

# Technical Training at ODOT

April 2019

## Strut-and-Tie Modeling (STM) for Concrete Structures

Fee: \$1020

### Dates

July 30 - 31, 2019

### Hours

Day One - 8 am to 5 pm  
Day Two - 8 am to 12 pm

### Location

NW Viticulture Center, Salem, Oregon

### Inside This Announcement

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### Contact Information

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## Purpose

STM provides engineers with a simplistic analysis and design tool for deep concrete bridge elements and disturbed regions that would otherwise require a rigorous refined analysis. STM has long been established as a reasonable analysis tool for disturbed regions and deep beams. However, this modeling tool has had difficulty being integrated into our bridge design state-of-practice, which has resulted in inappropriate use of the simplistic elastic beam theory design for deep beams and disturbed regions. In some cases, it has resulted in poor in-service performance. This training course serves as a significant step in providing the knowledge transfer necessary for STM to be used more frequently and more effectively.

## Professional Development Hours

The “name of training” will satisfy **10** of the Professional Development Hours required by OSBEELS to renew a Professional Engineer (PE) License.

## How to Register

### iLearnOregon Account

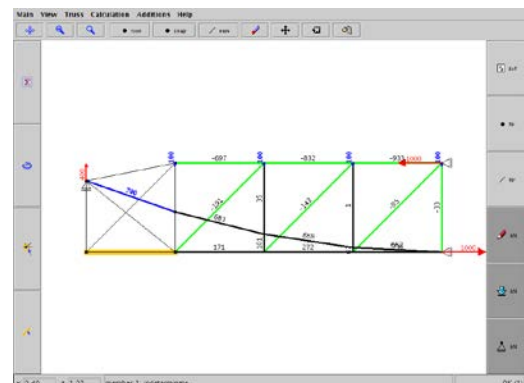
ODOT uses an on-line registration system called iLearnOregon to register people for training events. If this will be your first time registering for a class through iLearnOregon, go to [page 3](#) for more information on how to set-up an account.

### To register for the training

[Click here](#) to register in the “Strut-and-Tie Modeling for Concrete Structures.”

Sign into your account. This should take you directly into class registration page.

Click on the enroll button next to the date of the class you want.



## Payment Method

**Non ODOT:** VISA, Master Charge Cards, and checks will be accepted for payment.

**ODOT:** Your crew training EA will be charged for the training. When you click enroll, a “Course Enrollment Billing Form” will appear. [Click on the button in front of “Billing Code”](#) and fill in the training EA for your crew in the box provided.

Using a Credit Card as the Payment Method?  
For best results, submit your payment using the Google Chrome browser.

## Cancellation Policy

You must cancel at least 11 working days prior to the event. ***No refund will be made when cancellation occurs with 10 working days or less remaining before the training.***

## Course Description

### LEARNING OUTCOMES

The participant will be able to:

- Describe the fundamentals of STM, including its definition, theory, and historical background.
- Explain the application of STM in bridge design, including identification of B-Regions and D-Regions and specific applications to bridge superstructures and substructures.
- Describe the required procedures for STM model development and design.
- Explain element-level considerations in STM, including struts, ties, and nodal zones.
- Summarize serviceability considerations in STM, including crack control, shear stress check, and sizing of members to minimize diagonal cracking.
- Explain the STM provisions presented in AASHTO LRFD.
- Apply STM fundamentals and procedures through a comprehensive design example.

### TOPICS

- Strut-and-Tie Modeling Course Introduction
- Fundamentals of Strut-and-Tie Modeling
- Application of Strut-and-Tie Modeling in Bridge Design
- Strut-and-Tie Modeling Design procedures
- Element-level Considerations in Strut-and-Tie Modeling
- Serviceability Considerations in Strut-and-Tie Modeling
- Strut-and-Tie Modeling Design Example
- End-of-Course Assessment

## **PREREQUISITES**

None

## **DESIGNED FOR**

Bridge Designers, Bridge Inspector, Researchers, Manufacturers

## **ADA**

In this training, you will be:

- Viewing information on a projection screen
- Participating in group discussion(s)/exercise(s)
- Writing on paper or a flip chart
- Reading training materials
- Using a calculator



## Instructions for Creating an iLearnOregon Account

ODOT uses iLearnOregon to register people in their training events. In order to register, you must have an account in iLearnOregon. (**NOTE:** Another person cannot register for you using *his or her* iLearnOregon account.)

### Non-ODOT participants registering through iLearnOregon for the first time:

The first time you register for an event, you will be required to create an account. [Click here to access iLearnOregon.](#)

1. At the iLearnOregon Log In page, click on Create Account.
2. A pop-up window will display directing you to enter all required fields (those marked with an \*) and that a confirmation email will be sent to you.
3. From the User Registration screen, select **Not a State Employee**.
4. Complete the following information to create an account.
  - Enter your **full first** and **last name**. (If you have a common first name or last name, please also include a middle name or initial. This will help with locating your account.)
  - Enter your **email address** where you would like training notification emails to be sent.
  - Enter text for your **login ID**. Your login must be at least 6 characters and cannot contain spaces or special characters such as /, @, or &.
  - For Job Title, leave it as **(None Selected)**. The job titles in the drop down list come from the State's database and only apply to state employees.
  - For Organization, select **Other, Non State Employees** from the drop down list.
  - For **Manager**, leave it as **(None Selected)**.
5. Click **Submit**.
6. You will receive an email with instructions on how to confirm your account. **You must confirm your account before you enroll in the training.**

### ODOT employees registering through iLearnOregon for the first time:

ODOT employees sign on the first time using their OR # for the Login ID and Password. After you have signed on for the first time, you can change your Login ID and Password in your iLearnOregon profile. (If you have enrolled in training through iLearnOregon before now, you may already have a different Login ID and Password. If you do not remember the ID and Password, you can request that information by clicking on "Forgot Login ID?")

### Do Not Remember Your ID or Password?

If you have an iLearnOregon account but have forgotten your log in ID or password, ***please do not build another account.*** Click on the LogIn button, then click on "Forgot your login ID or password?"