

## CES FRAME CONSTRUCTION ENGINEERING SUPPLY

As Building technologies advance, innovative companies arise to provide the specialised services required for new developments. One chapter of this evolution is known as lightweight structures, a term which belies the complex nature of these forms. Lightweight structure refers to the field of complex geometric surface structures including space frames both flat grids and reticulated shells, prestressed fabric structures and cable nets. It is a challenging contemporary field much in the public eye and constantly breaking new ground in technology.

CES FRAME is the product of two decades of consistent and dedicated work in this field by the directors and staff. This firm developed from a recognition of the need for special skills in design, computer analysis and surface determination, precise manufacturing and finish requirements and different challenging erection parameters.

The group provides a total service for design/construction contracts or consultancy in specialised facets.

### FABRIC STRUCTURES

Fabric architecture is one of the more demanding forms of construction. Its simplicity of form disguises the complexities of the design.

It is probably the most honest form of construction being executed as its membrane presents any defects for all to see. No suspended ceilings and fascia claddings can hide the craft in these structures.

CES FRAME is recognised throughout the region as the field leader in design and construction systems for fabric structures. It leads the field in quality control techniques, detailing of connections and in erection technologies, as well as specialised consulting services on design for surface generation of fabric architecture.

### SPACE FRAMES

The CES FRAME space frame system represents the ultimate in aesthetics and engineering efficiency in space frame structural systems. Behind its elegance and simplicity lies the appropriate structural capability to achieve extremely long spans.

The construction system can be seen by architects and engineers as a kit of manipulate into three dimensional form without the customary loss to finishes caused by welding on site.

We maintain the highest quality specification for surface finishes with hot dip galvanizing after all fabrication followed by paint of primer plus two coats of polyurethane paint finish.

The resultant system is certainly the best available while not necessarily the most expensive and the list of projects enclosed indicates the application in prestigious throughout Thailand and Asia.

LIGHTWEIGHT  
SIMPLE  
ECONOMIC  
BEAUTIFUL  
STRONG



### PLAZA DOME

Area Diameter 16.00m. x 8.00m. Height  
Material Steel hot dip galvanized  
Finish Powder coated

CES FRAME

## COMPANY MISSION

C E S construction engineering supply

Design, manufacture, construction and installation of lightweight structures

- Space frames
- Tension fabric PVC/Polyester and PTFE/Glass structures
- Sun shade system
- Aluminium eclipse louvre
- Smoke and air ventilation roof
- Roof Sky light
- Engineering consulting design service

## SERVICES

- Feasibility study of architectural and engineering proposals
- In house architectural and engineering design of tension structures and space frames
- In house manufacturing facilities for
  - Space frame
  - PVC/Polyester/Fluoropolymer fabric structures
  - PTFE (teflon)/Glass fabric structures
  - ETFE/Foil (ethyl tetrafluorethylene foil) fabric structures
  - Electrical control system
- Project management of innovative structures
- Experienced construction crews
- Full design and construction package of lightweight structures and air ventilation control

CES Frame is committed to provide clients with the highest quality service and product.

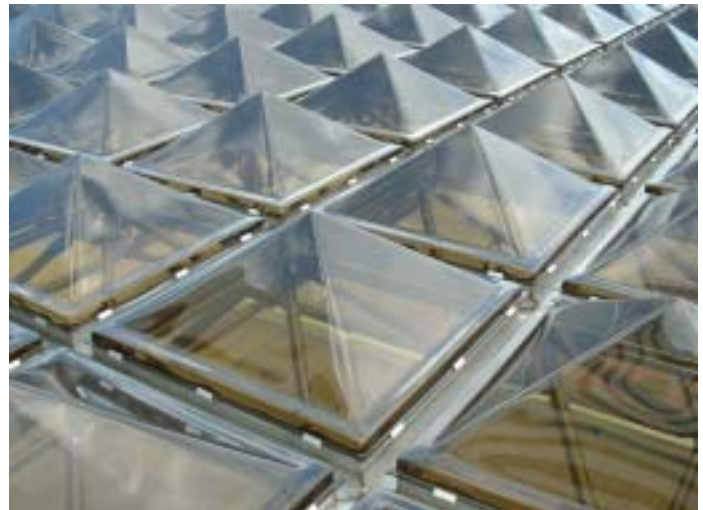
## DIRECTORATE OF MILITARY OPERATE

Year of installation / 2002.....Area / 180.00 Sqm.

Material Stainless steel

Finish Satin finish

Roof 5mm. Pyramid Acrylic plastic



## FABRICS

In the construction of lightweight tension structures, the fabrics used are grouped into

- PVC/Polyester/Fluoropolymer material
- PTFE/Glass material
- ETFE/Foil

### PVC/POLYESTER

PVC/Polyester fabric have been used for structural membranes in the field of textile roofing for more than 30 years. the properties of the material have constantly been optimised. Membranes made of PVC/Polyester fabrics are chosen for roofs with different requirements. Among these, three are open roofing, roofing for closed buildings as well as retractable membranes.

### PTFE/Glass

PTFE/Glass has already been used for constructive membranes in the fields of textile roofing for more then 25 years. Due to the excellent properties of the fluoropolymer coating in every respect this fabric is recognised as optimal membrane material is used for open roofing as well as for roofing for closed buildings.

structural membranes are made from high strength glass fiber woven fabrics, coated with PTFE - a material mixture well-known for its excellent dimensional stability, longevity and light weight. This material gives engineers and architects an exceptional freedom of design for all kinds of buildings and shade structures. Furthermore, these fabrics are not affected by extreme weather conditions, they are fire resistant, energy efficient and their non-stick properties make them substantially self cleaning.

### ETFE/Foil

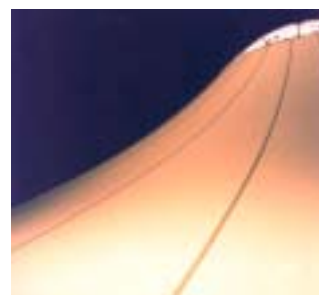
ETFE/Foil has been used for membrane roofings for decades. Due to the excellent properties of the fluoropolymer film in every respect, ETFE/Foil can be used for any application that needs transparency. this material is used for open roofing as well as for roofing of closed buildings.

Fluoropolymer membranes such as the current ETFE (ethyl tetrafluorethylene) foils are used in increasing numbers for transparent and highly translucent roofs and/or facades. The following technical data refers to ETFE foils only. The data of other, less common, transparent foils may be different.

Transparent membranes are becoming more and more important, particularly where transparency to the whole spectrum of natural light is required, and is to be combined with a lightweight structure to create an economical solution.

ETFE membrane is principally used in pneumatic, multi-layered systems. The maximum span width depends on the imposed loads and required geometry of the individual elements. For small span widths single layer ETFE can be used. Multi-layered systems allow projects with varying physical requirements to be accommodated.

Owing to the outstanding physical characteristics of this material a long life expectancy is guaranteed, with no reduction in aesthetic appearance.



### CES fabric dome

Design Architect/Architect.....CES Frame  
Year of installation\2002  
Area 500 Sqm.  
MaterialPVC Fabric Type FR.700  
Finish PVDF Top Coating