

SURAT KETERANGAN
MELAKUKAN KEGIATAN PENGABDIAN KEPADA MASYARAKAT
INSTITUT TEKNOLOGI NASIONAL
No. 301/C.02.01/LPPM/V/2021

Yang bertanda tangan di bawah ini,

Nama : Iwan Juwana, S.T., M.EM., Ph.D.
Jabatan : Kepala
Unit Kerja : LPPM-Itenas
JL. P.K.H. Mustafa No.23 Bandung

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3	Dr. Ir. Imam Aschuri, M.T.	940102	Tenaga Ahli
4	Dr. Yuki Achmad Yakin, S.T., M.T.	20140601	Tenaga Ahli
5	Desti Santi Pratiwi, S.T., M.T.	20190804	Tenaga Ahli
6	Badriana Nuranita, S.T., M.T.	20200201	Tenaga Ahli
7	Rinaldi Alamsyah, S.T.	-	Tenaga Ahli

Telah melakukan kegiatan Pengabdian kepada Masyarakat sebagai berikut:

Nama Kegiatan : NGC Plaxis Training Series #2 Plaxis 2D Training
Tempat : Webinar/Zoom Meeting
Waktu : 21 – 23 April 2021
Sumber Dana : RKAT Prodi Teknik Sipil Tahun 2020

Demikian surat keterangan ini dibuat untuk dapat dipergunakan sebagaimana mestinya.

Bandung, 19 Mei 2021

Lembaga Penelitian dan Pengabdian
kepada Masyarakat (LPPM) Itenas
Kepala,

Iwan Juwana, S.T., M.EM., Ph.D.
NPP. 20010601

LAPORAN KEGIATAN PENGABDIAN KEPADA MASYARAKAT



NGC PLAXIS TRAINING SERIES #2 PLAXIS 2D TRAINING

Ketua Tim :

Dr. techn. Indra Noer Hamdhan, ST., MT.

Anggota Tim :

**Ikhya, ST., MT., M.M.
Imam Aschuri, Ph. D.
Dr. Yuki Achmad Yakin, ST., MT.
Desti Santi Pratiwi, ST., MT.
Badriana Nuranita, ST., MT.
Rinaldy Alamsyah, ST.**

**Program Studi Teknik Sipil
Fakultas Teknik Sipil dan Perencanaan
Institut Teknologi Nasional
Bandung**

2021

HALAMAN PENGESAHAN

Judul : NGC Plaxis Training Series #2: Plaxis 2D Training

Ketua Tim Pengusul

Nama : Dr. techn. Indra Noer Hamdhan

NIP : 11785

Jabatan/Golongan : Lektor / IIID

Jurusan/Fakultas : Teknik Sipil / Fakultas Teknik Sipil dan Perencanaan

Bidang Keahlian : Rekayasa Geoteknik

Alamat Kantor : Jl. PHH Mustofa No. 23 Bandung

Lokasi Kegiatan

Wilayah Mitra : Provinsi Jawa Barat

Desa/Kecamatan : -

Kota/Kabupaten : Kota Bandung

Provinsi : Jawa Barat

Jarak PT ke Mitra : -

Luaran : -

Waktu Pelaksanaan : 21 April – 23 April 2021

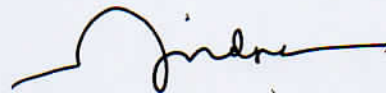
Total Biaya : Rp10.000.000,00

Bandung, 30 April 2021

Mengetahui,
Dekan Fakultas

 **itenas**
FTSP
(Dr. Soni Darmawan)

Ketua Tim Pengusul



(Dr. techn. Indra Noer Hamdhan)

Disahkan Oleh
Ketua LP2M,

Iwan Juwana, S.T., M.EM., Ph.D.
NIP: 20010601

LAPORAN KEGIATAN

Tujuan

Tujuan dari kegiatan NGC Plaxis Training Series #2 : Plaxis 2D Training ini adalah untuk memberikan wawasan, pengetahuan, praktik, serta wadah diskusi kepada para peserta baik yang berasal dari akademisi maupun praktisi yang bergerak di bidang geoteknik serta membutuhkan *upgrading* keahlian dan pengetahuan terkait *Deep Excavation and Ground Improvement* melalui perangkat lunak PLAXIS 2D.

Deskripsi Kegiatan

Kegiatan ini dilaksanakan selama 3 hari, yakni pada 21 April – 23 April 2021 selama 4 (empat) jam setiap hari-nya, dari pukul 13.00 – 15.00 WIB. Lokasi pelaksanaan kegiatan ini dilaksanakan melalui pertemuan *online* (tatap maya) via aplikasi Zoom. Jumlah peserta yang mengikuti pelatihan ini yaitu sebanyak 48 peserta yang tercatat pada formulir pendaftaran maupun daftar hadir setiap harinya yang disampaikan melalui *Google form*. Adapun peserta yang mengikuti pelatihan ini berasal dari berbagai institusi, seperti Institut Teknologi Nasional Bandung, Politeknik Negeri Bandung, Institut Teknologi Sumatera, Universitas Lampung, Politeknik Negeri Semarang, dan berbagai konsultan geoteknik (daftar peserta terlampir).

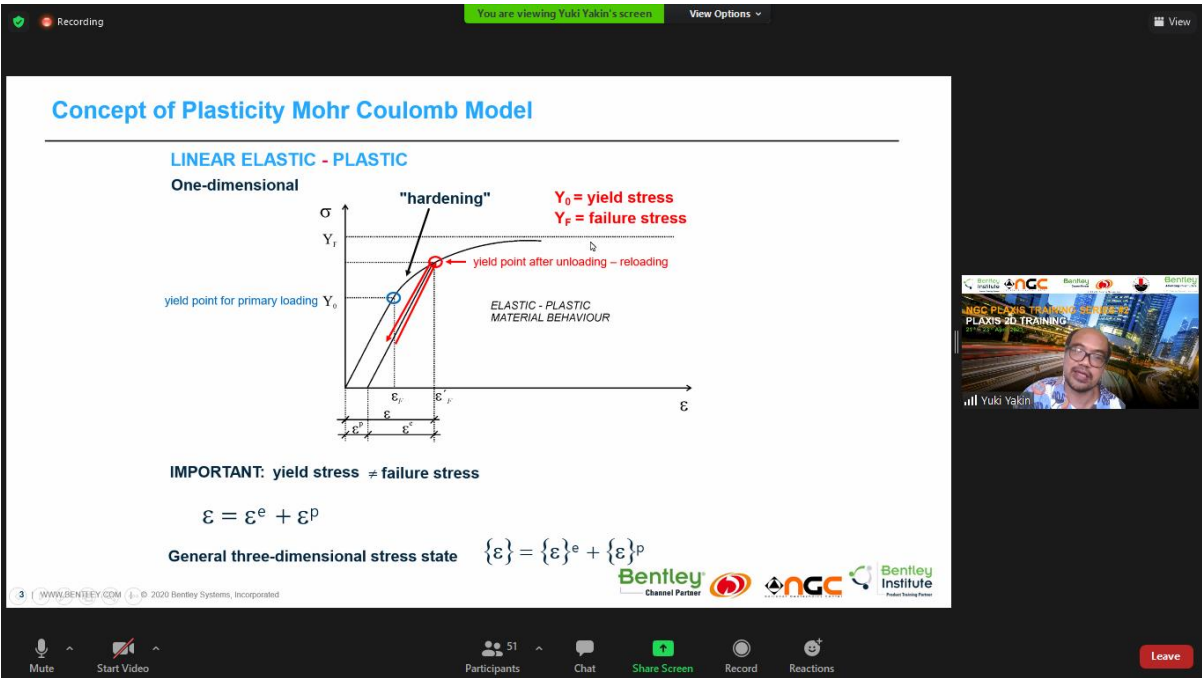
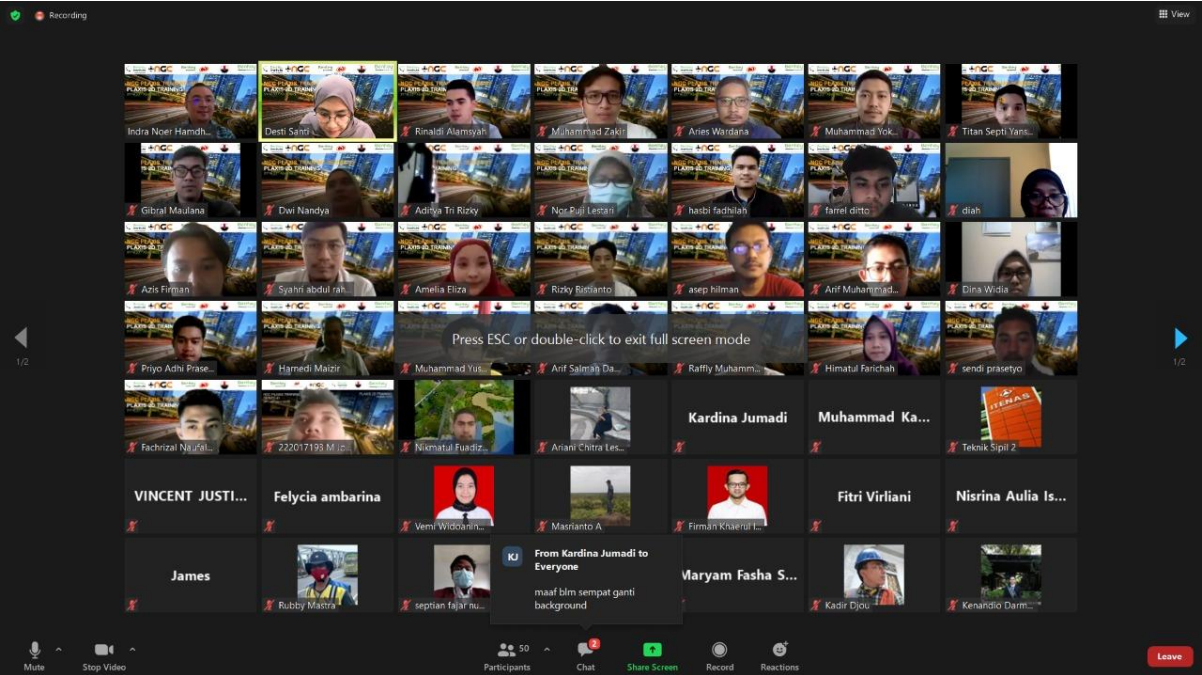
Materi-materi yang disampaikan pada kegiatan pelatihan ini adalah sebagai berikut (jadwal pelaksanaan terlampir):

1. Hari ke-1 Plaxis 2D Training:
 - Introduction to Finite Element Modeling
 - Plasticity Mohr-Coulomb & Hardening Soil Model
 - Structural elements in Plaxis
 - Initial Stresses
 - Calibration of HS model
2. Hari ke-2 Plaxis 2D Training:
 - Modeling of deep excavation
 - Excavation of building pit (MC)
 - Excavation of building pit (HS) with geogrid approach
 - Excavation of building pit (HS) with embedded beam approach
3. Hari ke-3 Plaxis 2D Training:
 - Modeling groundwater
 - Modeling of undrained behaviour and consolidation
 - Modeling of ground improvement
 - Modeling of embankment improved with PVD
 - Modeling of embankment improved with PVD + Vacuum

Para peserta yang mengikuti pelatihan ini mendapatkan Modul Pelatihan dan sertifikat resmi dari *Bentley Institute*.

BUKTI KEGIATAN

Hari Pertama Kegiatan



Hari Kedua Kegiatan

Recording

3D EXAMPLE - PROBLEM SPECIFICATION

The diagrams illustrate a 3D problem specification for a geotechnical analysis. On the left, a plan view shows two buildings, Building 1 and Building 2, with dimensions and a central 'STRUT' area. On the right, two cross-sections are shown: Cross Section B-B and Cross Section A-A. These sections detail the soil profile, including 'Fine Sand' and 'Clay', and show the placement of 'STRUT' elements. Elevation markers are provided for various levels, such as 0.0, -1.0, -2.0, -3.0, -4.0, -5.0, -6.0, -7.0, -8.0, and -9.0. The diagrams are part of a presentation by Bentley and NGC.

NGC WEBINAR SERIES 13
GEOTECHNICAL ANALYSIS
USING PLAXIS 2D TRAINING

Indra Noer Hamdhan

Zoom Meeting

You are viewing Indra Noer Hamdhan's screen

View Options

Recording

DIAPHRAGM WALL - MODELLING

- Isotropy
 - Linear elastic material behaviour
- Anisotropy
 - Plate elements
 - Linear elastic material behaviour
 - Continuum elements
 - Jointed Rock Model
 - Assumptions:
 - $\nu_1 = \nu_2 = 0.2$
 - $E_2 = \frac{1}{4}E_1$
 - $\Rightarrow EA_2 = \frac{1}{4}EA_1$ (axial stiffness)
 - $\Rightarrow EI_2 = \frac{1}{4}EI_1$ (bending stiffness)

The diagrams illustrate different modeling approaches for a diaphragm wall. The top row shows isotropic models with normal stresses N_1, N_2 and strains ϵ_1, ϵ_2 . The bottom row shows anisotropic models with bending moments M_{11}, M_{22} and curvatures κ_{11}, κ_{22} .

Participants

Chat

Share Screen

Record

Reactions

Leave

Zoom Meeting

Recording

Page 5

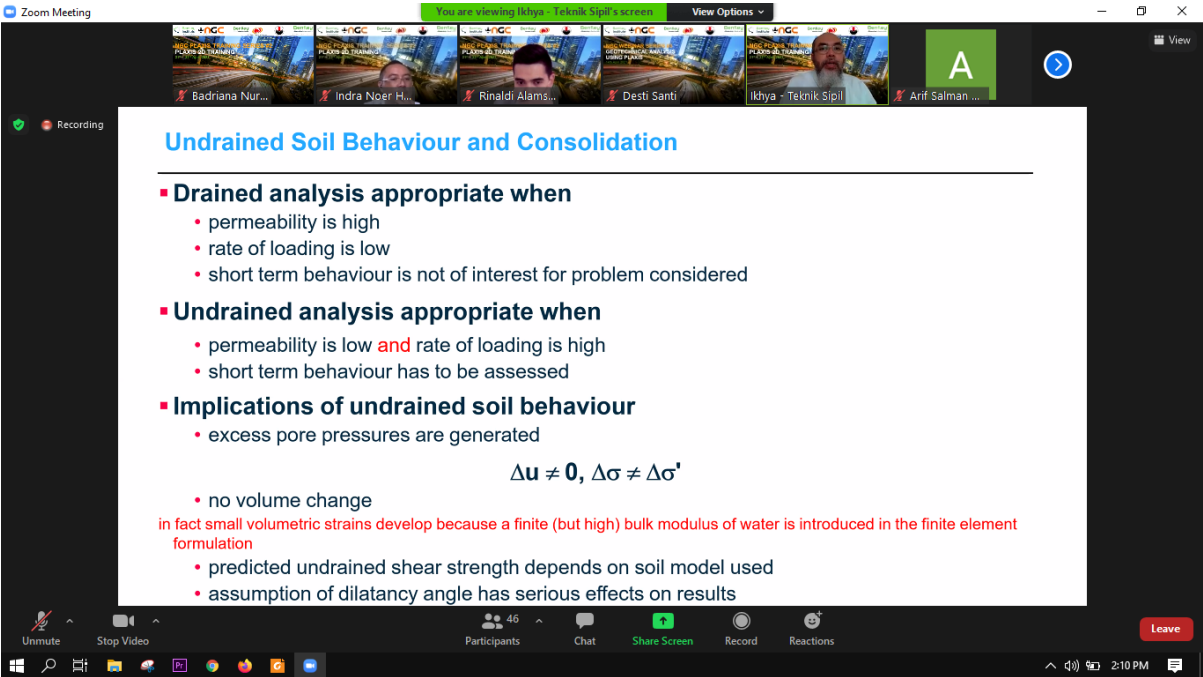
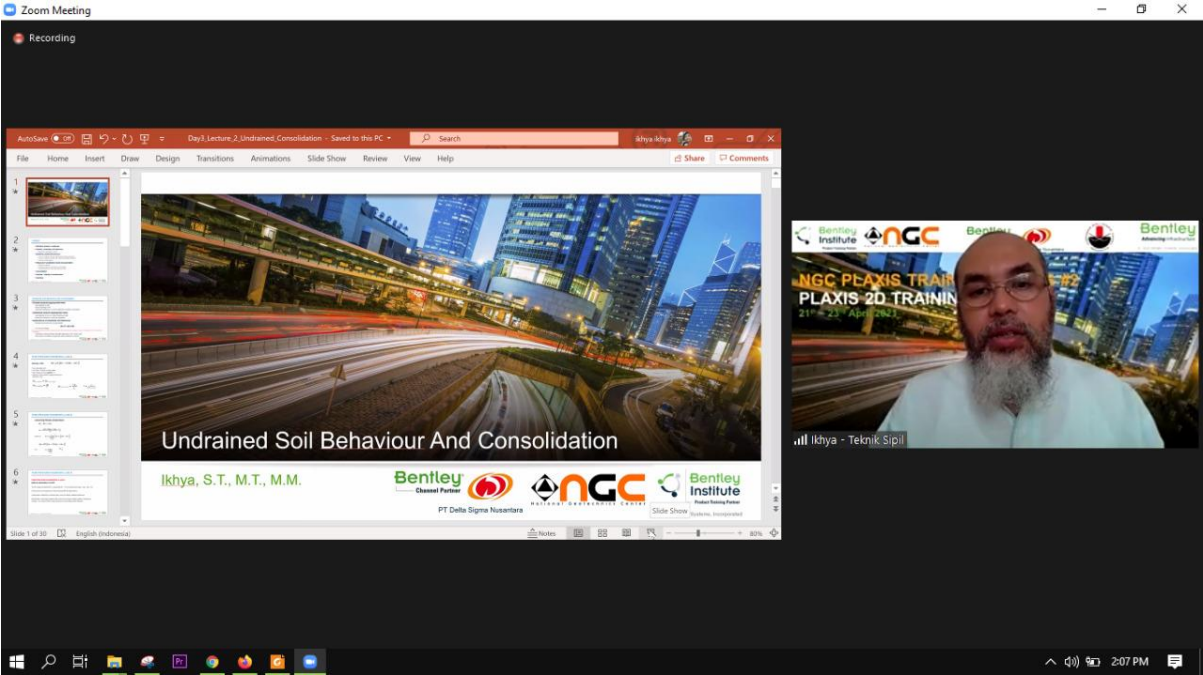
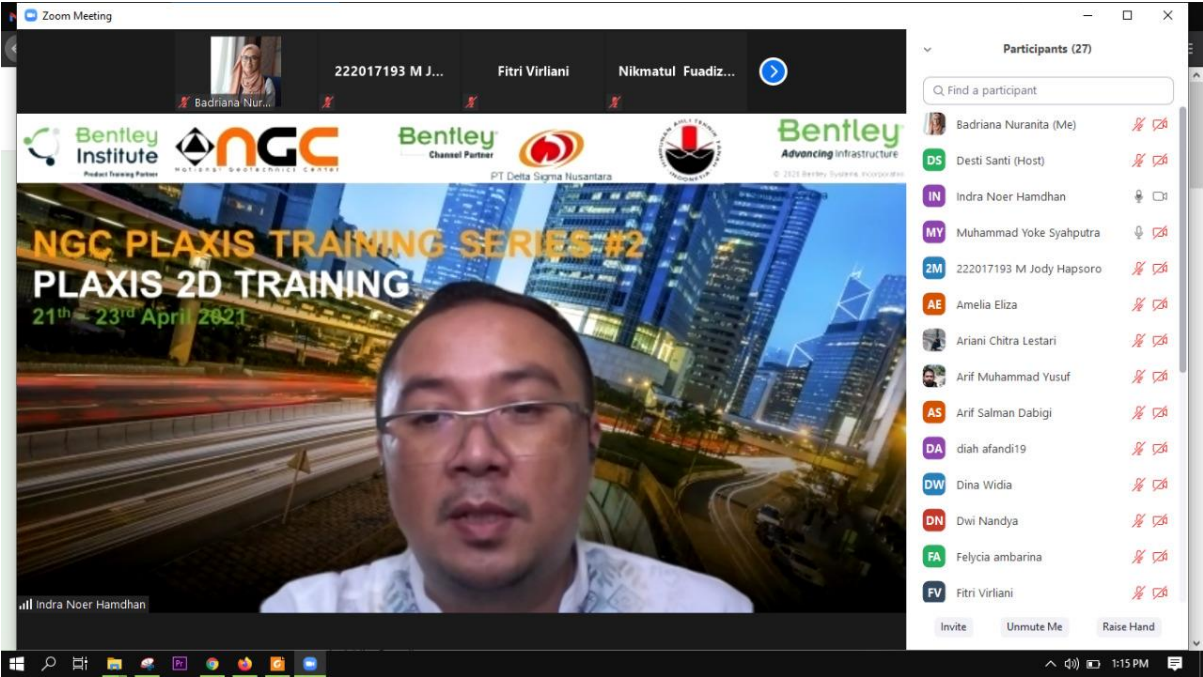
The figure shows a cross-section of a diaphragm wall and the surrounding soil. The wall is represented by a vertical line with a central 'STRUT' area. The soil is divided into layers with different properties. The figure is labeled 'Figure 4: Geometry of the model'.

- Click the Create structure button in the side toolbar and select the Create Plate option to introduce the diaphragm wall.
- Click the Create structure button again and select the Create geometry option to introduce the two geotextile elements that represent the great body.
- Right-click the plate representing the diaphragm wall. Next to Create and click on the Material properties option in the opening menu (Figure 5). In the same way, right-click on the negative structure as well.

NGC WEBINAR SERIES 13
GEOTECHNICAL ANALYSIS
USING PLAXIS

Desti Santi

Hari Ketiga Kegiatan



Zoom Meeting window showing a screen share of a PDF document titled "2-Reference-2D.pdf" and a video feed of participants.

The PDF document displays the "INTRODUCTION" section of a report, detailing the exercise's focus on consolidation analysis with vertical drains. It lists objectives such as modeling drains, changing horizontal permeability (kx), and updated mesh analysis. A schematic diagram (Figure 1) illustrates the cross-section of a road embankment on soft soil, showing dimensions like 64m total width and 4m height, and a 12m wide soft soil layer. The "INPUT" section describes the embankment's geometry and material properties.

The video feed shows several participants, including Badriana Nurantia, Rinaldi Alamsyah, and Desti Santi. The Zoom interface includes controls for Unmute, Start Video, Participants (40), Chat, Share Screen, Record, and Reactions.

Zoom Meeting window showing a screen share of a PDF document titled "2-Reference-2D.pdf" and a video feed of participants.

The PDF document displays the "INTRODUCTION" section, which includes a schematic diagram (Figure 1) of a road embankment cross-section. The diagram shows a 64m wide embankment with a 4m high slope, resting on a 12m wide soft soil layer. The "INPUT" section describes the embankment's geometry and material properties.

The video feed shows participants Rinaldi Alamsyah and Desti Santi. The Zoom interface includes controls for Unmute, Start Video, Participants (40), Chat, Share Screen, Record, and Reactions.

Zoom Meeting window showing a screen share of a PDF document titled "2-Reference-2D.pdf" and a video feed of participants.

The PDF document displays the "RESULTS" section, which includes a schematic diagram (Figure 1) of a road embankment cross-section. The diagram shows a 64m wide embankment with a 4m high slope, resting on a 12m wide soft soil layer. The "RESULTS" section describes the embankment's geometry and material properties.

The video feed shows participants Rinaldi Alamsyah and Desti Santi. The Zoom interface includes controls for Unmute, Start Video, Participants (40), Chat, Share Screen, Record, and Reactions.

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CONTOH SERTIFIKAT



The certificate features a green and dark blue header with the Bentley Institute logo. The main text is centered, and the recipient's name is highlighted in green. The course details are listed in a structured format at the bottom, and the signature of the Global Head is prominently displayed.

Bentley[®] Institute

Certificate of Accomplishment

THIS CERTIFICATE IS PRESENTED TO

Badriana Nuranita

upon successful completion of

Plaxis 2D Training | EN

Product: *PLAXIS 2D* Version: *CONNECT Edition*

Course Date: *April 21, 2021 - April 23, 2021* Learning Units: *12*

Training Partner: *NATIONAL GEOTECHNICS CENTER ITENAS*



Vinayak Trivedi
Global Head, Bentley Institute
Bentley Systems Inc.

Certificate ID: *1179335129*

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Advancing Infrastructure

JADWAL KEGIATAN
PLAXIS 2D ACADEMIC TRAINING
21th – 23th April 2021

DAY 1

No	Name	Session Time (hh:mm)	Total Time (hh:mm)	Name	Type
1	IM	13:00 - 13:45	0:45	Introduction to Finite Element Modelling	Lecture
2	YK	13:45 - 14:45	1:00	Plasticity Mohr-Coulomb & Hardening soil model	Lecture
3	INH	14:45 - 15:45	0:45	Structural Elements In Plaxis	Lecture
4		15:45 - 16:00	0:15	Istirahat dan Shalat Ashar	
5	INH	16:00 - 16:45	0:15	Initial stresses	Lecture
6	RA & DSP	16:45 - 17:45	1:00	Calibration of HS model	Exercise

DAY 2

No	Name	Session Time (hh:mm)	Total Time (hh:mm)	Name	Type
7	INH	13:00 - 14:00	1:00	Modelling of deep excavation	Lecture
8	RA & DSP	14:00 - 15:00	1:00	Excavation of building pit (MC)	Exercise
9	RA & DSP	15:00 - 16:00	1:00	Excavation of building pit (HS) with geogrid approaches	Exercise
10		16:00 - 16:15	0:15	Istirahat dan Shalat Ashar	
11	RA & DSP	16:15 - 17:15	1:00	Excavation of building pit (HS) with Embedded beam approaches	Exercise

DAY 3

No	Name	Session Time (hh:mm)	Total Time (hh:mm)	Name	Type
13	INH	13:00 - 13:45	0:45	Modelling groundwater	Lecture
14	IK	13:45 - 14:45	1:00	Modelling of Undrained Behaviour and Consolidation	Lecture
15	IK	14:45 - 15:15	0:30	Modelling of ground improvement	Lecture
16		15:15 - 15:30	0:15	Istirahat dan Shalat Ashar	
17	RA & DSP	15:30 - 16:30	1:00	Modelling of Embankment Improved with PVD	Exercise
18	RA & DSP	16:30 - 17:30	1:00	Modelling of Embankment Improved with PVD + Vacuum	Exercise