



Course ID: 12d – 2C2

Two Day – Intermediate Civil Design

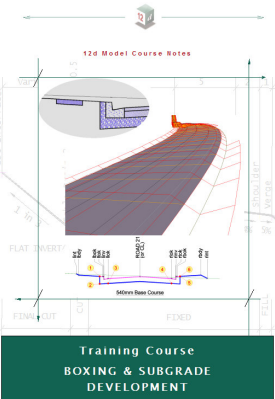
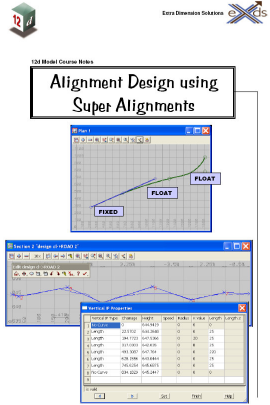
Summary:

This course introduces people to the advanced tools of 12d Model Software for Civil Engineering projects.


Prerequisites:

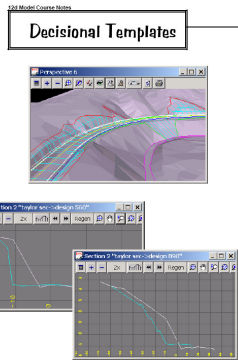
Experience in 12d Model with completion of the Two Day – Basic Civil Design training (12d – 2C1) is required.

Course Contents:

	<h3>Boxing and Subgrade Development</h3> <p>Participants will learn to:</p> <ul style="list-style-type: none"> • Develop pavement layers using the various 12d Boxing rules. • Check and create subgrade layers for volumes calculations. • Apply Boxing via the Many Templates File (MTF). • Calculate the Subgrade volumes via the Apply Boxing Function. • Create Boxing for sub-division (Estate Roads) developments. • Better appreciate the requirements of the Construction Surveyor.
	<h3>Super Alignment I</h3> <p>Version 7 of 12d Model introduced the "Super Alignment". This string type allows Alignments to be created using traditional I.P. methods, OR by defining the elements of the Alignment geometry. For example a curve can be defined using three I.P.s and a radius, OR by two points, a centre and a radius. The latter method results in NO I.P.s and is referred to as "Parametric Design".</p> <p>This session is intended for skilled users of 12d Model who wish to extend their skills to use the Super Alignment Elements.</p> <p>The course will cover:</p> <ul style="list-style-type: none"> • Defining the three types of "Elements" used in the Super Alignment, that is "Fixed", "Floating" and "Free". • Methods of creating and adjusting Fixed Elements.



	<ul style="list-style-type: none">• Connecting Fixed, Floating and Free elements together.• Design of trunk road horizontal geometry using both I.P. and Parametric methods. Comparison of the two methods.• Design of trunk road vertical geometry using Parametric methods. Investigate techniques for fixing low points, and intersecting road centrelines.• Creation of kerb returns and a turning heads, using Fixed and Free elements that are defined from road centrelines.
 <p>SUPER ALIGNMENT II DESIGNING WITH COMPUTATORS</p>	<h3>Super Alignment II</h3> <p>With the release of Version 8, the "Super Alignment" has been packed full with additional tools. The "Computator" has arrived. Developed to help users link geometric strings (road centrelines, kerb returns, roundabouts, interchanges, entry / exit ramps, traffic islands etc), both horizontally and vertically.</p> <p>The power of this development allows users to change one road and have other side roads; kerb returns and associated pedestrian islands automatically update and their changes outputted with greater speed and consistency.</p> <p>This session is intended for skilled users of 12d Model who wish to extend their Super Alignment skills to the next level.</p> <p>The course will cover:</p> <ul style="list-style-type: none">• Creation of a road intersection, linking two roads and kerb returns, so vertical or horizontal changes to the geometry will happen automatically.• Construction of a roundabout using Parametric methods for Horizontal Geometry, then using a mixture of I.P. and Elements for the vertical design.• Construction of Traffic Islands, which will automatically re-size and vertically adjust when the roundabout moves.• "Closing" the roundabout centre island string to simplify the vertical design.• Horizontal and Vertical computation of a left hand turn bay into a proposed sub-division.• Creation of a pedestrian underpass, vertically linked to a proposed road (similar tools would be used to create a grade separated interchange), which will vertically update when the main road is modified.



Decisional Templates

This session is intended to follow on from the Template Modifiers course, and participation in that course or very good working knowledge of 12d model is assumed.

The Decisional Template is an advanced road design tool, used to automatically calculate various scenarios and "decide" which design method is required. Eg. When to introduce benching in a deep cut/fill, or modifying batter slopes due to rock strata's.

Participants will:

- Gain an understanding as to why & when, we use the Decisional Template.
- Create a simple Decisional Template to ensure a project sub-grade remains dry.
- Create coding to ensure 12d automatically generates a table drain when in cut.
- Work through a Decisional Template used to create benching in a deep cutting area and the calculation process 12d model performs.
- Modify a Decisional Template to use different batter treatments given various known strata surfaces (Eg. in rock batter slope 1 in 1, in clay batter 1 in 4).

This course is aimed at users with a good working knowledge of 12d Model, those who have completed the Template Modifiers course.

Please note the content for all EXDS training is the use of 12d Model Software. EXDS does not teach civil and surveying principles.

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