

TRAINING ON BRIDGE DESIGN WITH MIDAS CIVIL

Introduction

Developed exclusively to upskill professional engineers who design and build bridges. By the use of the world's most powerful tool in the bridge engineering sector; MIDAS CIVIL. Nziza Training Academy in partnership with MIDAS has prepared the customized training event, which is purposed to help bridge professionals gain advanced-level skills via our uniquely structured training to be delivered by MIDAS Team live in Kigali - Rwanda.

MIDAS Civil is a Finite Element Analysis software, which is used for bridge design and analysis. It combines the powerful pre-and post-processing features with an extremely fast solver that makes bridge modeling and analysis simple, quick, and effective. In addition to that, several easy parameter modification tools are available, that can be used for parametric analysis leading to optimized and economical design.

Currently in Rwanda and surrounding countries, there is a shortage of skilled engineers that are keen to technically study hefty structures like bridges. This has pushed Nziza Training Academy to import MIDAS bridge experts to upskill local and regional engineers in bridge engineering to the highest level of competency in delivering the studies of bridge structures. Keeping in mind that targeted professionals are busy, that is why this training event will happen within 5 days only.

DATE OF THE TRAINING: March 30, 2022, until April 04, 2022

EVENT CATEGORY: MIDAS Authorized Training.

ELIGIBILITY: Open for all engineers with proven knowledge of structural design.

TRAINING PROVIDER: MIDAS Bridge Experts

ADDRESS: Five to Five Hotel - REMERA

Training schedule in brief:

Day 1 (March 30, 2022): Introduction to Midas Civil & 3D Box Culverts Design

Day 2: Reinforced Concrete T-Girder Bridge Design

Day 3: 3D Bridge Substructure & Foundation Design, Expert Lecture featuring the experience of using MIDAS Civil by Midas power user from Uganda

Day 4.1: Practice and Q&A session

Day 4.2: Design of Reinforced Concrete slab Bridge

Day 5: Design of Prestressed Composite I-Girder Bridge

Day 6: Certification ceremony

Take-home Technical materials from MIDAS

- Software tutorial video recordings
- Midas civil design guide (PDF)
- Midas Civil licensed software from one month (Free)
- Detailed tutorial book of all bridge types that will be covered in the training (PDF)
- Structural Analysis I - Basic analysis with Midas software (PDF)
- Structural Analysis II - Advanced analysis with Midas software (PDF)
- Frequently asked question (FAQ) booklet for Midas Civil (PDF)
- Midas Project Application booklet - The masterworks of Civil Engineering (PDF)
- Midas International Technical Paper Collection (PDF)
- Midas training certificates

Training objective:

The main objective of this training is to deliver professional skills through a practical design of a real project. The course will involve different practical exercises and assignments but the final goal is to deliver a technical design study of the Highway Bridge project.

The MIDAS CIVIL will be used for 3D Modelling, analysis, and design of the bridge structure.

What will be the outcome?

At the end of this training, you will have picked up the useful tips needed when utilizing MIDAS Civil, specific features within the software that help you start and complete your bridge design project with exact and effective construction documents for all concepts with standard bridge types.

At the end of the training, successful participants will receive a MIDAS certificate.

Who should attend this event?

- Structural Engineers
- Civil Engineers with experience in structural designs
- Roads/highway Engineers with experience in bridge design/construction
- Final Year students in structural engineering
- Final Year students in highway engineering with interest in bridge design

OTHER DETAILS

- The course will be conducted in English.
- Each day will consist of a short recap followed by a lecture and practical exercises for the delegates to complete.
- The course will provide the delegates with the necessary tools and knowledge to set up and complete a bridge design project using MIDAS Civil.
- Upon completion of the course, trained attendees will receive a certificate of attendance issued by MIDAS.
- Covid-19 full vaccination is necessary and will be checked.

PROPOSED TRAINING AGENDA

DAY 1 - Introduction to Midas Civil Software

Time	Description
01:30PM to 02:30PM	Meet and greet, opening remarks followed by slide presentation
02:30PM to 03:00PM	<ul style="list-style-type: none"> - Introduction to GUI, Task pane window, Works tree menu, MCT command shell, Unit system, Wizard options. - Introduction to Node/Element creation, Section definition, Material property definition, Supports and Boundary conditions and Load definition.
03:00PM to 03:45PM	<p>Exercise Problem 01 - Analysis of Simple Beam</p> <ul style="list-style-type: none"> - Node/Element Creation - Nodal Loads, Element Beam Loads, Line Beam Loads. - BM, SF & Deflections Diagrams
03:45PM to 04:45PM	<p>Exercise Problem 02 - Analysis of 3D two bay Frame</p> <ul style="list-style-type: none"> - Structural modelling using nodes & elements, Plate Modelling, Auto Meshing - Define Self weight, Floor loads, Nodal loads, Load cases, Uniformly Distributed Loads. - Load Combinations, - Verify Reactions, Verify Deformed Shape and Displacements, Verify Member Forces. - Beam Detail Analysis
04:45PM to 05:00PM	<i>Coffee Break</i>
05:00PM to 06:00PM	<p>Exercise Problem 03 - Modelling of 3D Box Culvert with wing walls</p> <ul style="list-style-type: none"> - Introduction to wizard template feature for culvert modelling - Definition of materials.

<p>06:00PM to 06:30PM</p>	<p>Definition of loads on culvert structure:</p> <ul style="list-style-type: none"> - Application of Self weight, pavement loads, surcharge soil loads, crash barrier & median loads. - Definition of lanes, vehicle & moving loads as per EuroCode. - Soil-structure-interaction (applying soil springs) & hydraulic loads - Definition of boundary condition & soil springs based on modulus of elasticity for subgrade reaction.
<p>06:30PM to 08:00PM</p>	<p>Analysis results interpretation & RC Design</p> <ul style="list-style-type: none"> - Auto Generation of load combinations, Reactions, Displacement Contour, Plate Forces/Moments - Moving Load Tracer - Cutting plane & Moment envelope diagrams - Plate Beam & Plate Column design & checking - Graphic summary report & Detailed calculation report generation

DAY 2 - Reinforced Concrete T-Girder Bridge

Time	Description
<p>01:30PM to 02:00PM</p>	<p>Setting up unit preference, material properties, sections definition</p>
<p>02:00PM to 03:30PM</p>	<p>Modeling of RC Girder bridge</p> <ul style="list-style-type: none"> - Creating nodes & elements for Girders - Using modelling functions of MIDAS Civil - extrude, divide, translate etc. - Creating diaphragm elements & cross beams
<p>03:30PM to 04:45PM</p>	<p>Load Definition</p> <ul style="list-style-type: none"> - Defining support conditions & bearings - Defining structure & boundary groups - Applying loads - Static loads, moving loads - Setting up analysis control data
<p>04:45PM to 05:00PM</p>	<p><i>Coffee Break</i></p>

05:00PM 06:00PM	to	Results extraction & interpretation <ul style="list-style-type: none"> - Generating load combinations - Reactions, Displacement, Beam diagrams, Stresses.
06:00PM 07:00PM	to	Design of RC Girder bridge: <ul style="list-style-type: none"> - Design parameters - Partial safety factors for materials - Limiting maximum rebar ratio - Beam section data - Beam design report - Concrete code checks
07:00PM 07:30PM	to	Analysis report generation
07:30PM 08:00PM	to	Q&A - Winding up the day!

DAY 3 - 3D Bridge Substructure and Foundation Design

Time		Description
01:30PM 02:00PM	to	- Setting up unit preference, material properties, sections definition
02:00PM 03:30PM	to	Modelling of Substructure with Foundation <ul style="list-style-type: none"> - Creating nodes & elements - Using modelling functions of Midas Civil - extrude, divide, translate etc. - Creating Pier Cap, Pier, Pile cap and piles
03:30PM 04:45PM	to	Analysis and Design <ul style="list-style-type: none"> - Defining support conditions & bearings - Applying loads - Static loads, moving loads - Perform Analysis - Design of Pier, Pier Cap, Piles as per Eurocode
04:45PM 05:00PM	to	<i>Coffee Break</i>

05:00PM	to	- Expert Lecture sharing their experience, tips & tricks of using Midas Civil software
07:30PM		- Discussion on past projects done using midas Civil.
07:30PM	to	Q&A - Winding up the day!
08:00PM		

DAY 4 - Reinforced Concrete Slab Bridge

Time		Description
09:00AM	to	Practice session, Q&A
12:30PM		
12:30PM	to	Lunch Break
01:30PM		
01:30PM	to	Geometry overview of the bridge structure, setting up unit system, & Material definition
02:00PM		
02:00PM	to	Modelling of RC Slab bridge (traditional way)
03:00PM		<ul style="list-style-type: none"> - Different ways of modelling a RC slab bridge - Manual modelling & Wizard modelling. - Introduction to RC slab bridge wizard.
03:00PM	to	Modelling of RC slab bridge using wizard template:
04:45PM		<ul style="list-style-type: none"> - Transverse geometry definition of slab bridge. - Longitudinal geometry definition of slab bridge. - Loads definition - Traffic surface lane definition
04:45PM	to	<i>Coffee Break</i>
05:00PM		
05:00PM	to	Results extraction & design checks
07:30PM		<ul style="list-style-type: none"> - ULS Checks: Beam, Column, Slabs, Walls Design; - SLS Checks: Stress Limitation, Crack Control. - Design input parameter. - Transverse design of slab rebars in a model - RC Plate Beam design

07:30PM to 08:00PM Q&A - Winding up the day!

DAY 5 - Prestressed I-Girder Bridge using PSC Wizard

Time	Description
01:30PM to 02:00PM	Introduction to Unit system, geometry, and parameters.
02:00PM to 04:45PM	Modelling of PSC I-Girder concrete composite bridge using PSC Wizard option - Definition of Material & Section properties - Static loads definition - Define boundary condition - Define time dependent material properties - Define boundary, structure & load groups - Define construction stages
04:45PM to 05:00PM	<i>Coffee Break</i>
05:00PM to 06:30PM	Tendon definition & loss calculation - Ways of tendon profile definition in Midas Civil - Tendon profile generation, - Tendon profile definition - Wizard saving option, - Generate the Model Moving Load Analysis, Results interpretation and Post-processing - Moving load definition - Result interpretation and extraction in form of tabular and graphical representation. - Load combinations, - Tendon loss calculation
06:30PM to 08:00PM	Design of Prestressed bridge - Define design parameters & information - Design report generation and interpretation

DAY 6 - Certification Ceremony at Grand Legacy Hotel at 4 PM

WHAT WILL BE THE TRAINING PRICE?

AS the training is financed by MIDAS and Nziza Training Academy, the participant will have to pay only one hundred and fifty US Dollars (150 USD) per person to attend.

The payment must be delivered before March 28, 2022, to be able to make it to the confirmed list of attendees.

The training dates can be changed due to serious circumstances and once happens; it will be communicated at the right time.

For the payment details, contact the responsible staff on

Call/WhatsApp: +250 785 568 718 or email on: sales@nzizatrainng.ac.rw

HOW TO REGISTER FOR THIS TRAINING?

Follow this link: <https://nzizatrainng.ac.rw/register/> to register yourself, while filling out the form, in the course option, you will have to choose bridges engineering.

End!