Ramp Gore Design with Roadway Designer

Joe Waxmonsky, Bentley Systems, Inc.

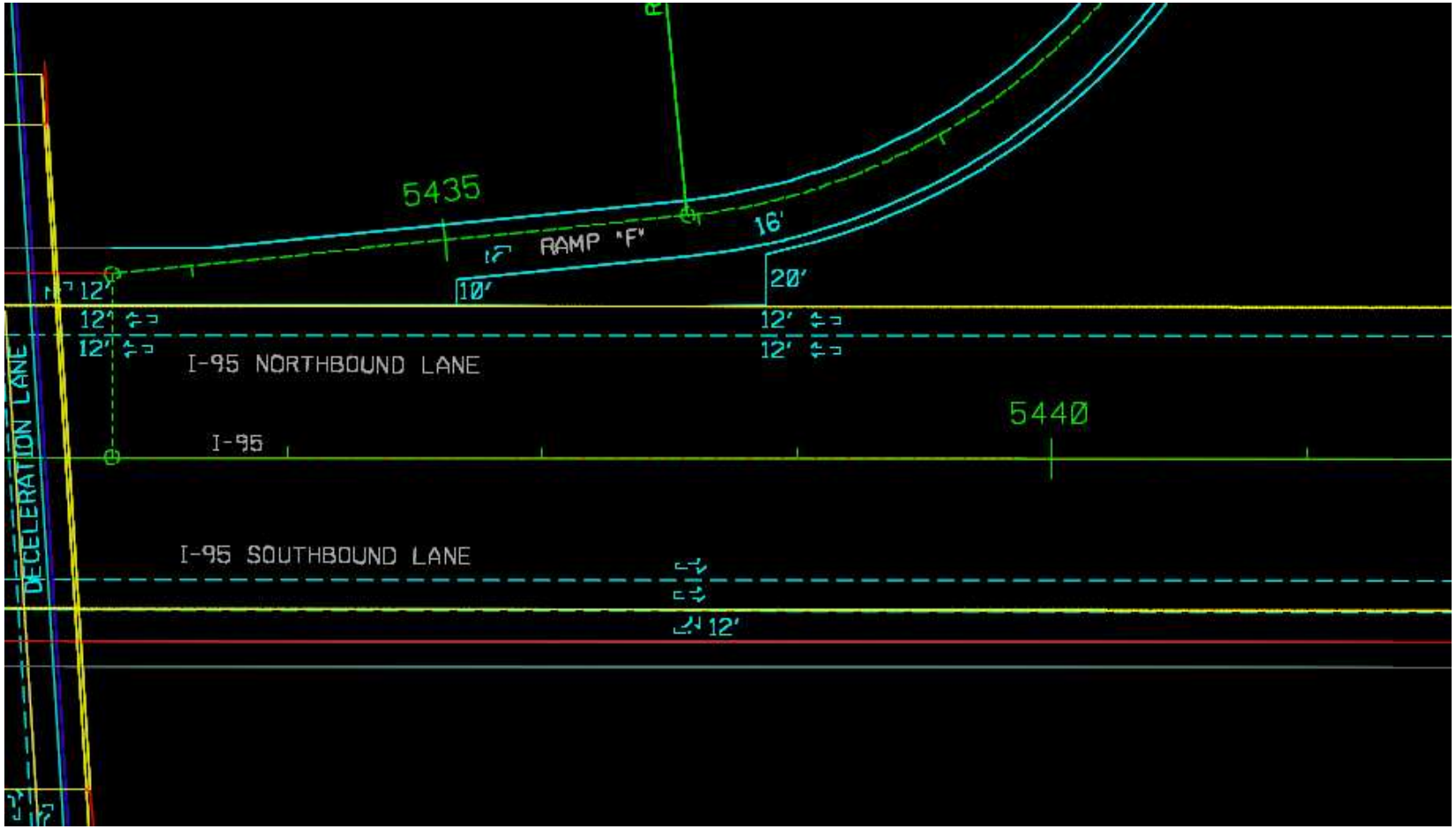
Bentley
Sustaining Infrastructure

Ramp Gore Design Introduction

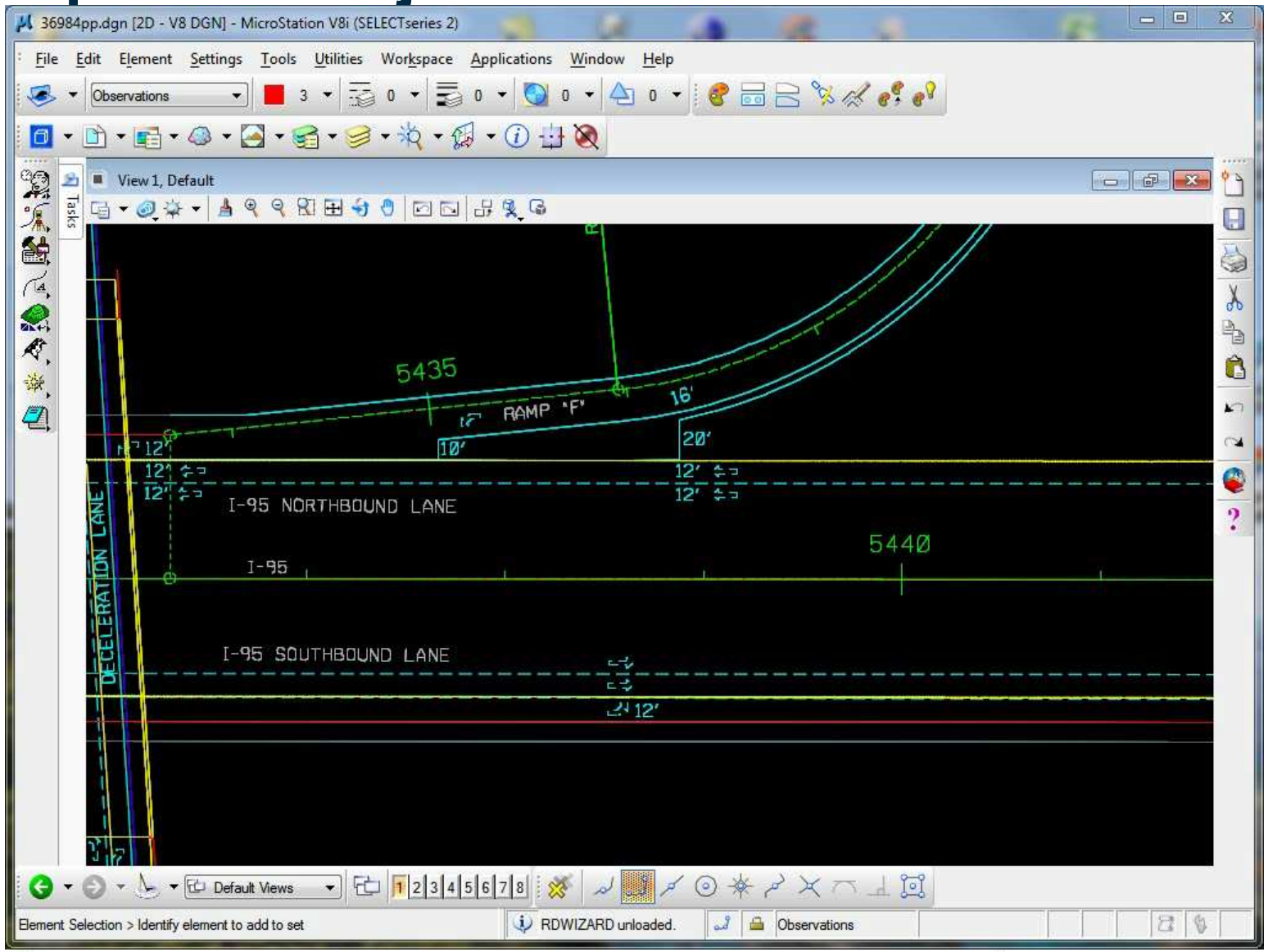
Designing a ramp gore can be a complex and iterative process. There are an abundance of criteria to consider such as min/max roll over slopes, ramp profiles, and drainage – just to name a few.

There are many techniques in Roadway Designer that can be used to model ramp gores. This presentation will cover the basic workflow used to model a ramp gore.

Ramp Gore Project Review



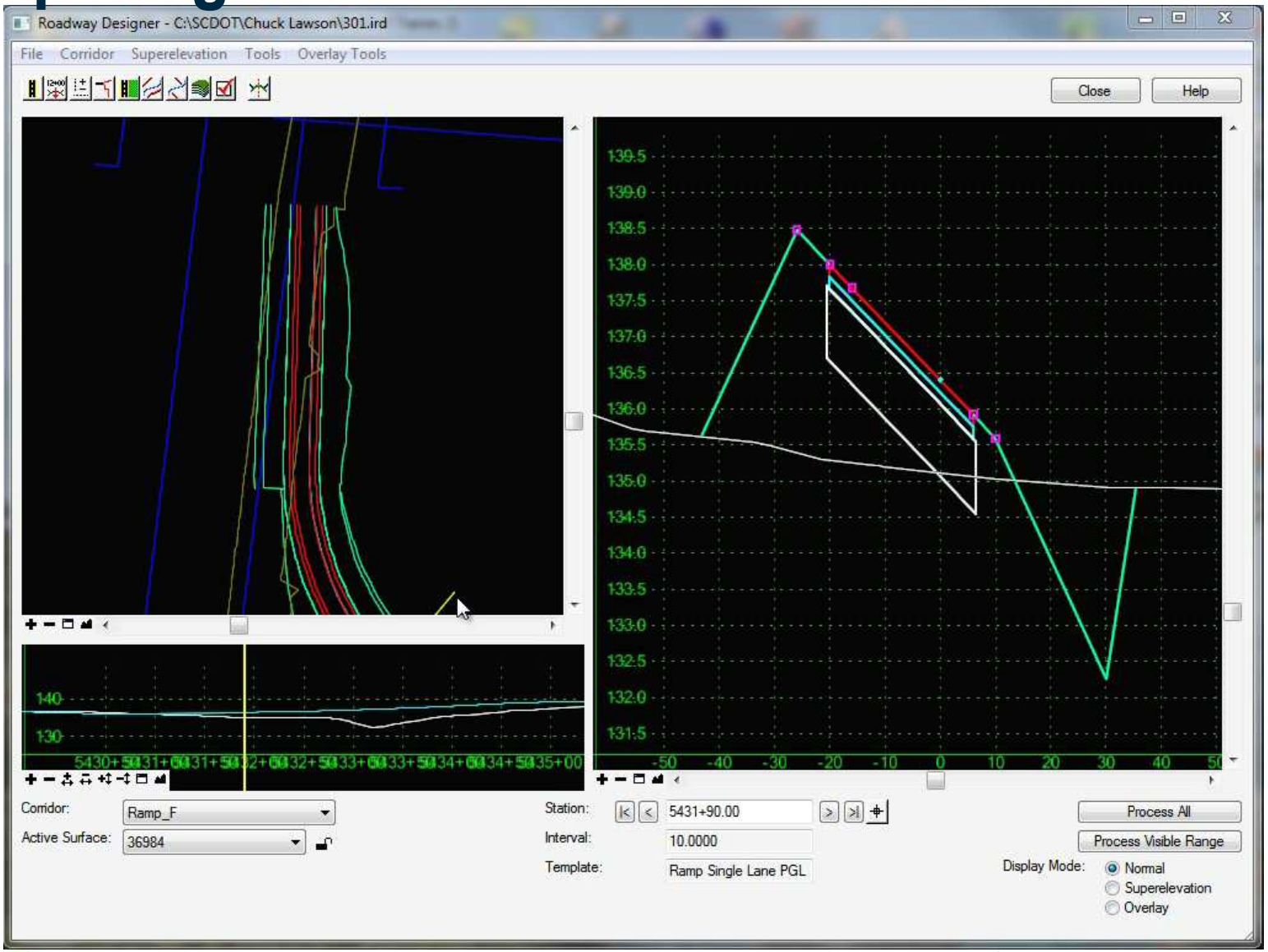
Ramp Gore Project Review Demo



Preparing the Mainline Corridor

- Check to see if the end conditions from the mainline go beyond the end conditions of the ramp.
- If mainline end conditions exceed the ramps end conditions, add an end condition exception to the mainline.
- Use Target Aliasing to clip the shoulders off when creating a combined DTM.

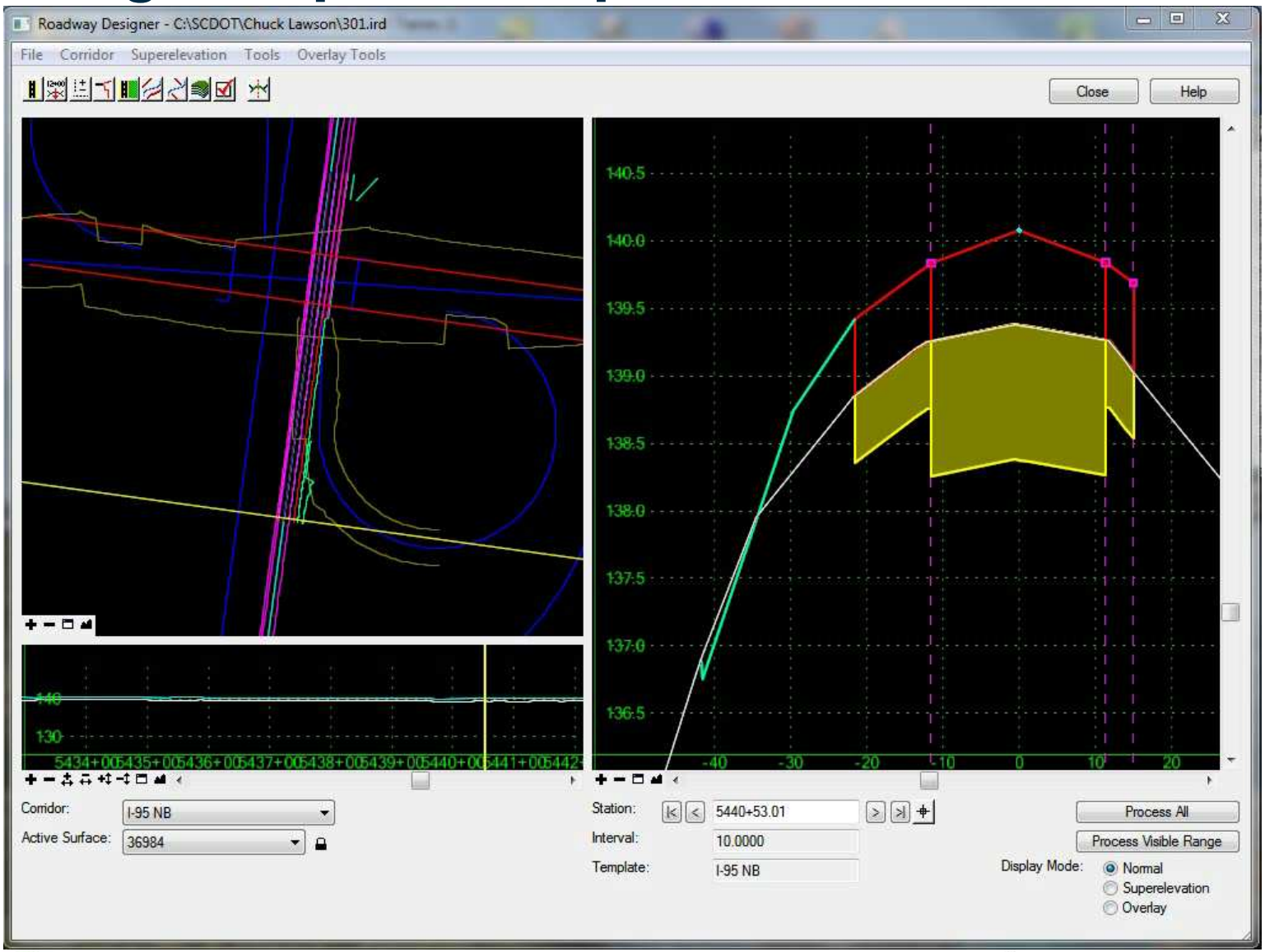
Preparing the Mainline Corridor Demo



Adding Template Drops to the Ramp

- Two template drops are generally required for the ramp.
  - One template drop where shoulder ties to shoulder
  - One template drop where pavement ties to pavement
- The template drop interval should be increased in this range to provide a smooth transition

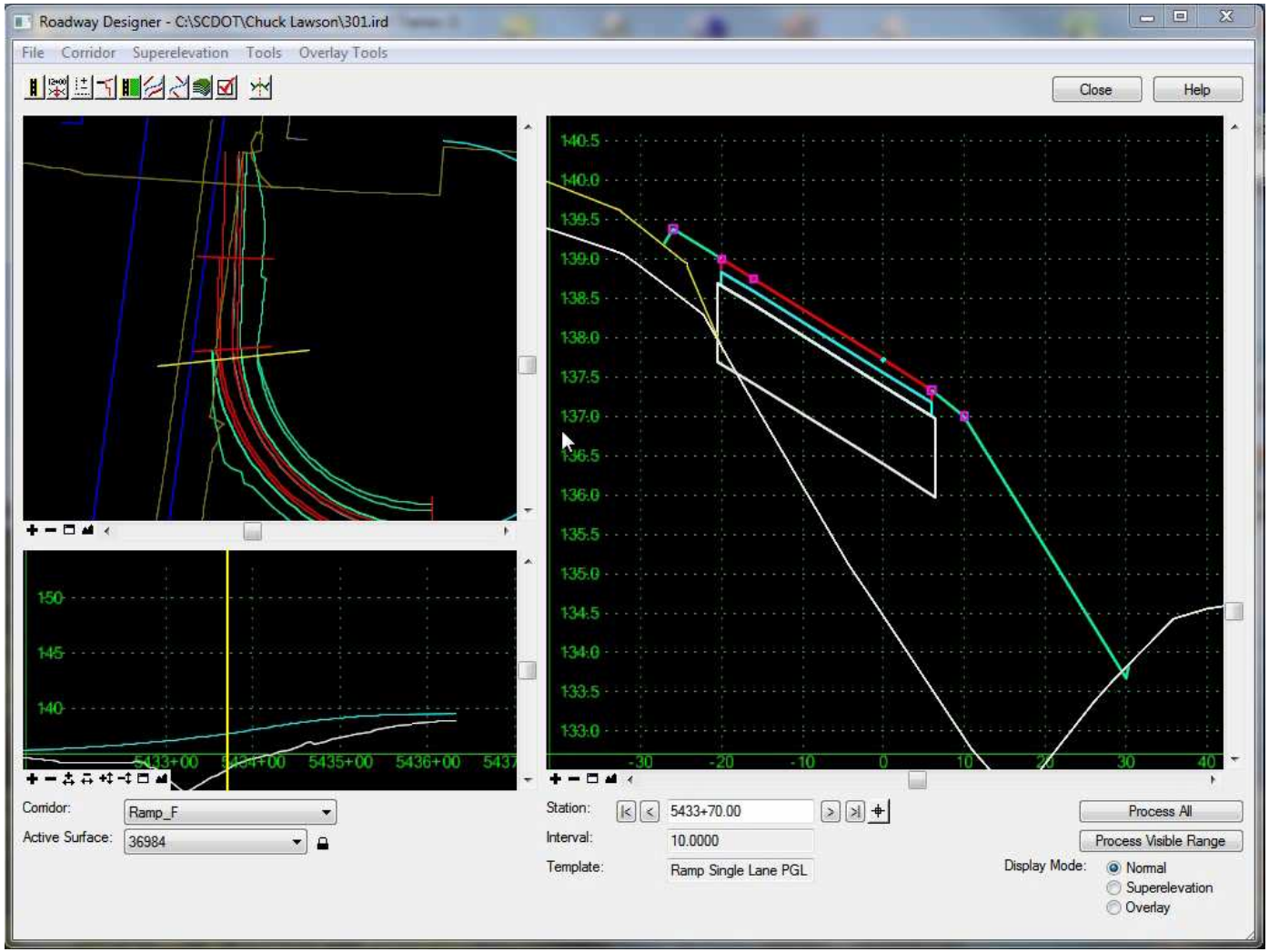
Adding Template Drops Demo



Assigning Point Controls

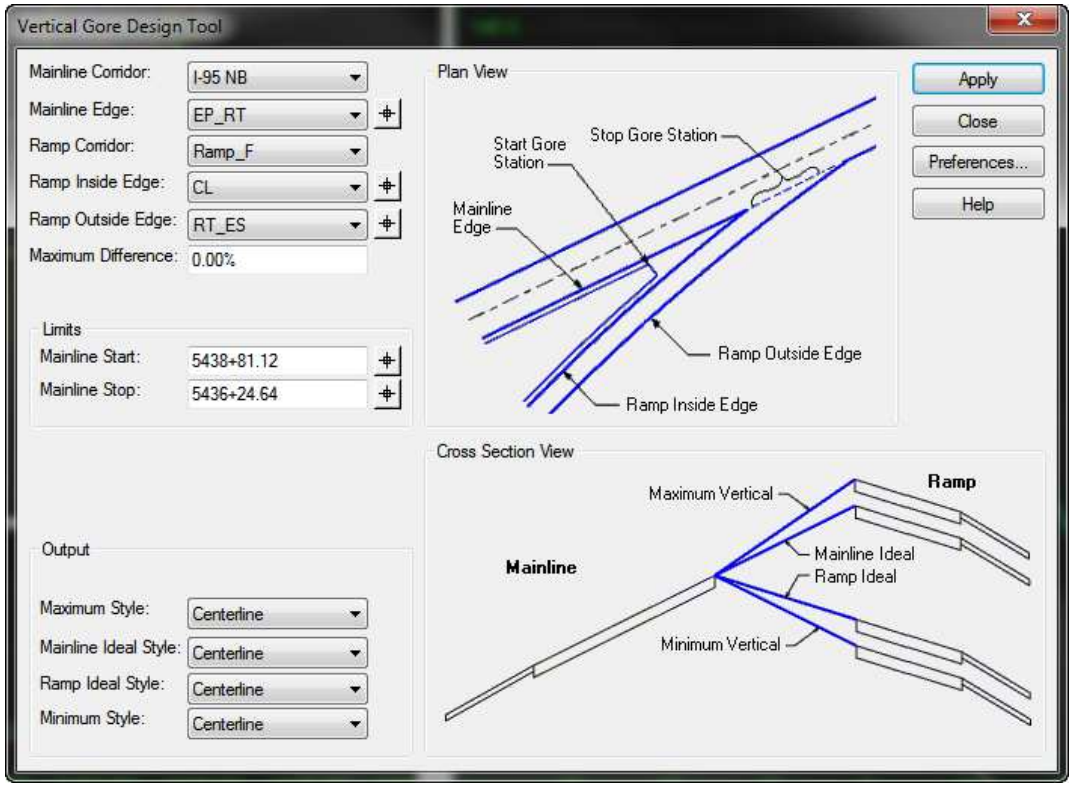
- Assign the ramp shoulder to the mainline shoulder edge
- Assign the ramp edge of pavement to the mainline edge of pavement

Assigning Point Controls Demo

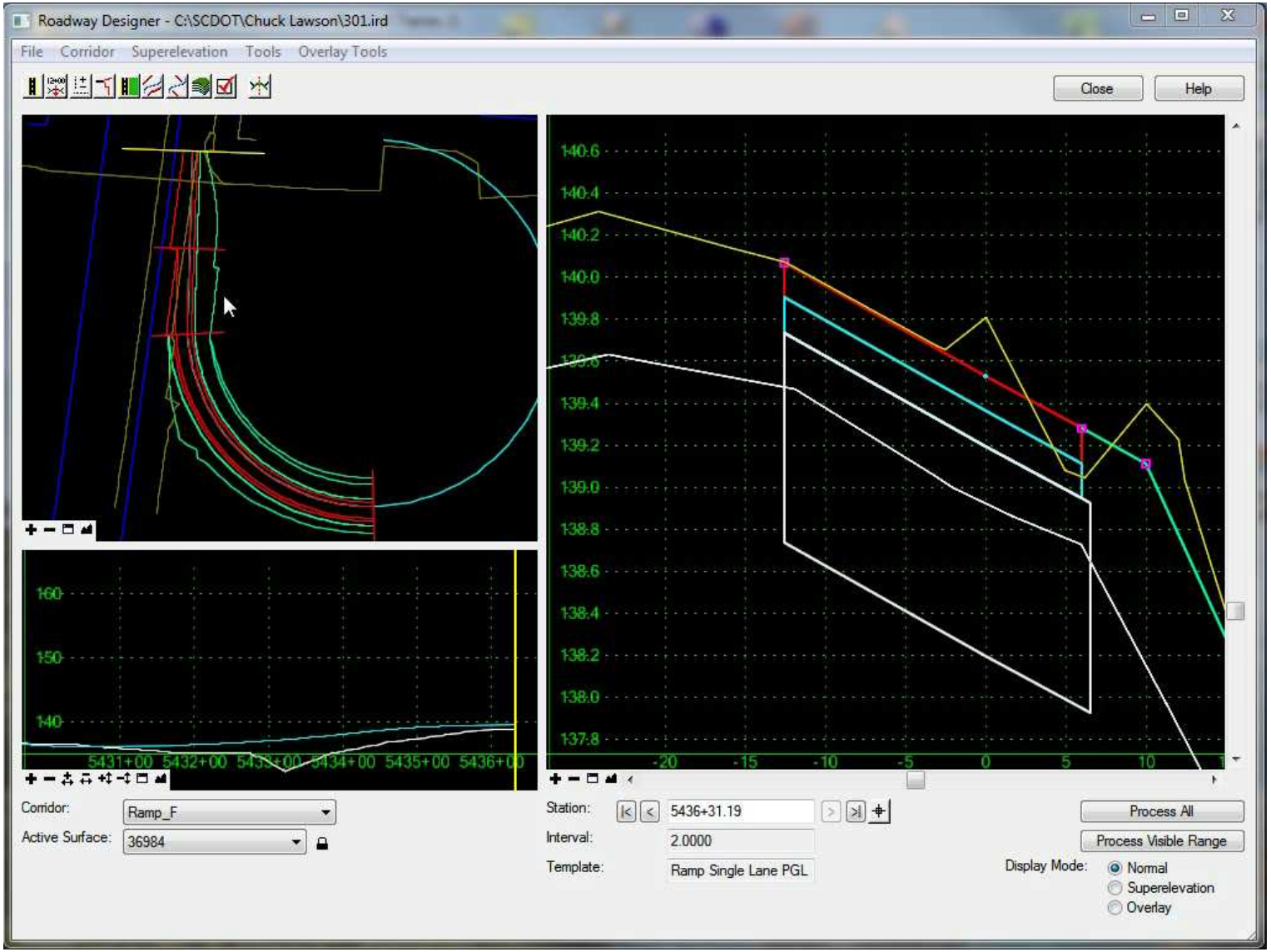


Profile Design

- The Vertical Gore Design Tool allows the designer to project the mainline slope to approximate a ramp design profile.

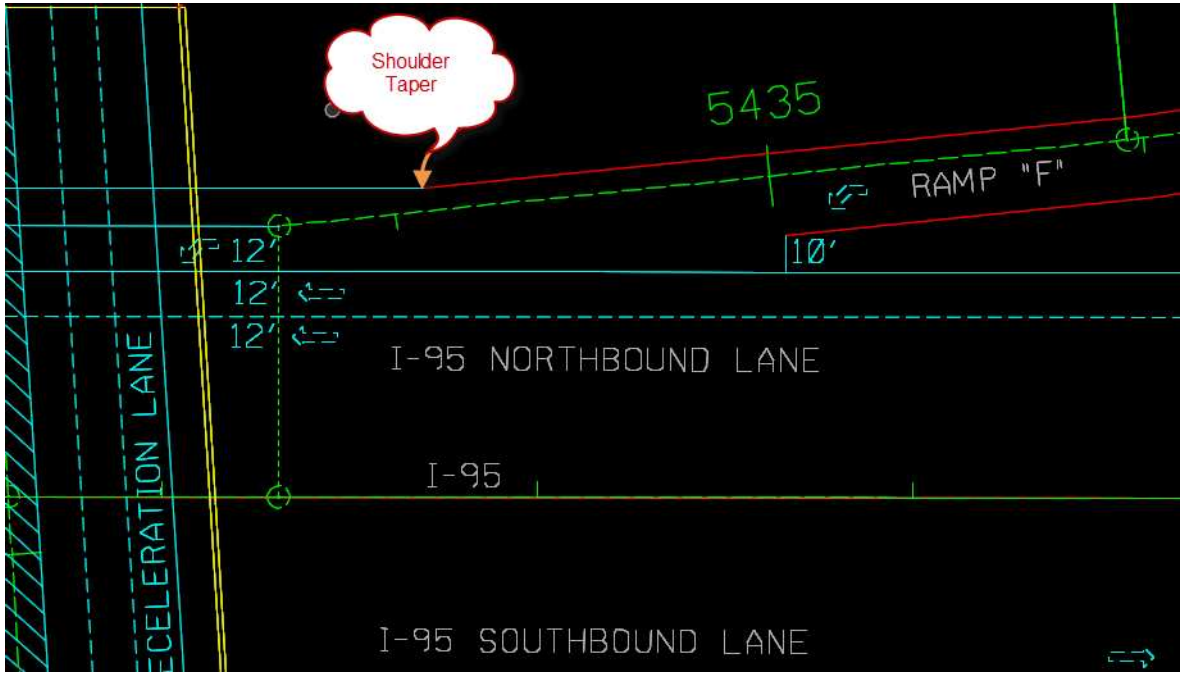


Profile Design Demo

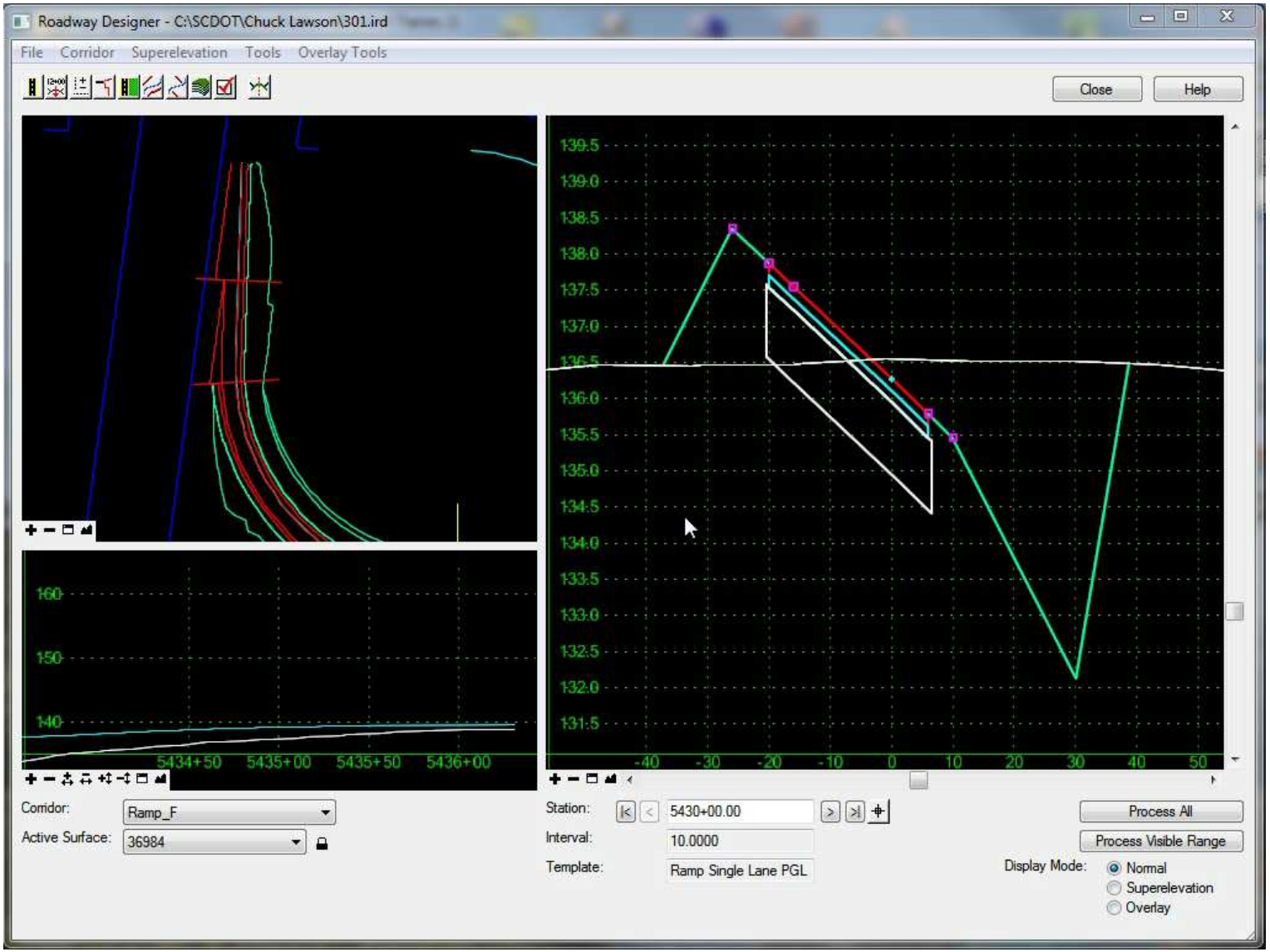


Shoulder Tapering

- The right shoulder of the ramp needs to taper from 6’ to 10’ wide at the end to match with the acceleration lane. Point controls and offsets are a simple way to add this taper.



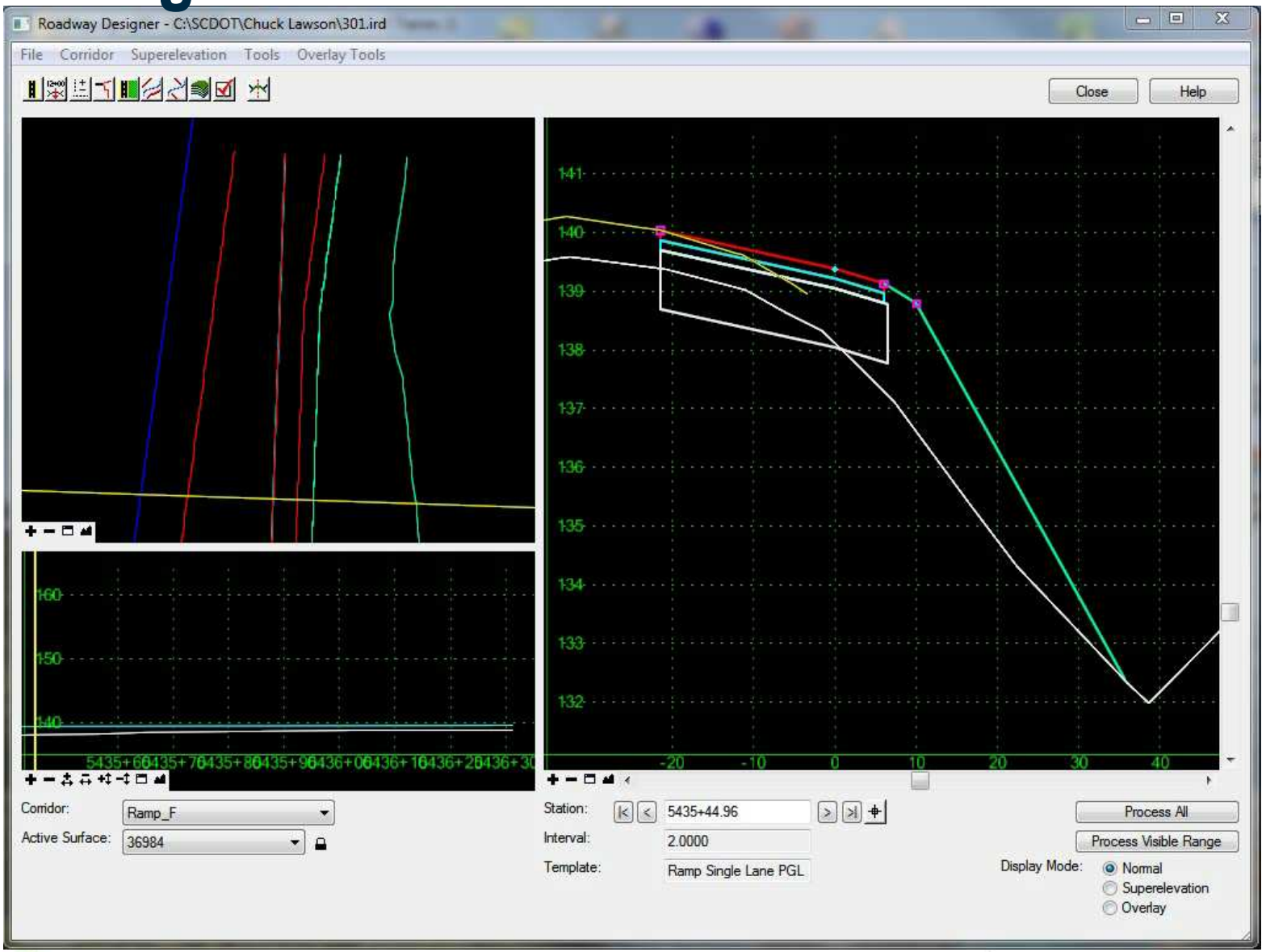
Shoulder Tapering Demo



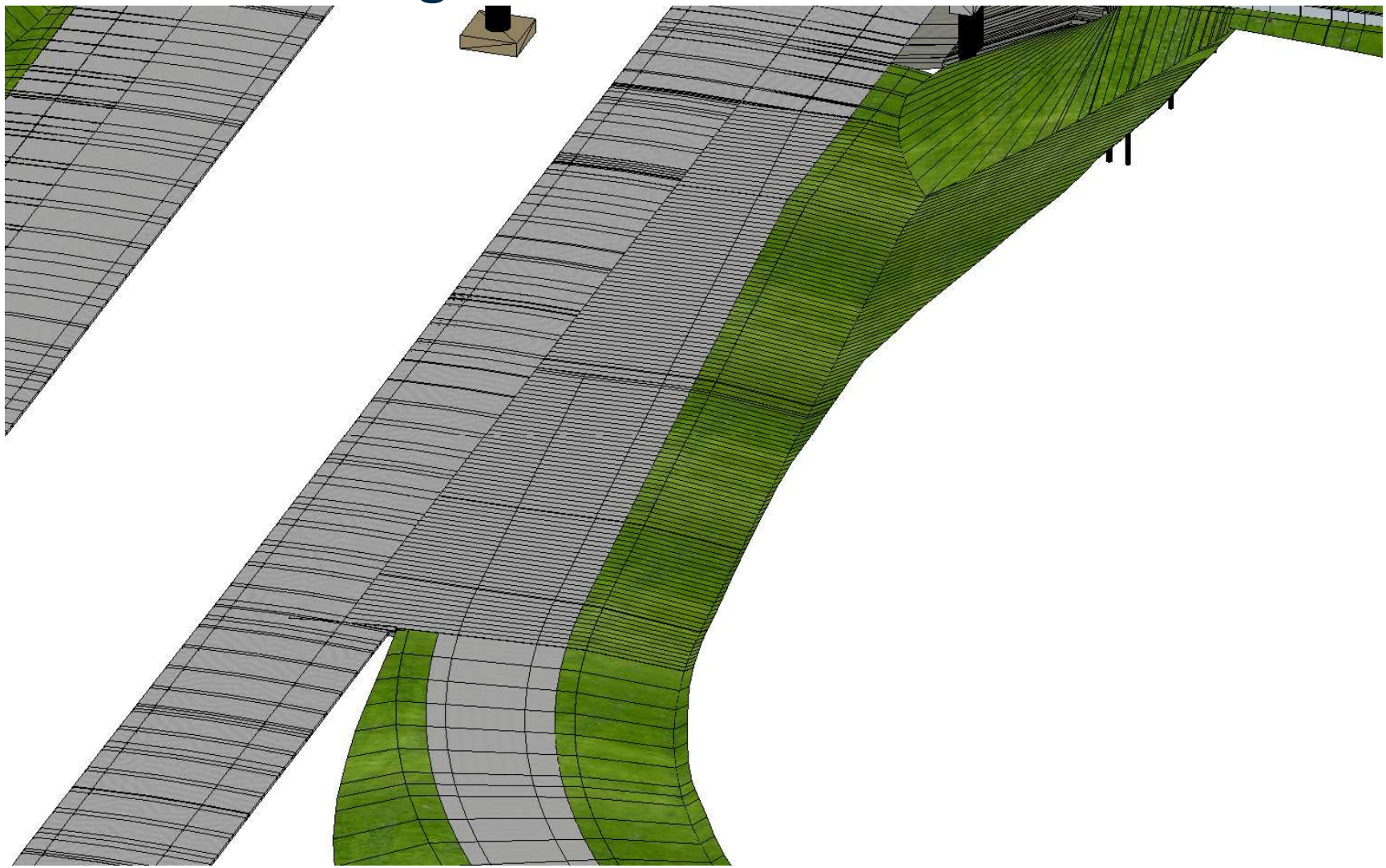
Creating the Combined Surface

- Using Target Aliasing, the mainline corridor will be clipped by the ramp corridor.
- Make sure to include both corridors when creating the surface
- Make sure clipping options are set to “clip all”

Creating the Combined Surface Demo



The Final Design



Ramp Gore Design with Roadway Designer

joe.waxmonsky@bentley.com

Bentley
Sustaining Infrastructure