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COUNTRY PAPER
ON
PREFABRICATION FOR INDUSTRIAL CONSTRUCTION 1/

by

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PREFABRICATION FOR INDUSTRIAL CONSTRUCTION

I. CURRENT STATUS

In Greece they use three main categories of construction for industrial buildings:

- Conventional construction
- Construction with metallic prefabricated elements
- Construction with prefabricated concrete elements of heavy or light type

Originally for prefabrication of industrial buildings, they used metallic elements and from the year 1970 they began to use prefabricated concrete elements.

The use of prefabricated concrete elements confront the competition of conventional construction.

Today there are in Greece about 10 considerable industrial construction firms of prefabricated concrete elements and several firms of metallic constructions.

I.I. PREFABRICATION WITH CONCRETE ELEMENTS

From 1970 till today about 500.000 m2 of industrial buildings have been constructed.

About the 80 % of the above construction have been done by elements produced in factory, and the 20 % by elements produced in field.

The following normalized elements are used for the construction of industrial buildings.

a) For one-story industrial buildings:

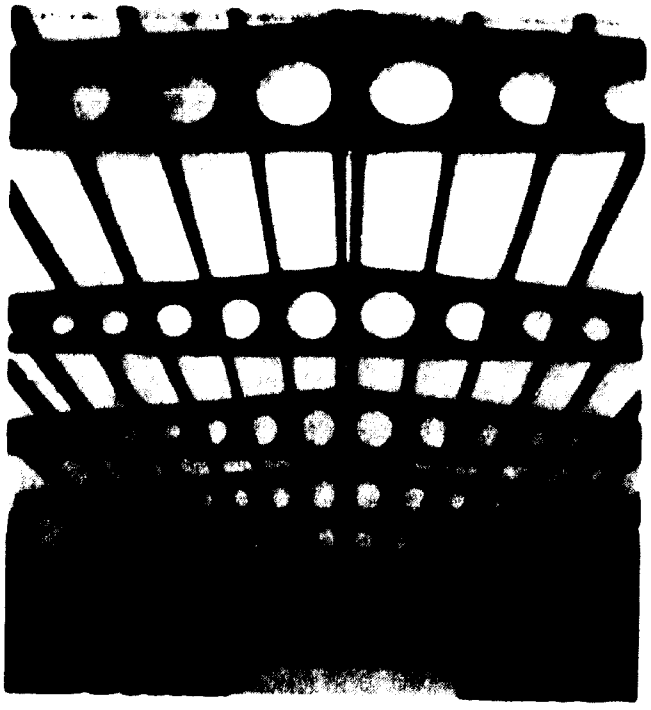
- Saw toothed roofs (Shed roofs)
- Double pitched roofs
- Wide span shell rooofs
- Flat roofs (Double "T" beam roofs)
- Linear arc bearers
- Simple supported triangular bearers
- Parabolic are bearers

b) For multi-stories industrial buildings:

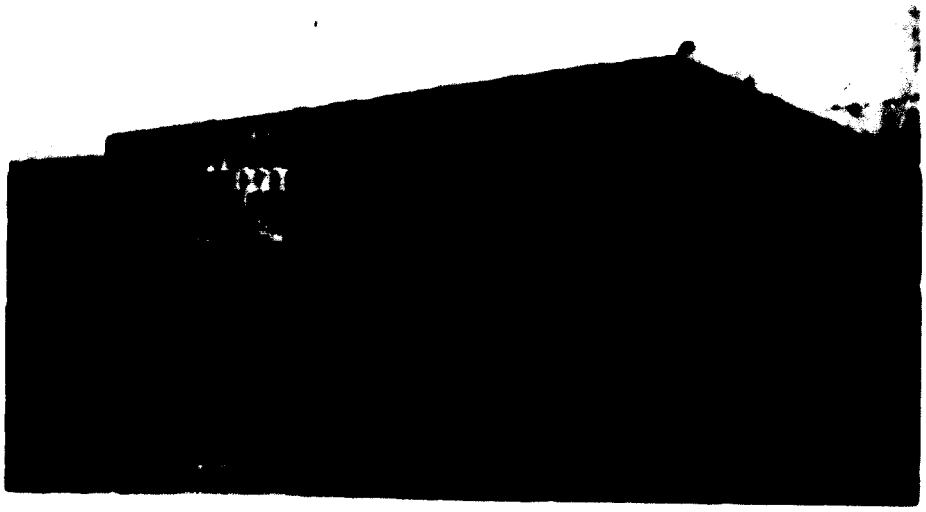
- Linear structure conventional or prefabricated with precast roof slabs and fascia pannels
- Structure of load bearing walls

Also prefabricated fascia walls and prefabricated concrete sandwich slabs are used for industrial construction.

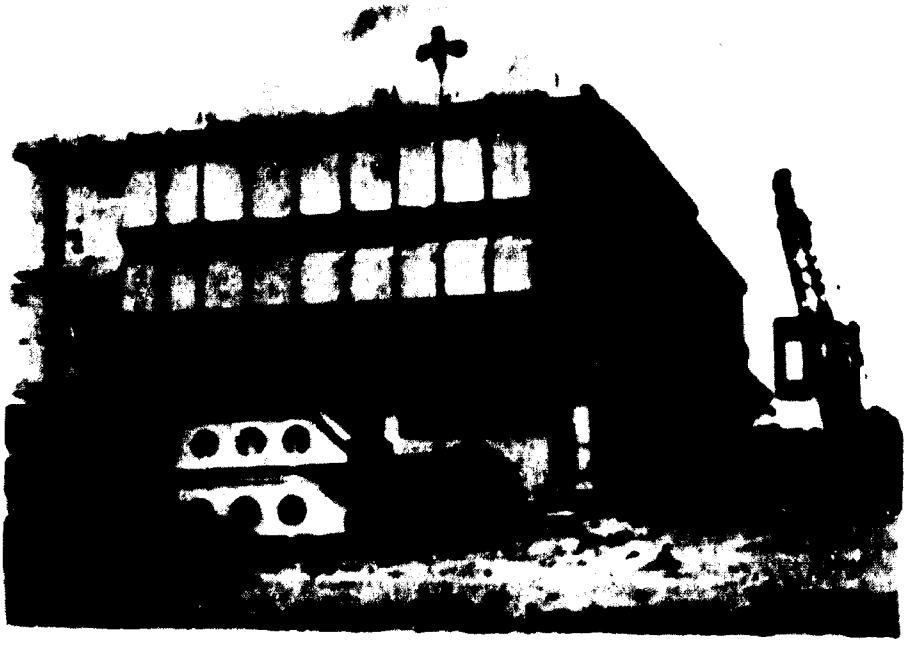
I.I.I. Illustrations and technical data of several prefabricated concrete industrial constructions are given in the following pages:



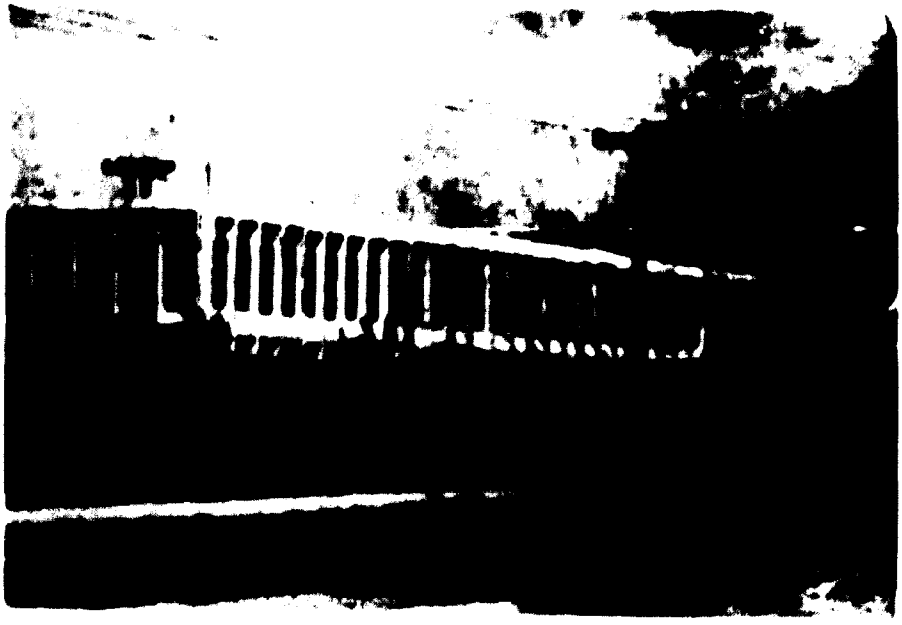
Factory of cables in Stylis
Covered area 40.000 m^2
Built in 8 months
Triangular perforated beams
Span of beams 22 m
Height : 8 - 11 m

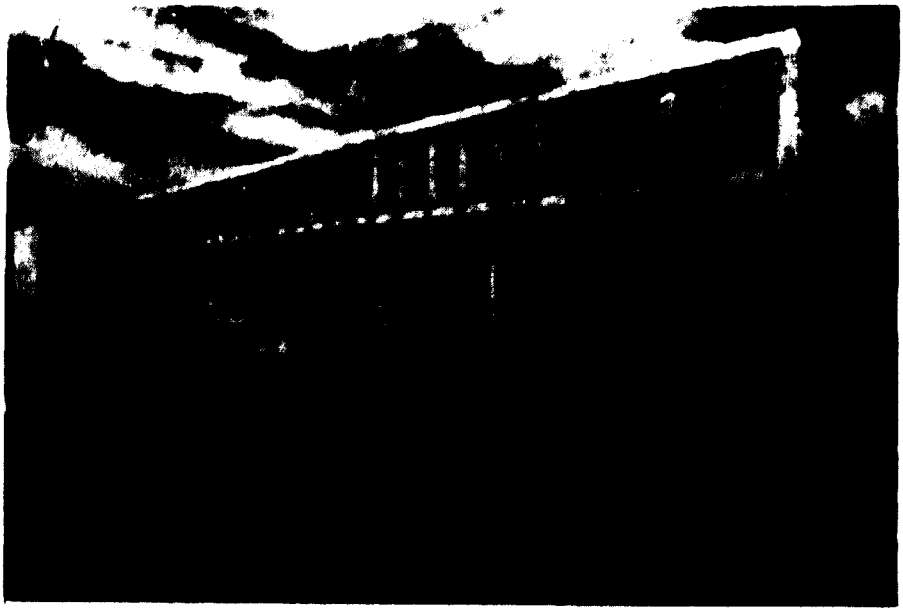


A Factory in Lamia
Covered area 3.000 m^2
Triangular beams
Span of the beams 16 m
Height 6 m



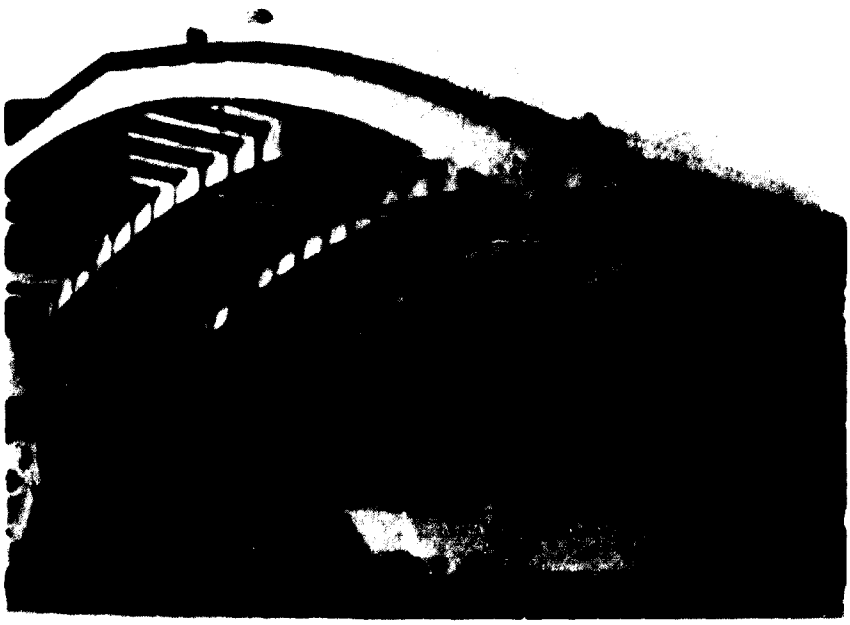
Factory of coffee treatment in Athens region
Five storey building
Covered area 3.000 m^2
Prefabricated fascia elements



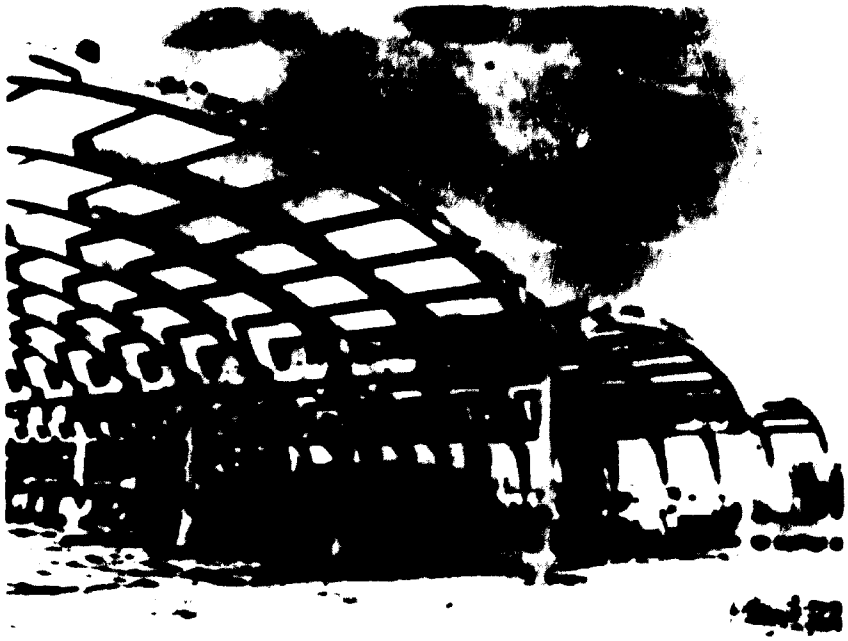


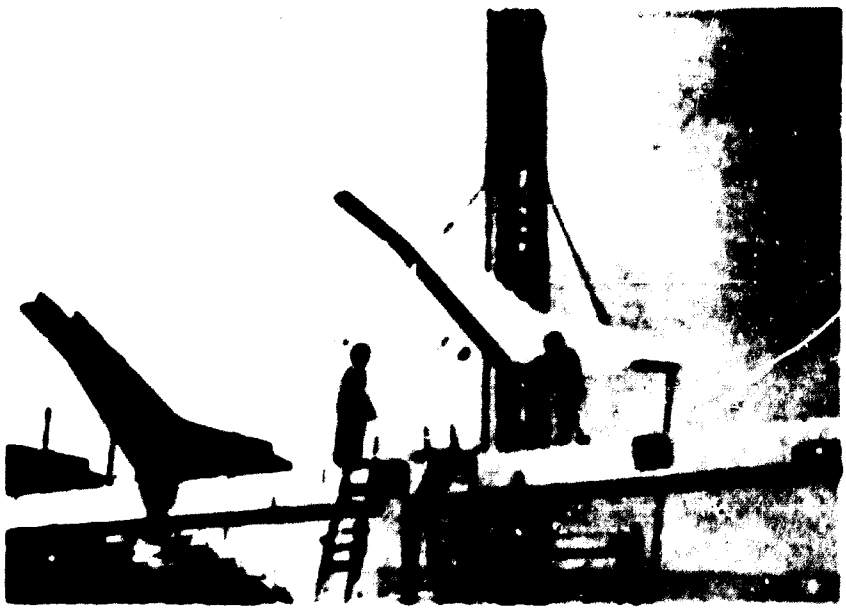
Two storey factory of drugs in Thiva.
Covered area 2.500 m^2
Linear structure conventional, prefabricated slabs and fascia pannels.

Factory of ceramic slabs in Stylis
Covered area 7000 m^2
Span of beams 22 m
Interior column distance 15 m



Parabolic arc bearers structure
in the port of Patras
Covered area : 6.000 m^2
Span of beam 28 m





Factory of refreshments in the region of Athens

Covered area 4.000 m^2

Span of beam 19 m

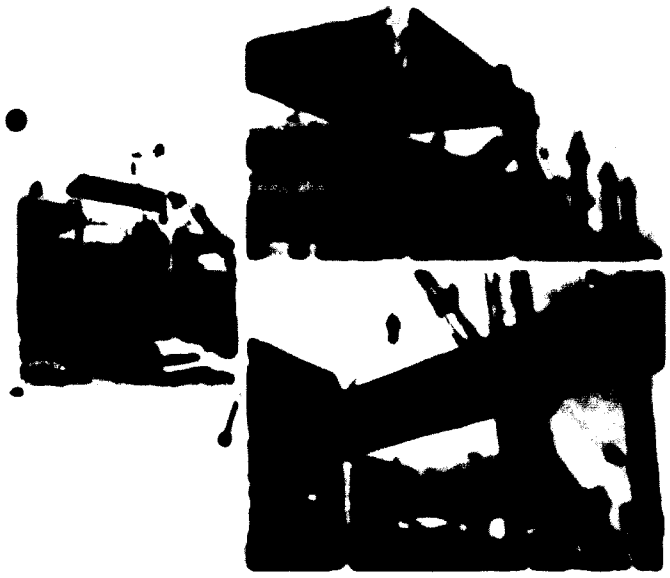
Height : 7 m

Parabolic arc bearers

Factory in Lavrion of Attica
Wide span shell roofs
Covered area : 2550 m^2
Span 18,5 m
Height 8,5 m

Factory of assembling electric divices
in Athens region

Sawtoothed roofs (Shed roofs)
Covered area 5.000 m^2
Span : 12 X 13
Height: 5,5 m



Office building of a factory in Kriseria
in Attica

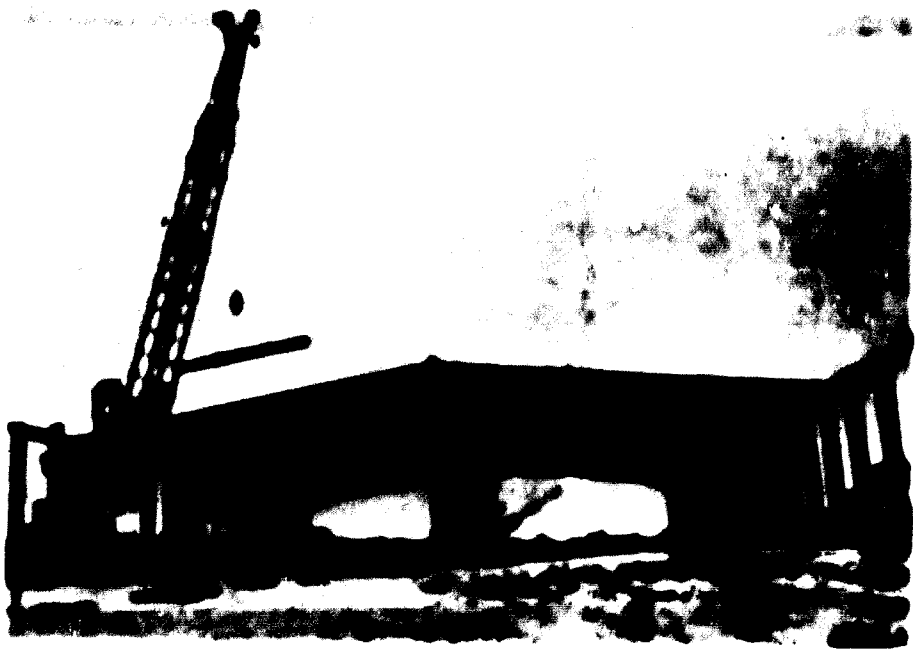
Flat roofs (double "T" Beam roofs)
Covered area 600 m^2
Span 10 m
Height 2,5 m

I.2. Metallic constructions

Because of the short interval of application of prefabrication system in Greece, the construction of industrial buildings by prefabricated metallic elements has not been developed very much.

In most cases the used metallic elements are not of normalised dimensions, but their dimensions are specified by order.
The mean annual value of application of metallic elements for the construction of industrial buildings fluctuate between 15.000 and 20.000 tons.

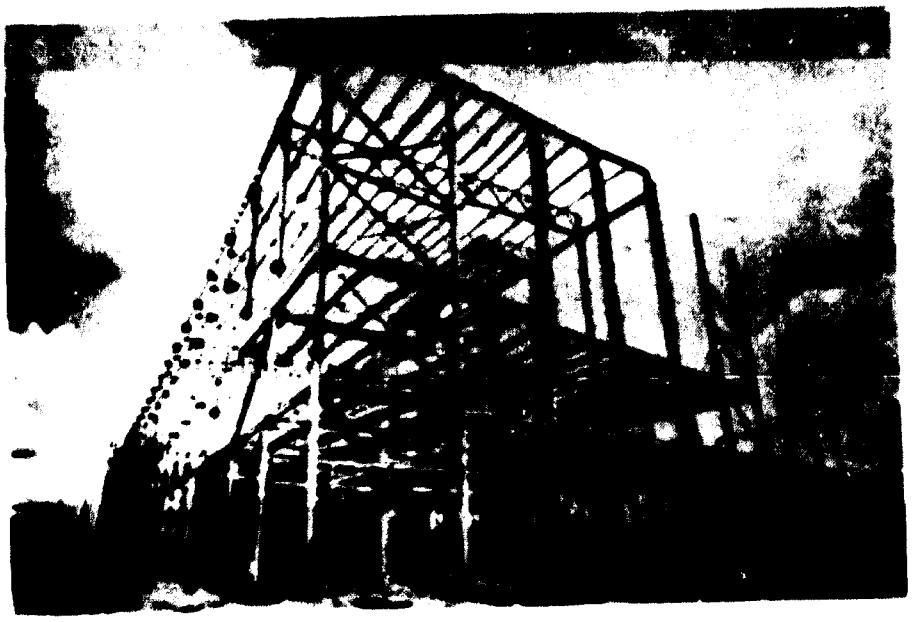
I.2.1. Technical data and illustrations of some industrial constructions by metallic elements are given in the following pages:



Factory of wool industry at Larisa
Covered area 27.000 m²
Height of steelwork 900 t
Span 30 m
Height 6 m

Coach house in Libya
Constructed by a Greek structural steelwork
Company with prefabricated in factory elements
Span : 40 m
Length: 80 m

Factory of preserves in Orchomene of Boiotia
Metallic structure of DEMIOS and building steel
Spans : 14 m and 22 m
Height : 4,80 m
Covered area 10.000 m^2
Fabricated in 60 days



Factory of sugar at Xanthi
View of the 4 storey part of the project
Weight of steelwork 4000 t.
Fabricated in 9 months.

Steel structure of a five storey factory at the region of Athens

2. Encountered problems

- The public is not yet [illegible] advantages of prefabrication systems.
- There is a competition from the part of low quality and consequently low cost conventional constructions.
- There is not always [illegible] prefabrication elements, and [illegible] elements, and this fact results in the preservation of prices of prefabrication in relatively high values.
- There is not always collaboration in advance between designer (studier) and constructor for the purpose of selecting the most financially [illegible] solution and for using in all cases prefabricated elements of [illegible]malized dimensions.
- Because of the diminuation of rhythm of construction activity generally during the last years in this country for the reason of several conditions, a lot of prefabrication firms confront a sharp problem to continue their work.

3. Future prospects

Because of the fact that Greece is in the situation of a developing country, the future prospects of the development of prefabrication for industrial construction should be considered as encouraging.
For the purpose of helping the proper development of the sector of prefabrication in Greece, it should be offered technical assistance for the training of staffs, assistance of industrial construction firms by transfering construction technology

and knowledge about the suitable equipment, assistance for the establishment of standards elements with normalized dimensions, standards of quality and methods for testing, and generally by transmission in our country of higher construction technology of more developed countries.

We think that UNIDO would be in the position to help for the realisation of the above subjects.

4. SUMMARY

The following three categories of prefabrication for industrial constructions are used in Greece.

Conventional constructions

Prefabricated or non prefabricated metallic elements

Prefabrication with prefabricated concrete elements of heavy or light type

500.000 m^2 of industrial construction with prefabricated concrete elements, i.e. 100.000 m^2 mean annual value have been realised from the year 1970 till now.

The annual value of steel elements application varies from 15.000 to 20.000 ton.

In Greece the prefabrication of industrial constructions has not yet taken high development because of several general conditions and for the fact that, for different reasons, there is not yet gained the low cost price which should be gained against conventional constructions.

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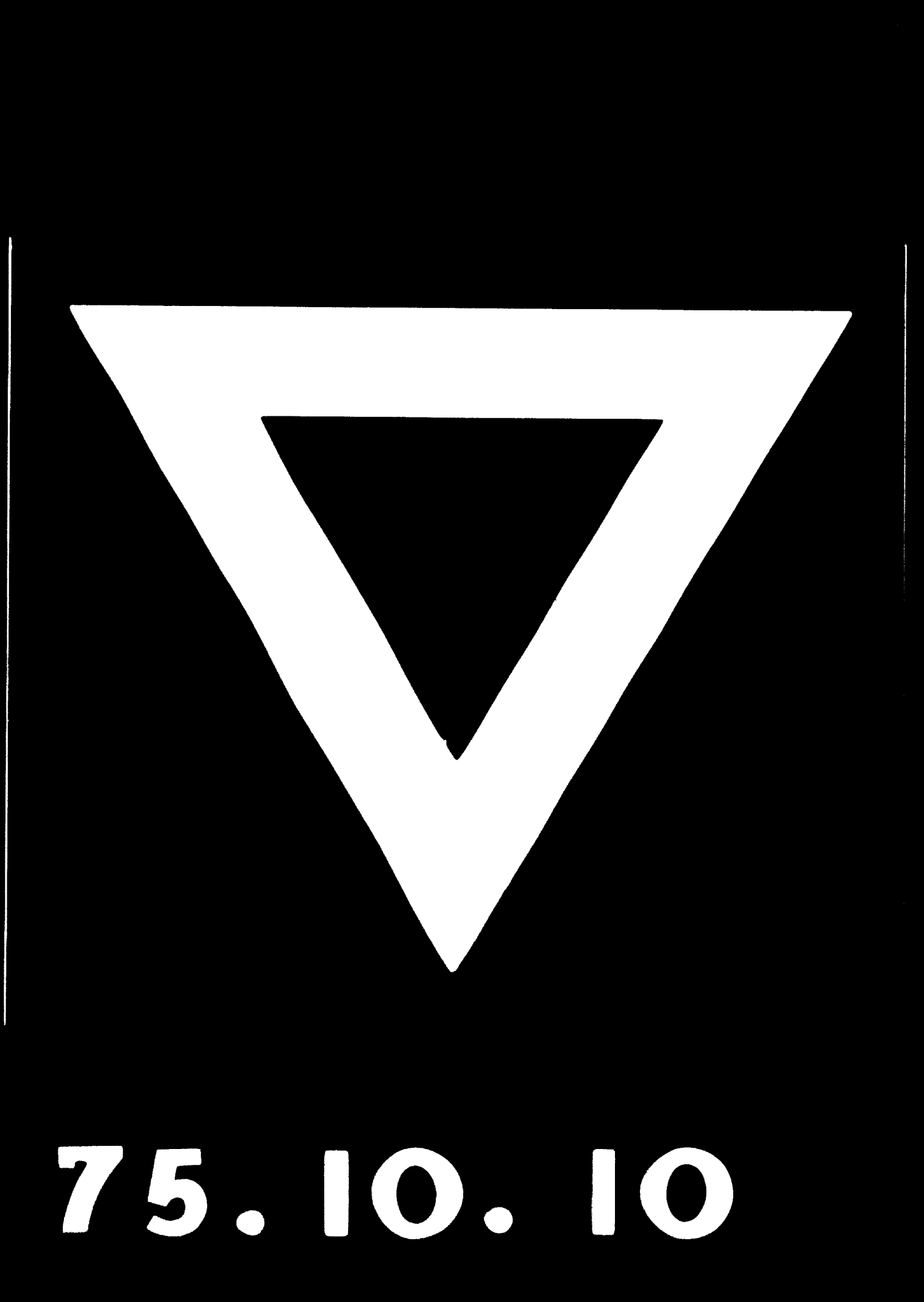
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