Intersections from the Inside Out: A Different Workflow for AutoCAD® Civil 3D®

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Class Summary

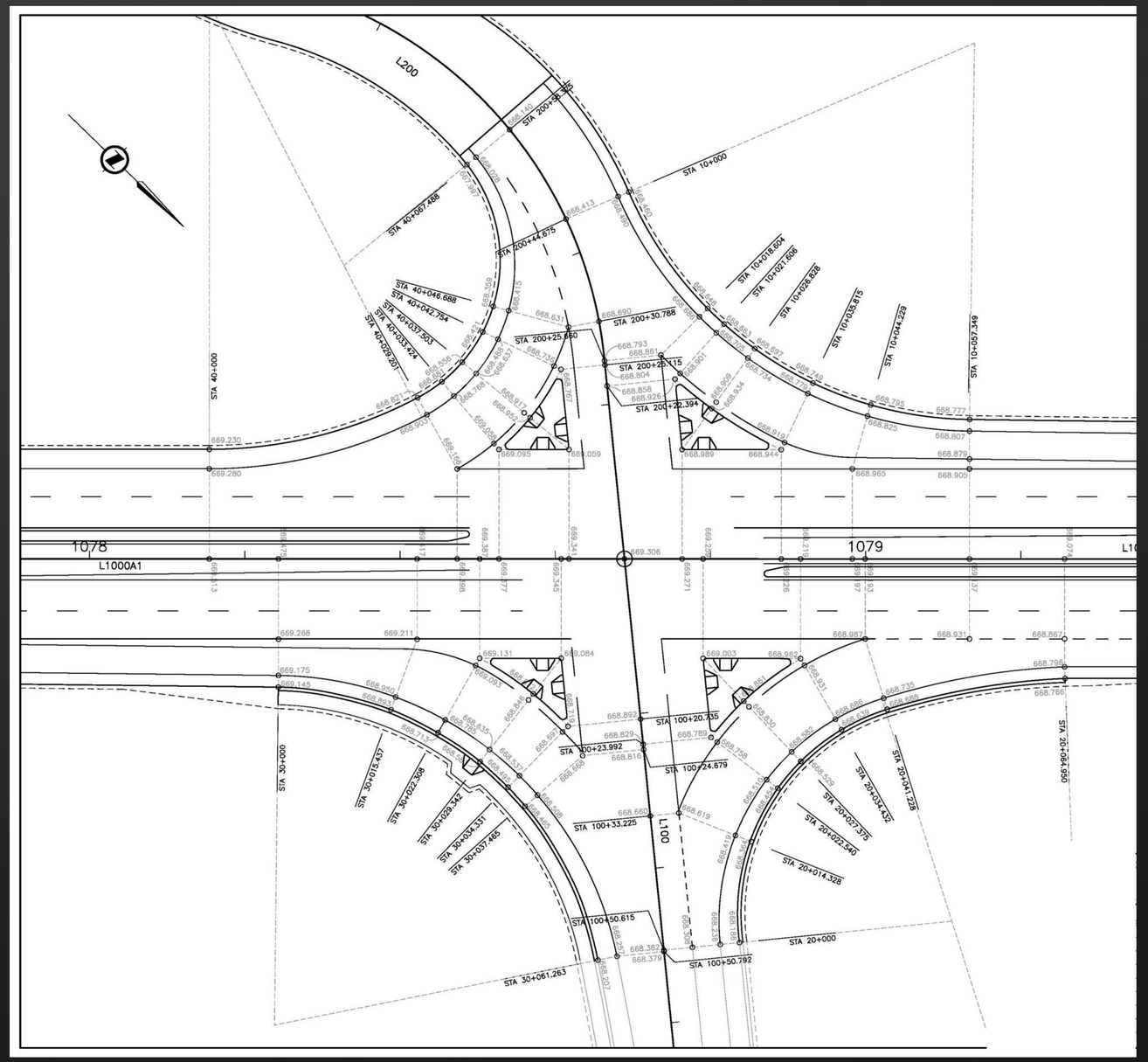
The design of roadways is typically based on the development of an alignment, then a profile, and finally a typical section. Many users who design intersections, ramps, or widenings run into difficulties because the process in AutoCAD Civil 3D software assumes that the road edge profile is designed semi-independently of the two centerlines. In this class, you will learn a technique that allows the use of the classic alignment–profile–section process to design a widening, a ramp, or the turning lanes of an intersection. This technique can be used for all types of corridors where the pavement edge elevations are to be controlled by a specified crossfall from another profile or surface.

Learning Objectives

At the end of this class, you will be able to:

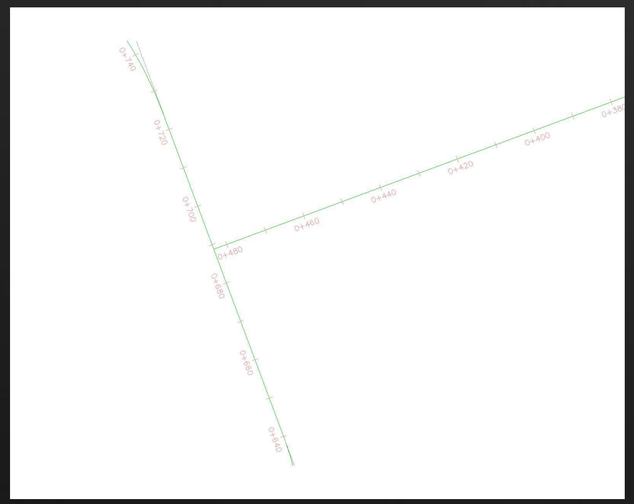
- Use superelevation parameters to aid in the design of curb return.
- Build assemblies which allow you to match a lane widening to an existing surface and crossfall.
- Build assemblies for the design of ramps which transition from another lane edge through a gore to an independent lane
- Put all of the pieces together in a corridor model

The “Old School” aka Spot Elevations

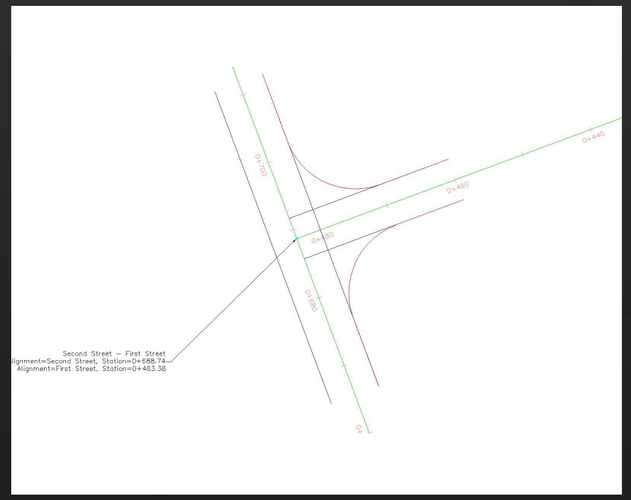


A Simple Intersection

- Use the Intersection Wizard to create the offset alignments and the curb return alignments.
- Add superelevation data to the curb return alignments.
- Build an assembly using a generic link to the left, then roadway subassemblies to the right.
- Add baselines and regions to your corridor, to put all of the pieces together.



From this



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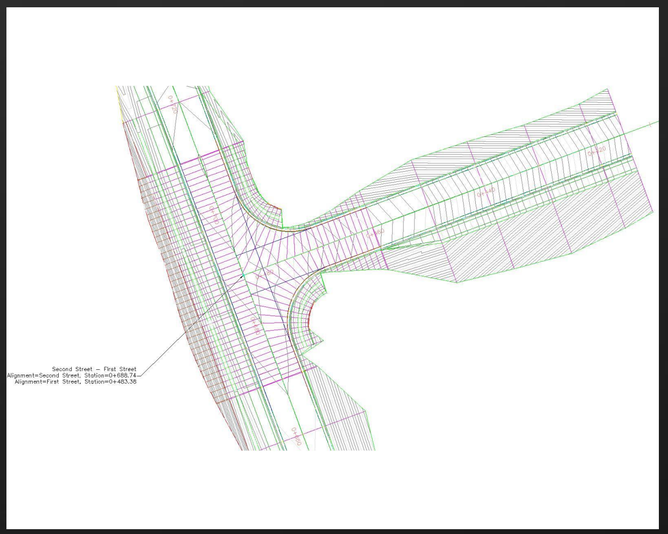
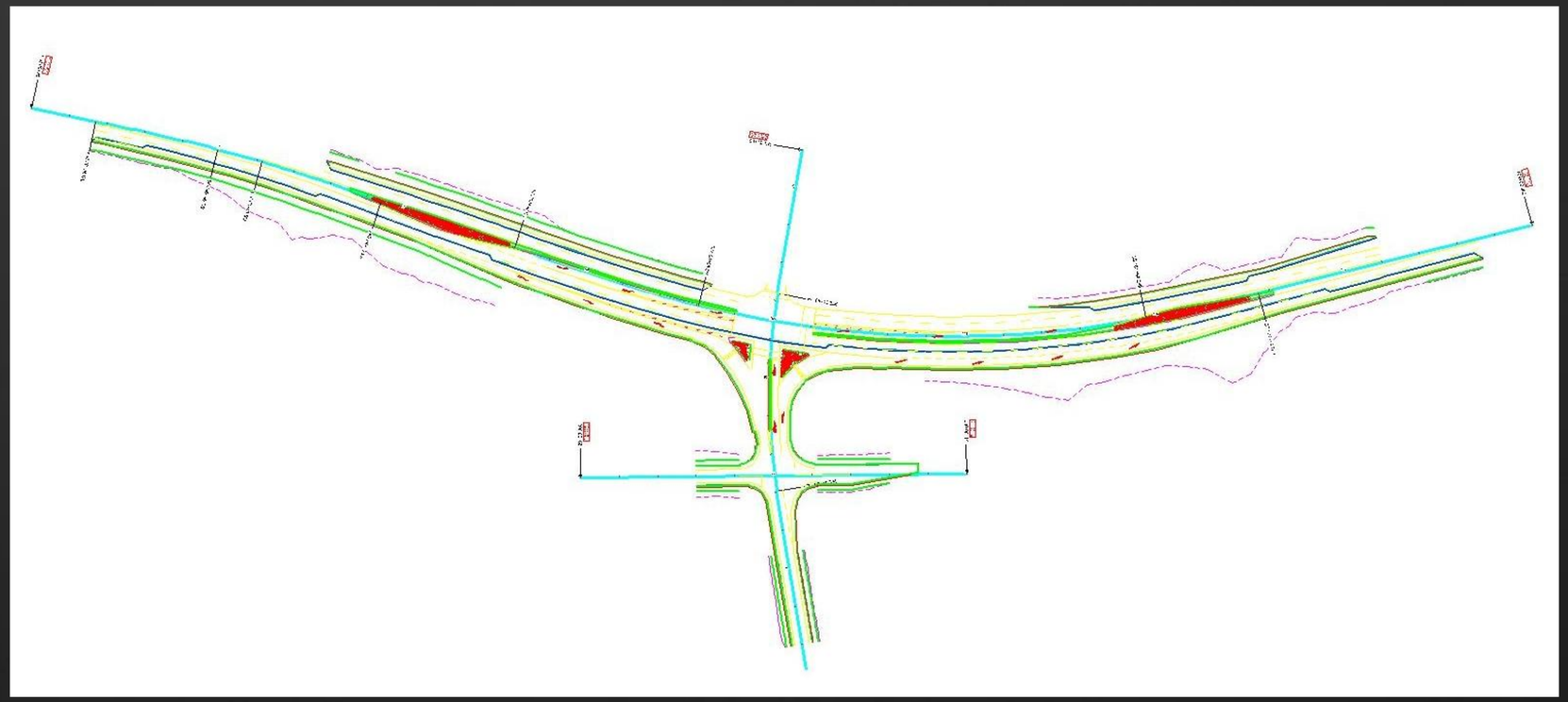


And finally this

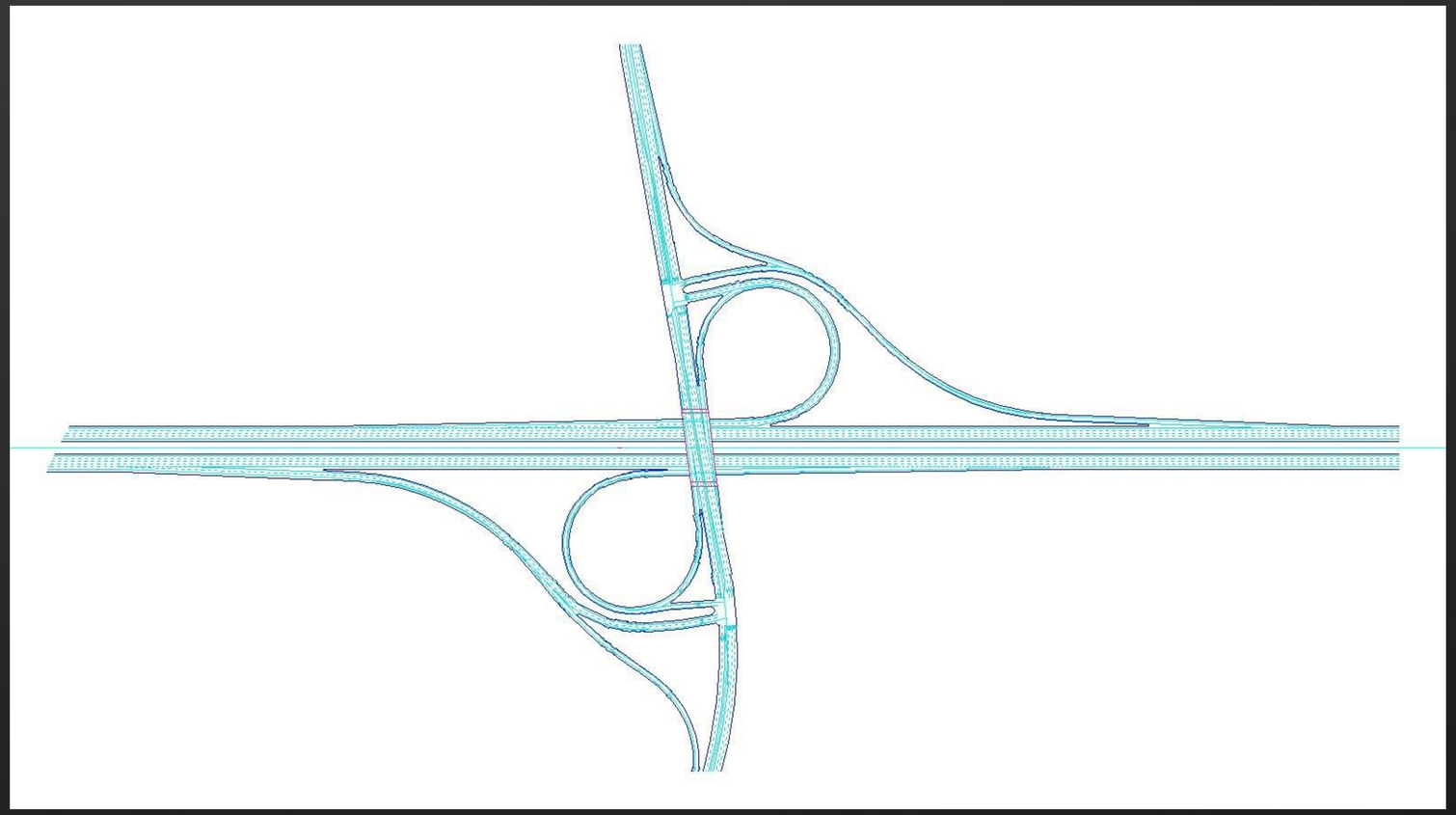
A Complex Intersection



Issues which affect the design:

- Poor sightlines from the west
- An existing superelevated curve along the highway.
- Existing facilities which must be accommodated.
- Design vehicles which require extra space to the side when they make a turn.
- Existing fill slopes to the northeast with poor soil conditions which must be avoided.

Ramps and Gores



The technique is the same as we have seen previously but the application is a little different. The freeway shoulders and the ramp tapers are built outward from the edge of the through lanes, and then the ramp profiles are tied into the surface.