

## Autodesk Storm and Sanitary Analysis – 16.0 Hours (2 Days)

### Course Description

#### Summary

Autodesk Storm and Sanitary Analysis Extension (SSA) is an advanced, powerful, and comprehensive modeling package for analyzing and designing urban drainage systems, stormwater sewers, and sanitary sewers. This training course is designed to provide a comprehensive overview of Autodesk SSA's capabilities for engineers, designers, project managers, and municipal engineers of all experience levels, who analyze, design, or review urban drainage stormwater and wastewater infrastructure.

This training course will explain how to use the Autodesk SSA software that comes with AutoCAD® Civil 3D® and AutoCAD® Map 3D, and will concentrate on demonstrating how to apply the software to everyday stormwater and sanitary sewer projects. Tips and tricks on increasing overall proficiency and productivity are provided throughout the training. Upon completion of this course, participants will have a comprehensive knowledge of the Autodesk SSA software and will be able to create, maintain, run, and analyze stormwater and wastewater models with complete confidence.

The primary focus of this training course is to provide "hands-on" experience. Participants will learn by doing, while using the Autodesk SSA software "hands on." The lectures and lab sessions will concentrate on demonstrating how to use the software in "real world" engineering applications. Participants will develop their own stormwater and wastewater infrastructure models and simulate different stormwater and wastewater management alternatives.

As an advanced level course, the Storm and Sanitary Analysis course can be tailored to the individual project requirements of the participants. The course is typically a two-day program based on the time required to cover the core level of the program, but the length can be varied to suit individual client requirements and desire to use real project data within the course.

#### Course Objectives

- Understand stormwater and wastewater infrastructure modeling with Autodesk SSA
- Develop confidence in application of Autodesk SSA to a variety of modeling problems
- Learn how to troubleshoot models
- Learn how to review analysis results
- Learn advanced modeling techniques
- Learn to recognize potential problems in a modeling situation

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### Course Topics

Stormwater fundamentals, including theory and principals that underlie Autodesk SSA  
Model theory, limitations, standard applications  
In-depth, step-by-step model building exercises  
Constructing pipe networks in AutoCAD Civil 3D  
Importing and exporting (round tripping) data with Civil 3D and Map 3D  
Importing aerial orthophotos, CAD drawings, GIS, and other data  
Defining element prototypes  
Sizing and designing detention ponds and outfall structures  
Defining rainfall and precipitation data, how to apply local rainfall design storms  
Modeling water quality, pollutant build-up, wash-off, removal, and treatment  
Various hydrology and time of concentration methods  
Interconnected ponds, tailwater submergence  
Looped networks, parallel networks, surcharging, diversions  
Determining time of concentration (Tc)  
Computing composite Curve Numbers  
Curb and gutter inlet capacity, design, and analysis  
Model calibration and optimization  
Defining sanitary (dry weather) wastewater inflows  
Design pump and lift stations, force mains  
Scenario management  
Pipe network, open channel, culverts, manholes, and storage structures  
Diversion and bypass flow structures  
Junction head losses  
Pipe sizing for parallel or replacement pipes  
Exfiltration and pipe storage structures  
Best management practices (BMPs)  
Hydrodynamic hydraulic and energy grade lines and animation visualization  
Determining system capacity and locating system deficiencies  
Reviewing and interpreting analysis results using graphs, tables, profiles, and plan views  
Model comparisons between pre-developed and proposed drainage systems  
Generating engineering reports  
Analysis output export

### Prerequisites

Thorough familiarity with AutoCAD Civil 3D or Map 3D is essential. Completion of Civil 3D Essentials or Map 3D Essentials is recommended.

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### Learning Objectives

1. Participants will learn the capabilities and limitations of Autodesk SSA from the lectures and exercises provided in the course.
2. Participants will be able to construct stormwater and wastewater infrastructure models with Autodesk SSA from scratch from the exercises provided in the course.
3. Participants will be able to import pipe network models from AutoCAD Civil 3D and complete the stormwater project in Autodesk SSA using the sample data sets used in the course.
4. Participants will learn how to design a detention pond for water quantity and water quality considerations using Autodesk SSA from the lectures and exercises provided in the course.
5. Participants will be able to define rainfall and precipitation data using Autodesk SSA for the sample land development project used in the course.
6. Participants will be able to calculate time of concentration (Tc) using Autodesk SSA for the sample land development project used in the course.
7. Participants will be able to produce comparisons between pre-developed and proposed drainage systems using Autodesk SSA for the sample land development project used in the course.
8. Participants will be able to generate engineering reports using Autodesk SSA for the sample land development project used in the course.

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AUTODESK STORM AND SANITARY ANALYSIS – TWO DAYS	
Overall Course Length	16 Hours
Instructional Time	14 HOURS
PROFESSIONAL DEVELOPMENT HOURS (PDHs)	
New York State Land Surveyors	N/A
New York State Professional Engineers	14.0 PDHs



This course is a registered Continuing Education class with the AIA. Courses taught by CivilTraining, LLC meet continuing education/professional development requirements for Alabama, Delaware Professional Engineers, Georgia, Illinois, Kentucky, Michigan, Missouri, Nevada, New Mexico, Ohio, Pennsylvania, South Carolina, Tennessee Professional Engineers, Texas Professional Engineers, Utah, Virginia, and West Virginia, and the Association of State Floodplain Managers has approved this course for 12 core Continuing Education Credits. CivilTraining, LLC is an approved Florida Board of Professional Engineers Continuing Education Provider for Area of Practice courses, an approved provider of Continuing Professional Competency (CPC) requirements for Maryland Professional Engineers and Land Surveyors, approved by the Maryland Boards for Professional Engineers and Land Surveyors, and an approved provider of CPC courses for New Jersey Professional Engineers, approved by the New Jersey State Board of Professional Engineers and Land Surveyors. CivilTraining, LLC, an approved sponsor of continuing education for Professional Engineers and Land Surveyors in New York State, NYS Sponsor #171, has received approval for the above-referenced PDHs for this course. CivilTraining, LLC is an approved sponsor for North Carolina engineers and land surveyors, approved by the North Carolina Board of Examiners for Engineers and Surveyors.