

## TE, Consulting Engineer

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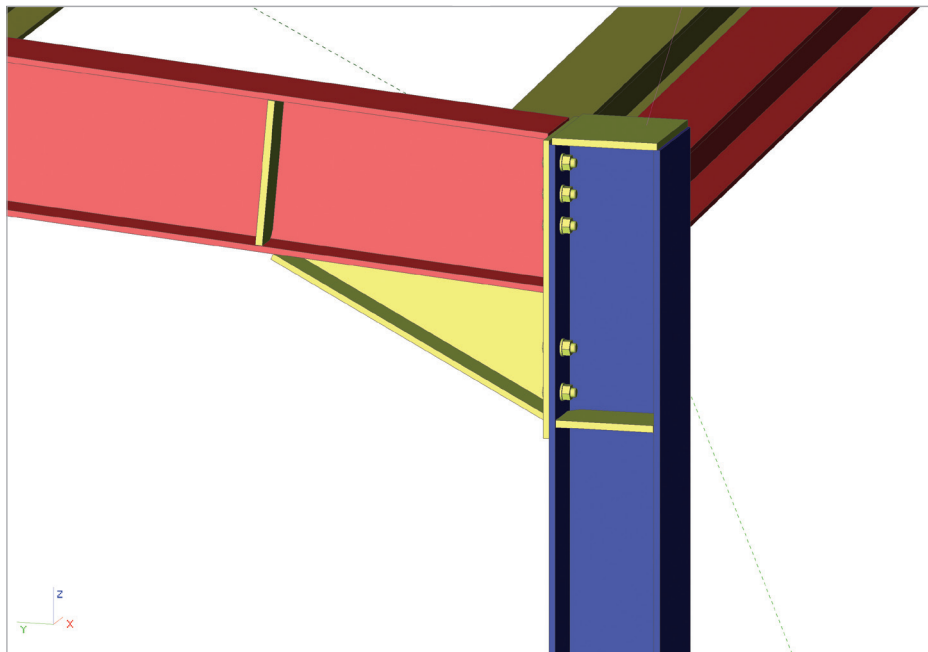


TE, Consulting Engineer was founded in 2007 to provide the following Civil Engineering Services:

- Technical advice for the development of new buildings.
- Technical advice for the restoration-upgrading of existing buildings.
- Structural design of new buildings (concrete, steel, composite, timber and masonry structures).
- Structural design and assessment of existing buildings.
- Supervision of civil engineering works.

Thanks to our experience and our knowledge, we can accomplish even the most exacting projects.

TE, Consulting Engineer has managed over 50 projects in Greece.



Software: Scia Engineer

## Extension of Single-Floor Shop - Chania, Greece

### Introduction to the project

The project included the extension of an old single-floor shop, made out of concrete in 1984. The free acreage was limited because an avenue passed through the land few years ago.

### Description of the project

The geometry of the floor plan of the extension is trapezoid. The large side is 9.25 meter, the narrow side 7.90 meter and the length about 29.20 meter. The height of the structure is about 4.30 meter. The access for the cranes to the land was easy through the main avenue.

### Approach

The owner wanted the old building and the extension to be as one shop. He wanted the construction to be finished fast in order to be able to rent the place. We suggested a steel structure to reduce the cost and save time.

In our design, we put a steel frame near the old concrete columns. The distances between the old columns were not equal. We used HEA200 cross-

sections for the columns, IPE270 for the beams, IPE160 for the purlins and SHS for the wall and the roof bracing.

### The use of Scia Engineer for this project

We measured all the dimensions of the old building and we designed the building in dwg format. The next step was to import the dwg drawing in Scia Engineer. After that, at which we used the line grid and the spans options, we started the 3D model.

The model was finished in no time. The next step was to make all the load cases, the load groups and the load combinations.

### Load groups

1. G : permanent
2. S : snow
3. W : wind
4. E : seismic

### Load cases

1. LC1 : self weight
2. LC2 : panel's weight
3. LC3 : snow
4. LC4 : seismic Y
5. LC5 : seismic X
6. LC6 : wind X+
7. LC7 : wind X-
8. LC8 : wind Y
9. LC9 : wind roof

### Load Combinations

1. EN-ULS
2. EN-SLS
3. EN-seismic X
4. EN-seismic Y

We used "line force" on beam for the wind and the snow loads according to the Greek 'Actions Code'.

After the linear and the modal analysis we made section and unity checks for all the members. We also proceeded to the serviceability check for the main beams.

Scia Engineer's Autodesign feature was used to reduce the cost of the construction.



# Extension of Single-Floor Shop

Chania, Greece

### Project information

Owner: Helen and Dimitra Lafata  
Architect: Stefanaki Kalliopi, Tsolakis Eleftherios  
General Contractor: Morfometal  
Engineering Office: TE, Consulting Engineer  
Construction Period: From June 2010 to August 2010  
Location: Chania, Greece



### Short project description

*This project includes the extension of an old single-floor shop on the island of Crete. The geometry of the floor plan of the extension was trapezoid and the columns were not positioned at equal distances. A 3D model was designed in Scia Engineer, this for specific studies regarding the seismic design of the building. Wind and snow loads have also been calculated according to the Greek 'Actions Code'.*

