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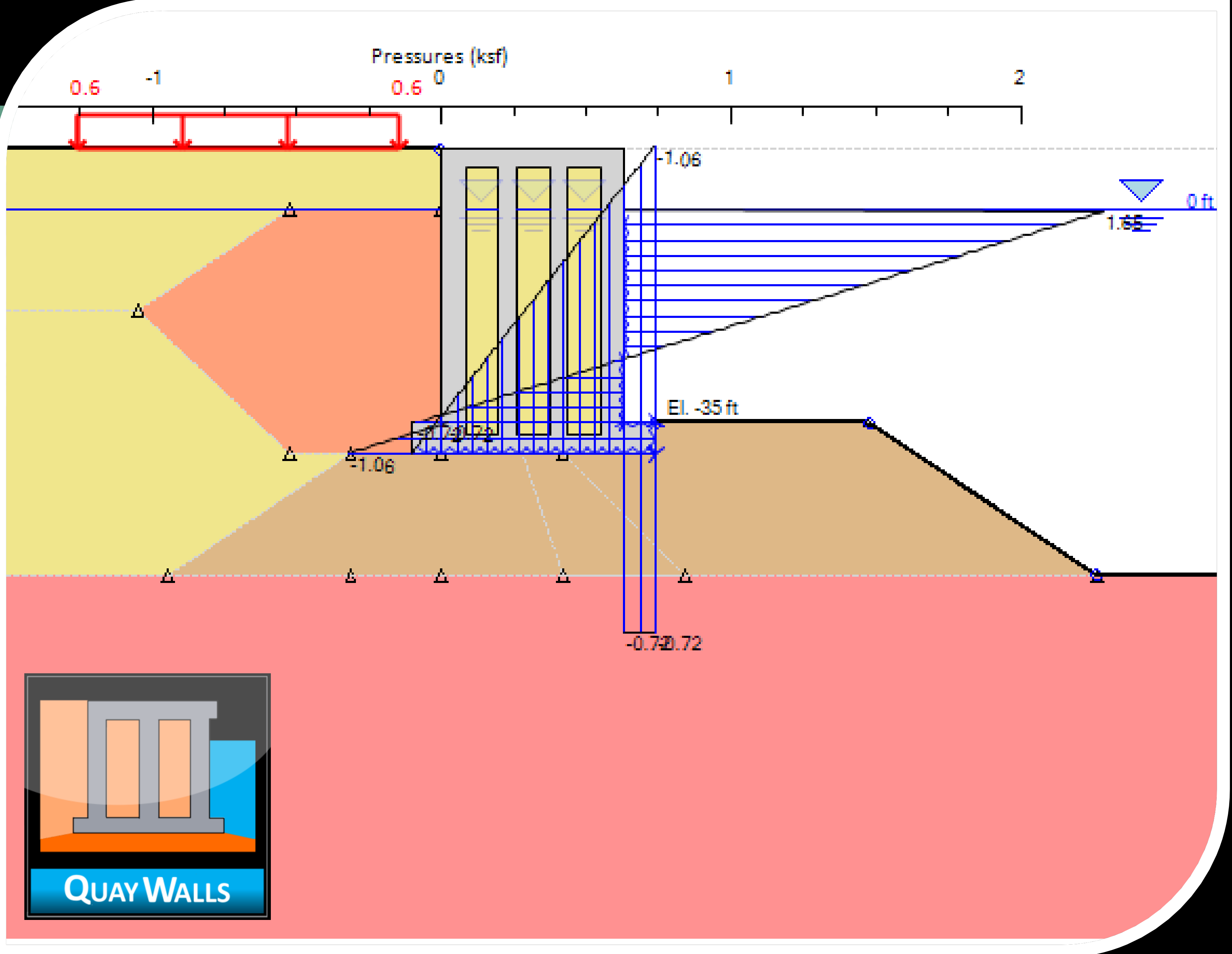
GEOTECHNICAL SOFTWARE & SOLUTIONS

QUAY WALLS

QuayWalls: The Ultimate Software for the Design of Gravity Quay Walls

Presentation: Dimitrios Mamoglou, Senior Engineer, Deep Excavation LLC
mamoglou@deepexcavation.com – T: +1-206-279-3300



Our Company

Deep Excavation LLC
240 W 35th Street, Suite 1004
New York, NY, 10001
USA

Websites:
www.deepexcavation.com
www.deepex.com

Contact Information:
sales@deepexcavation.com
training@deepexcavation.com

- Software solutions for excavation and foundation professionals
- Consulting Services - Design of deep excavations and pile foundations
- Virtual Reality applications for geotechnical engineers and contractors

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PART 1: QuayWalls Software Features and Methods

QUAY WALLS

QuayWalls - Main Software Capabilities

- ✓ Design Gravity Type Quay Walls (Any Shape)
- ✓ Calculate Wave Pressures and Overtopping Flow Rates
- ✓ Model Wizard - Automatic Model Generation
- ✓ Include External Loads (Surface Surcharges - Mooring Loads & More)
- ✓ Calculate Seismic Pressures
- ✓ Full Structural & Geotechnical Design

More information:

Click here to learn more:
QuayWalls – Features and Capabilities

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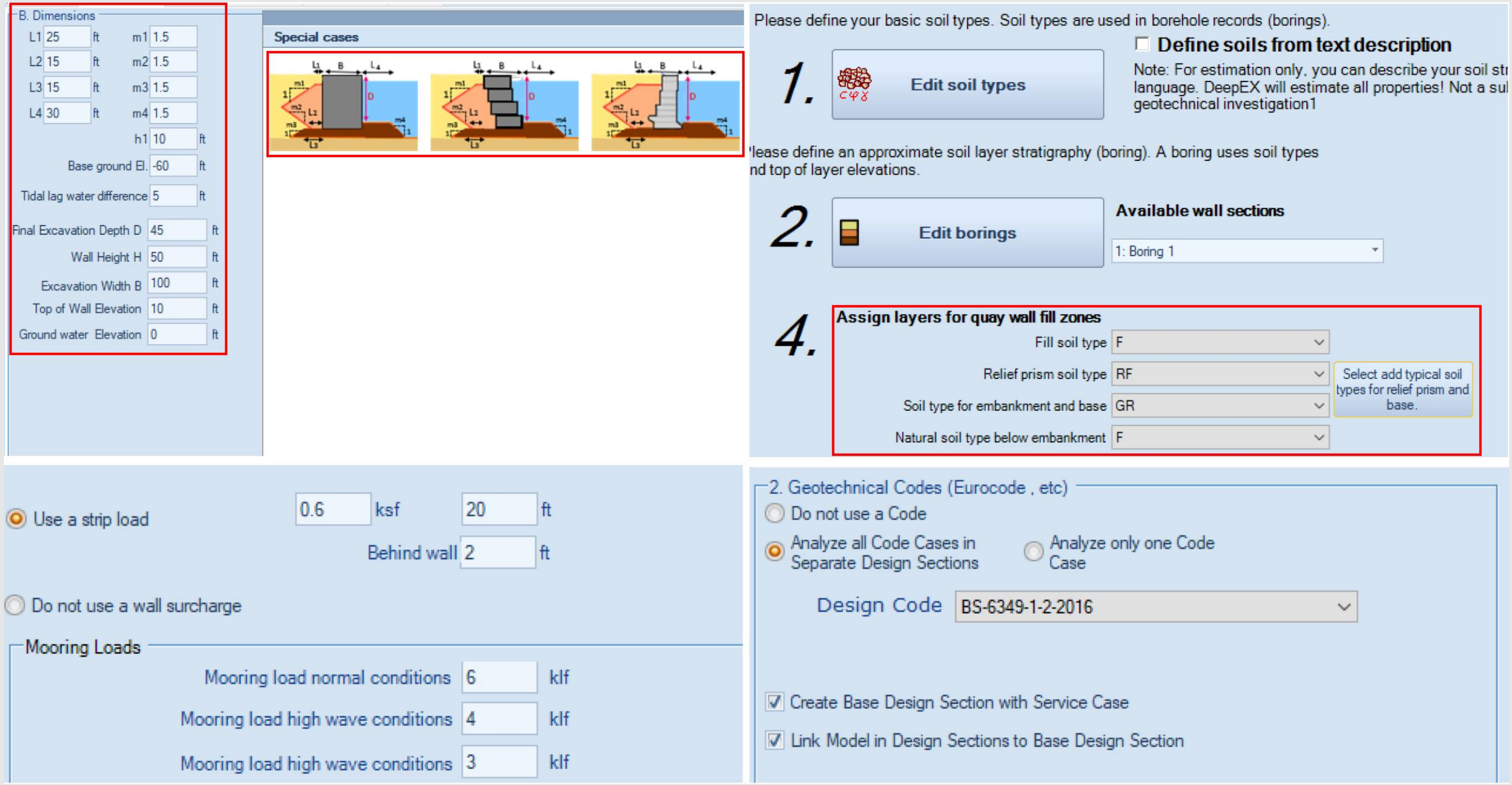
QuayWalls - Model Wizard - Create a Model in Minutes

Automatic Model Generation for all Project Stages:

- ✓ Select Wall Type
- ✓ Define Soil Properties and Stratigraphy
- ✓ Define External Surcharges
- ✓ Define Mooring Loads
- ✓ Define Analysis Settings
- ✓ Define Wave Pressures
- ✓ Select to Apply Seismic Loads



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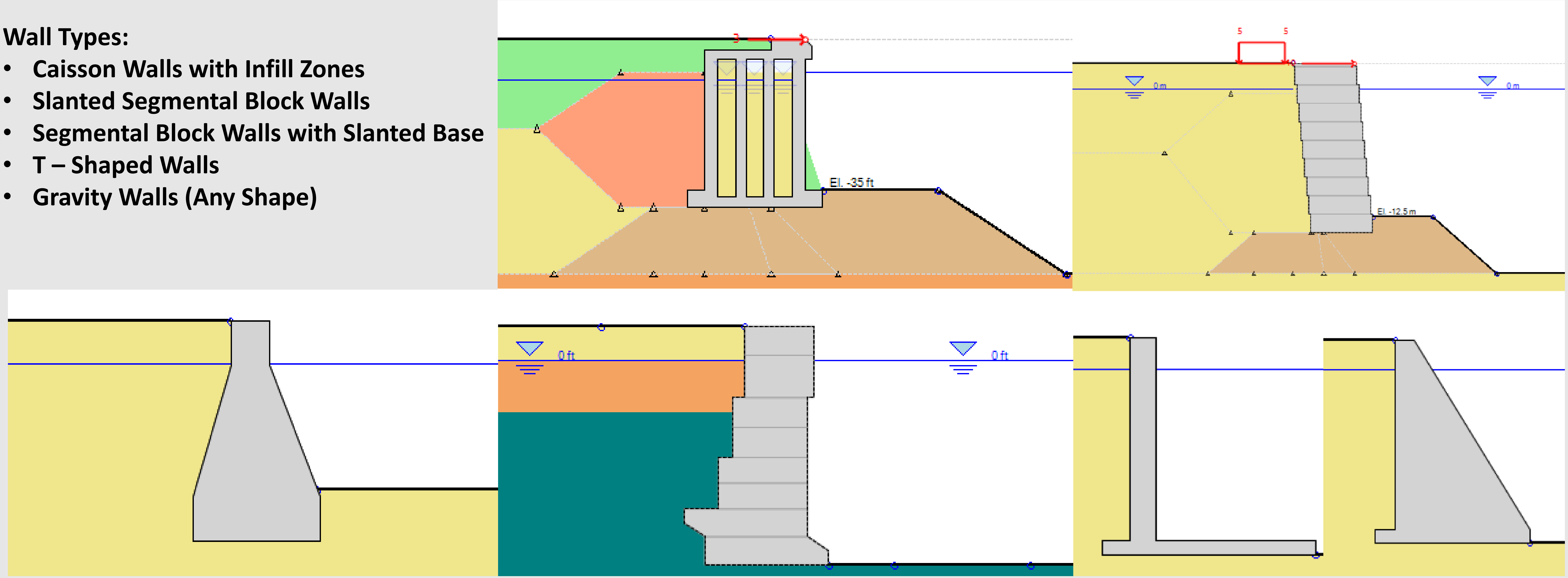
QuayWalls - Available Wall Types

Wall Types:

- Caisson Walls with Infill Zones
- Slanted Segmental Block Walls
- Segmental Block Walls with Slanted Base
- T – Shaped Walls
- Gravity Walls (Any Shape)



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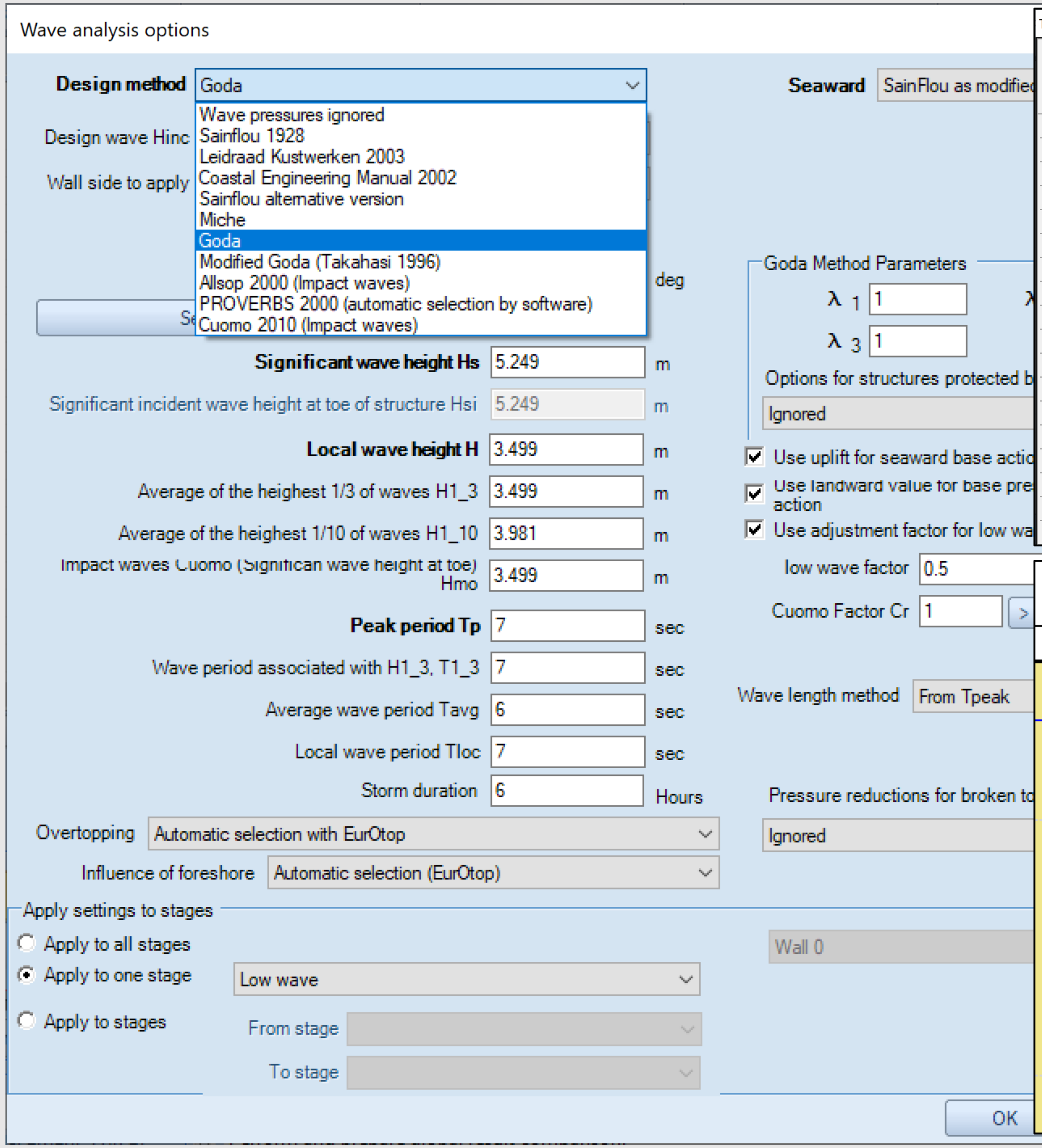
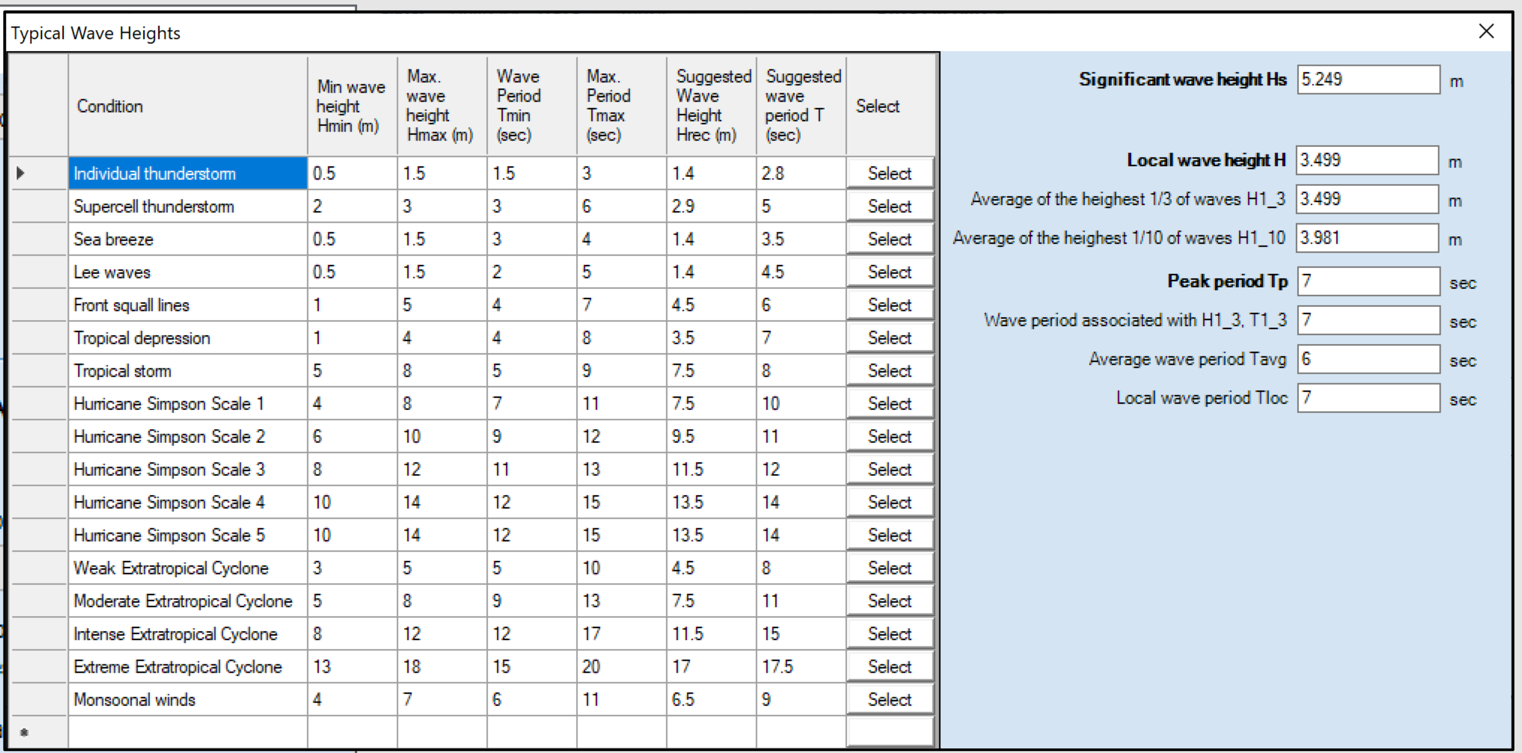
QuayWalls - Wave Pressures and Overtopping Methods

- ✓ Automatic Wave Options
- ✓ CEM 2011 Typical Wave Heights Implemented
- ✓ Overtopping Flow Rates
- ✓ High and Low Wave Scenarios

Wave Pressures Methods:

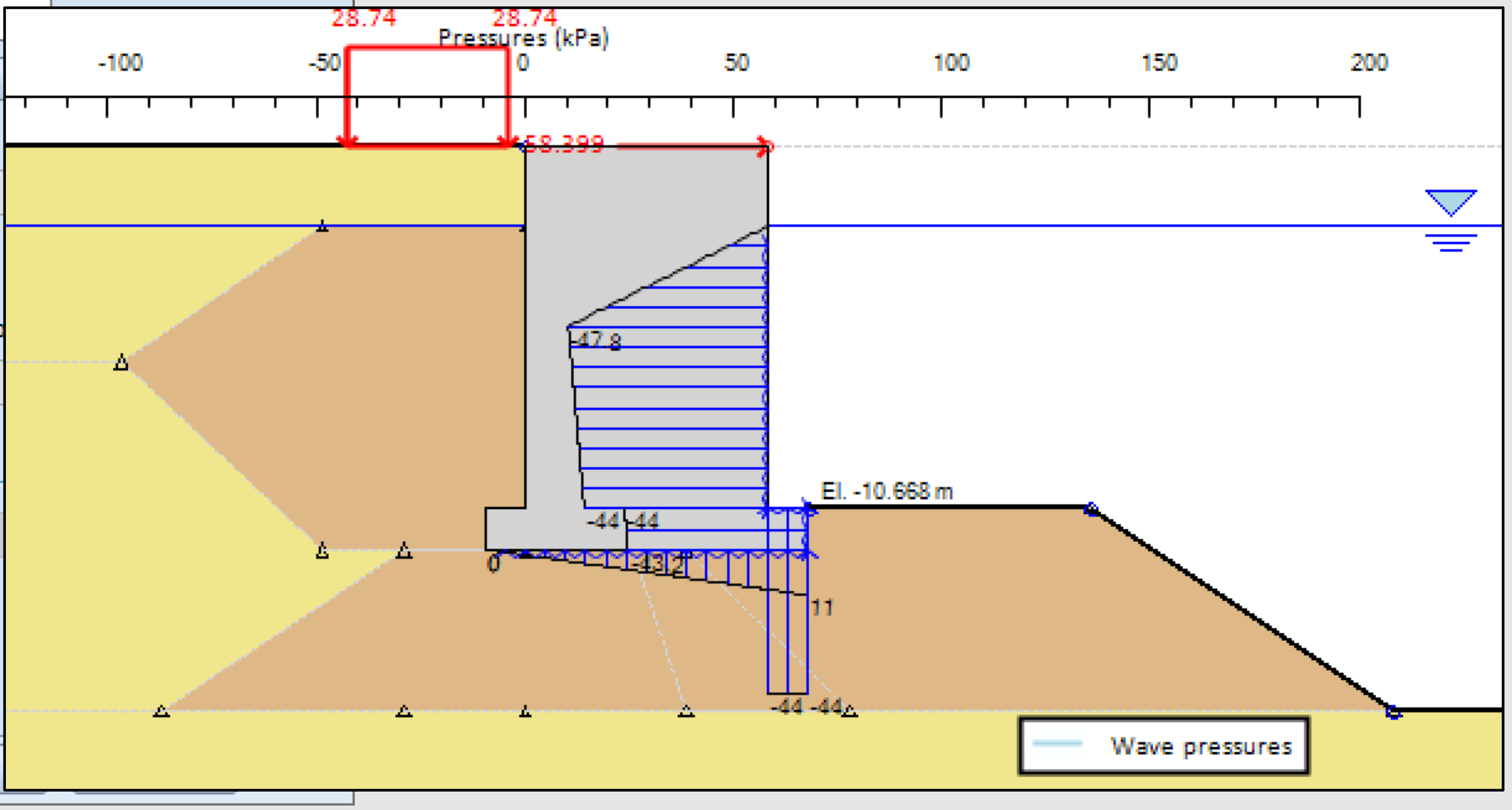
- Sainflou
- Goda
- Coastal Engineering Manual
- Allsop 2000
- PROVERBS 2000
- Leidraad Kustwerken
- Miche
- Cuomo 2010





Typical Wave Heights

Condition	Min wave height Hmin (m)	Max. wave height Hmax (m)	Wave Period Tmin (sec)	Max. Period Tmax (sec)	Suggested Wave Height Hrec (m)	Suggested wave period T (sec)	Select
Individual thunderstorm	0.5	1.5	1.5	3	1.4	2.8	Select
Supercell thunderstorm	2	3	3	6	2.9	5	Select
Sea breeze	0.5	1.5	3	4	1.4	3.5	Select
Lee waves	0.5	1.5	2	5	1.4	4.5	Select
Front squall lines	1	5	4	7	4.5	6	Select
Tropical depression	1	4	4	8	3.5	7	Select
Tropical storm	5	8	5	9	7.5	8	Select
Hurricane Simpson Scale 1	4	8	7	11	7.5	10	Select
Hurricane Simpson Scale 2	6	10	9	12	9.5	11	Select
Hurricane Simpson Scale 3	8	12	11	13	11.5	12	Select
Hurricane Simpson Scale 4	10	14	12	15	13.5	14	Select
Hurricane Simpson Scale 5	10	14	12	15	13.5	14	Select
Weak Extratropical Cyclone	3	5	5	10	4.5	8	Select
Moderate Extratropical Cyclone	5	8	9	13	7.5	11	Select
Intense Extratropical Cyclone	8	12	12	17	11.5	15	Select
Extreme Extratropical Cyclone	13	18	15	20	17	17.5	Select
Monsoonal winds	4	7	6	11	6.5	9	Select



DeepFND/HelixPile - Soils and Stratigraphy

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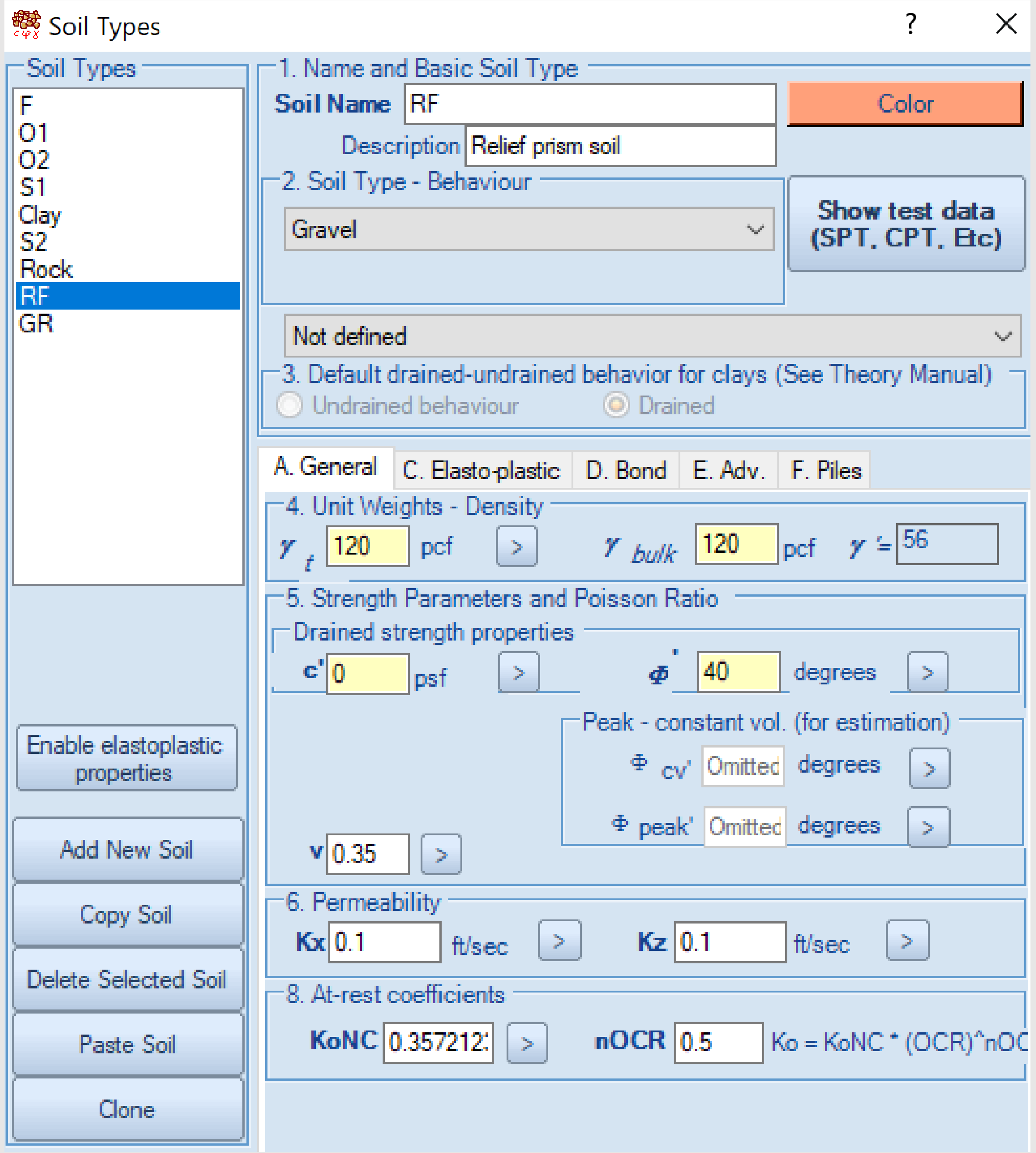
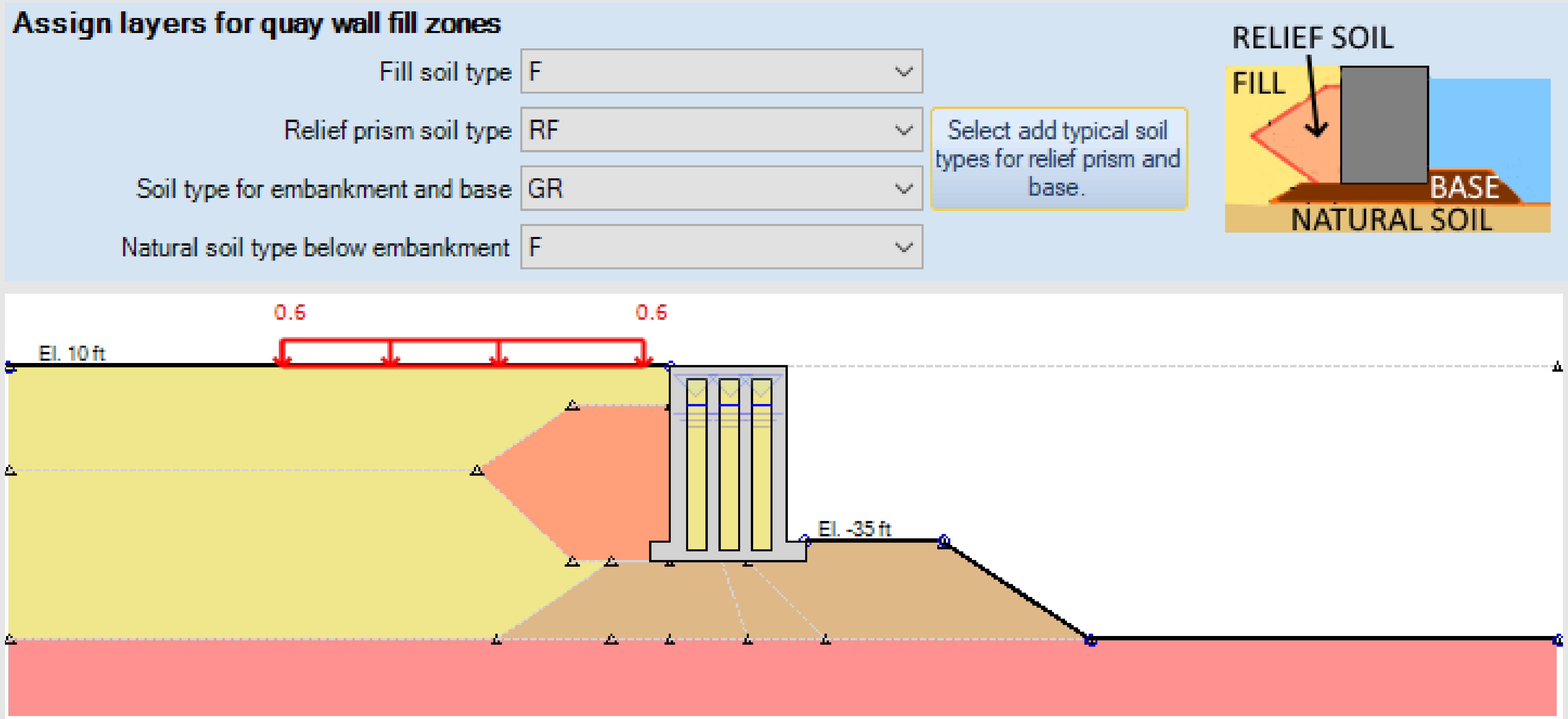


- ✓ Create multiply soil types and define soil properties
- ✓ Soil properties estimation tools (NSPT values - test data)
- ✓ Create multiple borings and define the horizontal stratigraphy
- ✓ Add CPT logs and SPT Records - Estimate properties from records
- ✓ Custom Layer mode: Create inclined soil layers
- ✓ Relief prism and embankment zones automatic generation



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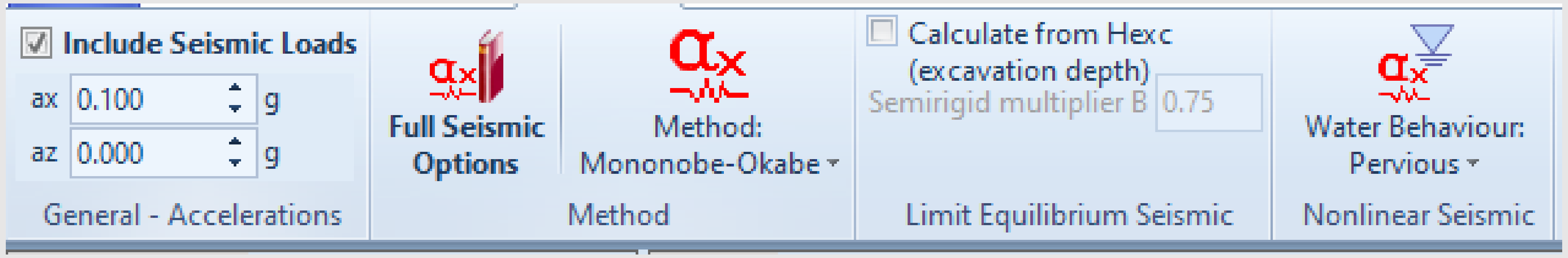
QuayWalls - Seismic Pressures & External Loads

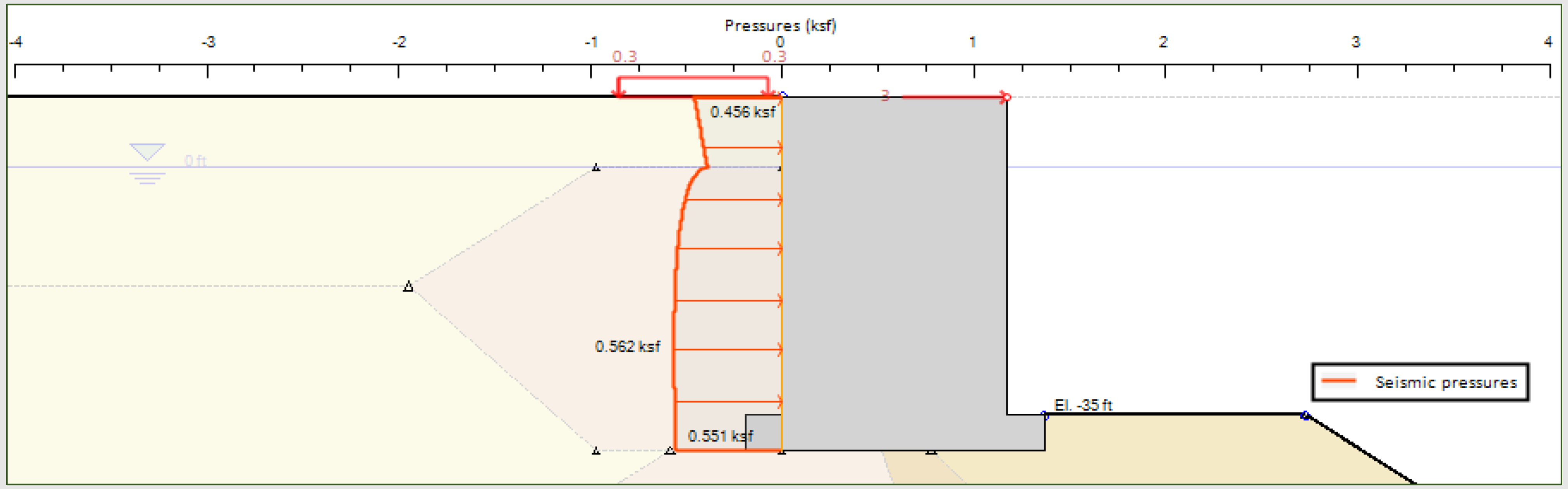
Seismic Pressures - Procedure in QuayWalls

- Define Seismic Accelerations Ax and Az
- Select Seismic Pressures Calculation Method

Seismic Pressure Methods

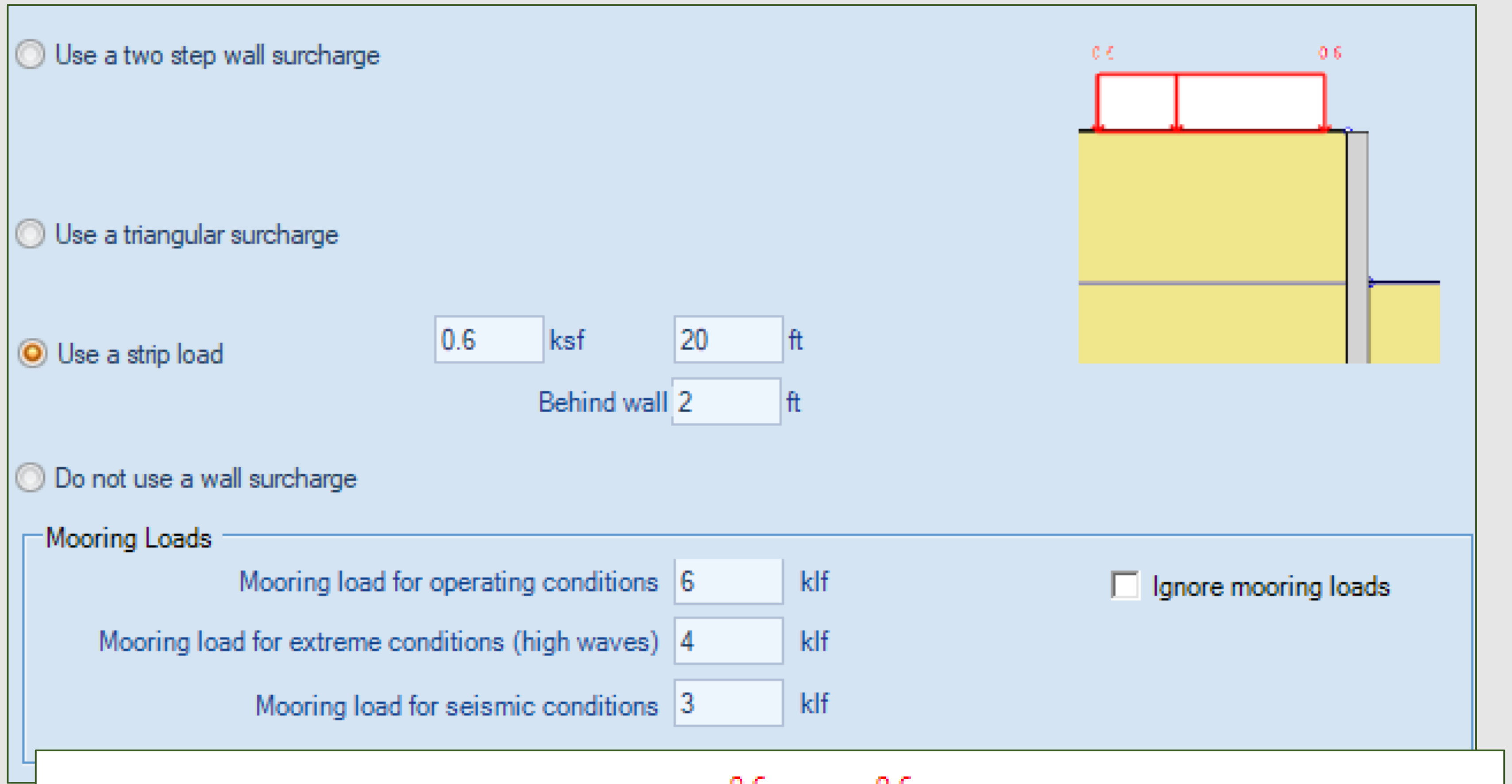
- ✓ Semirigid
- ✓ Mononobe-Okabe (frictional soils)
- ✓ Wood Automatic
- ✓ Wood Manual

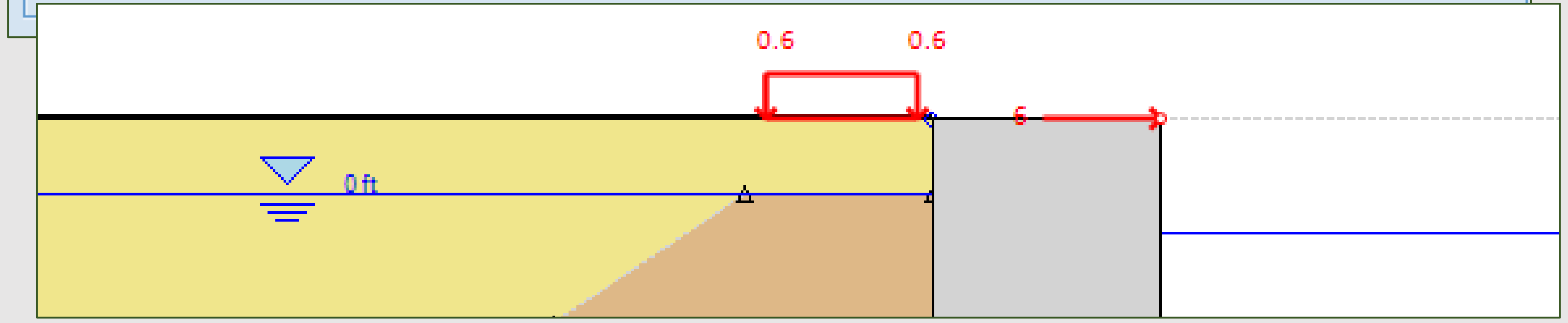




External Loads:

- ✓ Define external surface loads
- ✓ Define loads on the walls
- ✓ Include mooring loads (automatic model wizard options)





QuayWalls - Structural Codes & Design Standards

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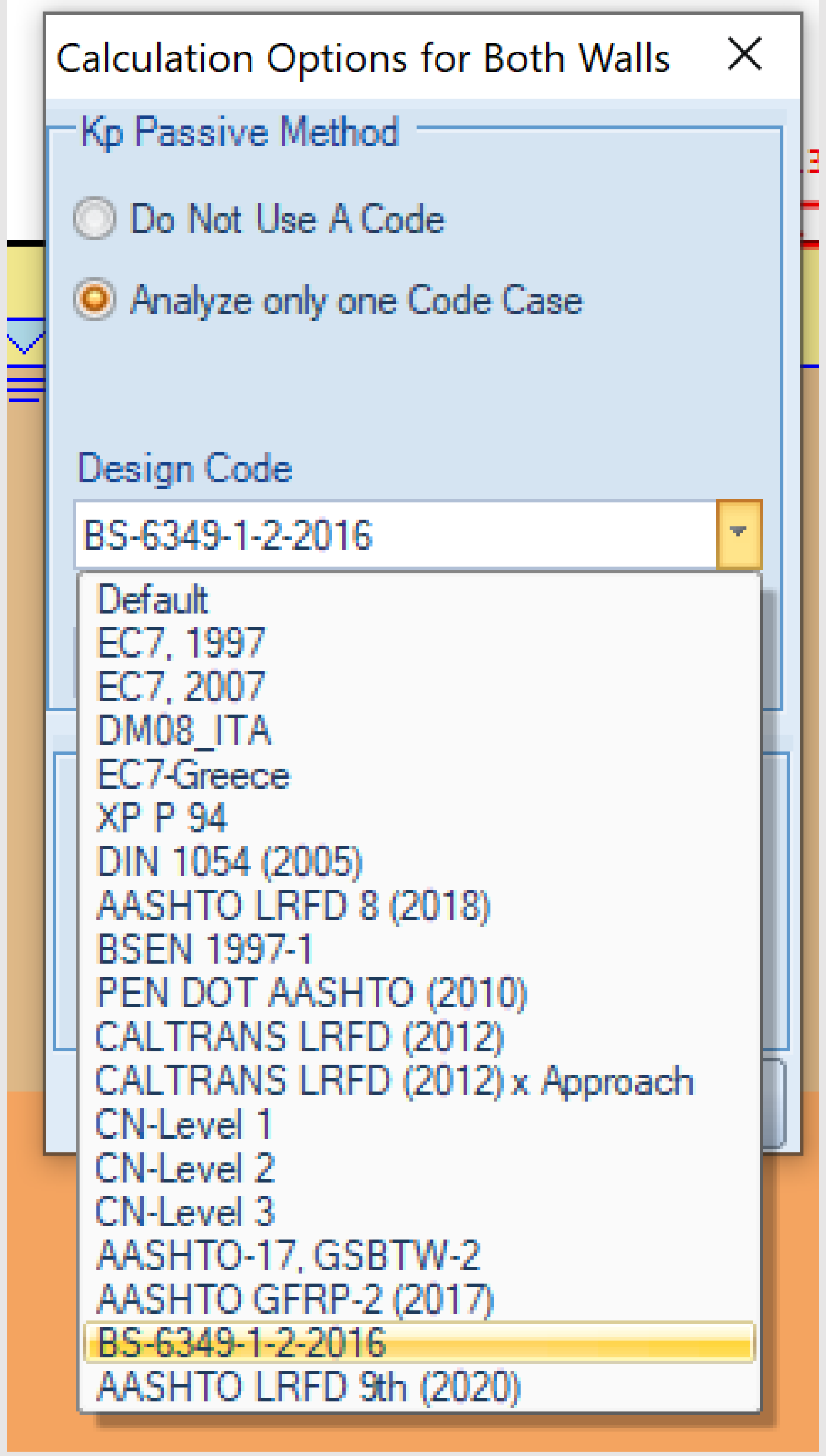
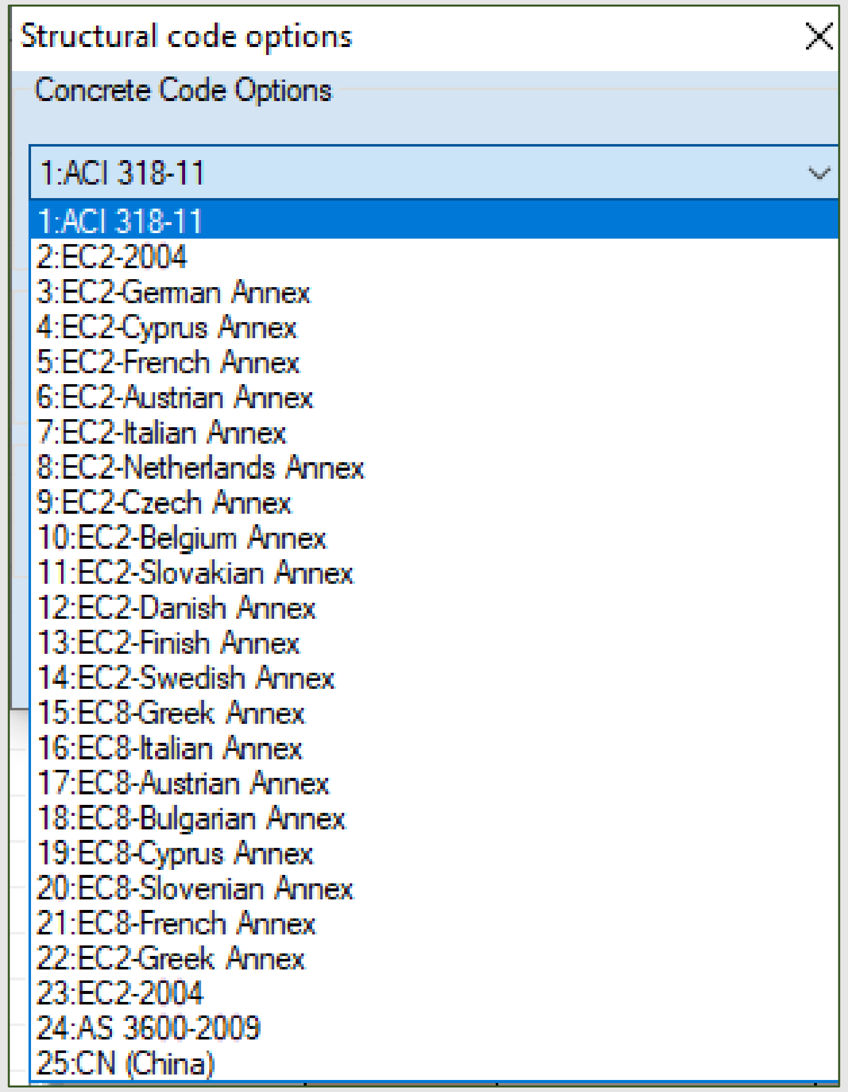
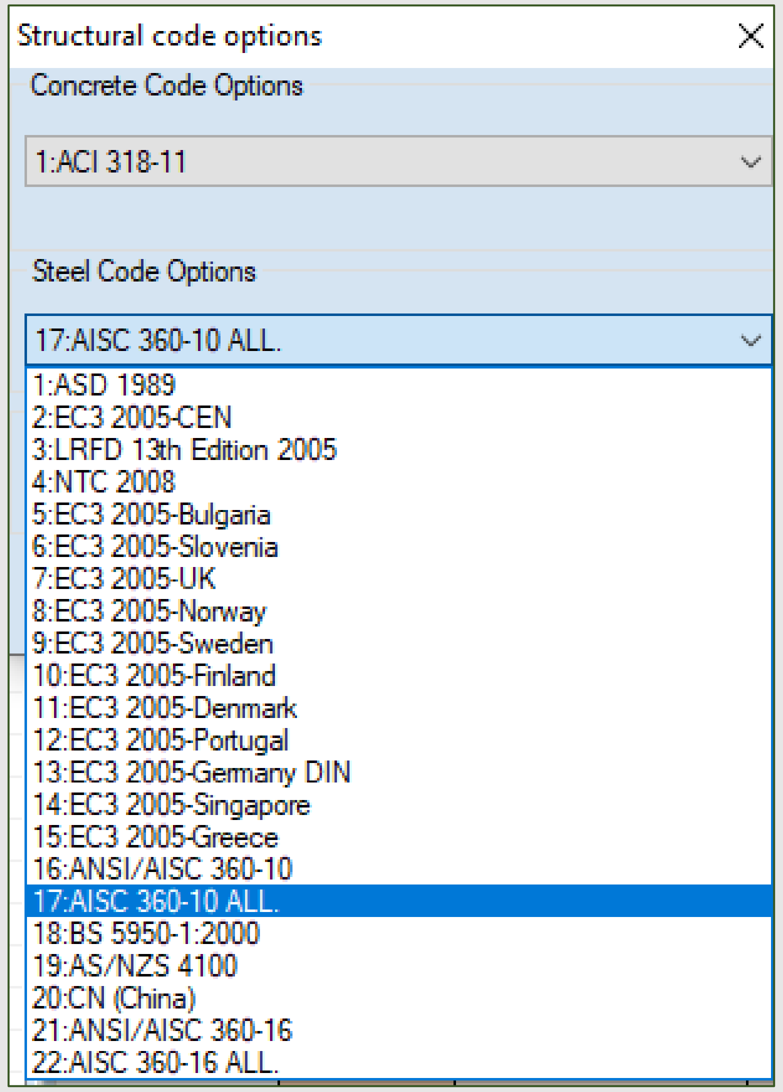
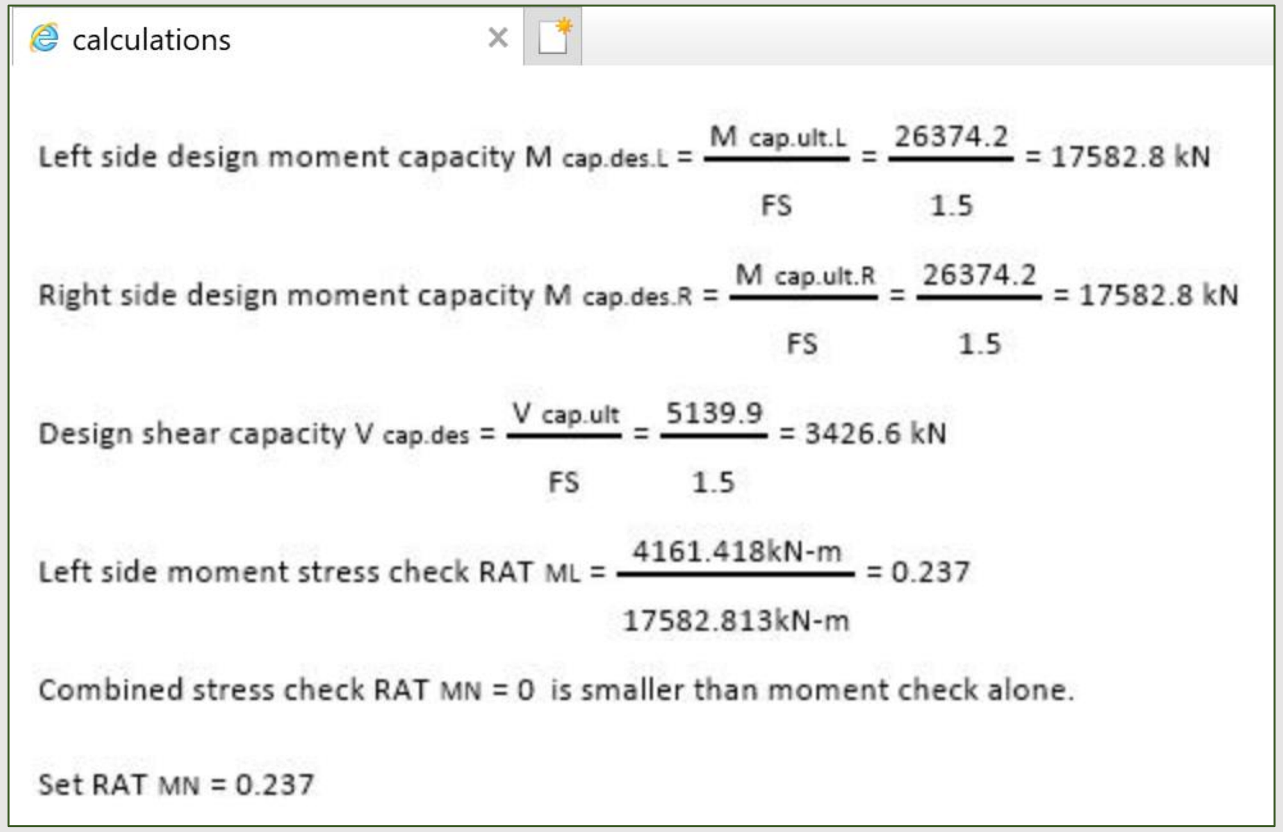
- ✓ Design Standards – Load Combinations: AASHTO LRFD, Eurocode 7, BS-6349 + more
- ✓ Structural Design Codes: ACI, AISC, LRFD, Eurocodes 2, 3 & 8, AS3600, AS 4100, CN + more
- ✓ Calculate moment capacity
- ✓ Perform all checks according to the selected design standard
- ✓ Export detailed report with all structural design calculations









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PART 2: Additional Modules - Expand QuayWalls Software Capabilities

Slope Stability Analysis

Finite Element Analysis

Soil Estimation - Statistical Analysis

Pile Supported Abutments

More information: Click here to learn more: QuayWalls – Features and Capabilities

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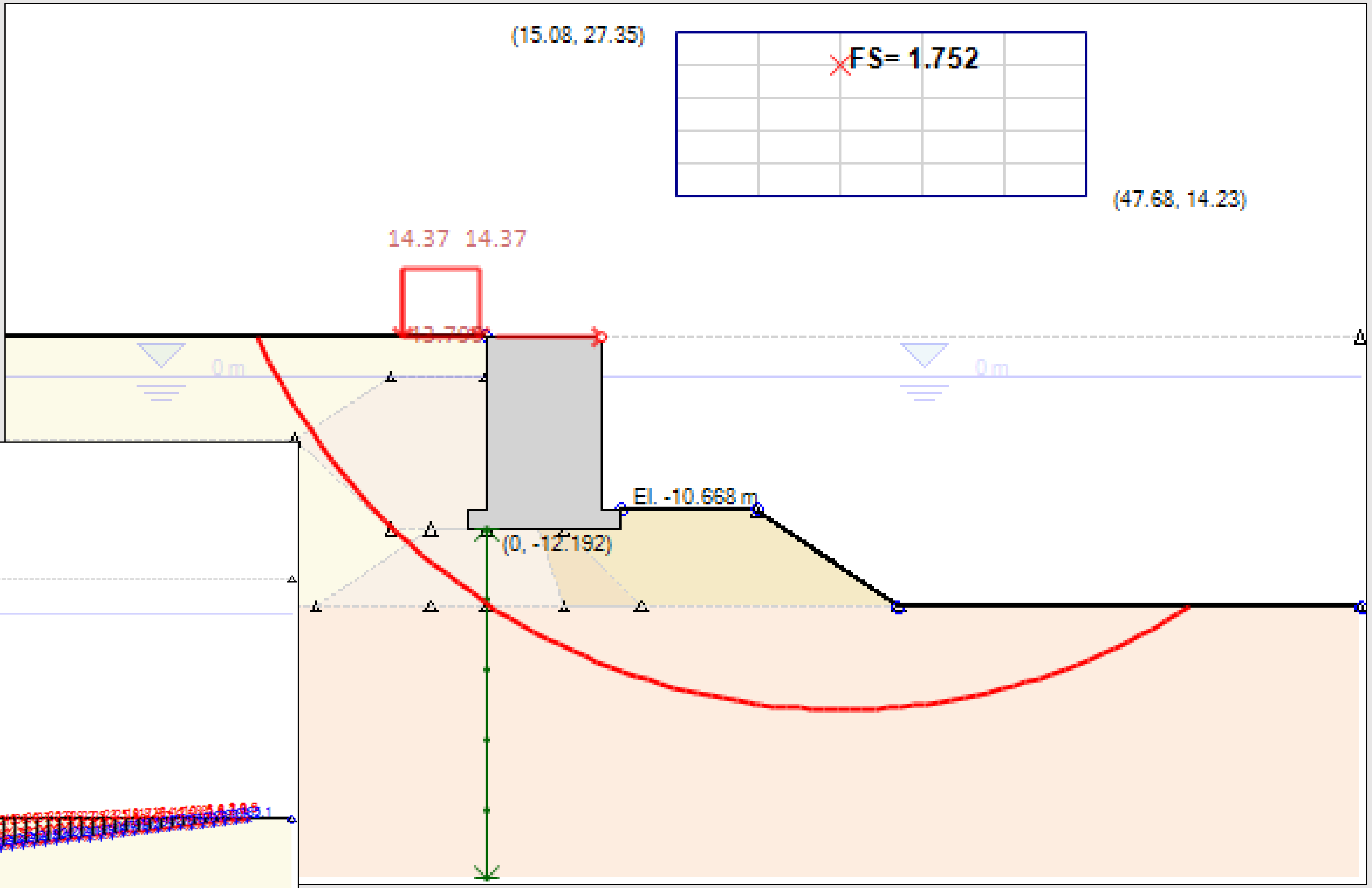
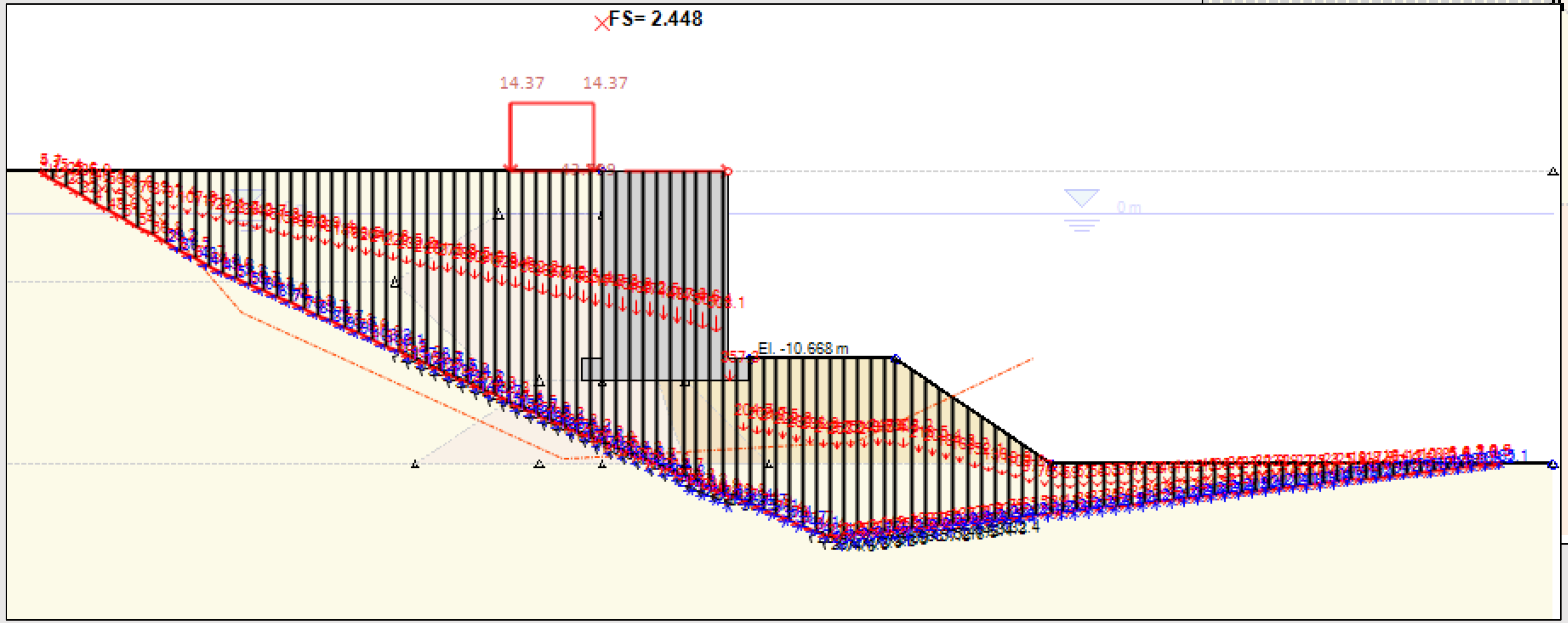
Slope Stability Analysis Module

- ✓ Bishop Method
- ✓ Morgenstern Price Method (G.L.E.)
- ✓ Spencer Method
- ✓ Ordinary (Swedish) Method
- ✓ Automatic Slope Search Method
- ✓ Single Point Slope Center
- ✓ Rectangular Slope Center
- ✓ Define Radius Search Limits
- ✓ Clouterre Standards for Soil Nails





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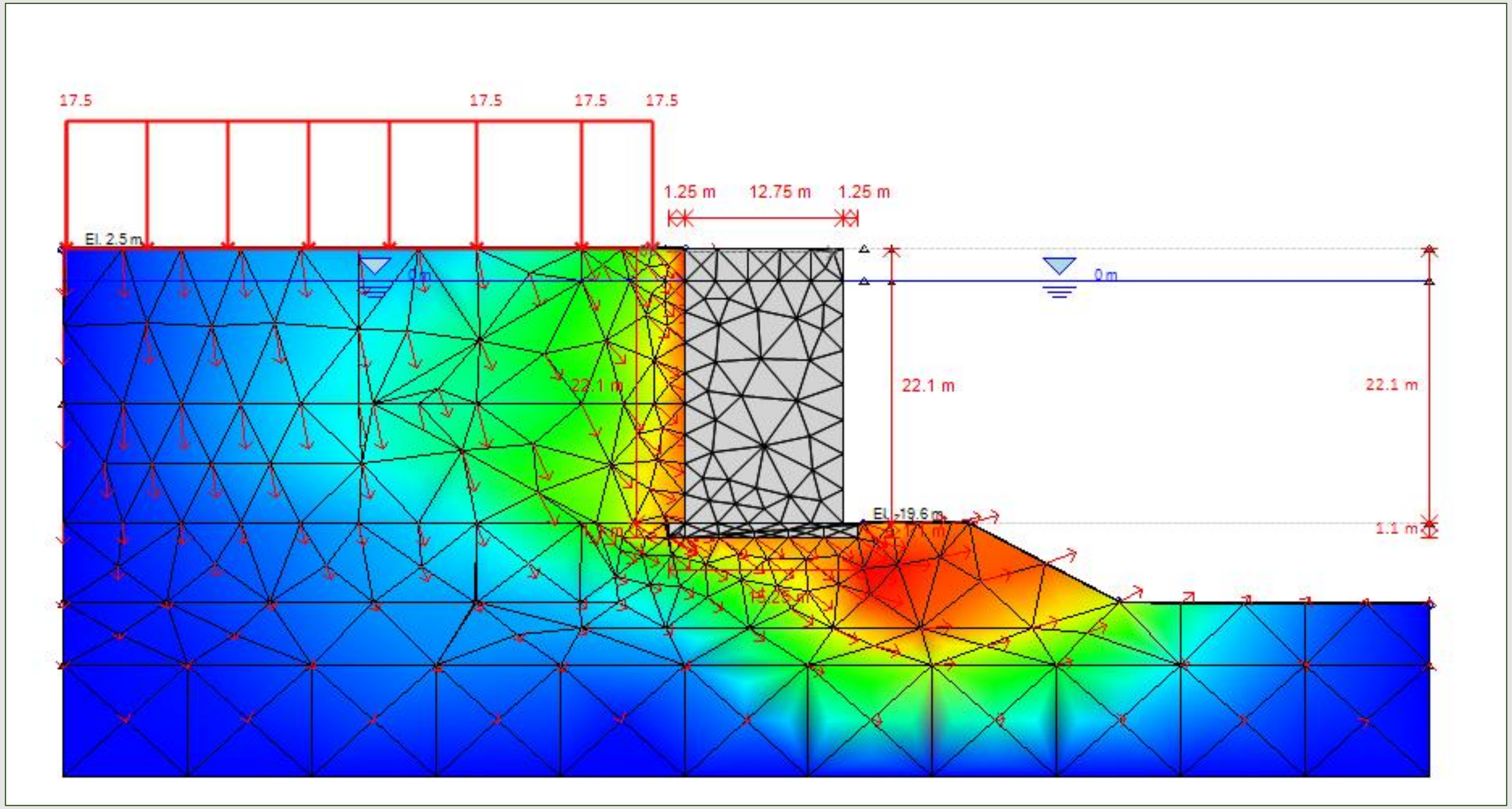
Finite Element Analysis Module

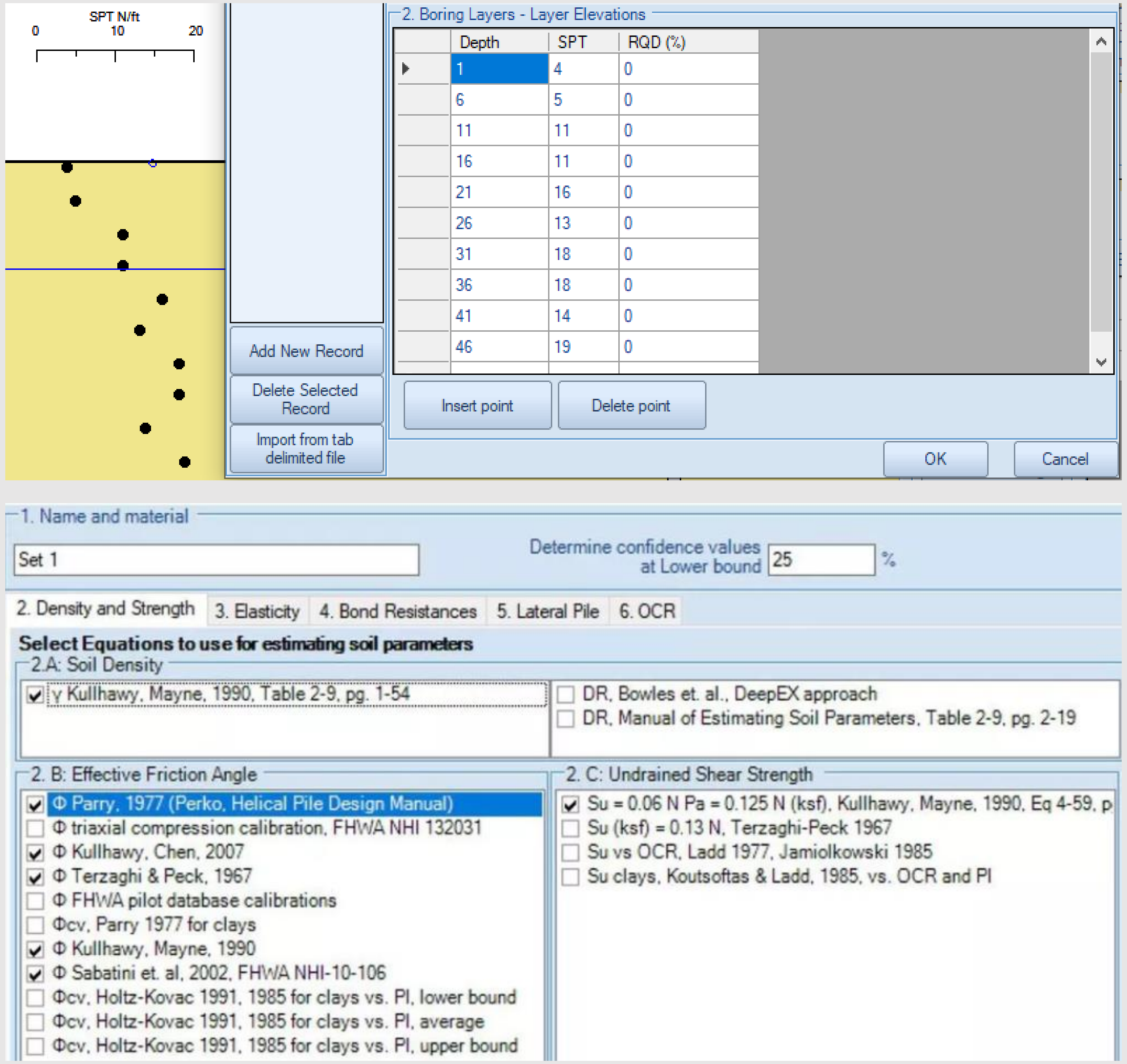
- ✓ Moments and reactions calculated with Finite Elements
- ✓ Automatic FEM mesh generation
- ✓ Consider full soil-structure interaction
- ✓ Calculate surface settlements
- ✓ Display soil mass displacements, settlements & stresses shadings

Soil Models:

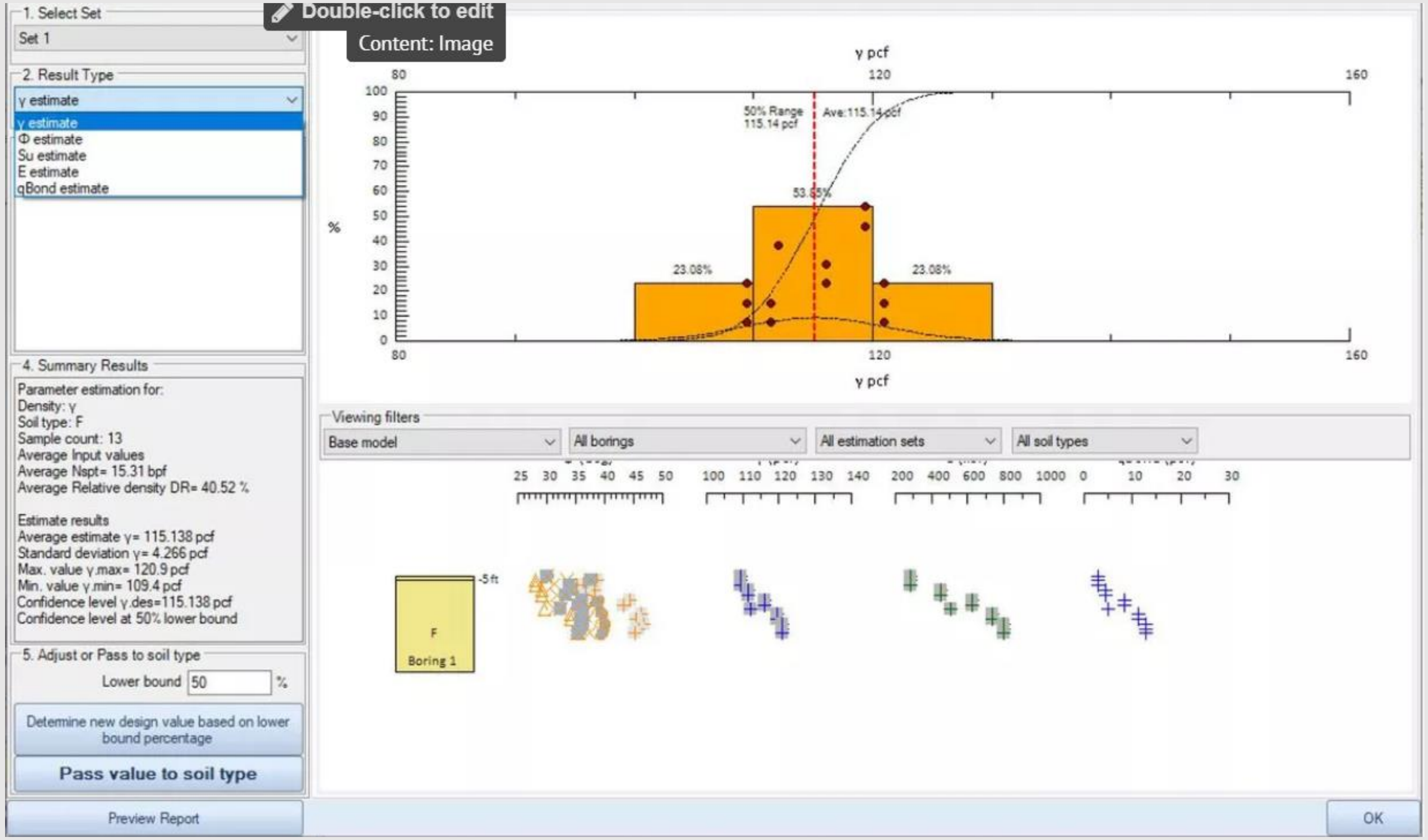
- ✓ Elastoplastic Model
- ✓ Exponential (Hyperbolic) Model (approximate solution)
- ✓ Exponential (Hyperbolic) Model (complete solution): Soil hardening model



Soil Estimation Statistical Analysis Module



- ✓ Estimate Soil Properties with different methods
- ✓ Review a statistical analysis of the estimated properties
- ✓ Select the project values with a high level of certainty



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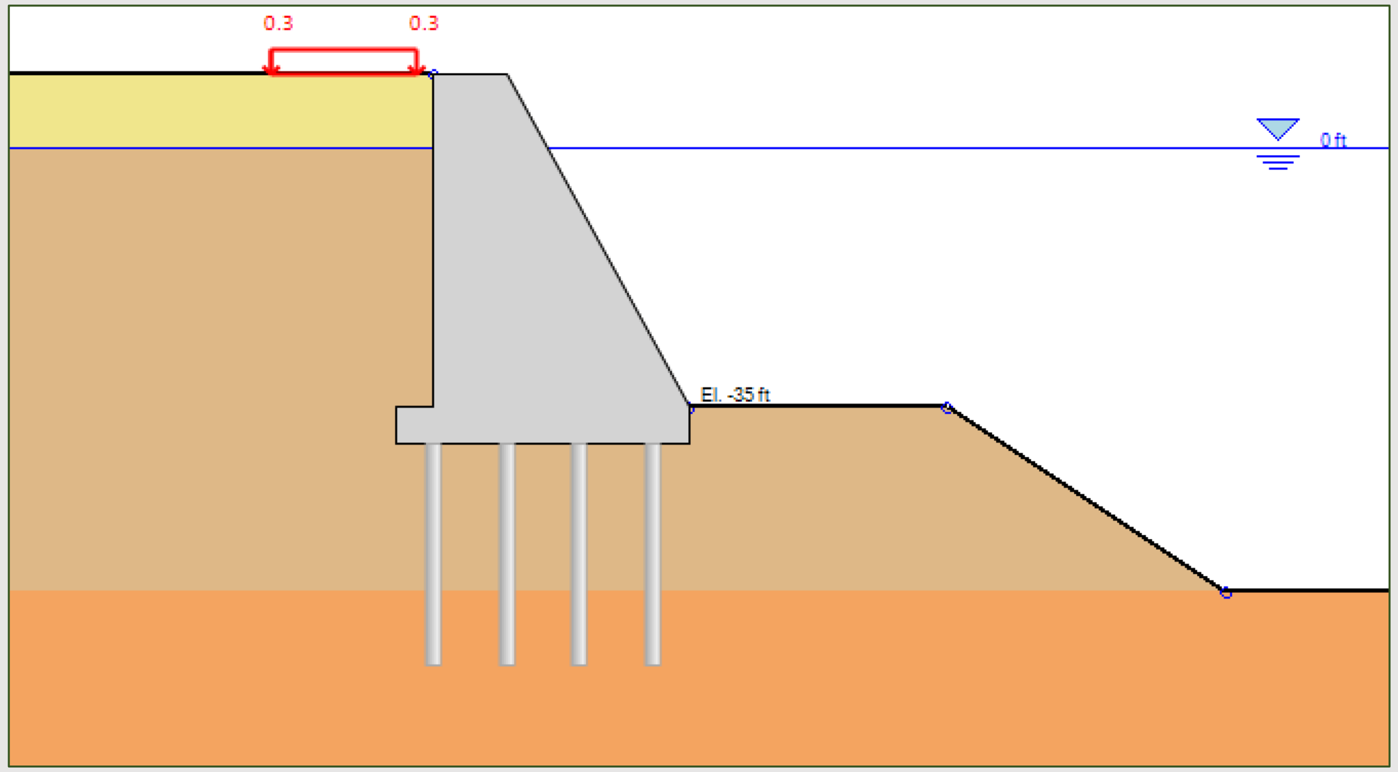
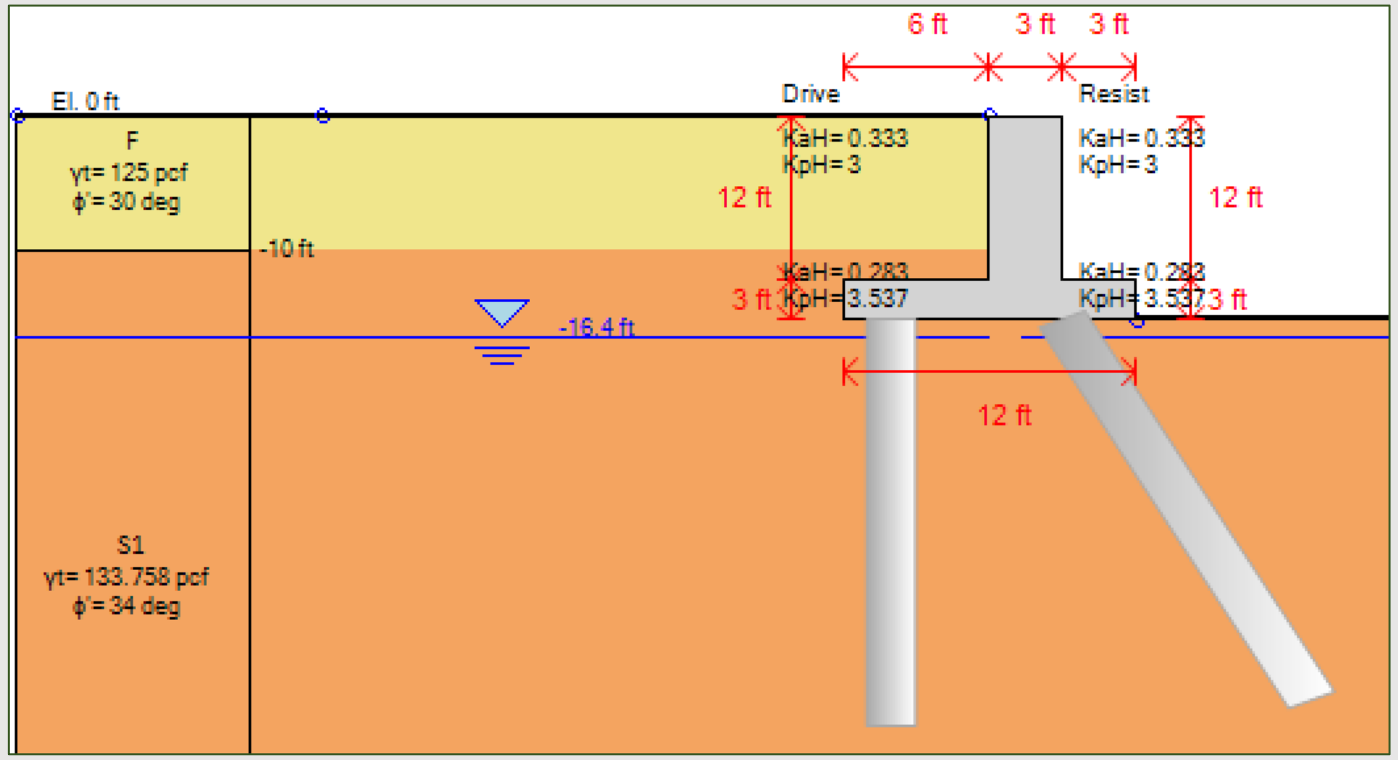
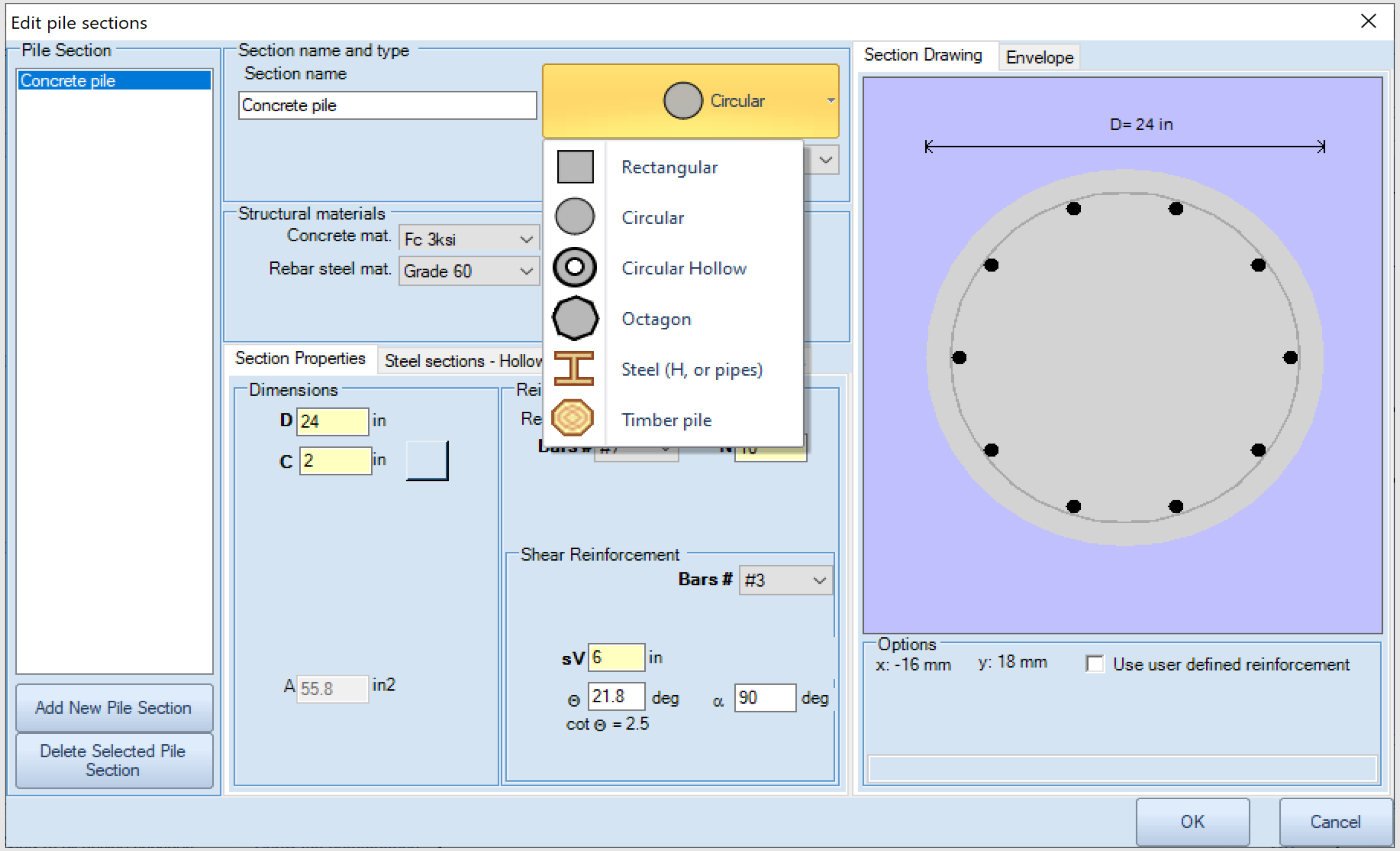
Pile Supported Abutments Module

- ✓ Design pile supported abutments
- ✓ Use footings (3D loads) and design the foundation piles







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