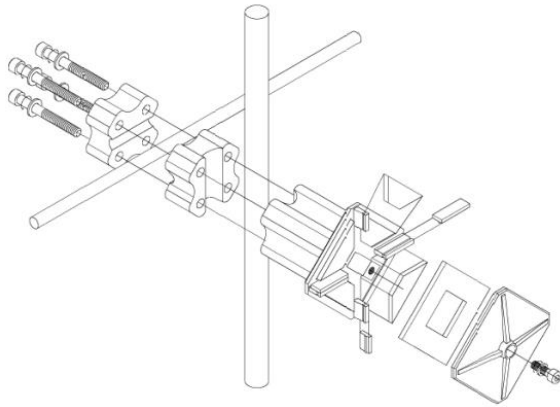
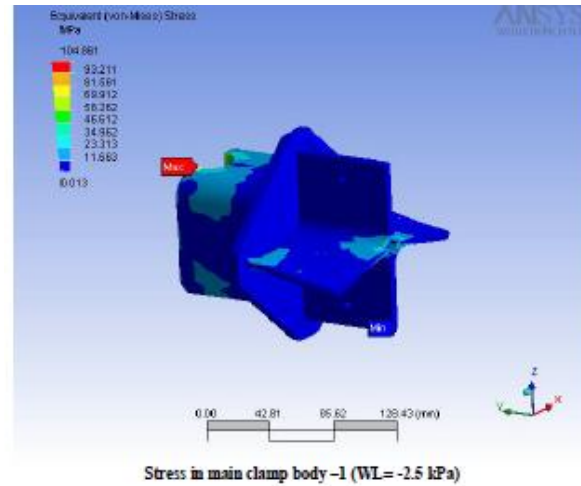




CRAFTED FEATURE FACADES



R & D APPROACH:
DETAIL, CHECK & EMPIRICALLY VALIDATE

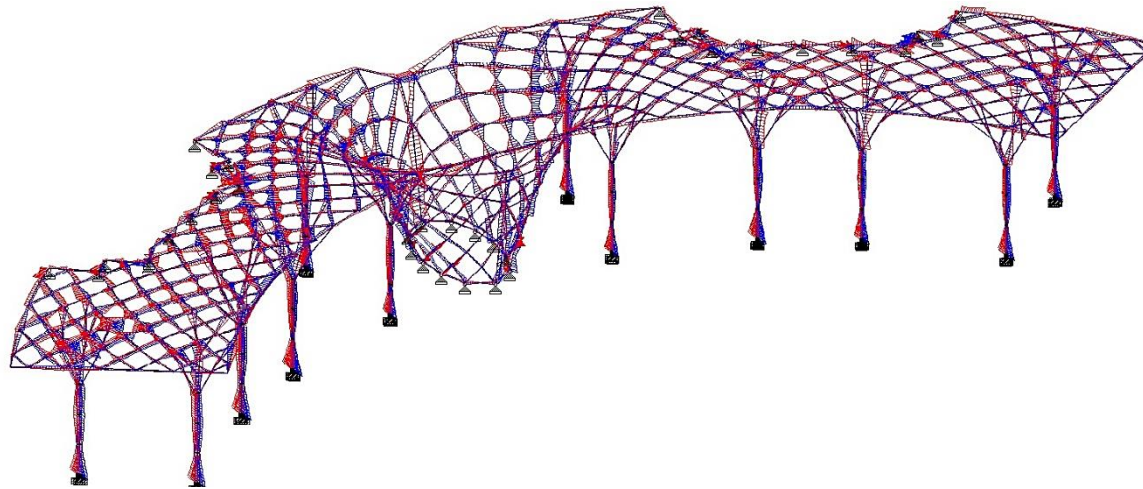


Sound architectural design depends on diligent structural analysis. To ensure that bold conceptual design becomes reality, **Civil Engineering Labs (CEL)** strives to uncover potential structural relationships that otherwise may be overlooked. We constantly push the boundaries of structural design to find safe, economical solutions to our clients' design challenges.

STRUCTURAL CONSULTANCY

*"What is **essential** is invisible to the eye."*

Antoine de Saint-Exupery



SERVICES:

PEB STRUCTURAL DESIGN

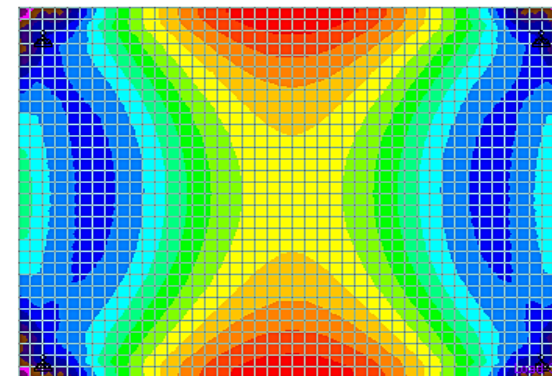
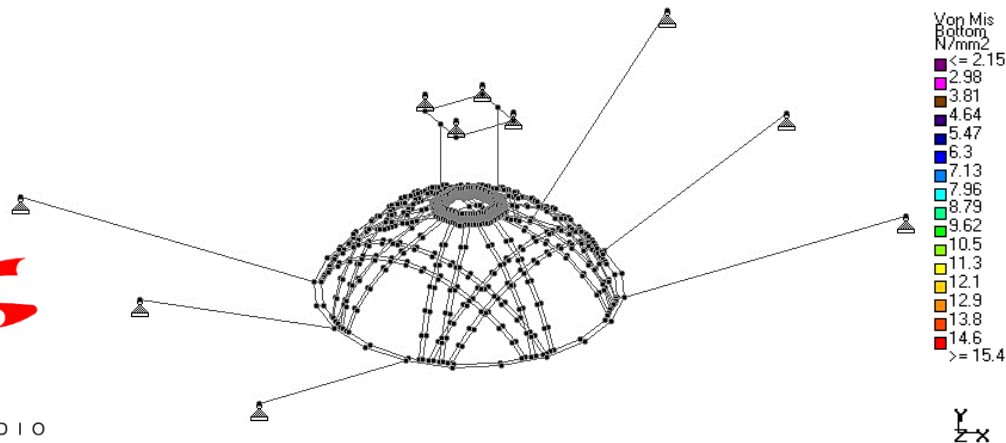
PEER REVIEW

ADAPTIVE RESTORATION

RETRO FIT STRUCTURE

BIM MODELLING

FACADE ANALYSIS

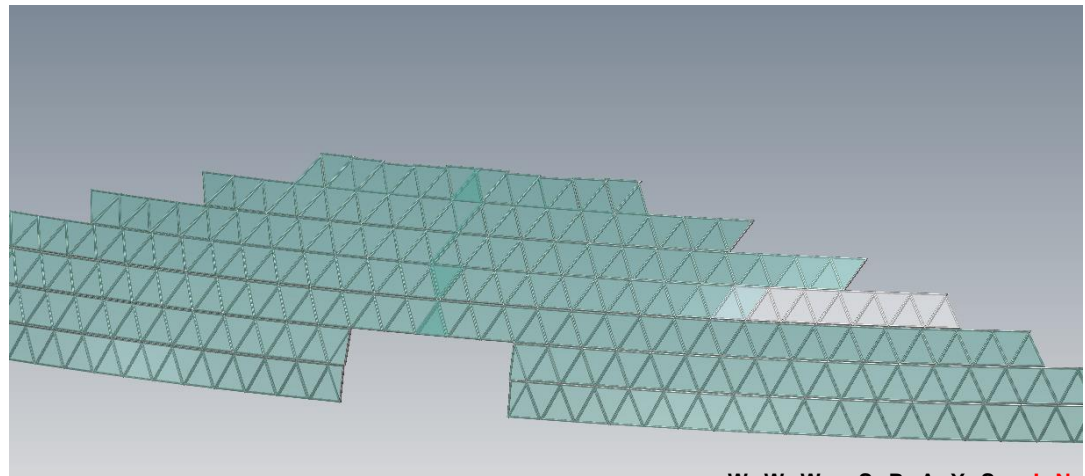
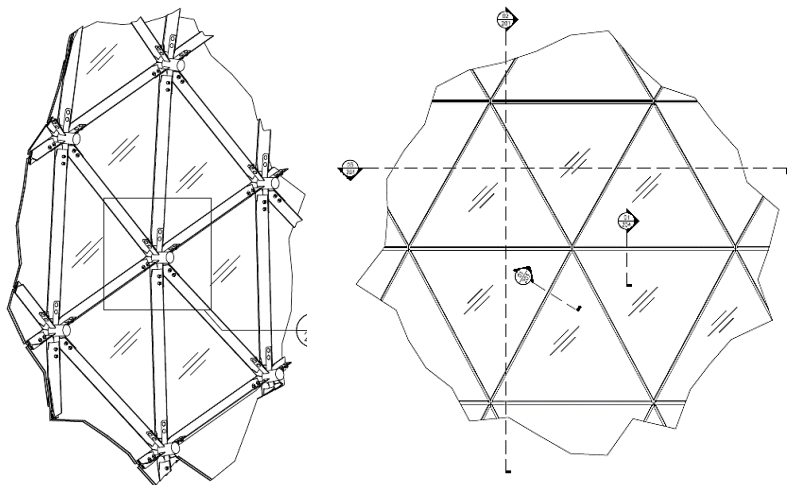
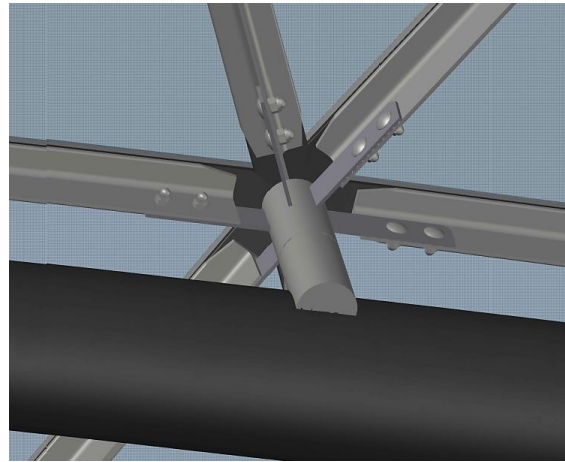
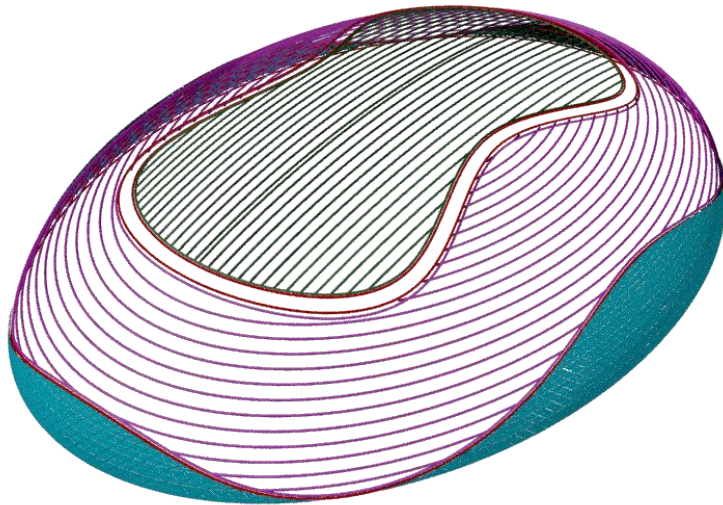


ON GOING PROJECTS

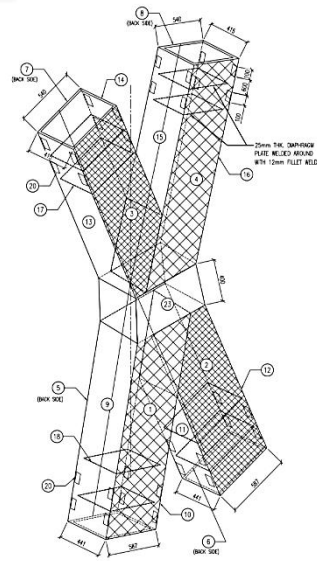
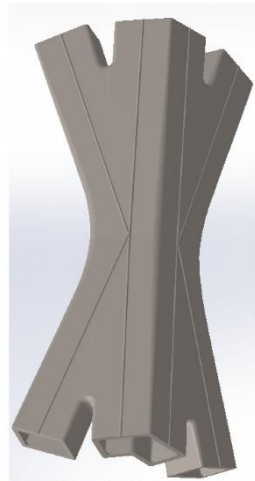
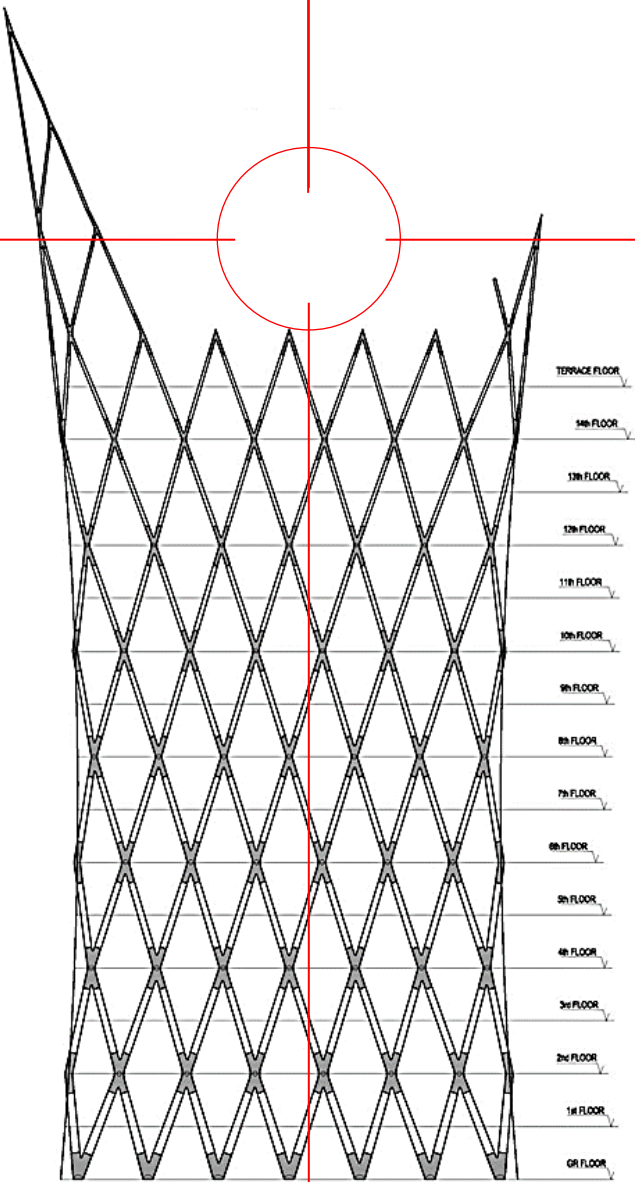
BE-SPOKE FACADES
DESIGN + BUILD

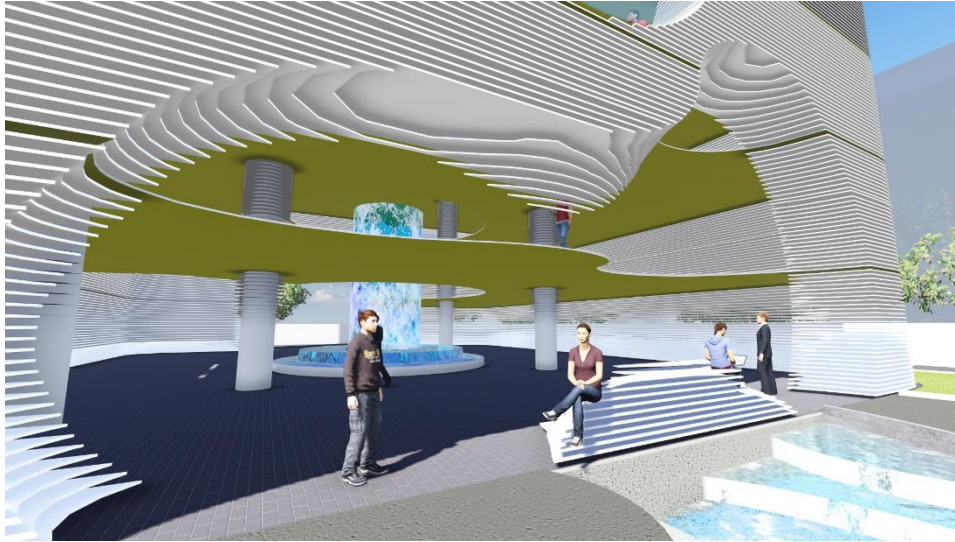
“...the *details* and the whole are one...”

Le Corbusier

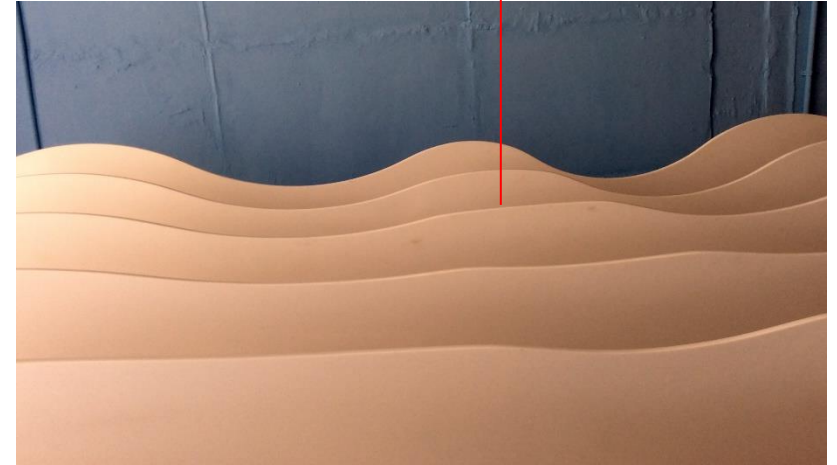


UNITED INDIA INSURANCE CORPORATION, CHENNAI – PRODUCTION ENGINEERING





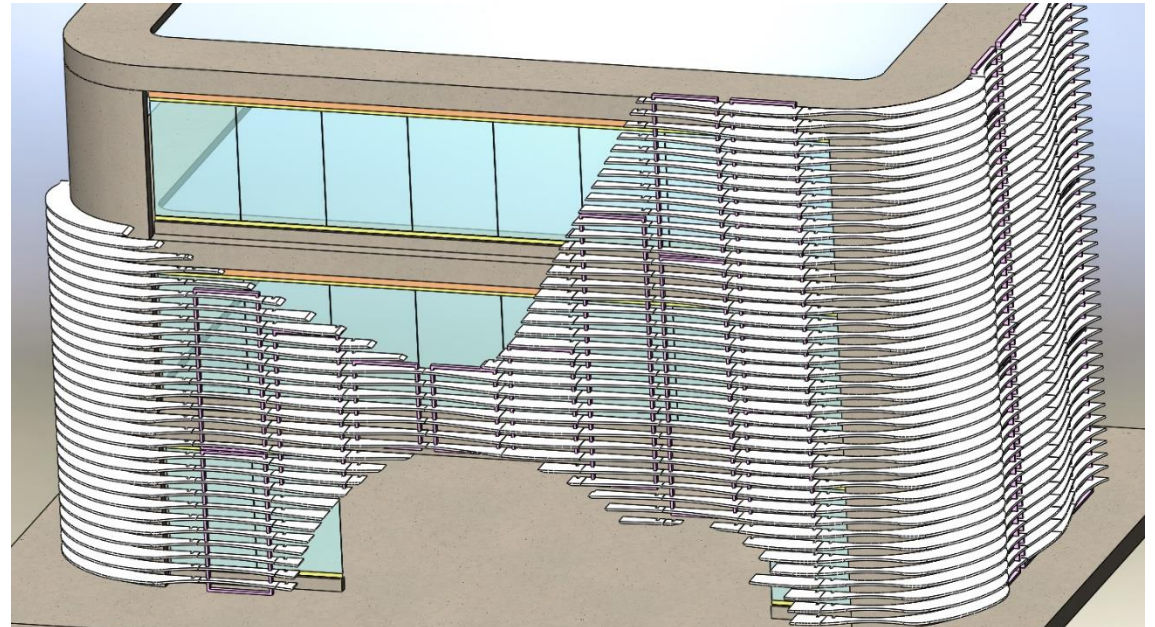
ARCHITECT'S DESIGN INTENT



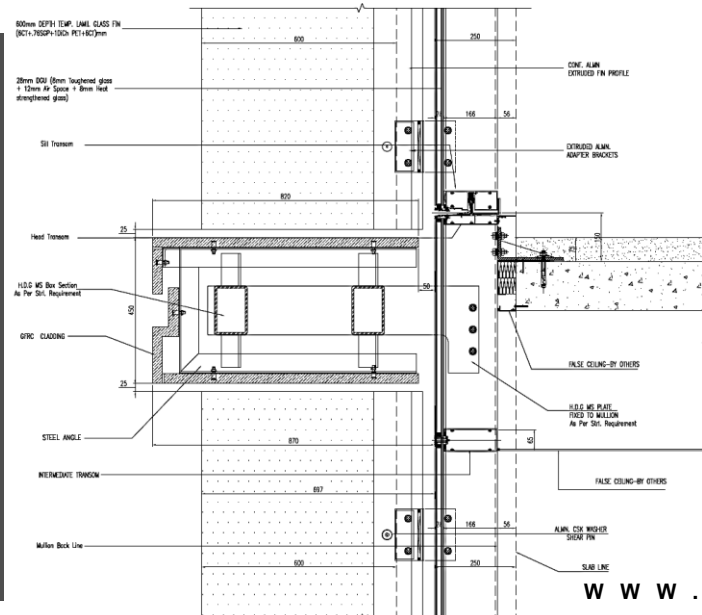
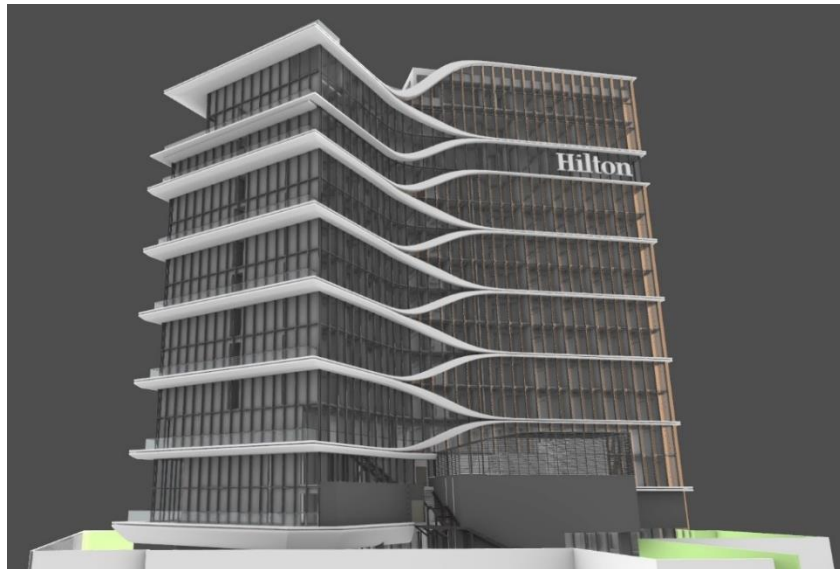
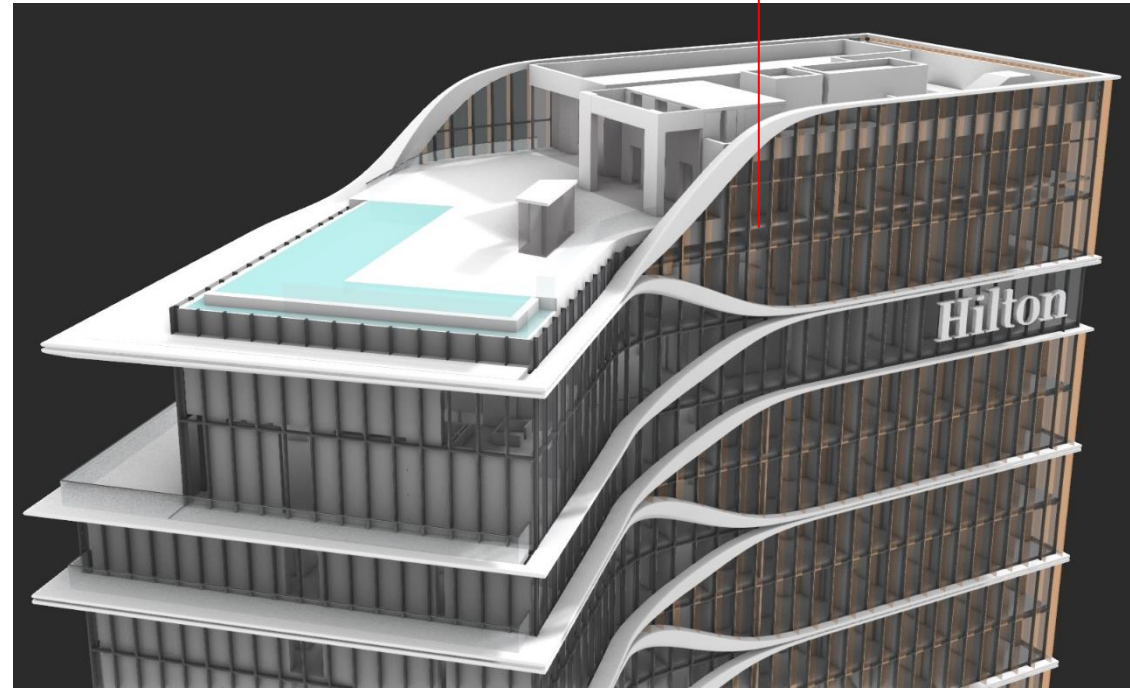
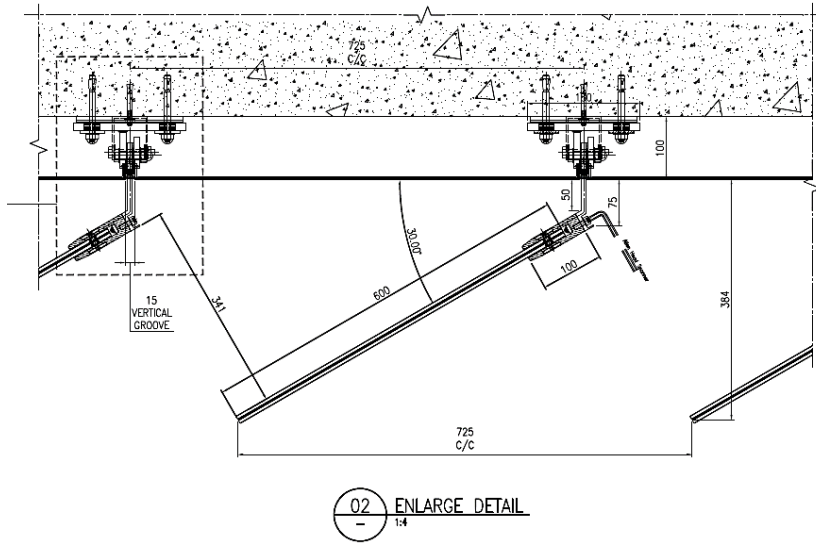
STUDIO WORK IN PROGRESS
DESIGN & ENGINEERING PHASE

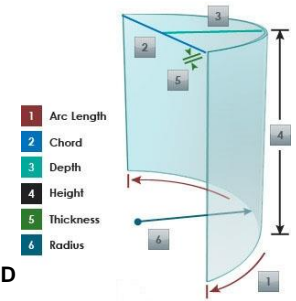
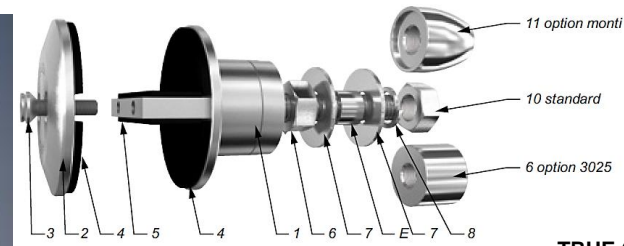
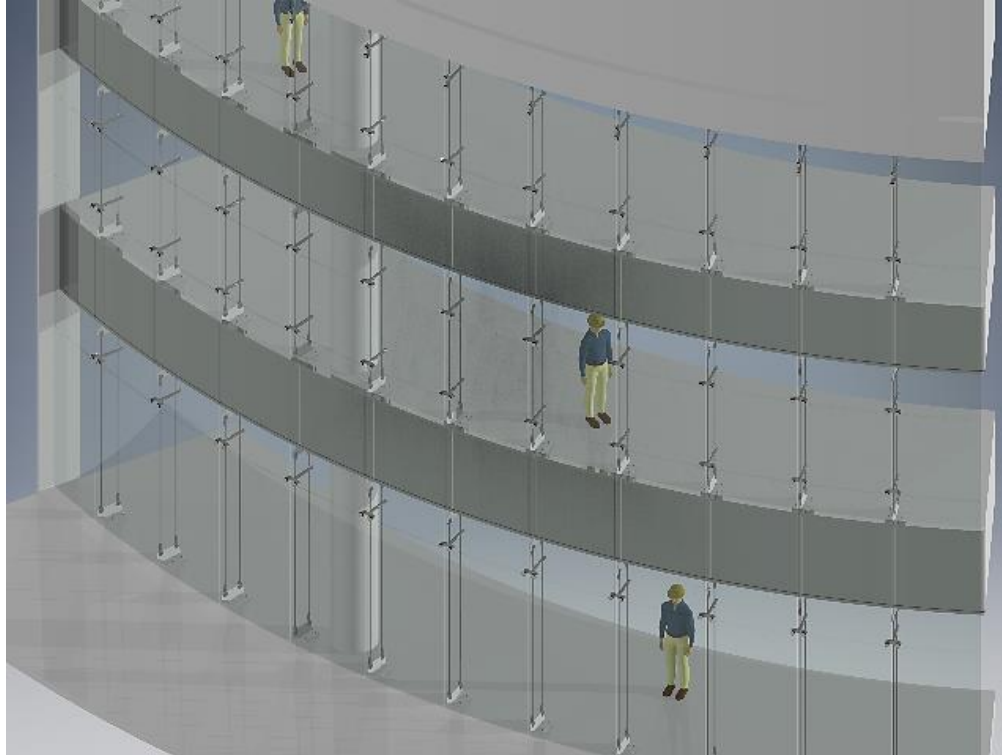


1:1 SCALE MOCK UP

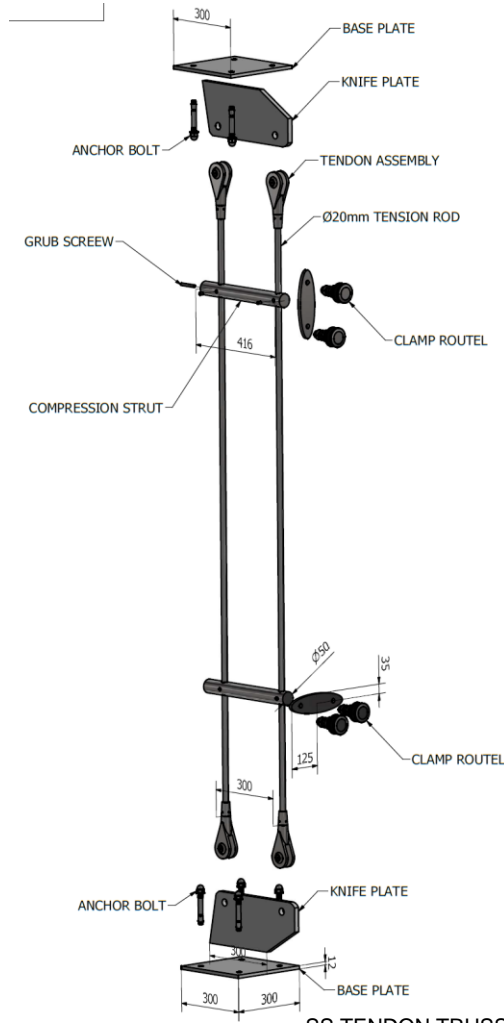


Client: **JAGDAMBA HOSPITALITY.**

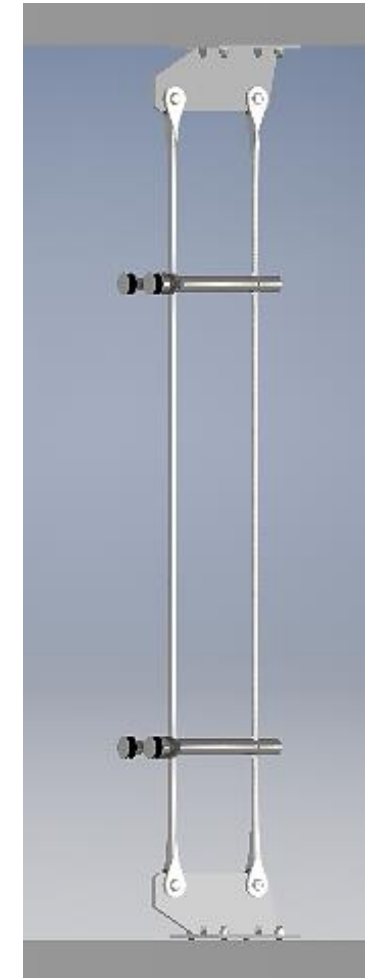




TRUE CURVED
with
POINT CLAMPS



SS TENDON TRUSS



COMPLETED PROJECTS

“...the *details* and the whole are one...”

Le Corbusier



AUDITORIUM SKYLIGHT – DIGITAL PRINTED GLAZING

SPECTRA CONVENTION CENTRE - FEATURE FACADE.

Mysore, INDIA.

Architects: ACE GROUP

BOUTIQUE

F

A

C

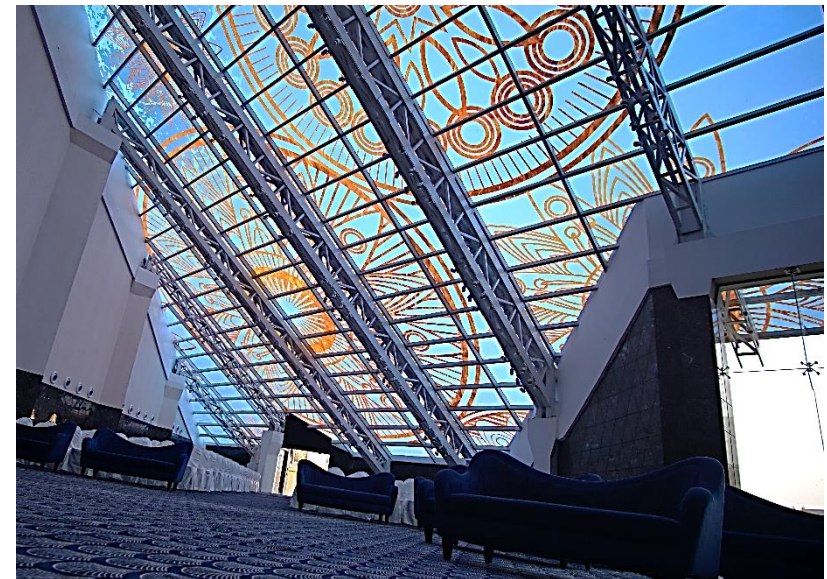
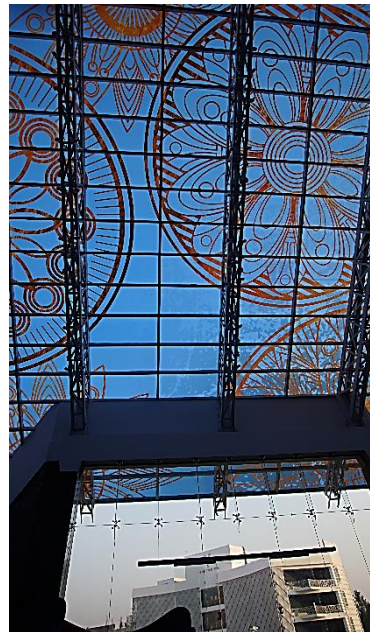
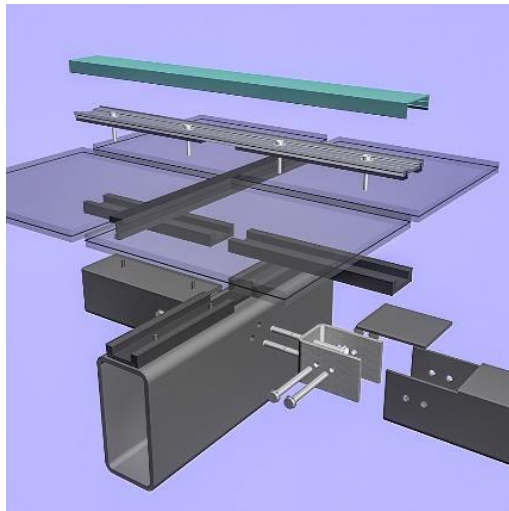
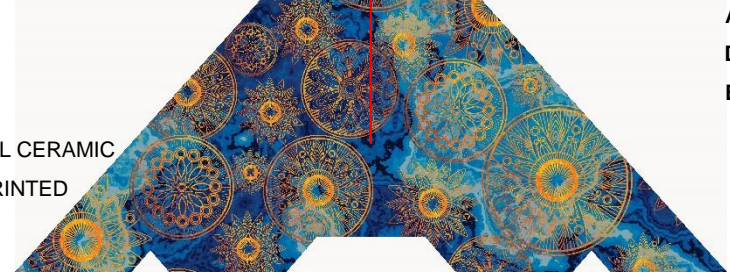
A

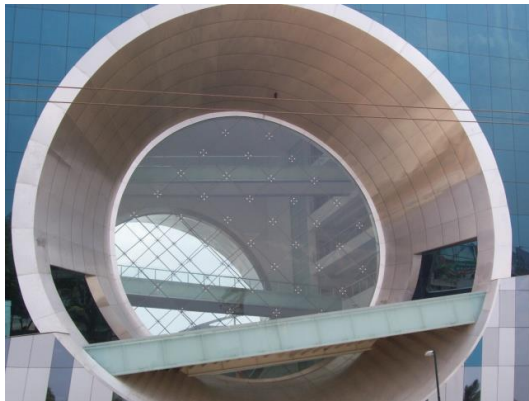
D

E

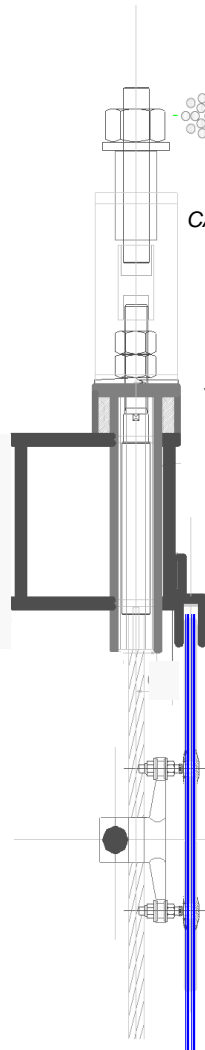


DIGITAL CERAMIC
PRINTED





POINT FIXED CABLE NET DOUBLE
FAÇADE



CABLE NET GLAZING DESCRIPTION:

The structural concept of a tensile cable net glazing is similar to a tennis racket. The cables consisting of high tensile steel intertwined individual strands of wires that are spirally coiled and drawn to form a steel rope. These 2-way cables are pre-tensioned to the required tensile load as per the structural requirement. Unlike the tension-rod truss system, this does not have too many components to align.

To remove the residual slack, a process of cyclic pre-stretching is done by the manufacturers.

This system is economical for a span greater than 12Mtrs.



TENNIS RACKET - STRUCTURAL ANALOGY

The immense tensile reactions of the cables are contained within the perimeter steel ring beam.

CLIENT: Shoba Glazing.

Coordination between ARUP and the execution team at site. ARUP concepts sketches were adapted & converted to executable working drawings as per site conditions. The spiders and cables were from Kin Long China.

Cyclic cable pre-stretching inspection along with ARUP in the Kin Long Factory.

The glass modules are:
(2000 X 2000)mm
(6CT+1.52PVB+6CT)mm

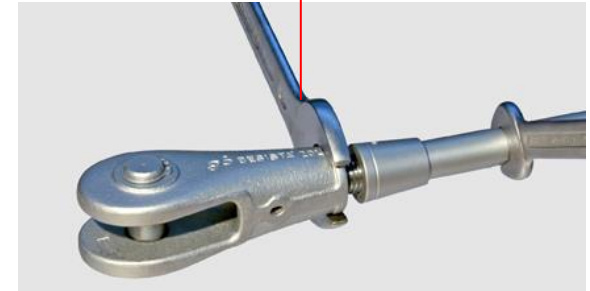
HYDRAULIC JACK ADAPTER



CABLE STRESSING PROCESS:



SITE in PROGRESS



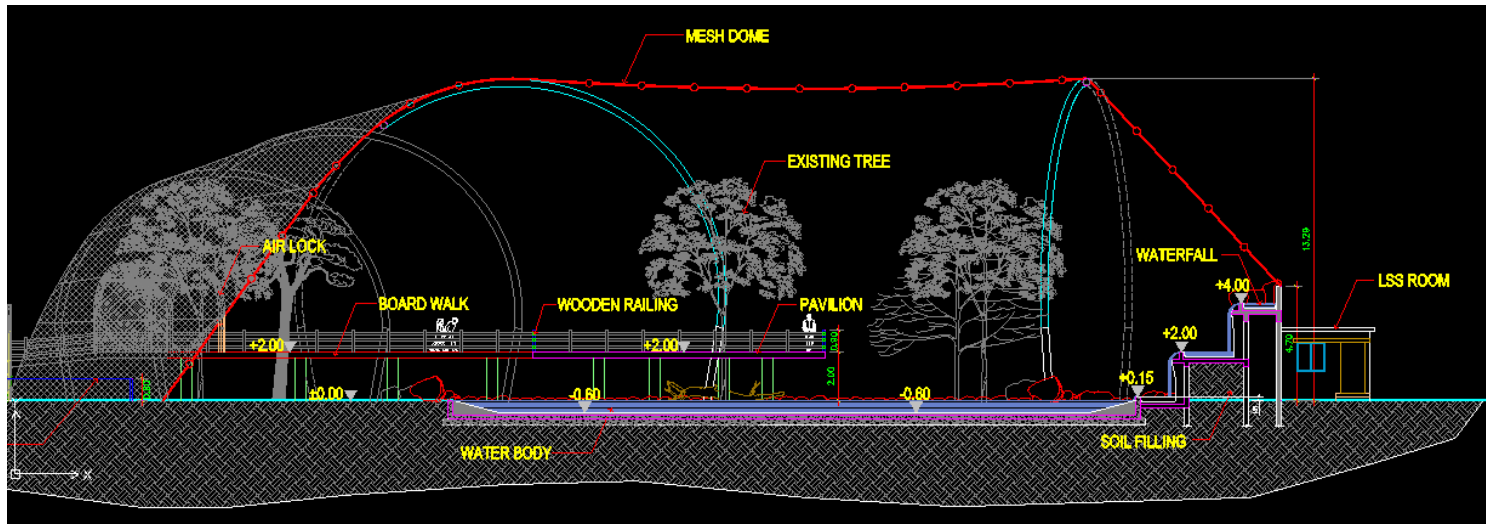
**POINT FIXED TENSION ROD
FAÇADE:**

*Kin Long SS 316 grade
Tension Rod Truss System,
with spiders rotules.*

*Segmented curved façade with
12mm clear tempered panels
set into SS structural skirting.*



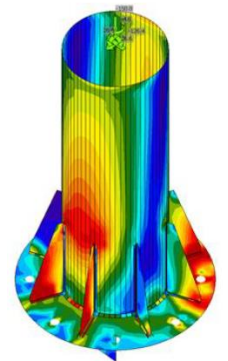
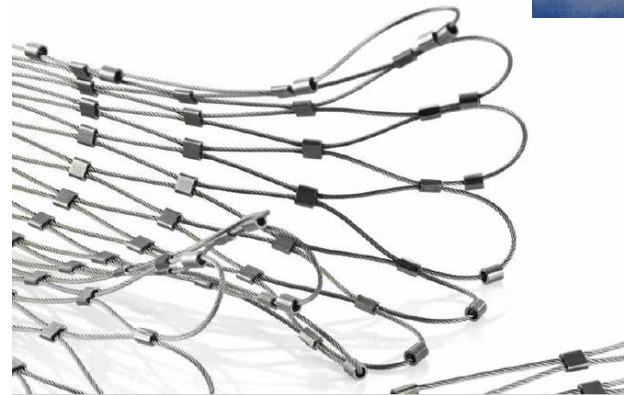




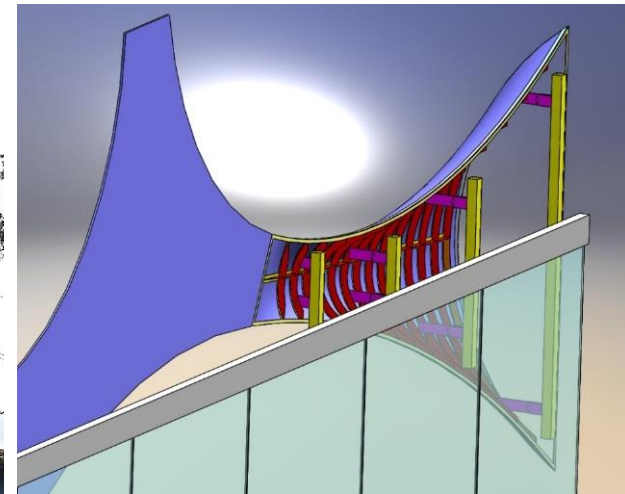
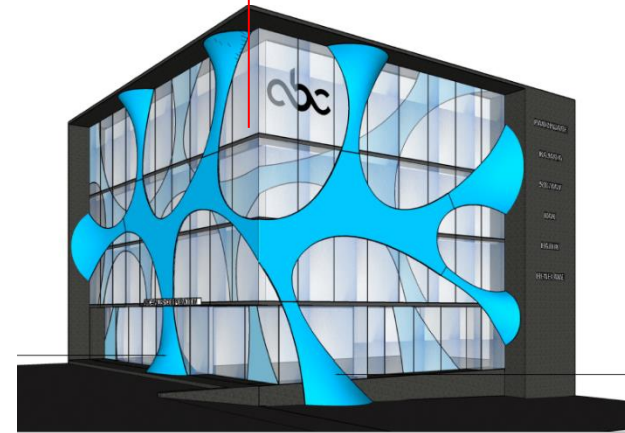
ARCHITECT'S DESIGN INTENT



HAND OVER ARIEL VIEW



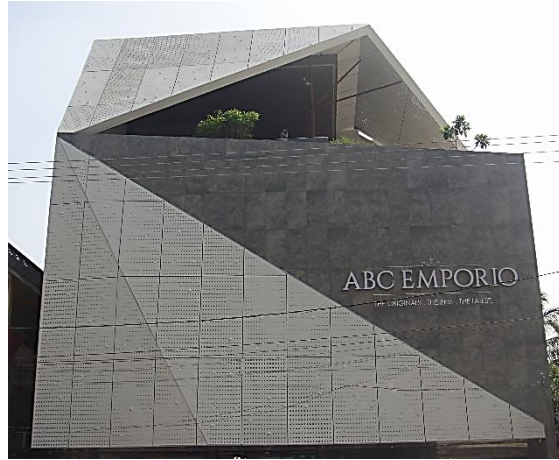
ABC EMPORIO - FEATURE FACADE.
Kannur, INDIA.
Architects: **ATMOF**



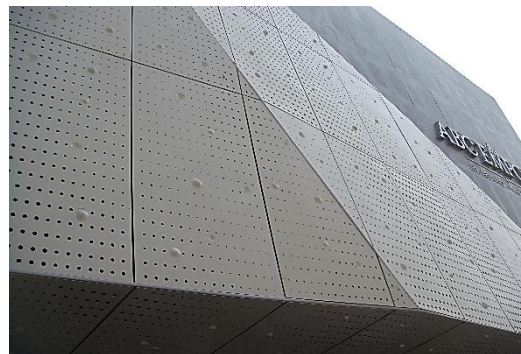
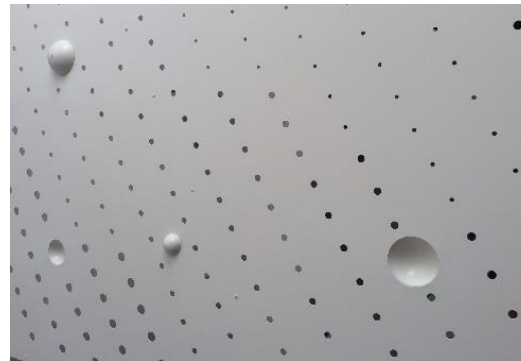
ABC EMPORIO - FEATURE FAÇADE.

Kochi, INDIA.

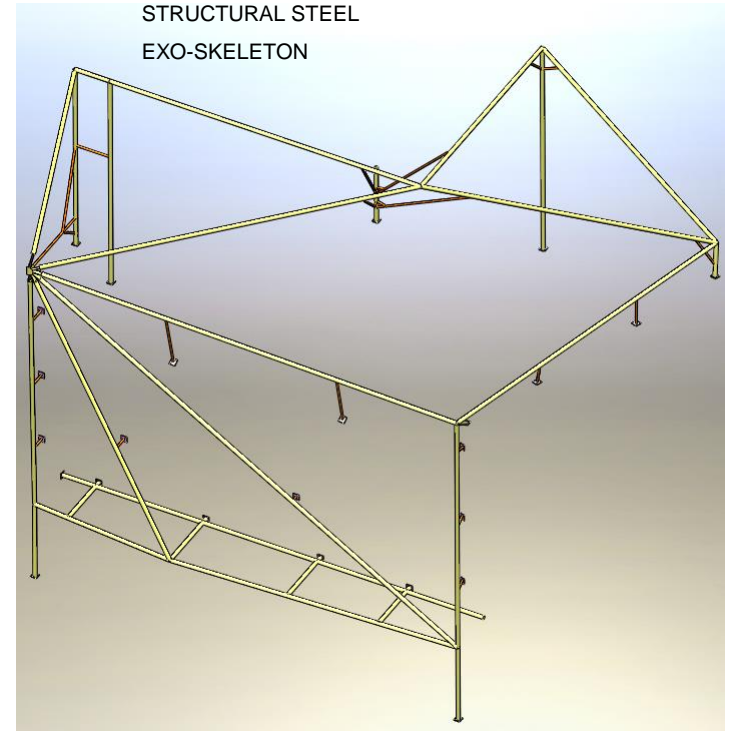
Architects: **ATMOF**

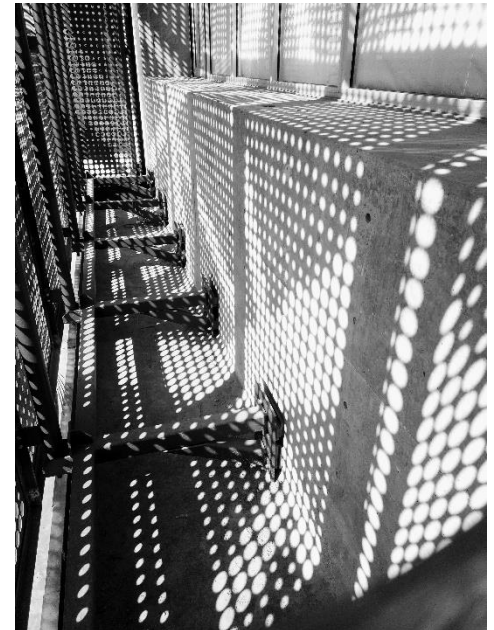
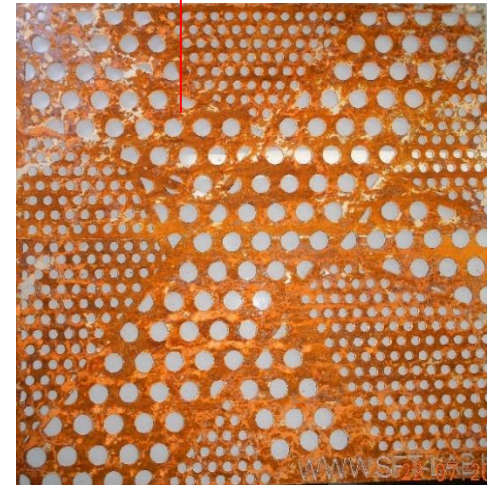


CNC PERFORATED & FORMED
PVDV COATED ALMN. PANELS.



STRUCTURAL STEEL
EXO-SKELETON





BRANDED FACADE

SCRIPT - by GODREJ

Bangalore, INDIA.

Architects: **GENSLER + FRDC**

SYNCHRO-LOUVERS



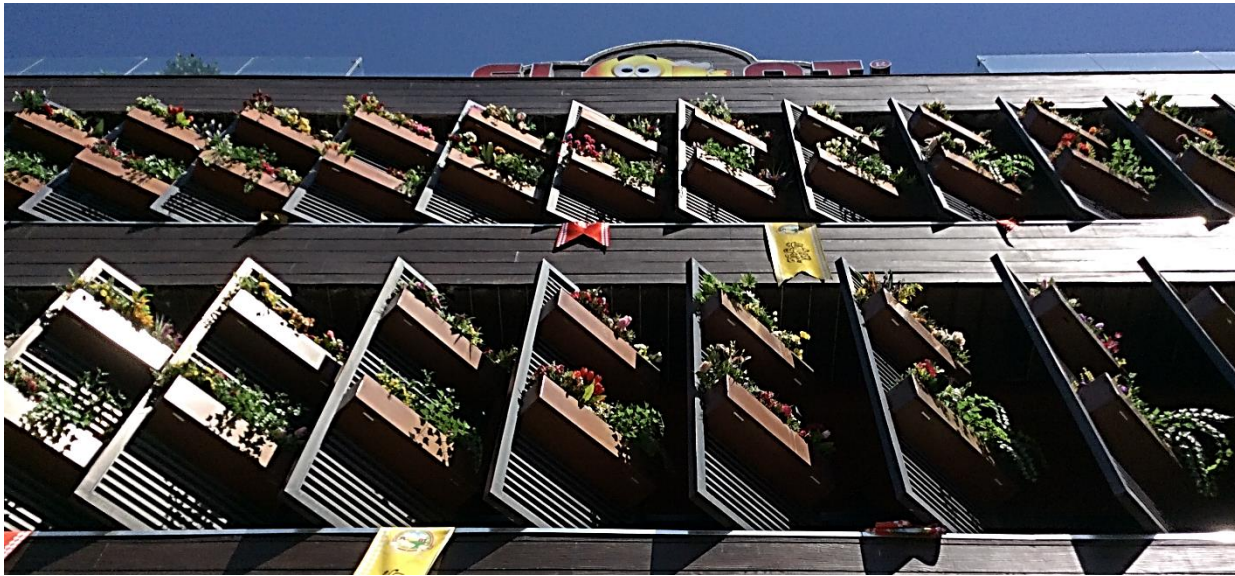
KINETIC FACADE

SYNCHRO-LOUVERS

FLOAT MICRO BREWERY PUB - SYNCHRO LOUVER FACADE.

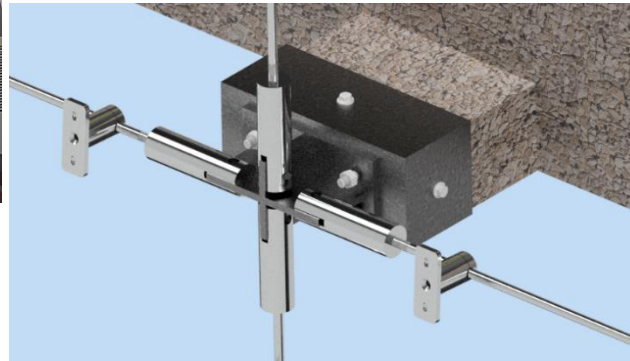
Bangalore, INDIA.

Architects: **Tilak Raj Associates**

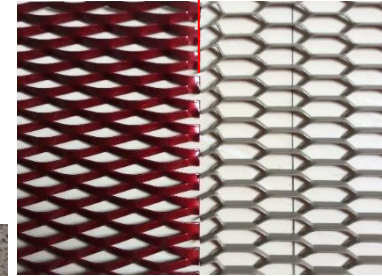




FAÇADE SCREEN



BESPOKE SS TENDON TRUSS





IMPACT SAFETY GLASS WORKS,
FRONT OFFICE.
Bangalore, INDIA



"SIGNAGE" as a FACADE

The client who is a leading glass processor, wanted us to use their in-house produced ceramic fritted glass cladding panels as an advertisement signage façade.

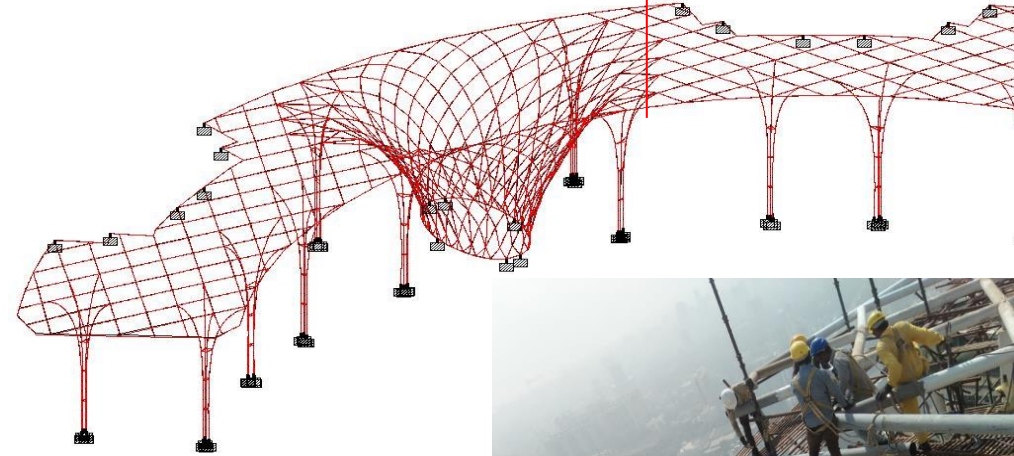
Foreign delegates visiting the industrial facility were greeted with their country's national flag suspended on cantilevered glass beams.

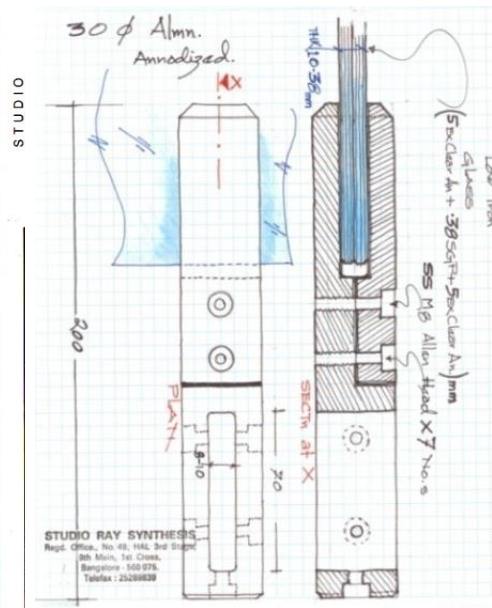
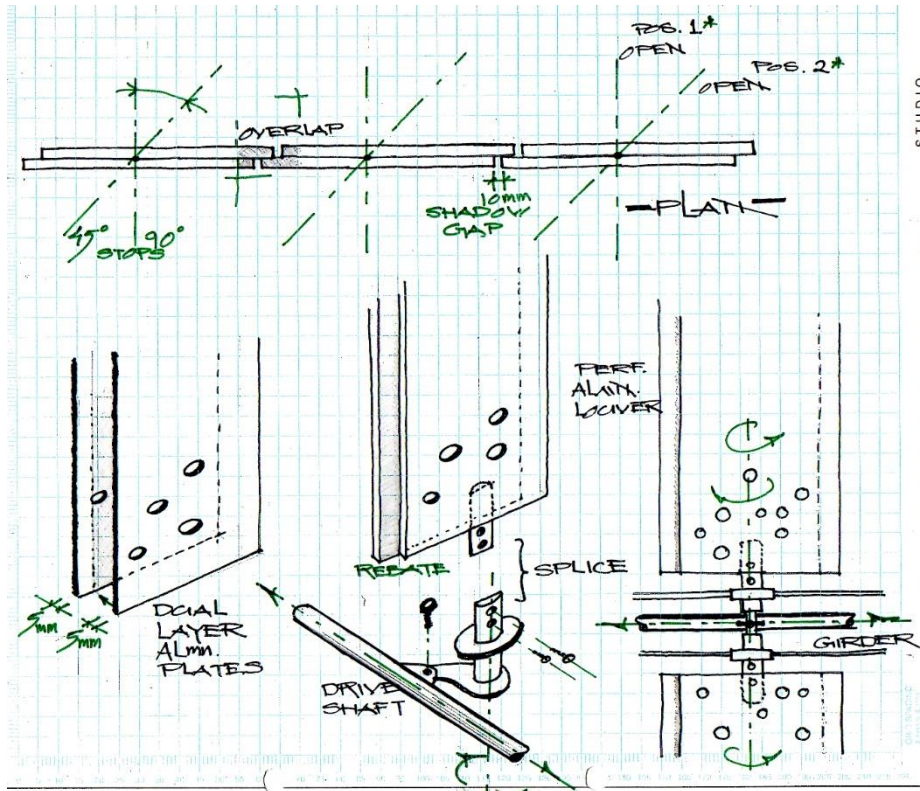
The free standing glass signage was made using DuPont's SGX custom printed PVB interlayer.



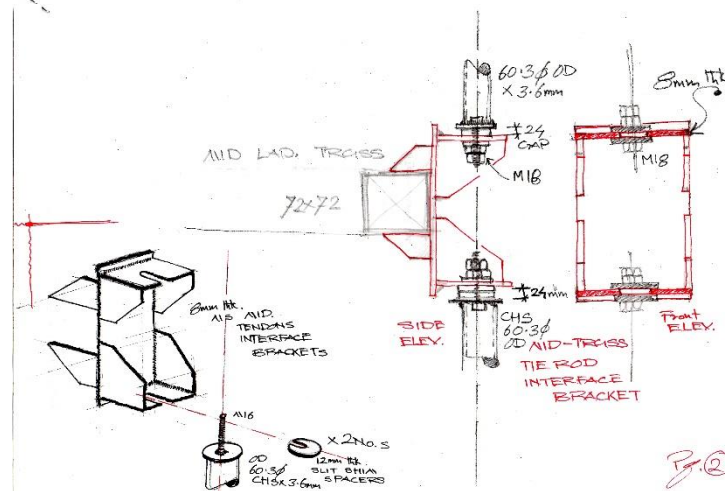
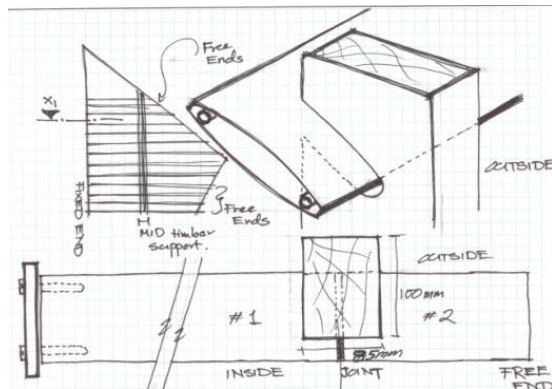
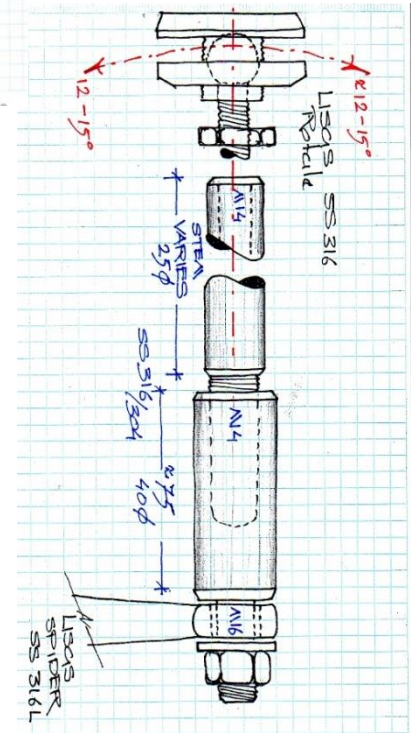
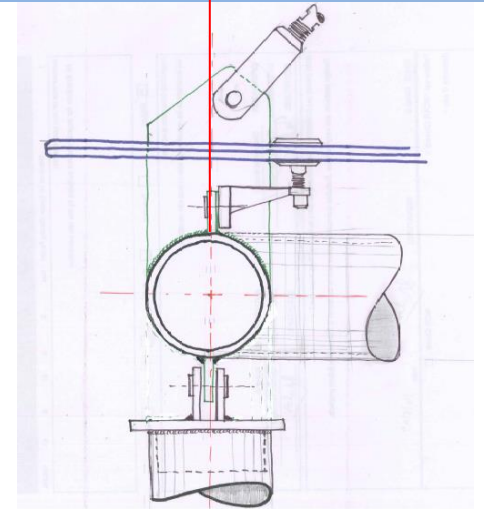
PRODUCTION
WELDED NODES

ROBO: 3D CNC PLASMA

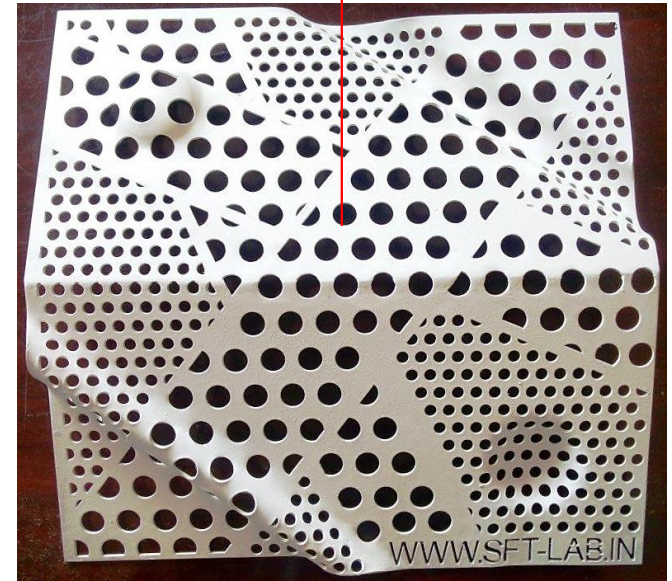
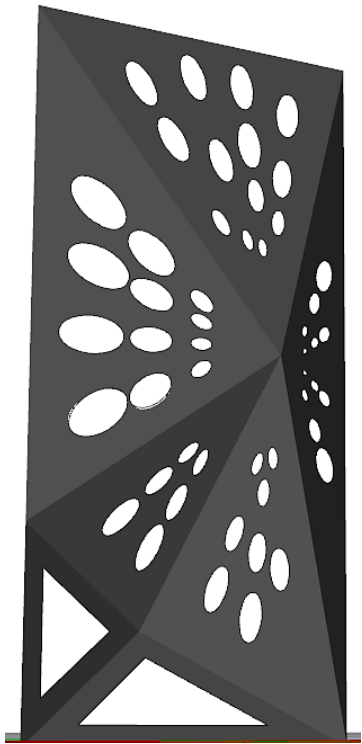


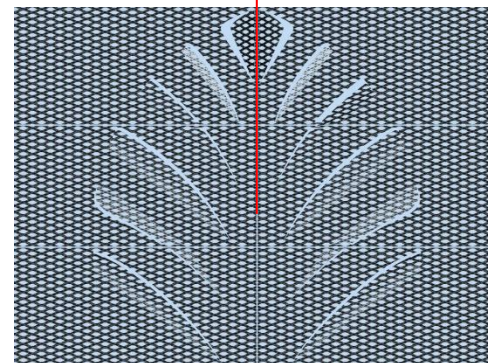
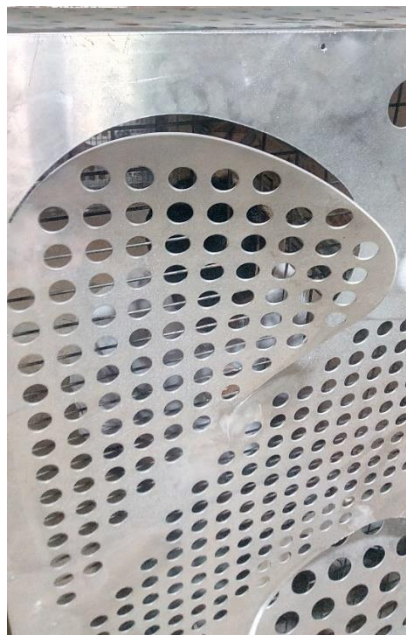


Hand sketches to resolve or convey a joinery detail is crucial at the concept stage.



APPLIED MATERIALS R & D





SCREEN MATERIALS:

FIN - CLOUD WALL

FRP / GFRC JALI

MULTIWALL POLYCARBONATE

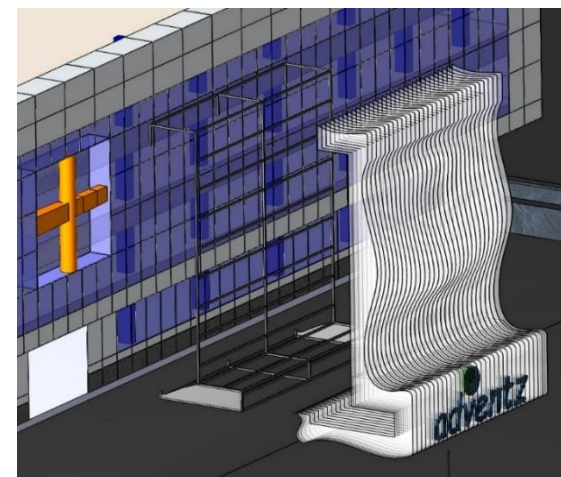
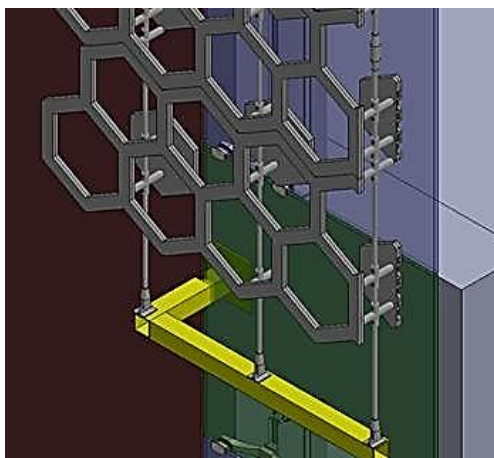
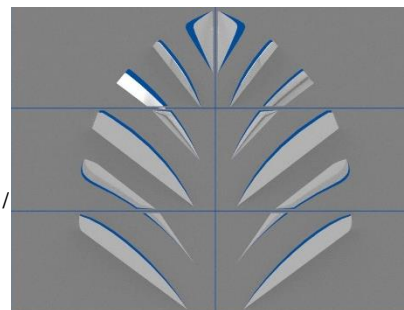
MINERAL / FIBER / CEMENT / HPL BOARDS

PRE-CAST CONCRETE

EXPANDED MESH / SS MESH / COPPER / CORIAN /
TENSILE FABRIC

TITANIUM FOIL

CORTEN STEEL / PERFORATED METAL SCREEN

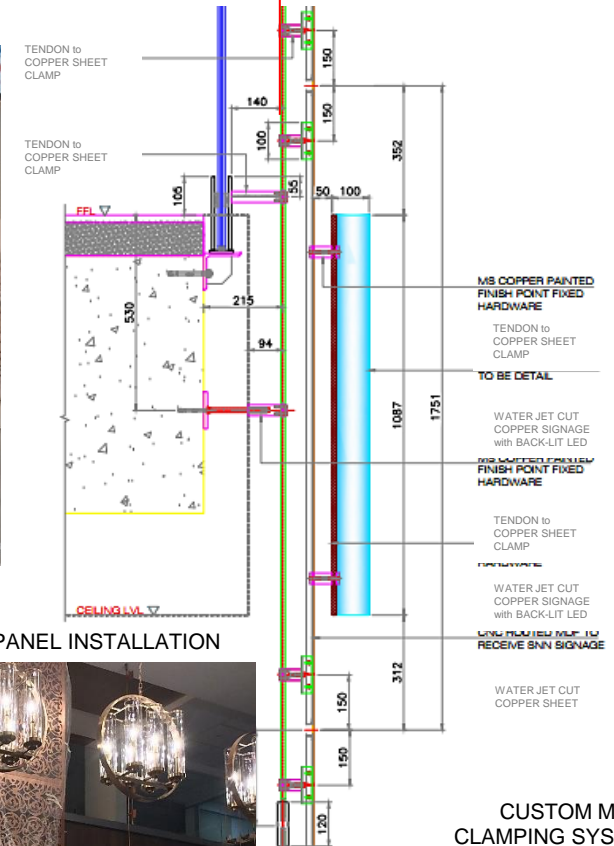


**Snn CORPORATE OFFICE – WATER JET CUT
COPPER JALI SCREEN**
Bangalore, INDIA.
Architect:: Space Matrix

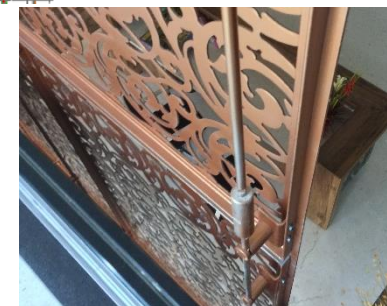
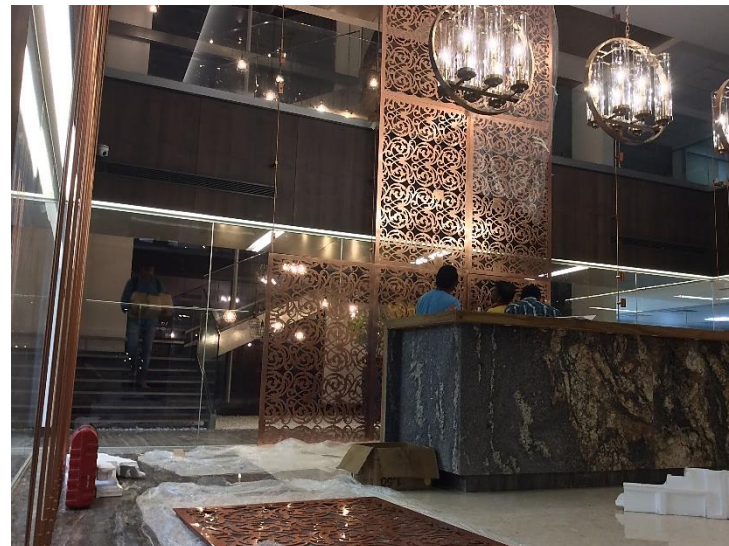
TENSION ROD SUSPENDED



COPPER SHEET POLISHING



ON SITE PANEL INSTALLATION



**CUSTOM MADE
CLAMPING SYSTEM**

I
N
S
T
A
L
L
A
T
I
O
N

A
R
T

FIBER OPTIC INTEGRATED TRANSLUCENT PRE-CAST CONCRETE PANELS

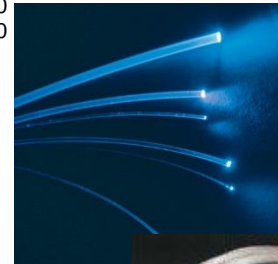


2025mm

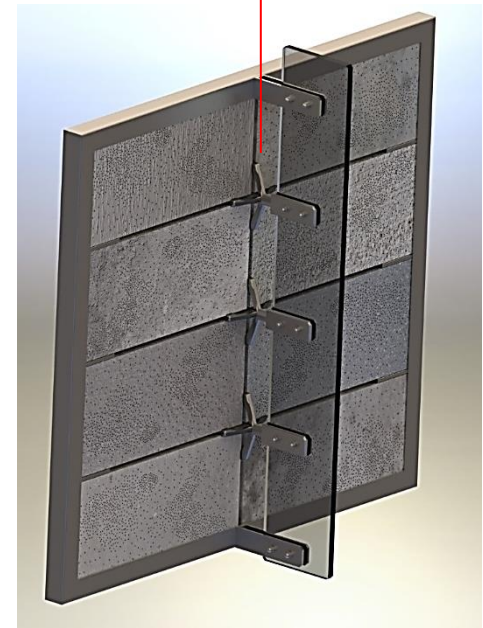
900mm



RGBW DYNAMIC
ILLUMINATION



OPTICON®



A
C
A
D
E

P
O
S
S
I
B
I
L
I
T
I
E
S

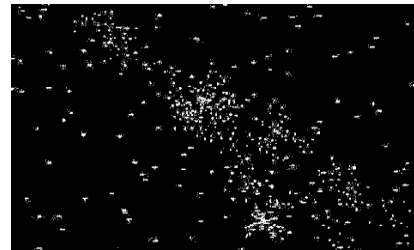
IMAGES COURTESY
LITRACON



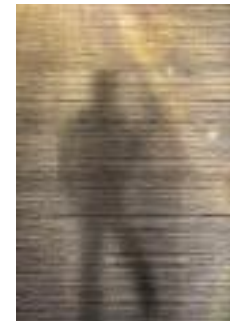
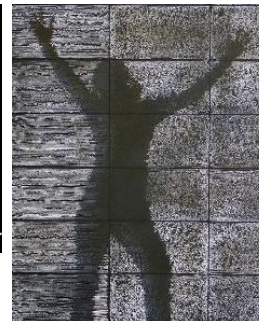
WWW.SRAYS.IN



PANEL at NIGHT signage
on



PANEL at NIGHT signage
off



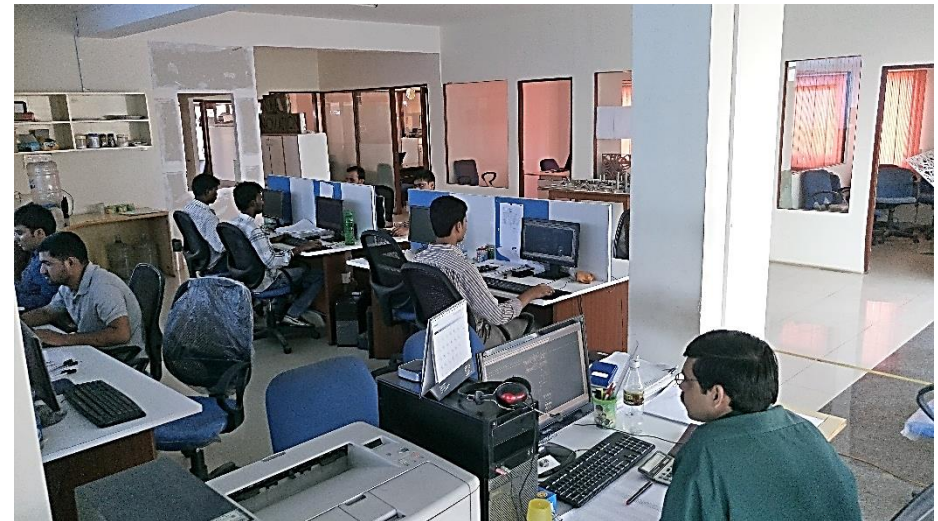
TEAM WORK



AT WORK SHOP



AT SITE



AT STUDIO

WWW.SRAYS.IN

THANK YOU FOR YOUR TIME

