



## **TRANSMISSION LINE PROJECT IN CUYUTLAN LAKE “ CONSTRUCTION OF THE RAILROAD VIADUCT ”**



**CFE** *Una empresa  
de clase mundial*

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**INTRODUCTION**

**PREVIOUS ACTIVITIES**

**PLS-CADD DESIGN**

**CIVIL CONSTRUCTION**

**ELECTROMECHANIC CONSTRUCTION**

## INTRODUCTION

**THE TERMoelectric PLANT CALLED “MANZANILLO” REQUESTS THE CONSTRUCTION OF A RAILROAD VIADUCT TO SUPPLY LIQUEFIED NATURAL GAS AS PRIMARY FUEL TO GENERATE ENERGY. FOUR OVERHEAD TRANSMISSION LINES (230 AND 400 Kv) ARE LOCATED OVER THE CUYUTLAN LAKE AND THESE LINES MUST BE MODIFIED TO PERMIT THE CONSTRUCTION**

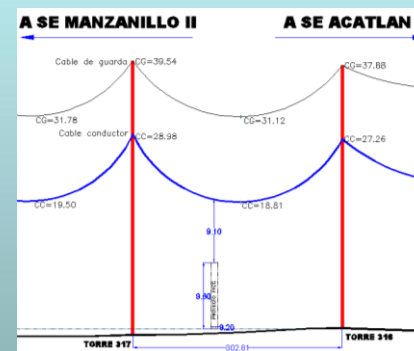
### TRANSMISSION LINES:

- TL MANZANILLO – COLOMO 230 kV**
- TL MANZANILLO – ACATLAN 400 Kv**
- TL MANZANILLO- ATEQUIZA 400 kV**
- TL MANZANILLO II – TAPEIXTLES 400kV (C1 Y C2)**

### RAILROAD CLEARANCE

**LT 230kV: 16m**

**LT 400kV: 18m**





**Comisión Federal de Electricidad**  
**Coordinación de Proyectos de Transmisión y Transformación**





TRANSMISSION LINES

RAILROAD VIADUCT

CUYUTLAN LAKE

8

6

7

19

18

15

17

14

5

16

12

1

2

3

10

9

11

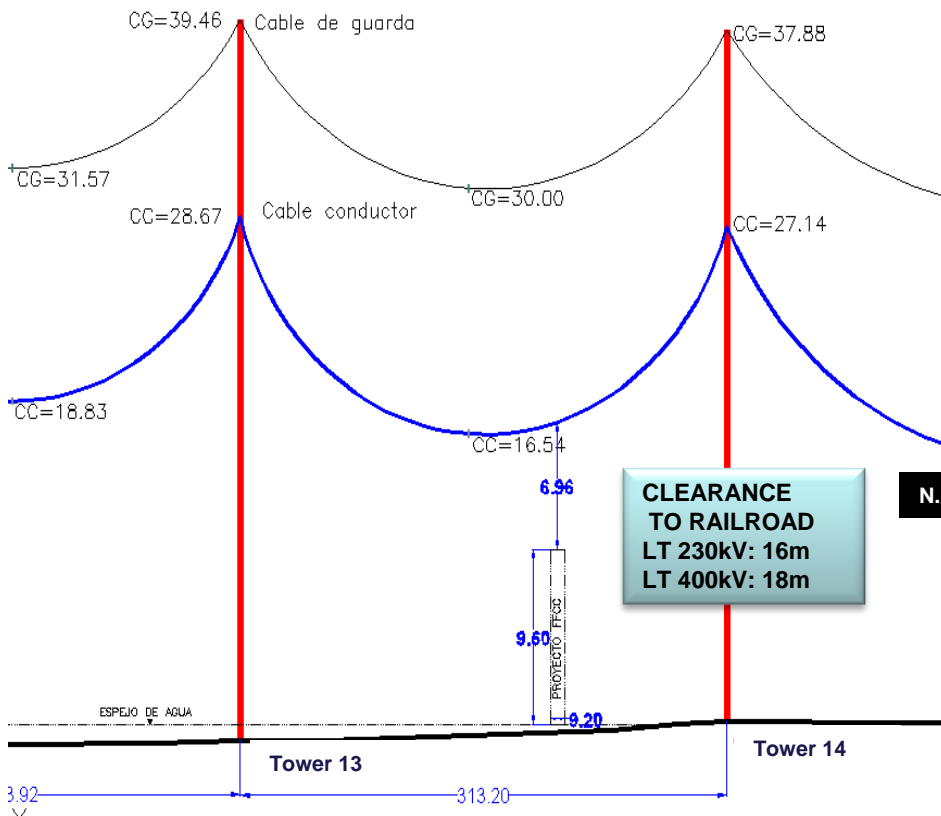
13

4

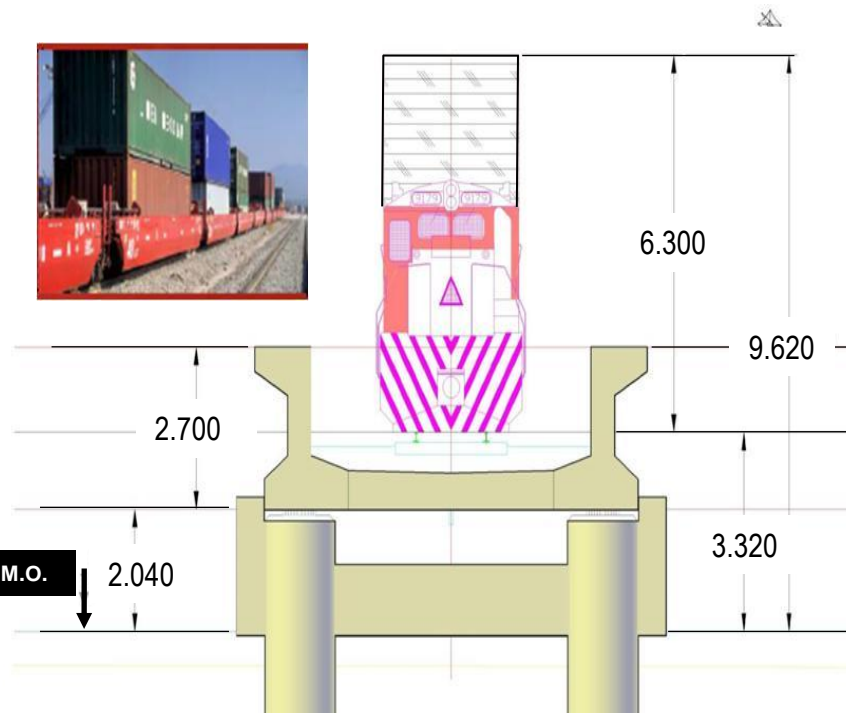
**ACTUAL SITUATION**

**A SE MANZANILLO II**

**A SE ATEQUIZA**



**CLEARANCE TO RAILROAD**  
LT 230kV: 16m  
LT 400kV: 18m

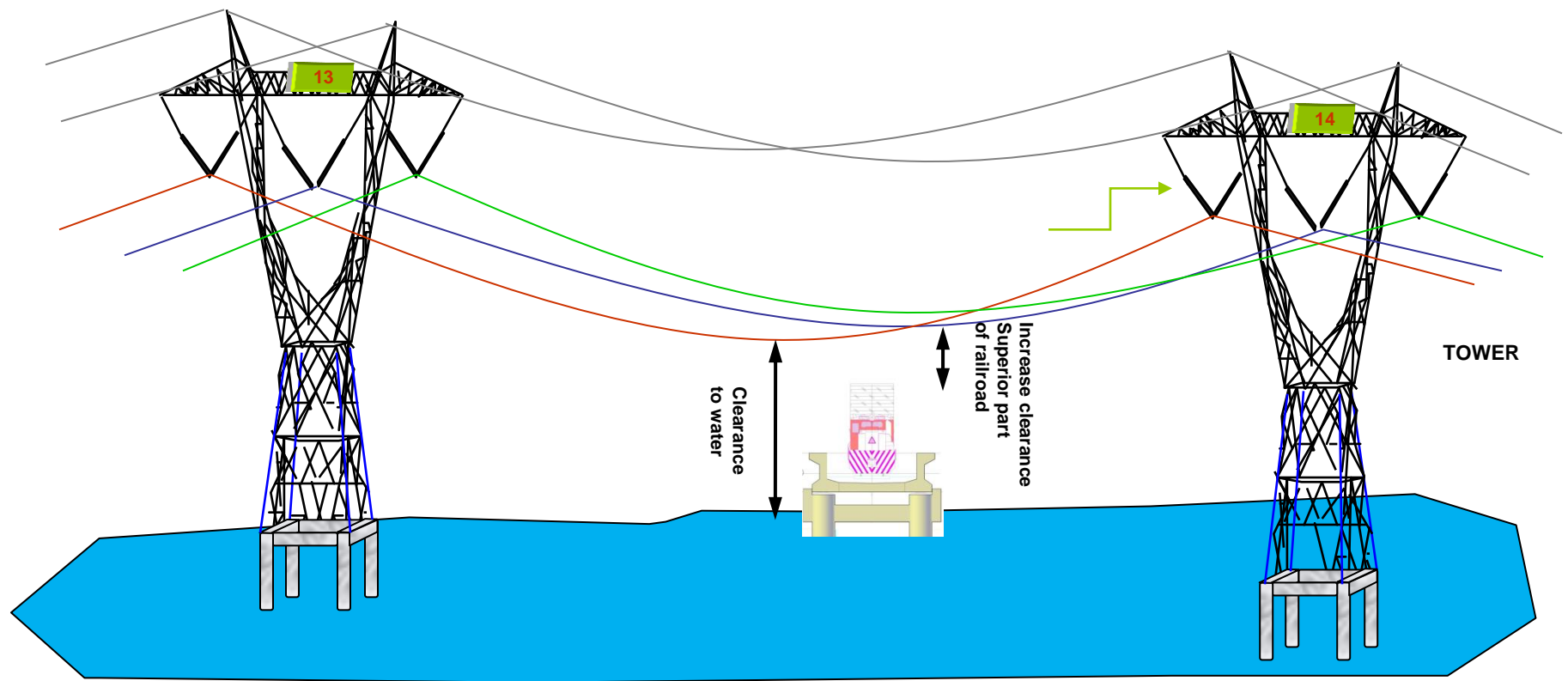




### RAILROAD CLEARANCE ACORDING WITH A CFE STANDARDS

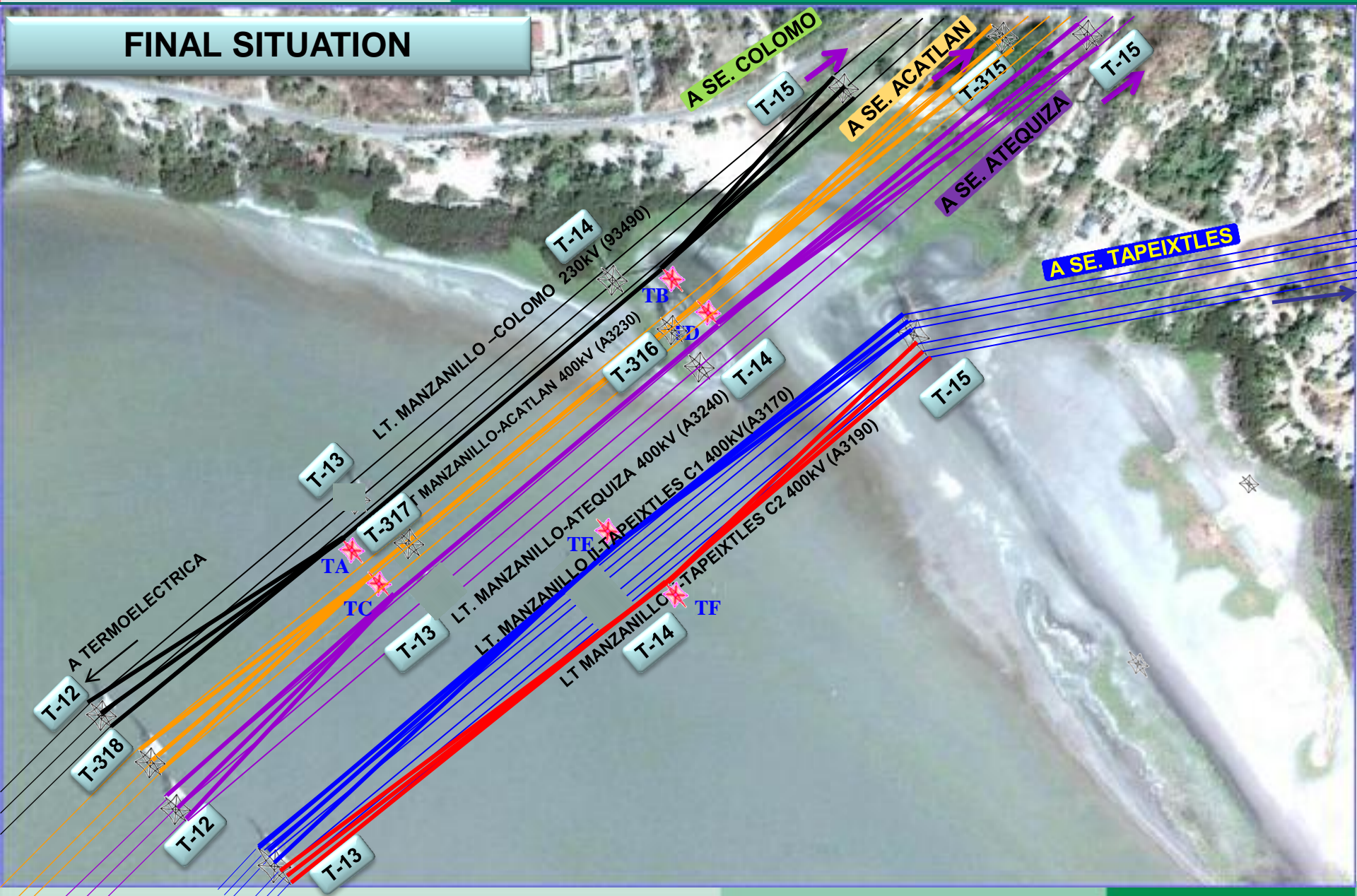
LT 230kV: 16m

LT 400kV: 18m





# FINAL SITUATION





## PREVIOUS ACTIVITIES

1. TOPOGRAFIC INFORMATION AND SOIL MECHANICS.
2. CIVIL AND ELECTROMECHANIC ENGINEERING.
3. FITTINGS SUSTITUTION FOR ADYACENTS TOWERS TO INCREASE SECURITY DURING CONSTRUCTION.
4. ANTICORROSIVE PROTECTION IN TOWERS.



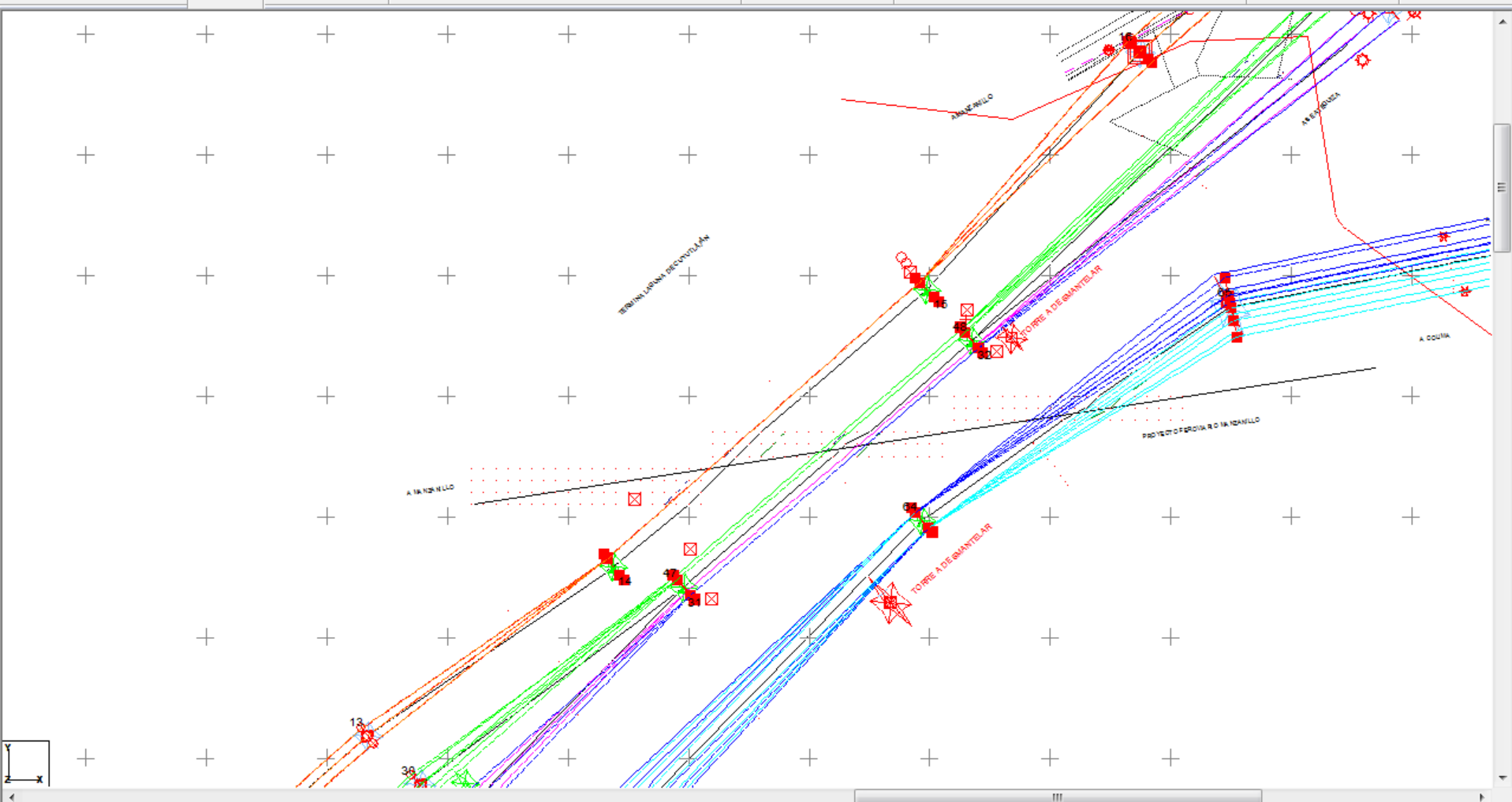


# PLS-CADD DESIGN

PLS-CADD - manzanillo 2010-definitivo-colomo.xyz - [3D View]

File Edit View Terrain Criteria Structures Sections Lines Drafting Window Help

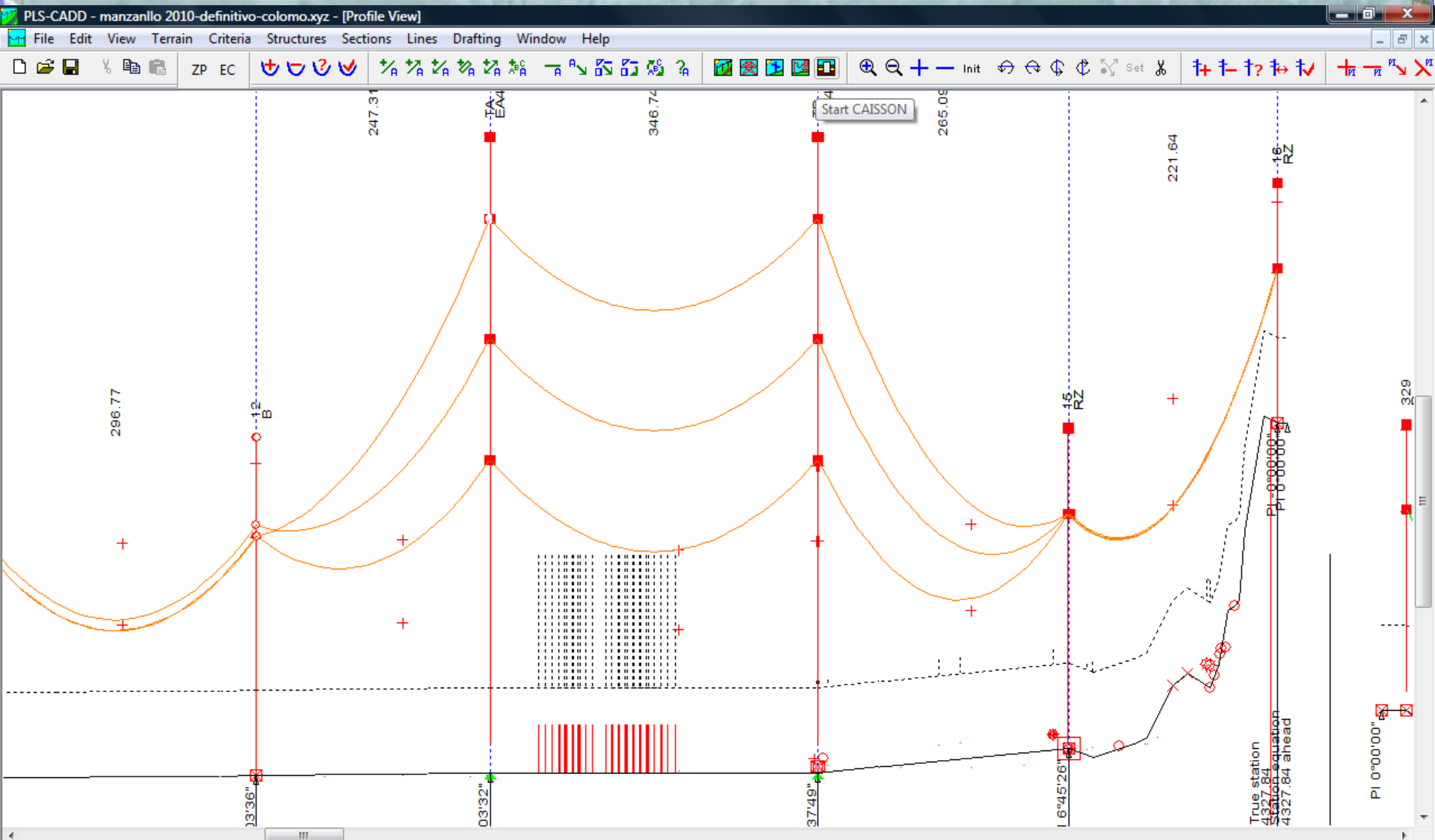
Toolbar with icons for file operations (Open, Save, Print, Copy, Paste), editing (Undo, Redo), and navigation (Zoom, Pan, Rotate, etc.).



Drag a rectangle over zoom area

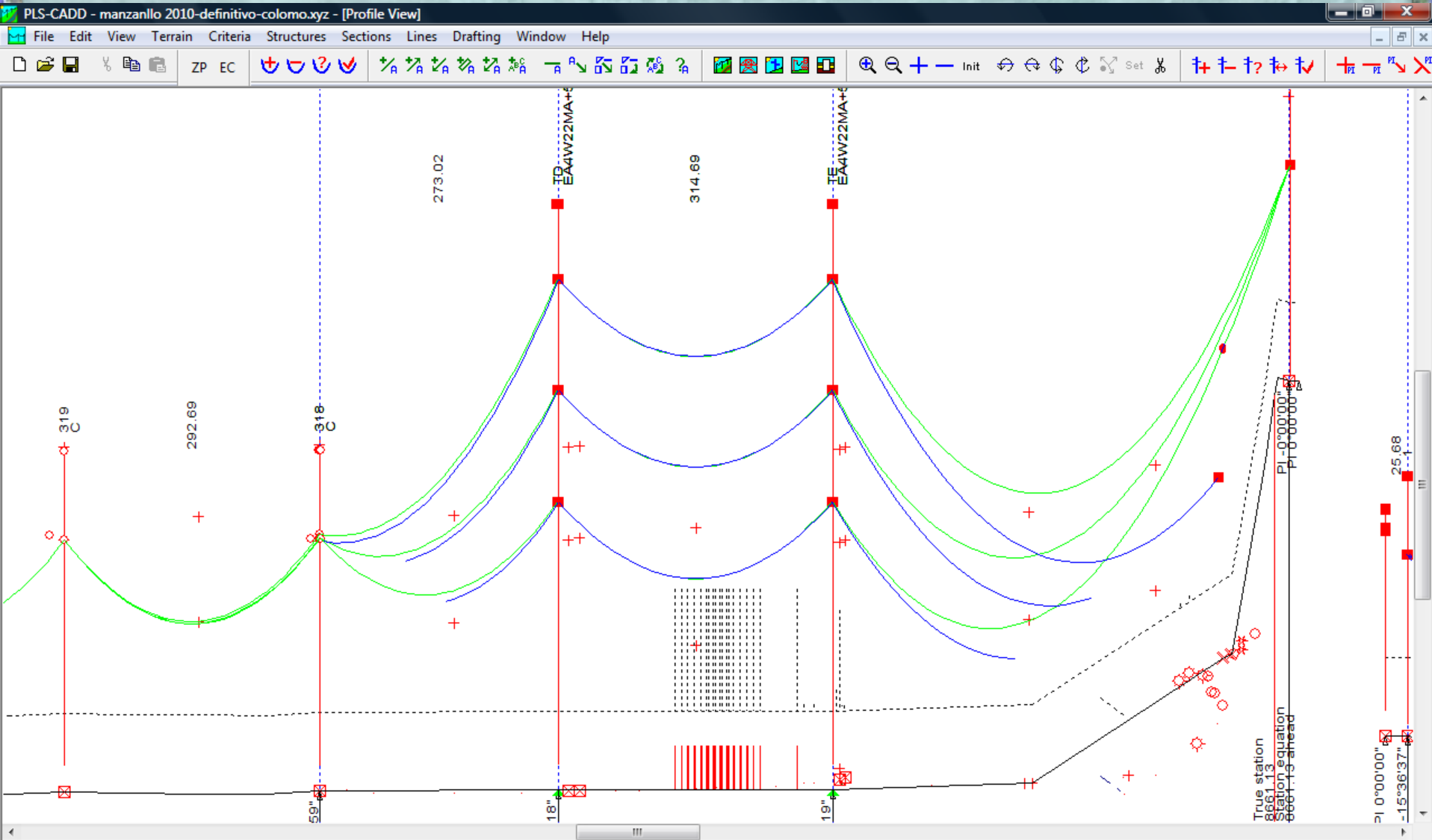


# PLS-CADD DESIGN





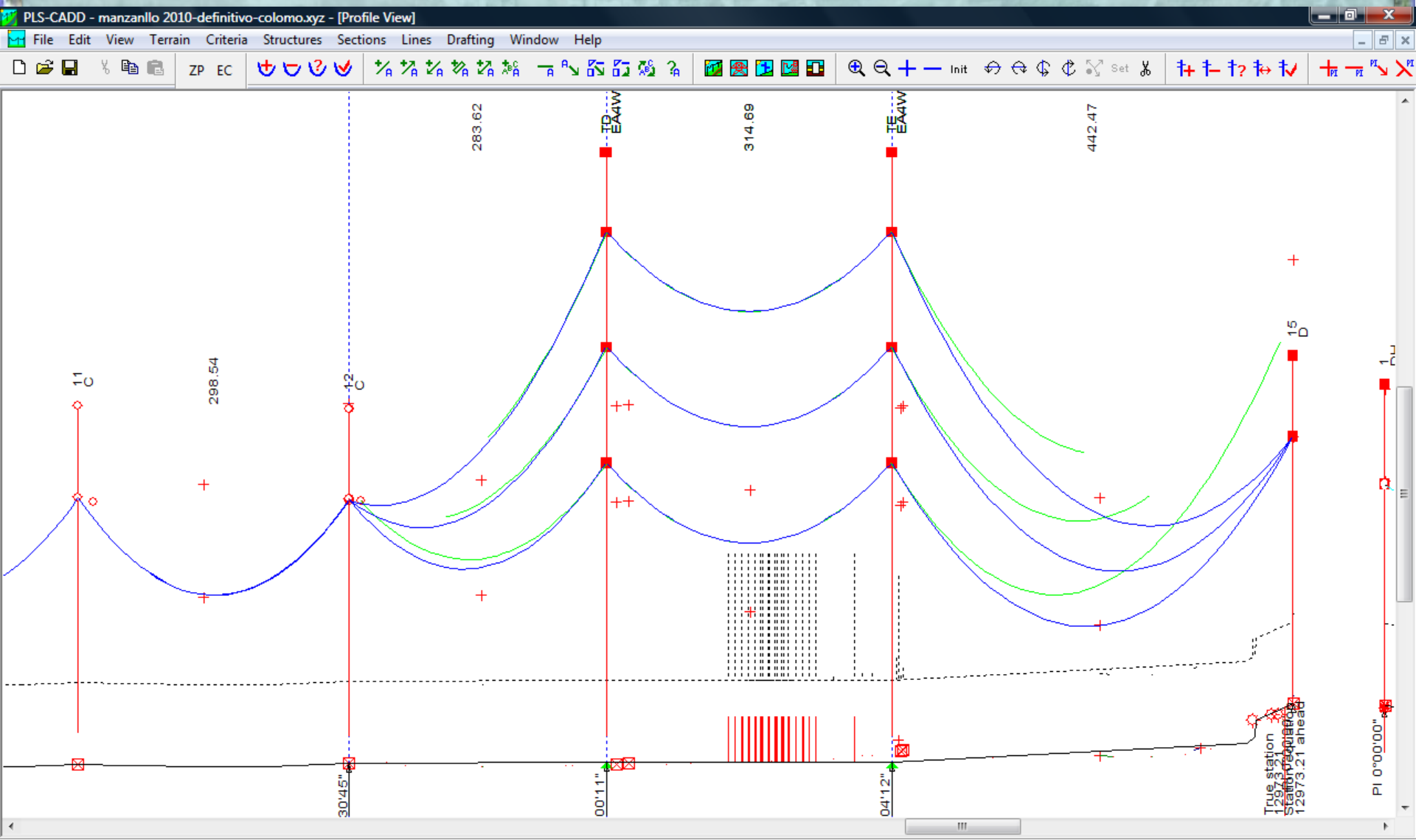
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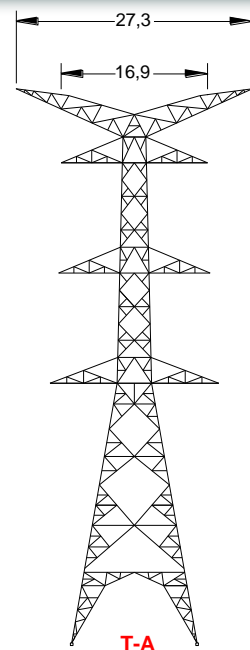


Section Graphical Sag (Click on section, Esc or right click to abort): S=8816.89

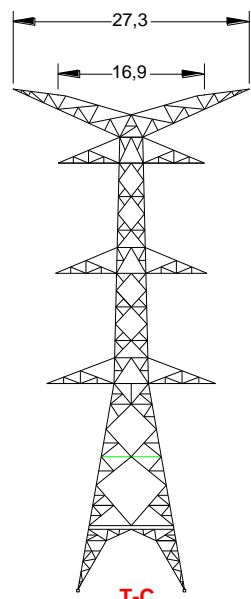


# PLS-CADD DESIGN

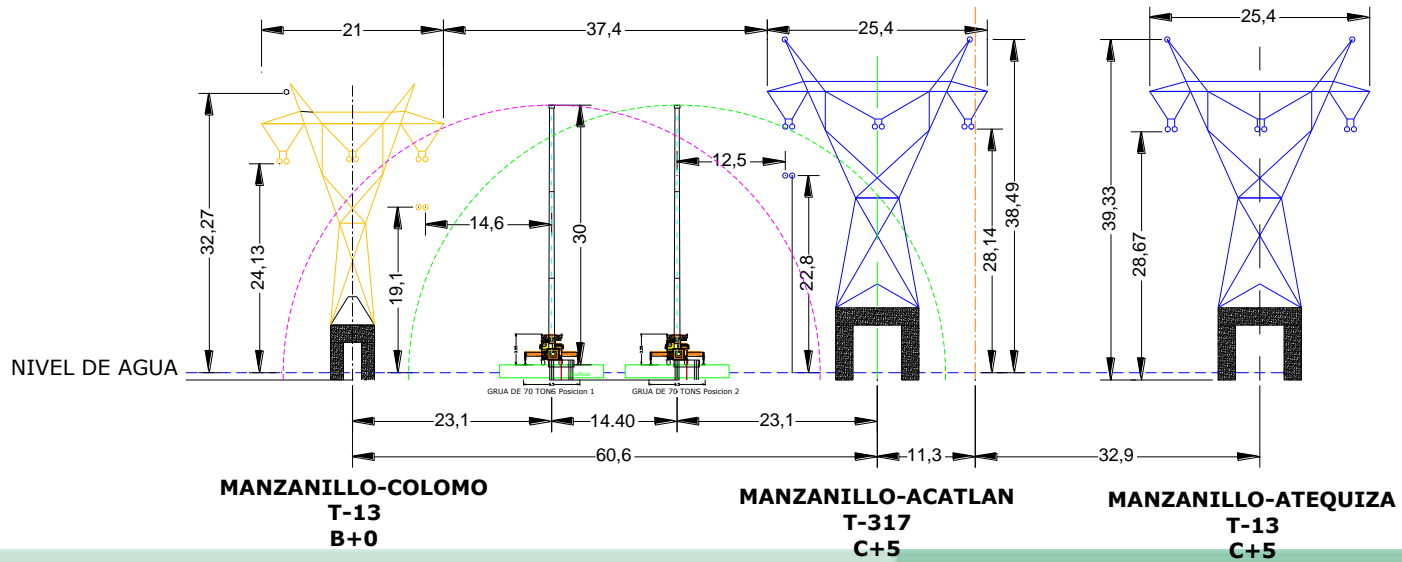


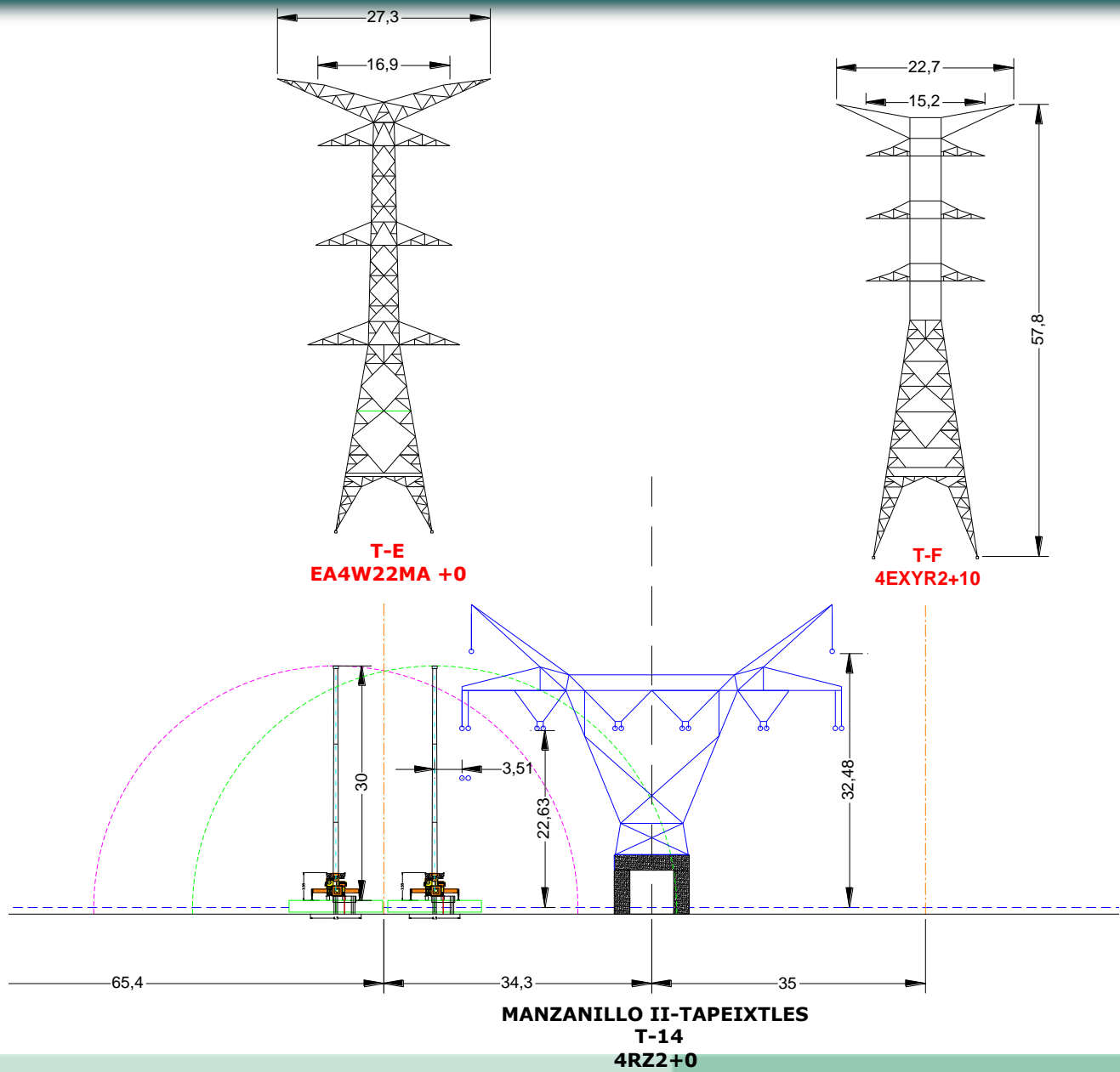


**T-A**  
**EA4W22MA+5**



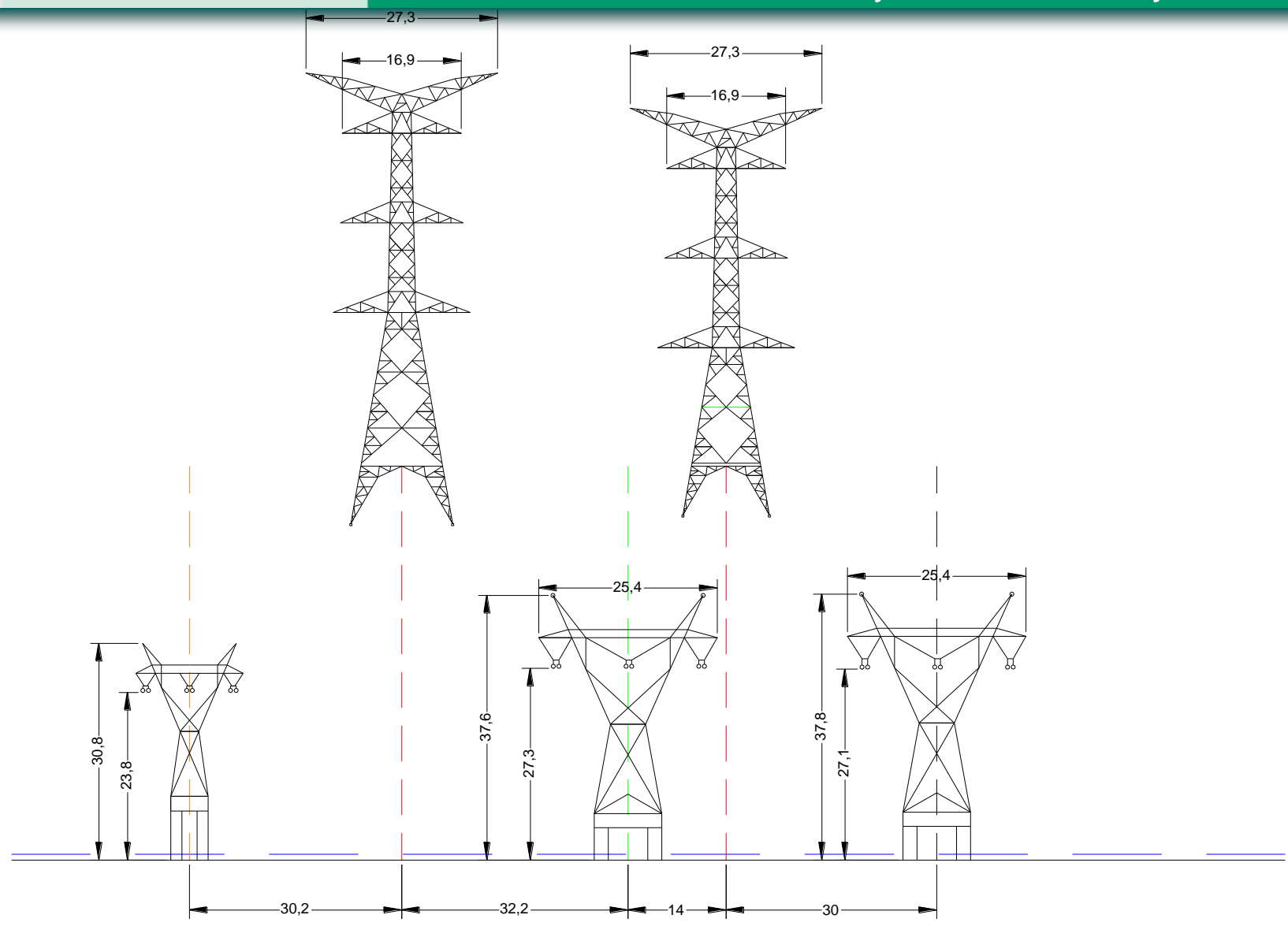
**T-C**  
**EA4W22MA +10**







# Comisión Federal de Electricidad Coordinación de Proyectos de Transmisión y Transformación



MANZ-COLOMO  
T-14  
B+0

T-B  
EA4W22MA+5

MANZ-ACATLAN  
T-316  
C+5

T-D  
EA4W22MA +0

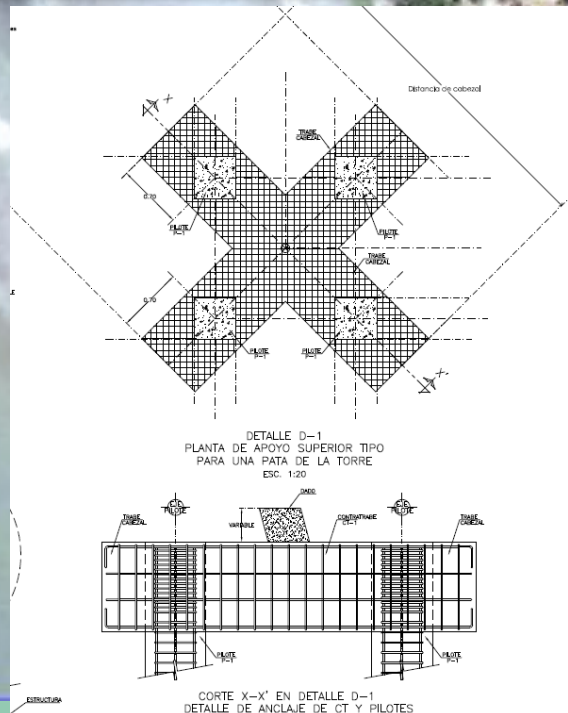
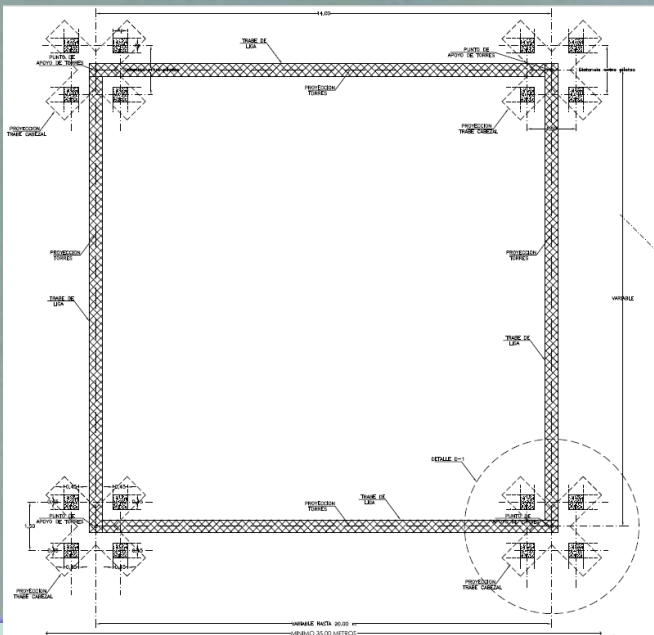
MANZ-ATEQUIZA  
T-14  
C+5





# CIVIL DESIGN AND CONSTRUCTION

- 1. FOUNDATIONS DESIGN.
- 2. STRUCTURAL REVIEW
- 3. NEW TOWERS SELECTION.
- 4. ANTICORROSIVE PROTECTION.



# BUILDING FOUNDATIONS



# BUILDING FOUNDATIONS



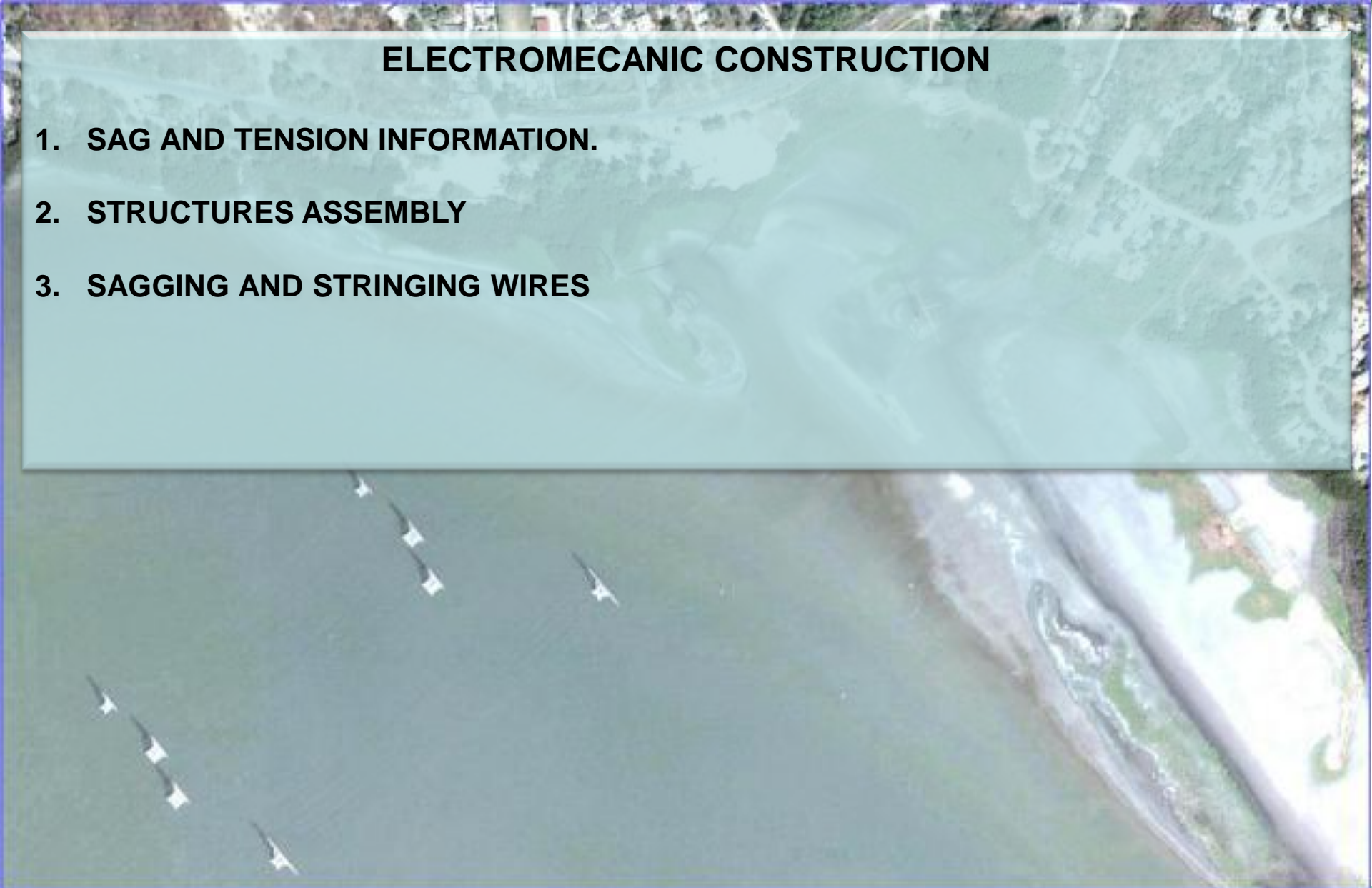
CONSTRUCTIVE PROCESS





## **ELECTROMECHANIC CONSTRUCTION**

- 1. SAG AND TENSION INFORMATION.**
- 2. STRUCTURES ASSEMBLY**
- 3. SAGGING AND STRINGING WIRES**



# STRUCTURES ASSEMBLY

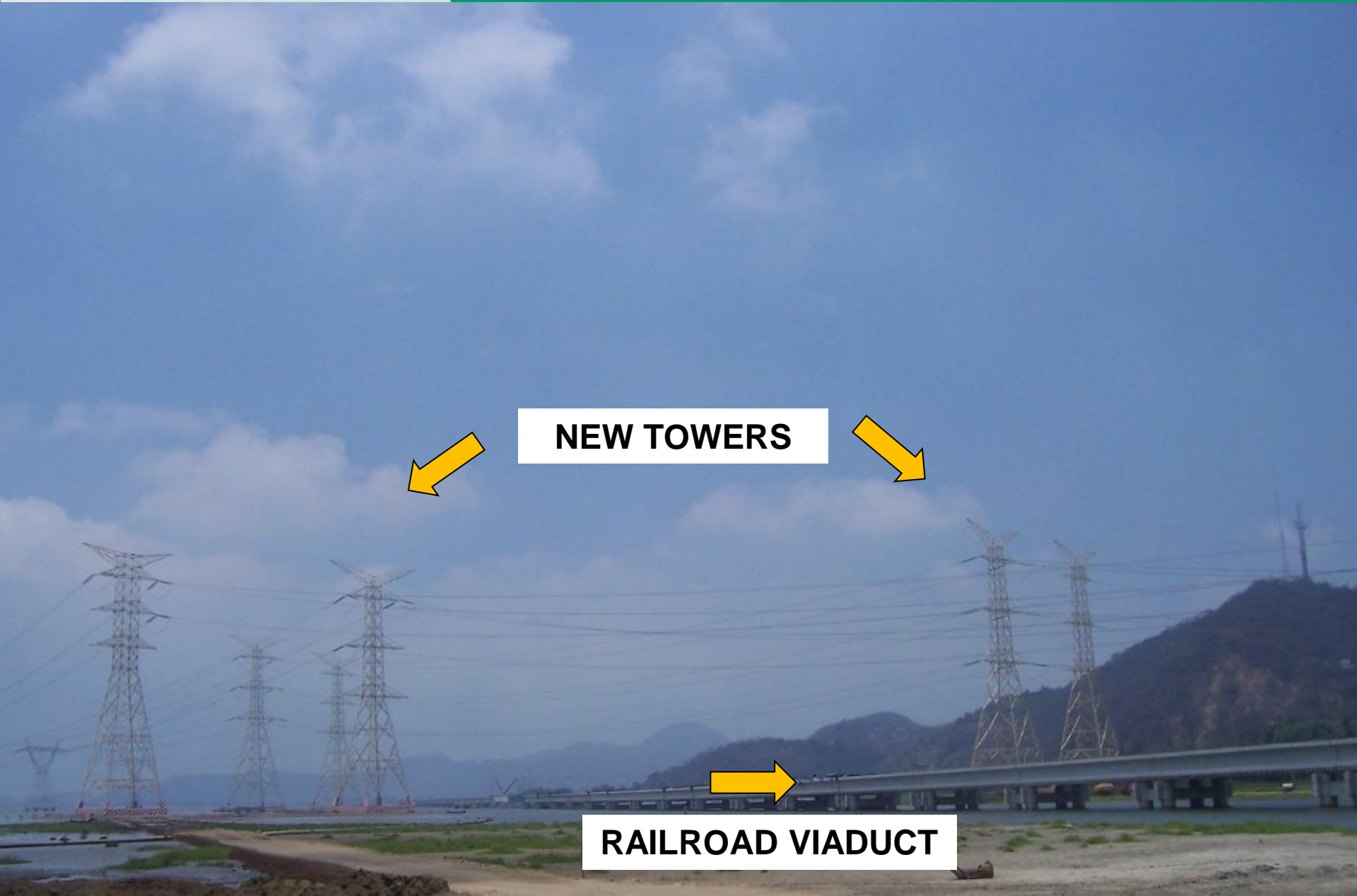


BOTTOM PANEL TOWER TB



BODY TOWER TF





**NEW TOWERS**

**RAILROAD VIADUCT**



## CLEARANCE AT CROSSING OF RAILROAD.

<u>LINE</u>	<u>CLEARANCE BEFORE</u>	<u>CLEARANCE ACTUAL</u>	<u>DIFERENCE OF CLERANCE</u>	<u>CLERANCE REQUIRED</u>
<u>LT MANZANILLO - COLOMO, 230 kV</u>	16.64 m	21.54 m	5.23 m	16.00 m
<u>LT MANZANILLO - ACATLAN, 400 kV</u>	16.89 m	21.76 m	6.37 m	18.00 m
<u>LT MANZANILLO - ATEQUIZA, 400 kV</u>	16.03 m	20.93 m	7.65 m	18.00 m
<u>LT MANZANILLO II- TAPEIXTLES CTO. IZQ, 400 kV</u>	16.18 m	21.08 m	10.53 m	18.00 m
<u>LT MANZANILLO II- TAPEIXTLES CTO. DER, 400 kV</u>	16.84 m	21.74 m	11.19 m	18.00 m



**THANKS!**

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