

# *ANNEXURE 11*

## *WRITEUP ON PDMS*

# *CUSTOMIZATION DONE AT IBG*

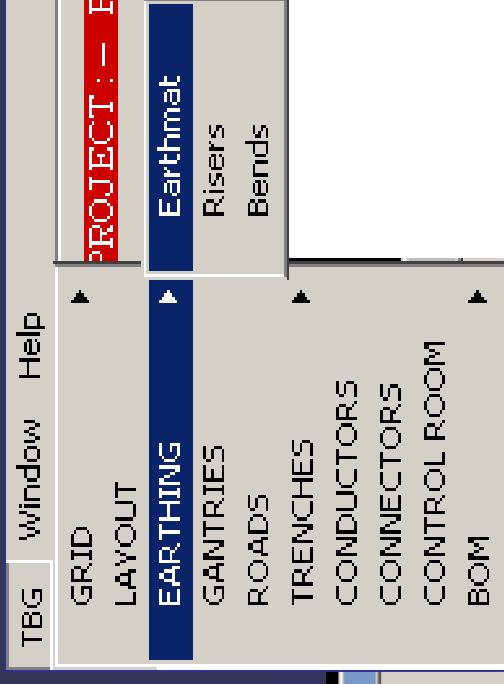
- ✦ CREATION OF CATALOGS FOR EQUIPMENTS
- ✦ USER FRIENDLY FORMS FOR CREATING SWITCHYARD MODELS
- ✦ AUTOMATED BOM GENERATION
- ✦ AUTOMATIC ELECTRICAL INTERFERENCE CHECKING

# *CUSTOMIZATION DETAILS*

- ★ FORM BASED PLACEMENT OF EQUIPMENTS, STRUCTURES & FOUNDATIONS
- ★ AUTOMATED CONDUCTOR STRINGING
- ★ FORM BASED CONNECTION OF ALL EQUIPMENTS
- ★ FORM BASED CREATION OF ROAD LAYOUT
- ★ FORM BASED SWITCHYARD EARTHING LAYOUT
- ★ AUTOMATED EQUIPMENT EARTHING
- ★ AUTOMATED CABLE TRENCH ROUTING
- ★ AUTOMATED CABLE LAYING

# EARTHING LAYOUT

- EARTHMAT
- RISERS & FLATS
- AUTOMATIC BENDS



**CREATE EARTHING CONDUCTOR**

GIVE DIAMETER

REFERENCE

SELECT ONE OF THESE

☒ MULTIPLE ☐ SINGLE

IN-BETWEEN DISTANCE

DIRECTION

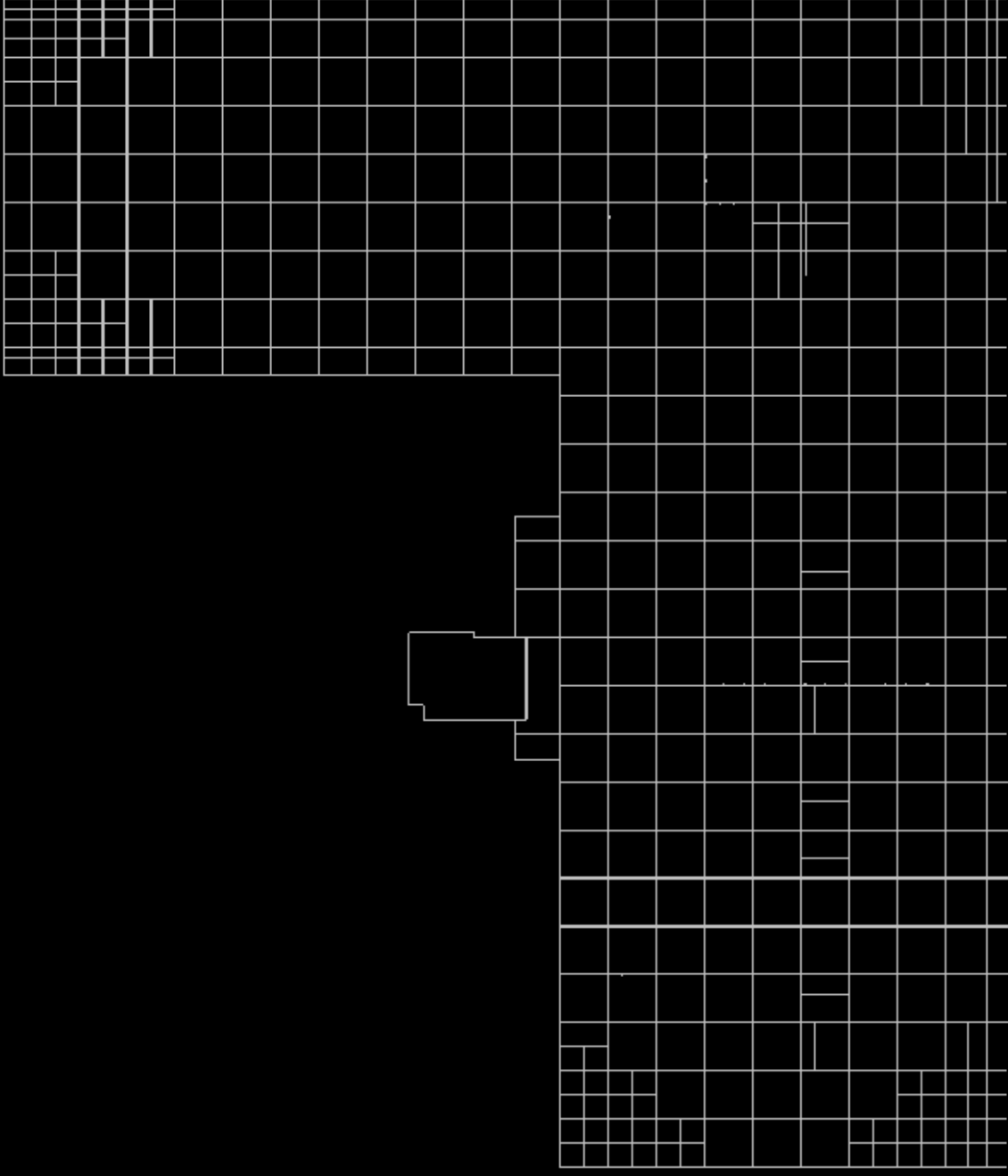
DISTANCE ALONG NORTH

DISTANCE ALONG EAST

DIRECTION

DISTANCE IN NORTH/EAST

# EARTHING LAYOUT PREPARED FOR PGCIL PATIALA PROJECT USING THE FORM



# PLACEMENT OF STRUCTURES

- ★ PLACEMENT OF TOWERS ALONG WITH THE FOUNDATIONS THROUGH FORM
  - SELECT THE TYPE OF TOWER TO BE PLACED
  - SELECT THE FOUNDATION FOR THE TOWER
  - GIVE THE CO-ORDINATES WHERE TOWER HAS TO BE PLACED
- ★ CONNECTING GANTRIES BETWEEN TWO TOWERS
  - SELECT THE TYPE OF GANTRY TO PLACED
  - PICK THE TWO TOWERS BY CLICKING ON THEM

# FORMS FOR PLACEMENT OF TOWERS AND GANTRIES

FOUNDATION	--SELECT ONE OF THESE-- ▶			GO
TOWER	400KV(TWR) ▶	TC		GO
	--SELECT ONE OF THESE-- ◀			
	220KV(TWR)			
	400KV(TWR) ▶			
			DISMISS	
			OK	

CREATE GANTRY

ENTER NAME 400-TC-1

ENTER HEIGHT 15000

SELECT GANTRY 220KV (BGA) 400KV (GB)

SELECT DIRECTION 220KV (BGA) 400KV (GA) 400KV (GB)

OK DISMISS

# CONDUCTOR STRINGING BETWEEN GANTRIES

- ★ SELECT THE CLASS & TYPE OF CONDUCTORS
- ★ ENTER THE SAG VALUE
- ★ ENTER THE SPACER SPAN
- ★ SELECT THE TYPE OF SPACERS
- ★ SELECT THE TYPE OF ANCHORING



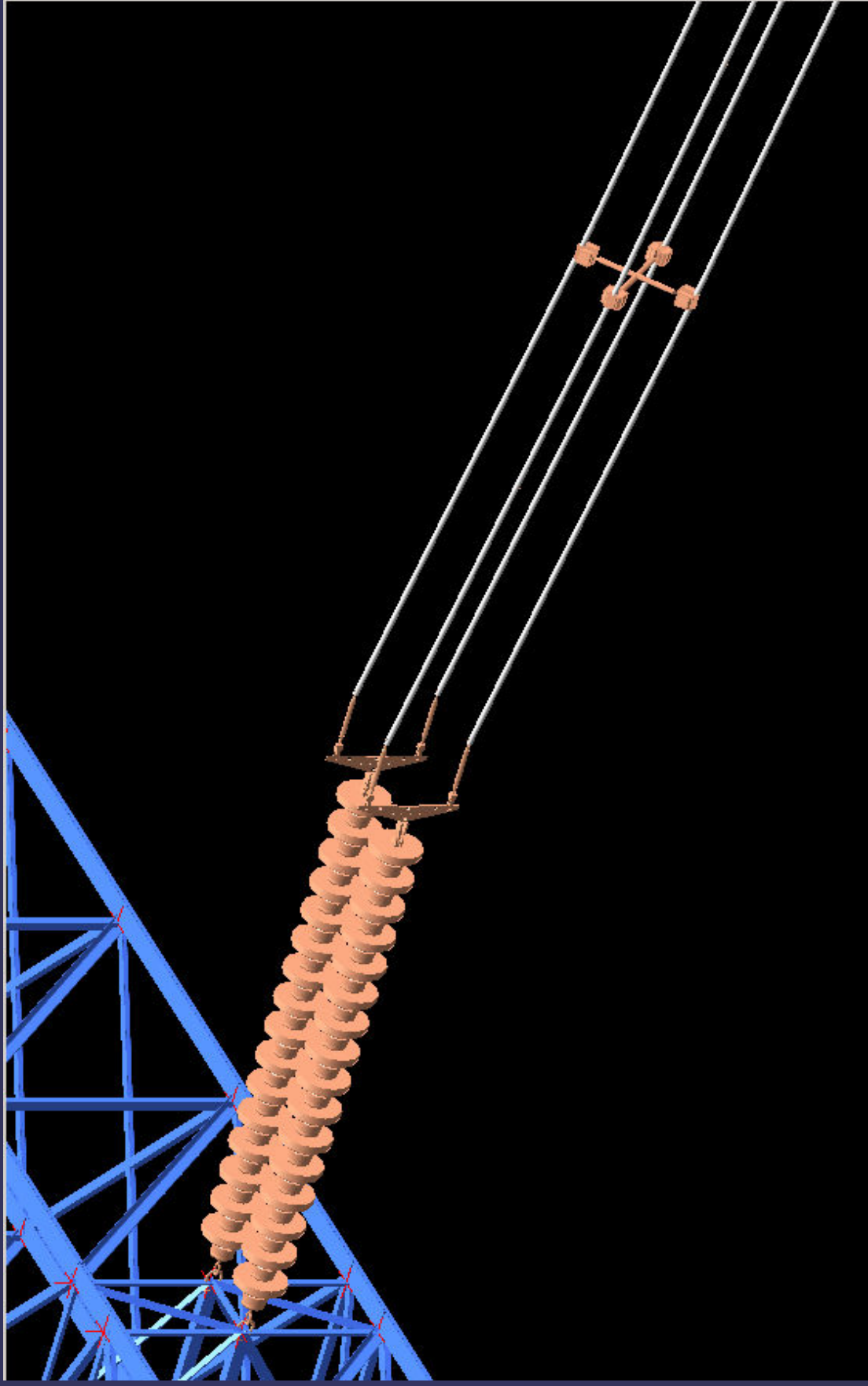
# FORM FOR CONDUCTOR STRINGING

A screenshot of a software window titled "ATTACH CONDUCTOR". The window contains several input fields and buttons. The fields are arranged in a vertical stack. The first field is "SELECT CLASS" with a dropdown menu showing "400KV". The second field is "SELECT TYPE" with a dropdown menu showing "ACSR MOOSE QUAD". The third field is "ENTER SAG VALUE" with a text input field containing "2000". The fourth field is "ENTER SPACER SPAN" with a text input field containing "60000". The fifth field is "SELECT SPACER TYPE" with a dropdown menu showing "FLEXIBLE". Below these fields is a radio button group with two options: "SUSPENSION" (which is selected) and "TENSION". Below the radio buttons are three more dropdown menus: "SELECT TENSION" showing "DOUBLE", "SELECT SUSPENSION" showing "THROUGH", and "SELECT ANCHORING" showing "DOUBLE". At the bottom of the window are two buttons: "OK" and "DISMISS".

Field Label	Value
SELECT CLASS	400KV
SELECT TYPE	ACSR MOOSE QUAD
ENTER SAG VALUE	2000
ENTER SPACER SPAN	60000
SELECT SPACER TYPE	FLEXIBLE
SUSPENSION / TENSION	SUSPENSION (selected)
SELECT TENSION	DOUBLE
SELECT SUSPENSION	THROUGH
SELECT ANCHORING	DOUBLE

Buttons: OK, DISMISS

# 400 KV CONDUCTOR STRINGING WITH INSULATORS AND SPACER CONNECTIONS



# EQUIPMENT, SUPPORT STRUCTURE & FOUNDATION LAYOUT

- ★ SELECT THE EQUIPMENT TO BE PLACED FROM THE LIBRARY
- ★ SELECT THE SUPPORT STRUCTURE AND FOUNDATION FOR THE EQUIPMENT
- ★ GIVE THE CO-ORDINATES WHERE EQUIPMENT HAS TO BE PLACED

# MAIN FORM FOR LAYOUT

CREATE AND PLACE EQUIPMENTS

NAME

4U1-R-PI

REFERENCE

E 53500 N 1568

MODIFY

PREV

CE

DISTANCE

EAST

1500

NORTH

0

UP

0

LIBRARY

TO CREATE

POST INSL

400KV(PI)

PIPE SUPPORT POST INSL

400KV(PI)

EQUIPMENT FOUNDATION POST INSL

EQUIPMENT HEIGHT

3650

PLINTH LEVEL

300

TOTAL HEIGHT

8500

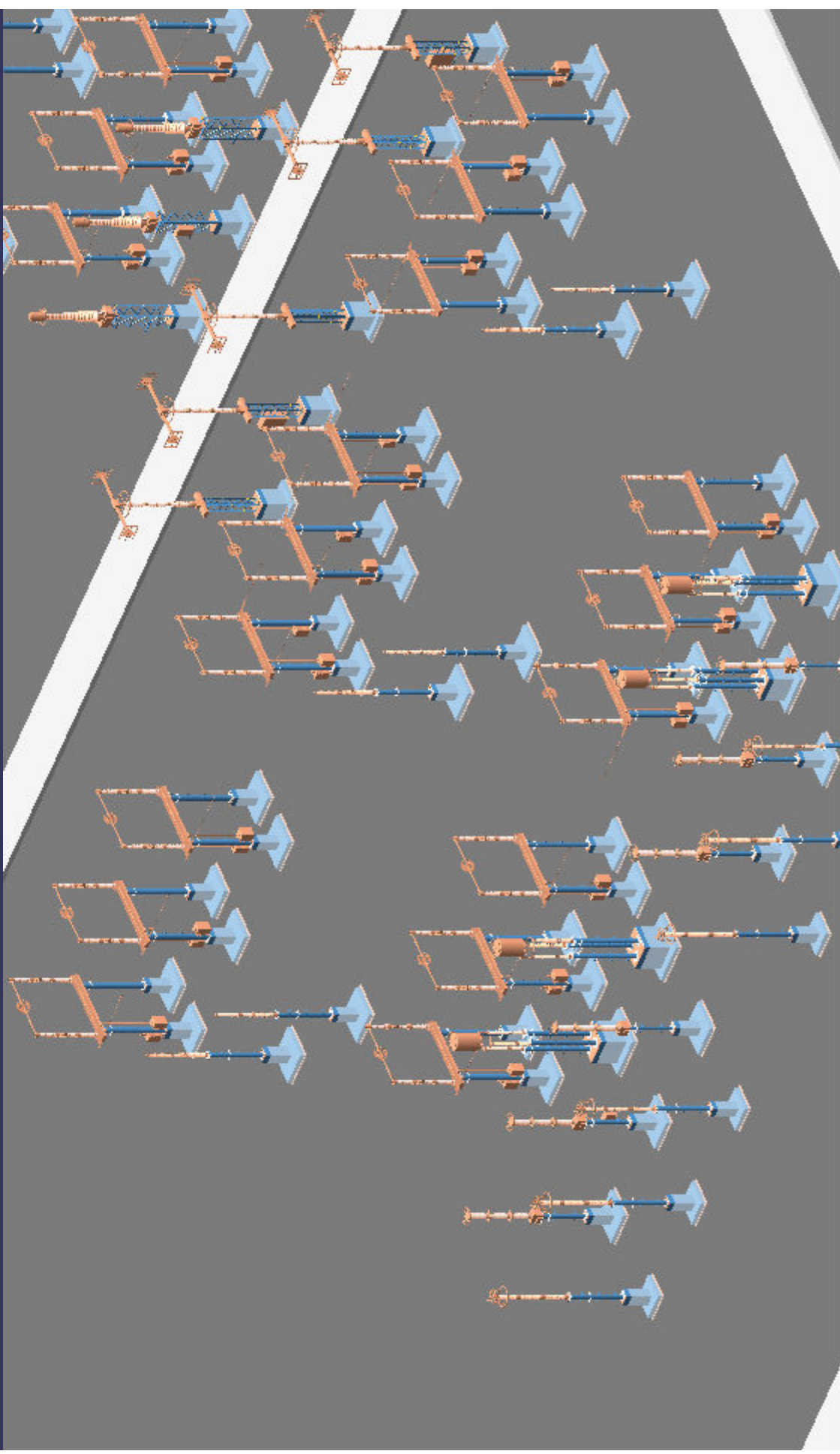
CREATE

DISMISS

# FORM FOR SELECTION FROM LIBRARY

SELECTION OF ITEMS				
CHOOSE ANYONE	SELECT TYPE			
EQUIPMENT	CVT		400KV (CVT)	GO
STRUCTURE	PIPE SUPPORT		400KV (CVT)	GO
FOUNDATION	EQUIPMENT FOUNDATION		400KV (CVTF)	GO
TOWER	--SELECT ONE OF THESE--			GO
				OK DISMISS

# EQUIPMENT, SUPPORT STRUCTURES & FOUNDATION LAYOUT PREPARED FOR PATIALA PROJECT USING THE FORMS



# EQUIPMENT CONNECTION

- SELECT THE CONNECTION TYPE
- SELECT THE TWO POINTS BETWEEN WHICH THE CONNECTION HAS TO BE MADE
- SELECT THE TYPE OF CLAMP

# FORM FOR EQUIPMENT CONNECTION

CONNECTOR

SELECT CLASS

CONNECTION TYPE

☒ ALUMINIUM TUBE

☐ CONDUCTOR

ALUMINIUM TUBE

4 Inches

CONDUCTOR

SINGLE MOOSE

SPACER SPAN

FROM |

☒ EQUIPMENT

☐ TUBE

☐ CONDUCTOR

SELECT EQUIP

CONDUCTOR

SINGLE MOOSE

SELECT CLAMP

☒ PAD

☐ STUD

☒ HORI

☐ VER

☒ EXP

☐ RIGID

☐ THRU

TO |

☒ EQUIPMENT

☐ TUBE

☐ CONDUCTOR

SELECT EQUIP

SELECT CLAMP

☒ PAD

☐ STUD

☒ HORI

☐ VER

☒ EXP

☐ RIGID

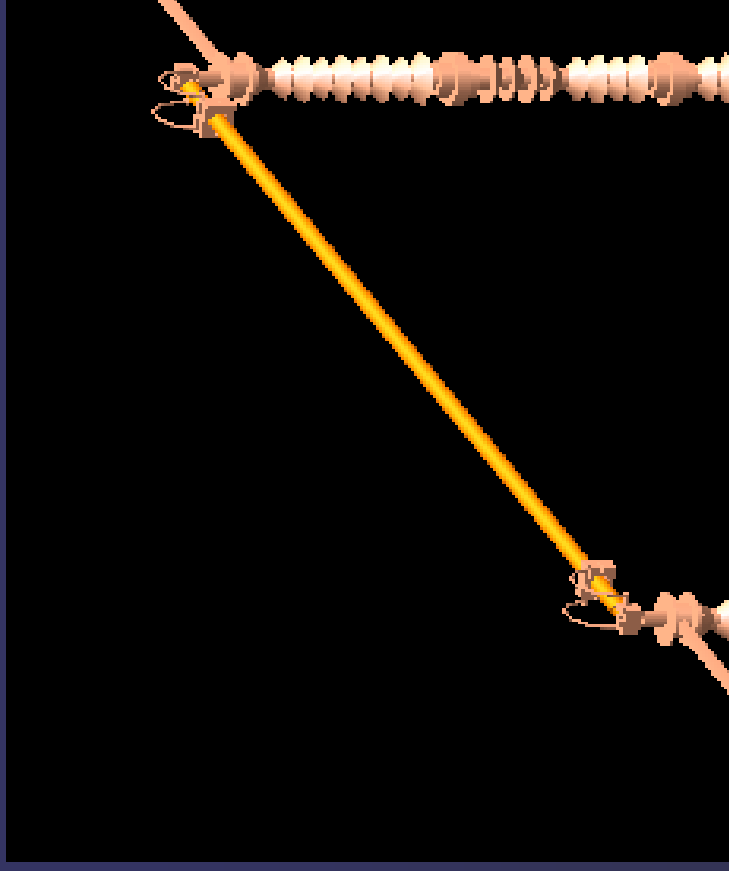
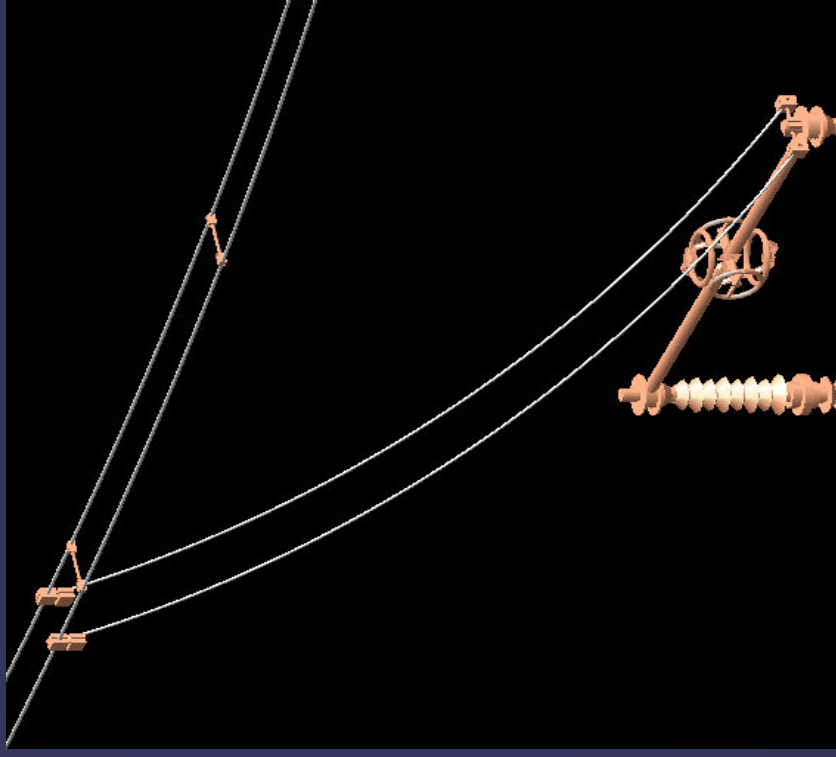
☐ THRU

OK

DISMISS



# CONDUCTOR AND TUBE CONNECTIONS



## CABLE TRENCH LAYOUT

- PREPARE AN EXCEL SHEET FOR LOCATING CABLE TRENCH
- INPUT THE TRENCH SIZE IN THE FORM
- SELECT THE TYPE OF RACK ASSEMBLY TO BE PLACED IN THE TRENCHES

# FORMS FOR CABLE TRENCH LAYOUT

CABLE TRAY APPLICATION

Name of the Input File

UILD\TRENCH\CSAM.CSW

File for Bill of Material

\\BUILD\BOM\RACK\BOMR (.CSW)

Name of the Branch

2-2

Width of the Trench

2200

Depth of the Trench

1350

Wall Thickness

100

OK

Cancel

TRENCH RACK

☒ SINGLE SIDED ☐ DOUBLE SIDED

CHOOSE RACK ALIGNMENT

LEFT

LEFT

RIGHT

3

ENTER NO. OF RACKS

ENTER RACK LENGTH

600

ENTER RACK DIST FROM TOP

210

VERTICAL DISTANCE BETWEEN RACKS

200

HORIZONTAL DISTANCE BETWEEN RACKS

750

CREATE RACK

DISMISS

## CABLE ROUTING

- ✱ CABLE ROUTING PROGRAM TAKES CABLE SCHEDULE IN EXCEL FORMAT AS INPUT
- ✱ PROGRAM READS THE CABLE SCHEDULE AND LAYS THE CABLES BETWEEN THE EQUIPMENTS LISTED IN 'FROM' AND 'TO' COLUMNS IN THE CABLE SCHEDULE
- ✱ ESTIMATES CABLE LENGTHS

# ROAD LAYOUT

- ☀ INPUT THE PARAMETERS IN THE FORM
- ☀ SELECT STRAIGHT OR CURVED SECTION TYPES
- ☀ INPUT THE REFERENCE POINT

POWER SUBSTATION ROAD

PARAMETERS

WIDTH

LENGTH

THICKNESS

REFERENCE

DIRECTION

CURVED ☒ STRAIGHT ☐

MODIFY REF

PREV REF

CREATE

DISMISS

CURVE DIRECTION SE

# BOM

BOM IS GENERATED AUTOMATICALLY FOR THE FOLLOWING:

- ✱ EARTHMAT
- ✱ EARTHING FLATS
- ✱ TOWERS AND BEAMS
- ✱ EQUIPMENTS
- ✱ CONDUCTOR
- ✱ CONDUCTOR HARDWARE ASSEMBLY
- ✱ CONNECTORS AND CLAMPS
- ✱ TRENCH RACK ASSEMBLY
- ✱ CABLES

## *ADDITIONAL FEATURES*

- ★ PARAMETRIC MODELING FOR STRUCTURES AND FOUNDATIONS
- ★ EXTENSION OF EQUIPMENT CATALOG
- ★ CONTROL ROOM PARAMETERISATION
- ★ GENERATION OF 2D DRAWINGS