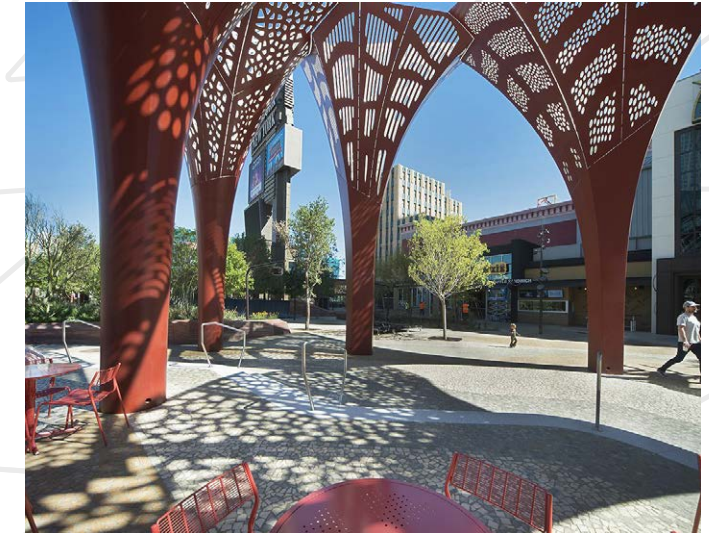


Fig 4. The Park with !Melk, Las Vegas, NV

ARUP ENGINEERS

Arup is an internationally recognized engineering firm that has collaborated on some of the world's most seminal art, architecture and engineering projects (Fig.3,4,5). Future Cities Lab and Arup are currently collaborating on the Levitt Pavilion for St. James Park in San Jose.

NICK SHERROW-GROVES, COLLABORATING ARTWORK ENGINEER

Nick Sherrow-Groves is a senior licensed engineer at the San Francisco office of Arup. Since joining Arup in 2010, Nick has worked on major projects including airports and skyscrapers, and has specialized in structural art, over the years managing the structural design for a variety of artistic endeavors (Fig.1,2,6,7).



Fig 5. Bombay Sapphire with Heatherwick, Denver, CO



Fig 6. Pier 55 with Heatherwick Studio, New York, NY



Fig 7. Swirl with Jim Campbell, Des Moines IA

