AUTODESK UNIVERSITY

Grading Optimization: Making Choices that Benefit Automatic Grading

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Who am I?

- Russ Nicloy
  - Civil Solutions Specialist
  - Almost 30 years between production and a reseller
  - Worked with all aspects of the civil industry

Agenda

- Zones, Lines, and Points
- Visualization Tools to Supervise Progress
- How to “Encourage” drainage
- Balancing Volumes and Other Objectives

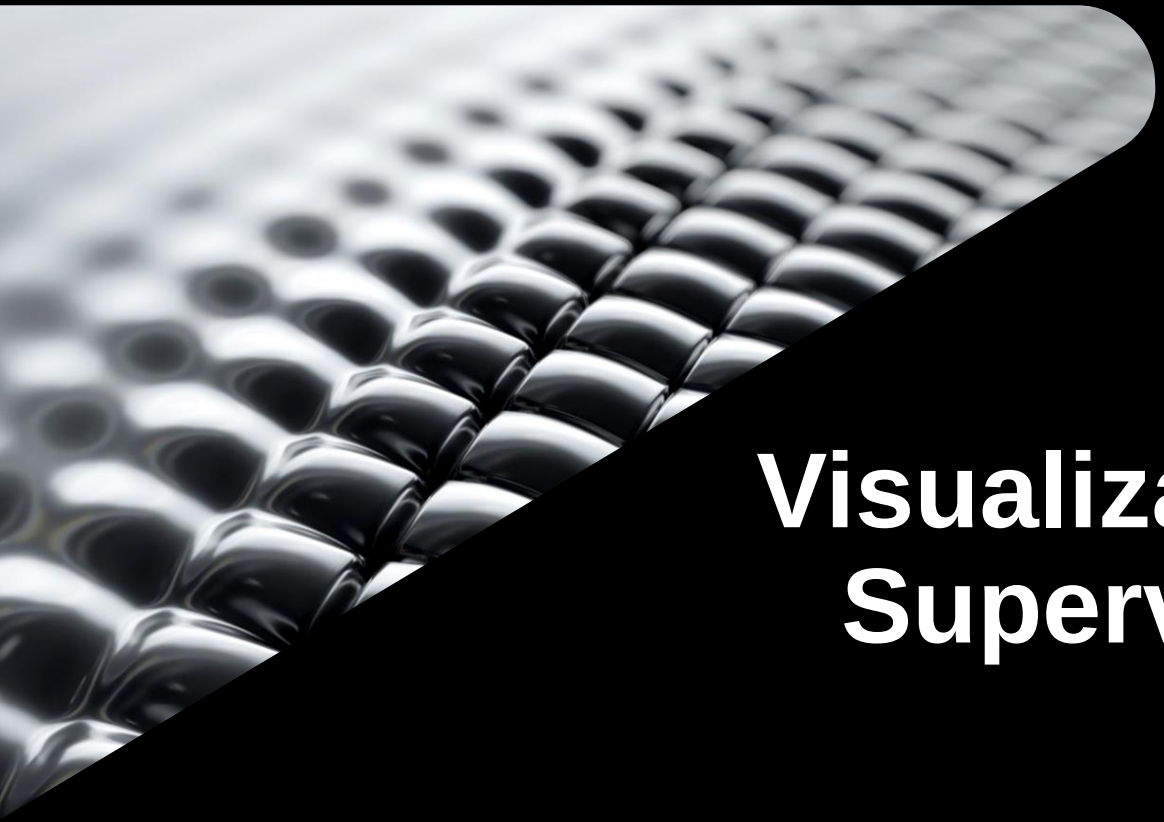
A Short Introduction to Grading Optimization

- It is for “Optimizing”
- Users provide the envelope of parameters
- Does the work of a VERY LARGE room of engineers
- The program will find the optimal result

A Short Introduction to Grading Optimization

Some suggestions for use

- Not for the over-constrained project.
- Limit your limits. The more options the more optimal
- Do grading in phases
- Adjust grading limits (extents) per phase
- Set Preferences for speed or quality (mesh, refine, iterations)
- Before accepting results adjust and try again

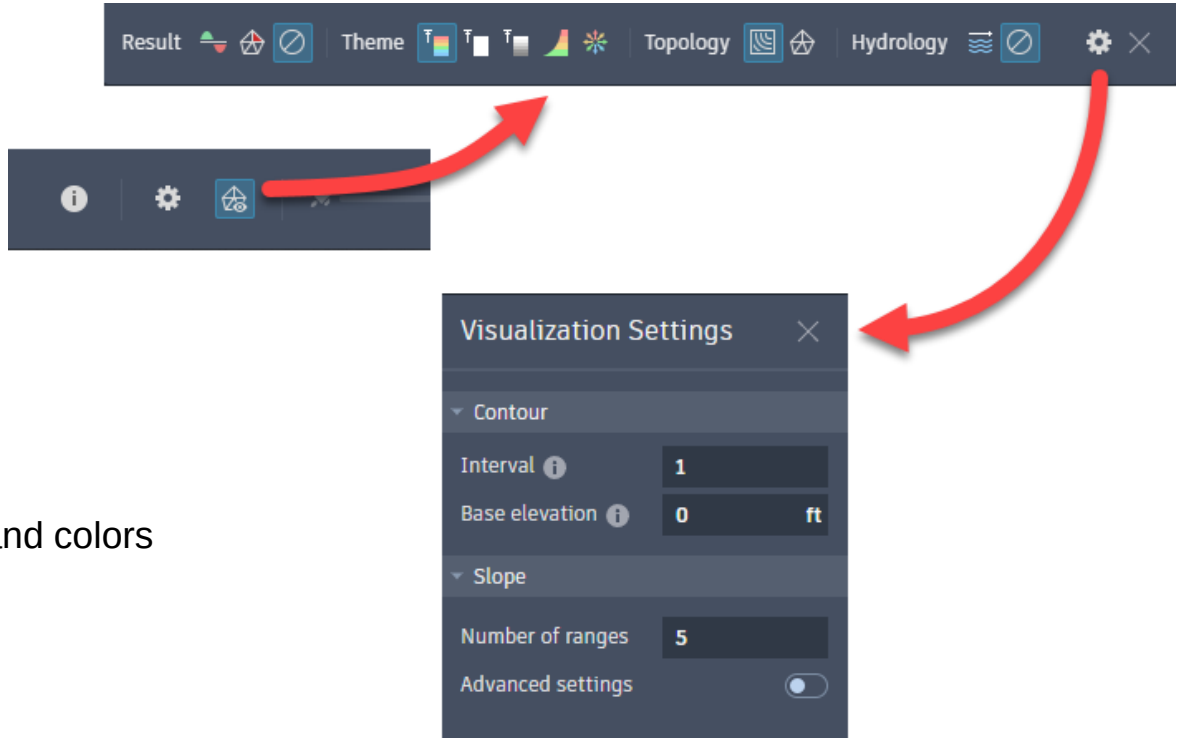


Visualization Tools to Supervise Progress

Visualization Tools

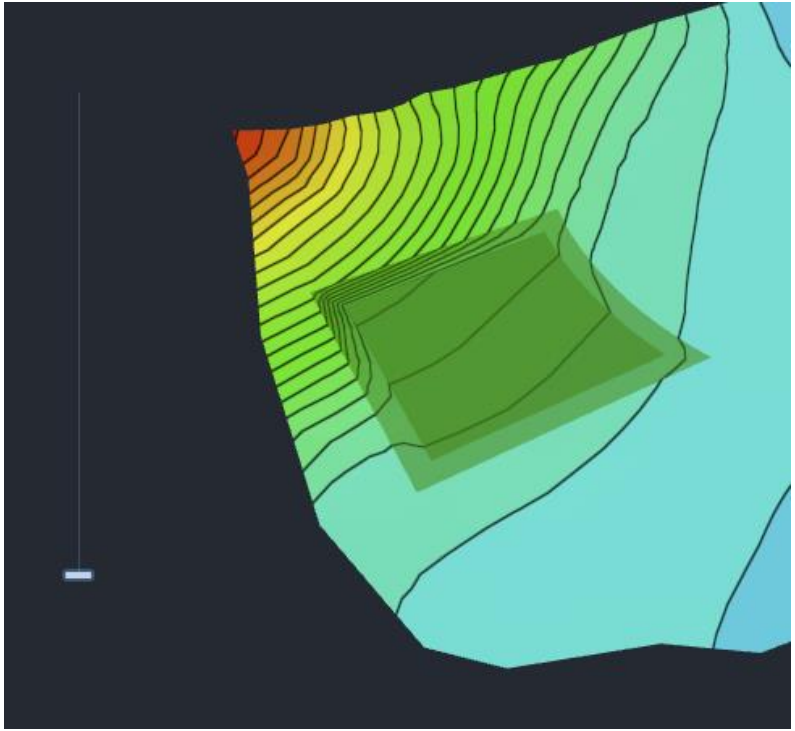
Help for understanding progress

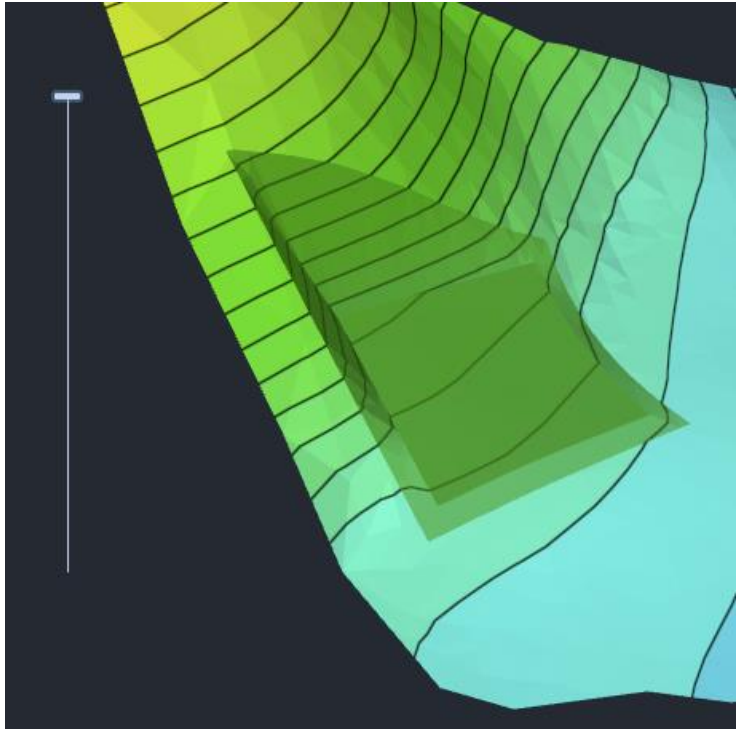
- Visualization Toolbar
  - Violations – colored triangles
  - Theme: Elevation, Slope
  - Contours versus Triangles
  - Hydrology/Slope Arrows
- Visual Settings
  - Contour Interval
  - Advanced Settings for ranges and colors
- Vertical Exaggeration Slider

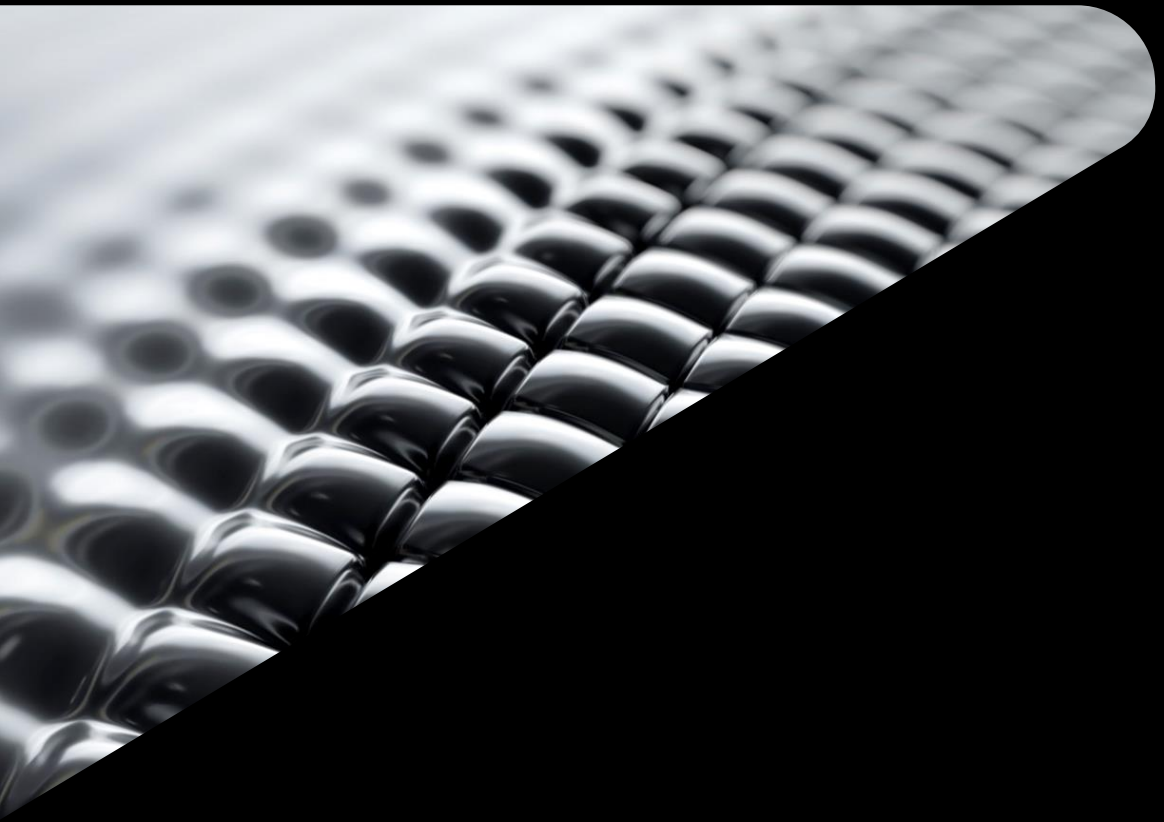


Visualization Tools

Vertical Exaggeration Slider



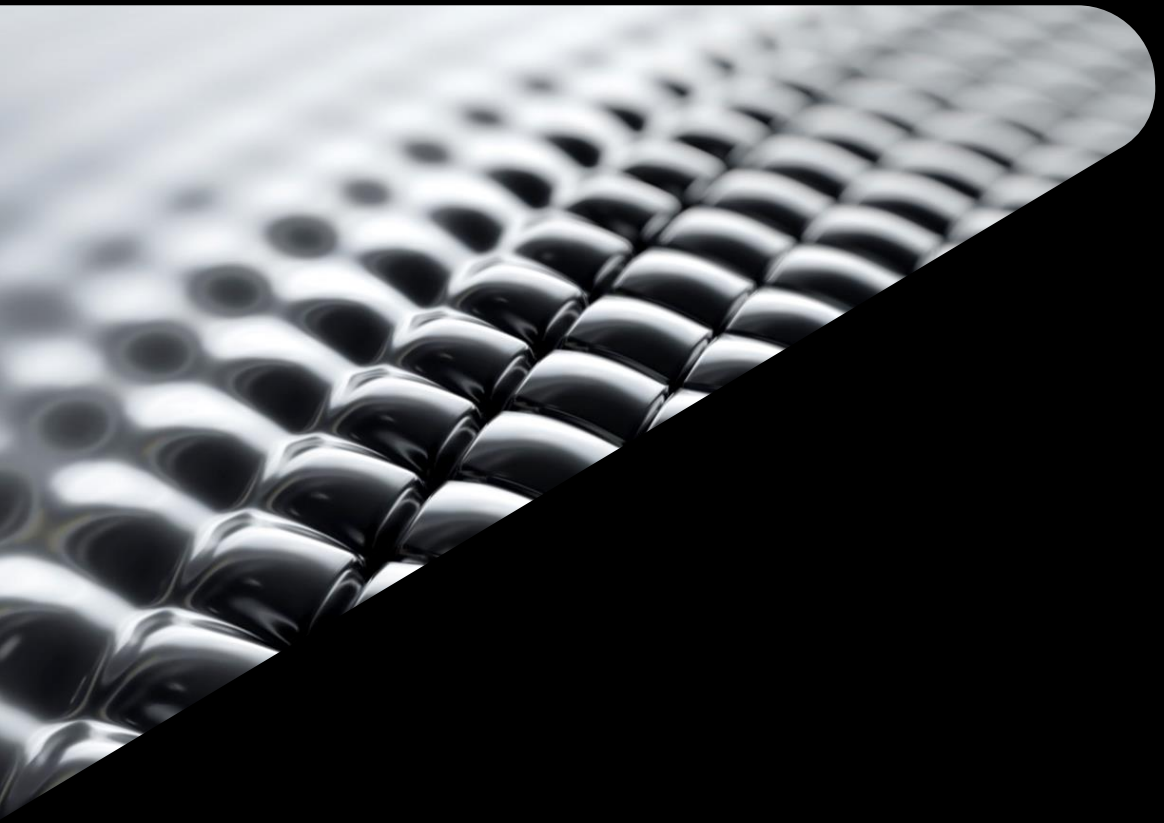




Zones, Lines, and Points

Zones, Lines, and Points

- Zones
  - Areas of grading, closed shapes
- Lines
  - Linear location of grading, usually open shape
  - Feel like breaklines
- Points
  - Location of specific or bounded elevation

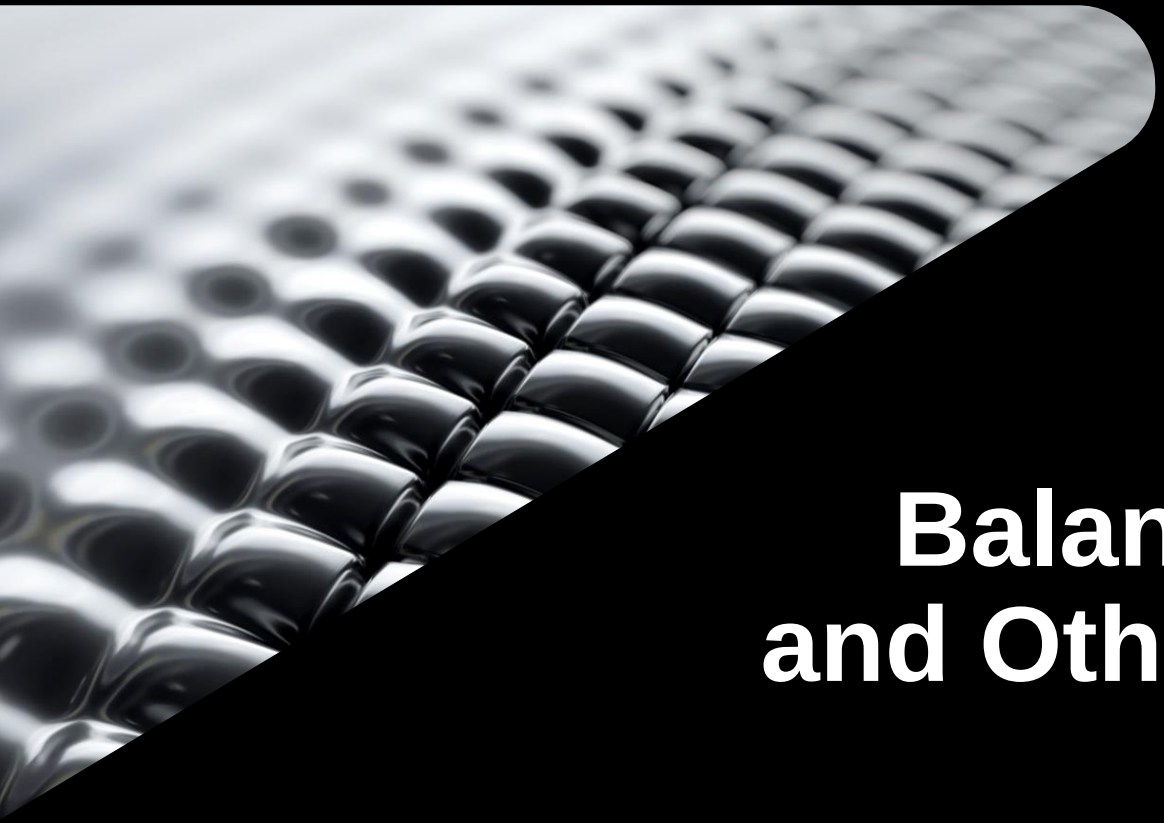


Encouraging Drainage

Encouraging Drainage

Get what you need while optimizing

- Lines that encourage drainage
  - Drain Line
  - Aligned Edge
  - Bend Line
  - Offset Points
- Points that encourage drainage
  - Low Point
  - Bounded Point

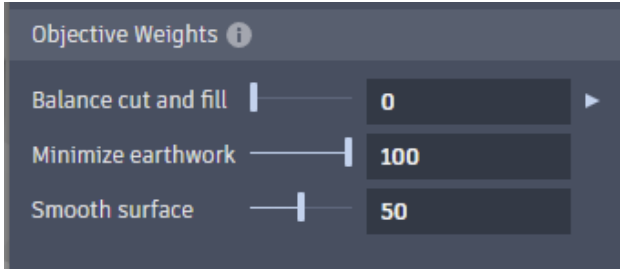


Balanced Volumes and Other Objectives

Grading Objectives

What (and how much) do you really want?

- Objective Weights
  - Balance Cut/Fill
  - Minimize Earthwork
  - Smooth Surface

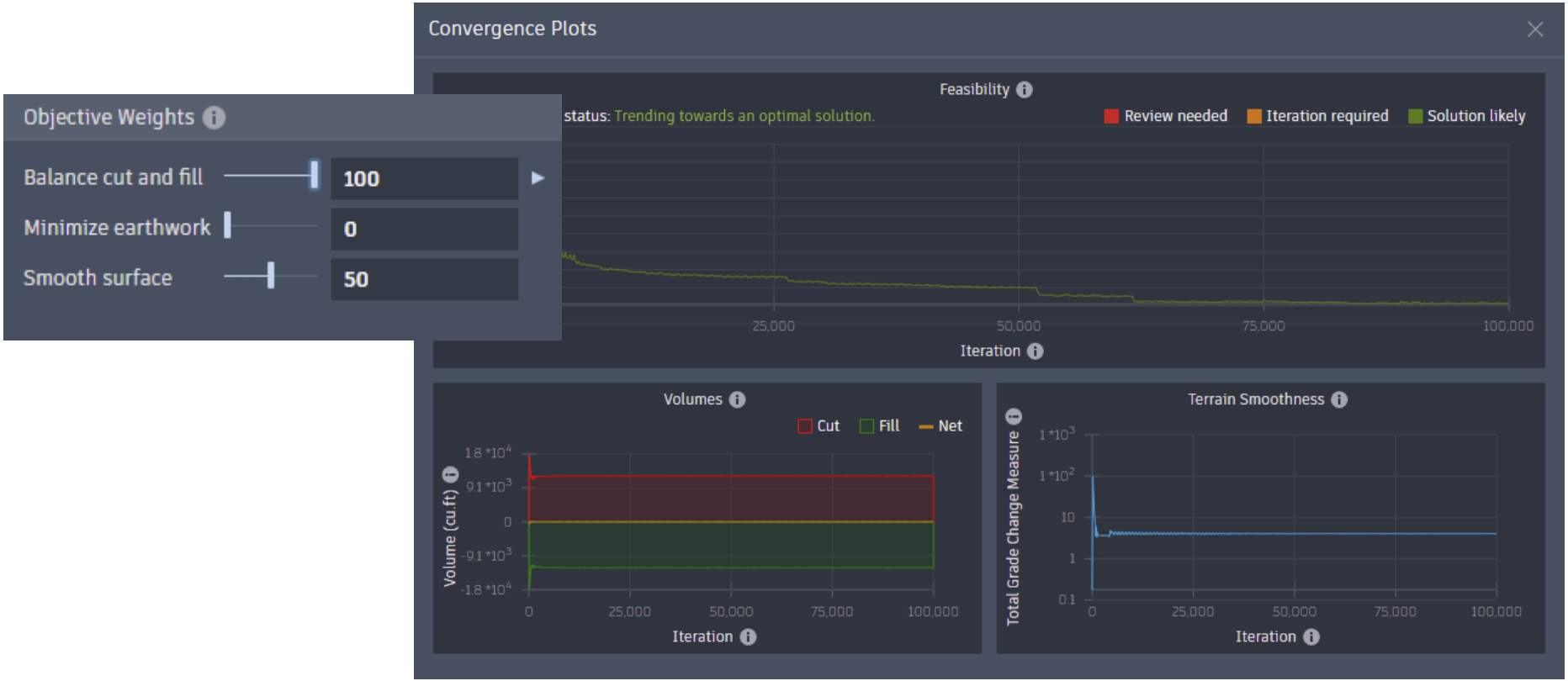


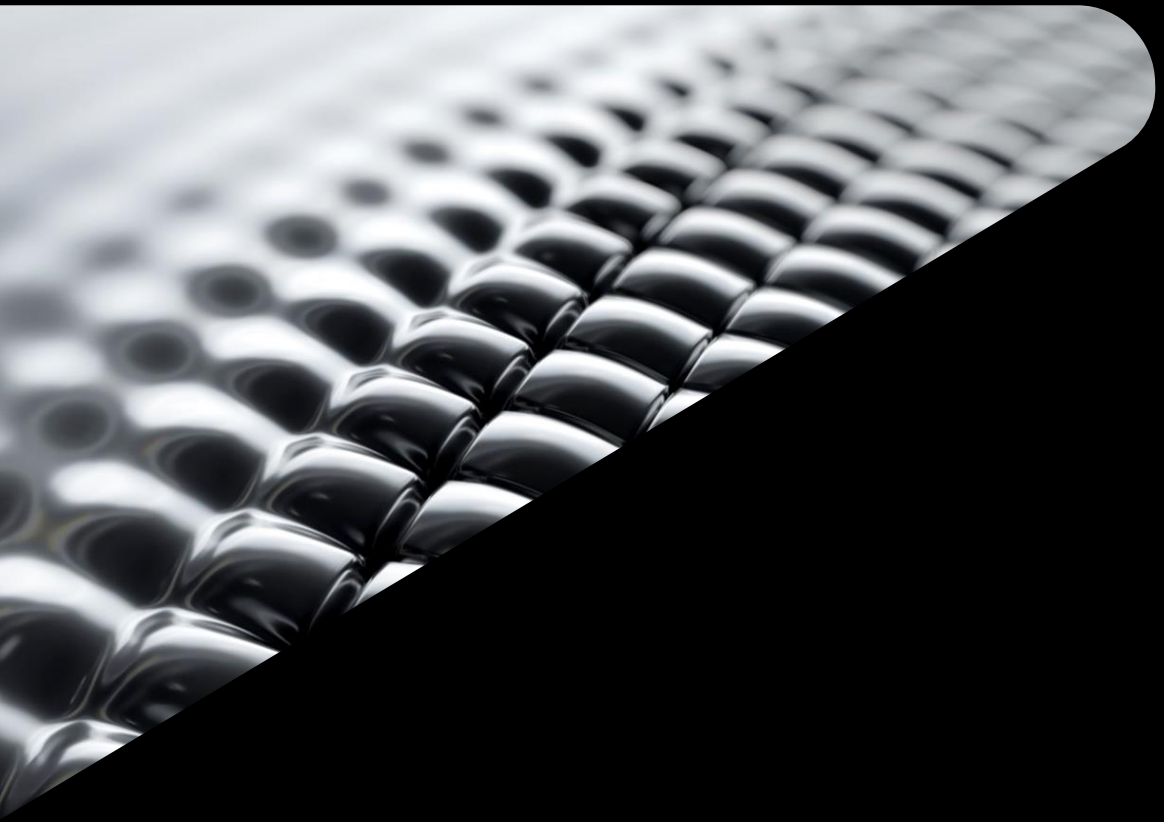
- A “0” weight removed from consideration.

- May increase time of calculation

Grading Objectives

What (and how much) do you really want?





Take Aways

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- Use the Visualization Tools to supervise progress
- Grading in phases may help some situations
- Drainage changes depending on where you put the “encouragement”
- Remember to set objectives and adjust settings

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