



**SCCA NATIONAL  
CONVENTION**  
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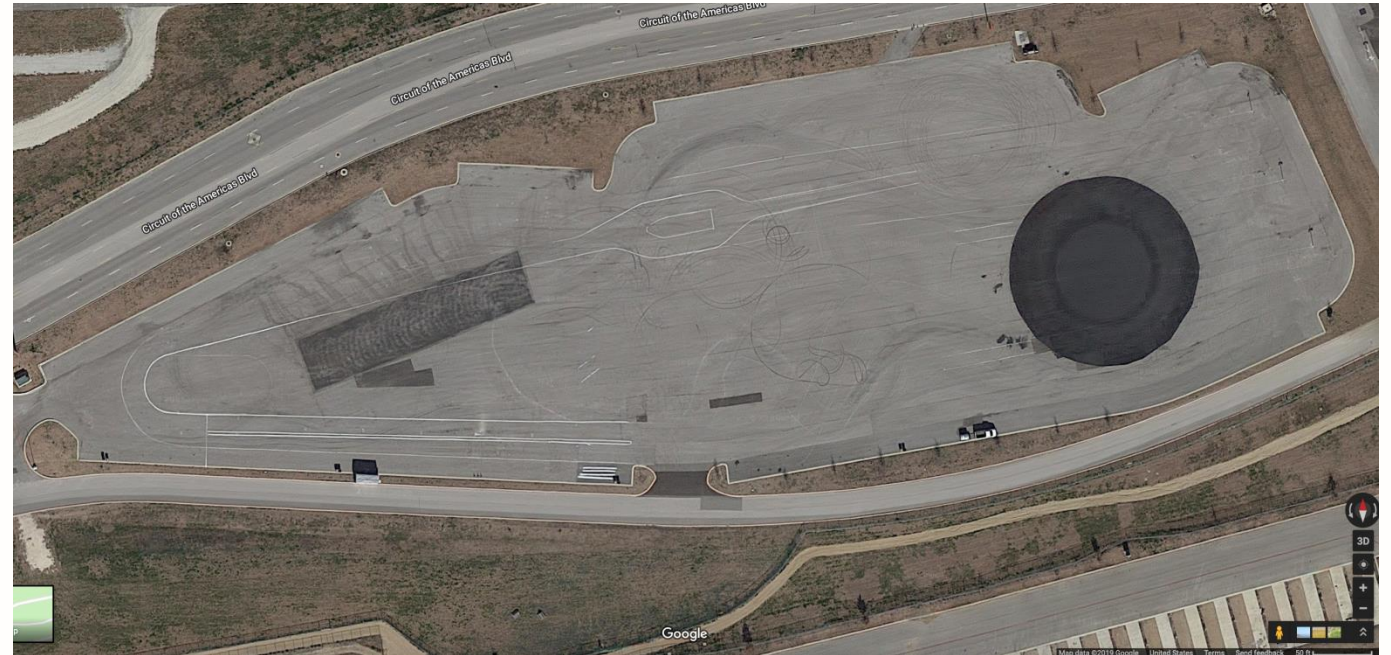
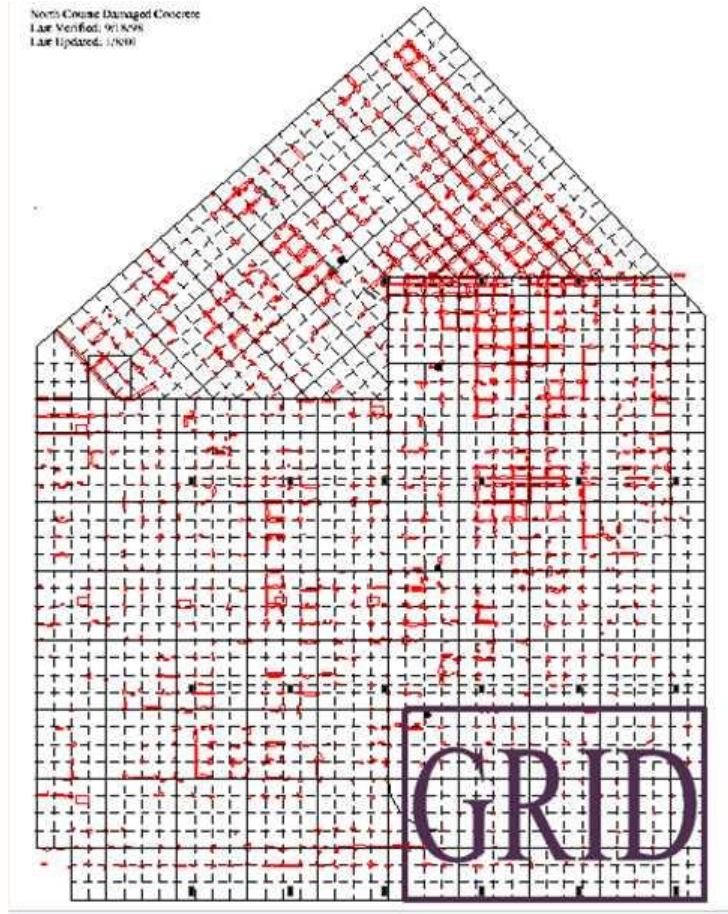
# *Solo Course Design 101*

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- Job Basics
- Parking Lots and Similar Sites
- Layout Techniques



# Challenging Sites We Have Worked



# Detailed References and Tools to Consider

- The big Roger Johnson presentation package:
  - Lots of examples and data
  - Great illustrations covering visuals and cone usage
  - Recommended reading for new and experienced designers
  - [www.houscca.com/autocross/course-maps/CourseDesignManual.pdf](http://www.houscca.com/autocross/course-maps/CourseDesignManual.pdf)
- Possible drawing tools to look at:
  - TurboCad ([www.turbocad.com](http://www.turbocad.com))
  - SketchUp ([www.sketchup.com](http://www.sketchup.com))
  - Lucidchart ([www.lucidchart.com](http://www.lucidchart.com))





# Attitude Adjustment - 1

- What do our customers drive? Everything.



# Attitude Adjustment - 2

- The course designer is not Michelangelo and he/she is not painting the Sistine Chapel.



- The objective is to provide a safe, fun, findable course that meets the needs of the event. Not to express one's creative genius 😊.
- The course is not someone's first-born child. It's a tool to do a job.



# Attitude Adjustment - 3

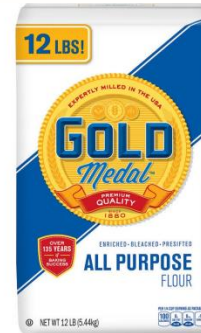
- Event Chairs and Safety Stewards
  - Review the map in advance if your process provides for that
  - Be present for the setup (or delegate authority to someone who can be)
  - Get feedback to the designer as soon as you can
  - If something needs fixing:
    - Tell the designer before you do anything about it, explain why it's an issue
    - Let them have first crack at fixing it
    - If they don't fix it satisfactorily, then step in or have someone knowledgeable do so



# Course Designer Job Basics - 1

- Know the responsibilities and deliverables

- Printed maps
- Supplies
- Pre-event setup coordination
- During-event fixes if needed



- Know the site and how it is going to be used

- Surface type, topography, obstacles, boundaries, other potential hazards
- Site utilization/layout; paddock, grid(s), course ingress/egress routes



# Course Designer Job Basics - 2

- Know the event parameters – expectations (and headcounts) will vary
  - Novice School – simplicity is paramount
  - Practice – good mix of content for car test/tune
  - Regional points event – good competition course meeting local needs
  - Divisional or Tour or Pro – high quality efficient course with Nationals-like content





# Course Designer Job Basics - 3

- Know the rules
  - Safety regs apply to all events as do margin dimensions (2.2)
  - Element dimensions are **not** mandatory for *Regional* events (2.3.B)
  - 15 ft, 25 ft, 45 ft, 75 ft
  - Kart requirements if applicable (2.2.D, 2.7, Appendix G)
  - Timing start placement (6.5.A)



# Parking Lots Have a Lot of Good Features

- More readily available than airports in many cases
- Can be any size from small to generous
- Closer to infrastructure (restaurants, lodging, fuel, retail, etc.)
- Generally closer to population centers so easier to drive to
- Parking stalls provide a built-in coordinate system
  - Find out their actual sizes in advance; 8x16, 9x19, other
- Exposure to public can be useful for program marketing purposes
  - Walk-up potential customers more likely
  - Banners, handouts, newbie wrangler can be helpful ideas
  - Have them sign the waiver and take them on a ride (“first hit is free”)

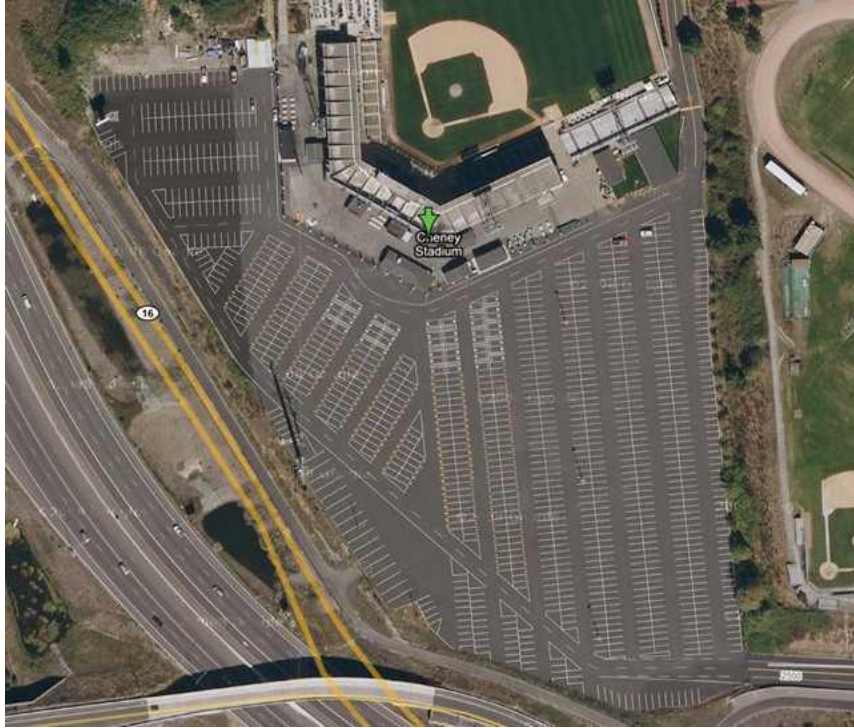


# ...But They Can Also Have Challenges

- Irregular shape
- Undulating surface (typically for drainage purposes)
- Light poles
- Grates
- Curbs and planters
- Poor and/or non-uniform pavement
- Dirt, debris, litter, leftover cars
- Little or no boundary control



# Google Maps (or Earth) is Your Friend





# Layout: Get the Priority Items Done First

- Locations of Finish and Start (in that order)
  - Finish should be done first
    - It's where the greatest safety issues tend to arise
    - The finish always needs more space than you probably want to give it
  - Both are likely to be influenced by Grid positioning and routing cars to/from
- Determine a feasible general route through the site (doodle)
  - Sketch more than one, figure out which you think works best
- Consider locations of course worker stations
  - Keep these in mind when sketching the routes
  - Should be a design/layout consideration, not an afterthought

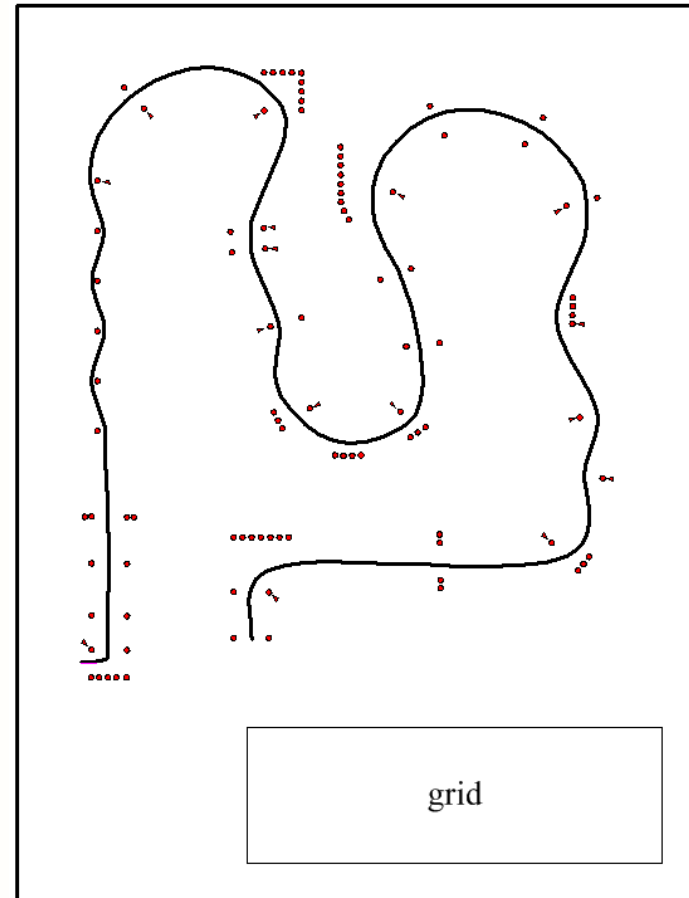
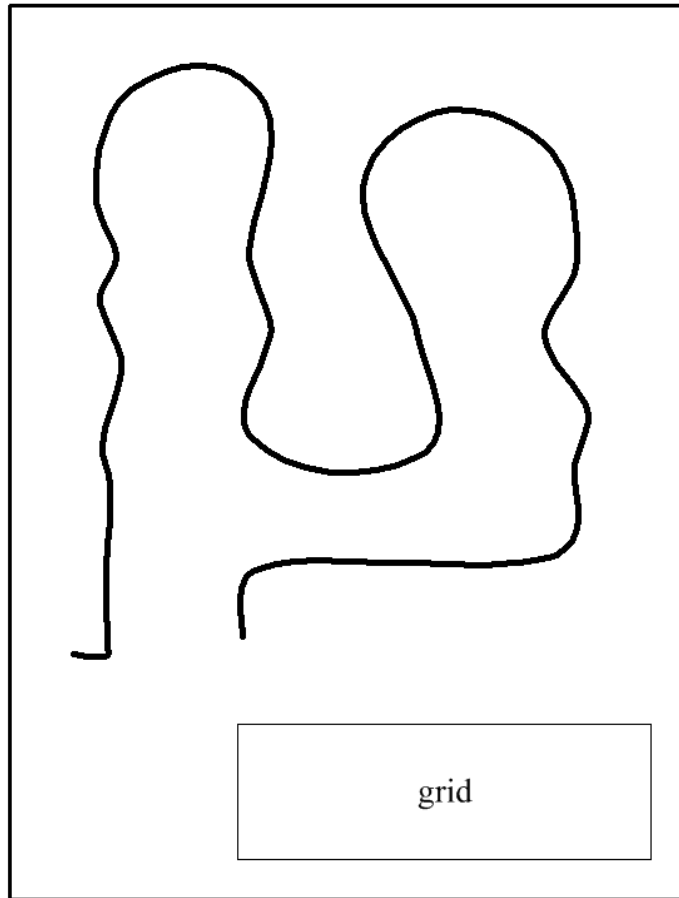


# Populate the Selected Route With Elements

- Tweak the route if needed as you add cone positions
- Use the coordinate system (stalls or concrete squares) to help with dimensions
- Have variety of content to provide competition quality
  - Transients (slaloms, lane changes)
  - Sweepers (constant and/or varying diameter)
  - Esses, connecting sweepers
  - 90's, 180's as applicable
  - Legally fast (as the site and safety allow) and medium-speed elements
- Double-check to be sure required dimensions are met
- Allow for adjustments everywhere possible
  - Moving a cone or gate 5-10' should not destroy a whole section

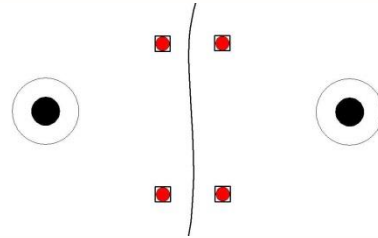


# Doodle Becomes Course Pretty Easily

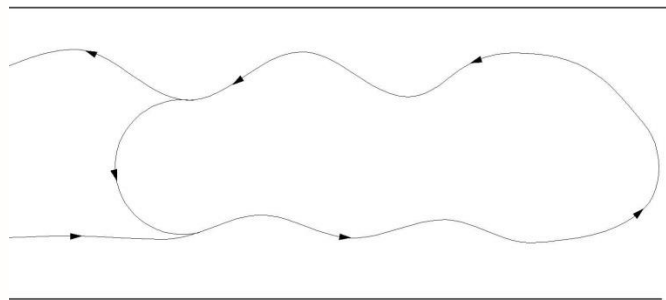


# Ways to Address Space Utilization Issues - 1

- Gap between light poles or between a pole and something else
  - A 60-foot gap can be negotiated via 10-foot gates (non-National event)



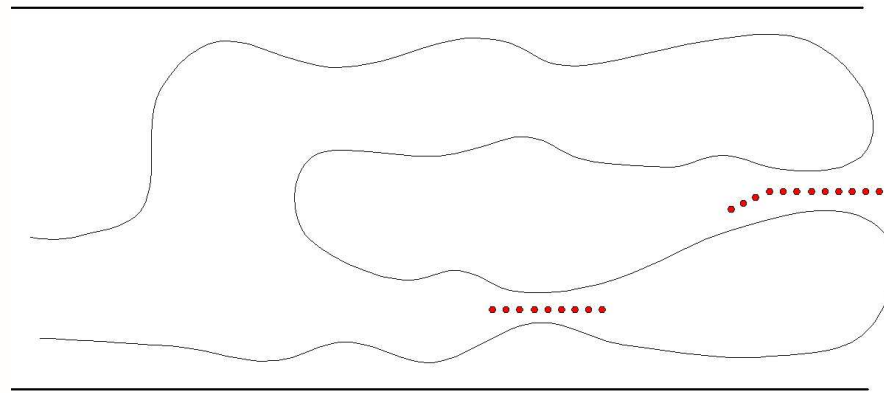
- Small area can be maximized via various methods
  - Multiple laps, full or partial (decision point needs to be visually obvious)



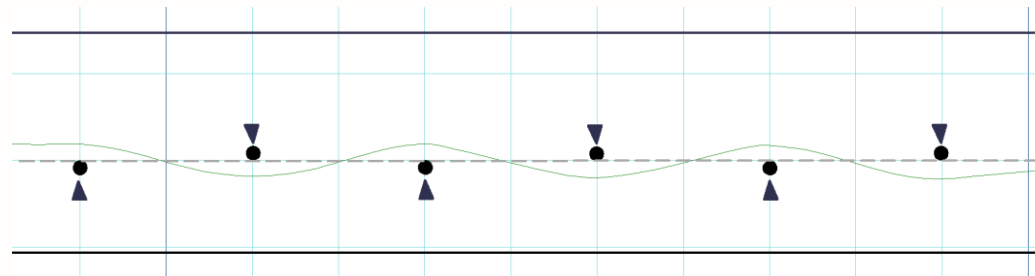


# Ways to Address Space Utilization Issues - 2

- Shared walls

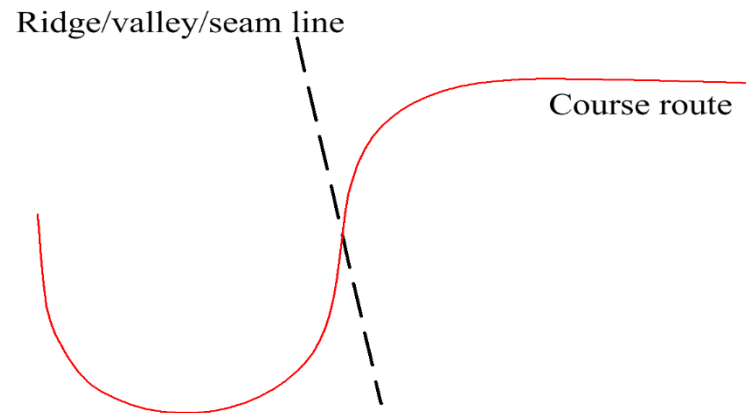


- Caveat: such methods significantly impact second-car starting
- Make a 50' slalom feel like a 65'; move cones off the centerline



# Surface Problems – Seams, Valleys, Ridges

- A primary responsibility of the designer is to avoid breaking cars
- If you must cross these things, do it at a shallow angle, closer to parallel than to perpendicular
  - This allows the suspension and chassis of the car to work better to absorb the bump/dip



# Dimensional Guidelines, Condensed Version

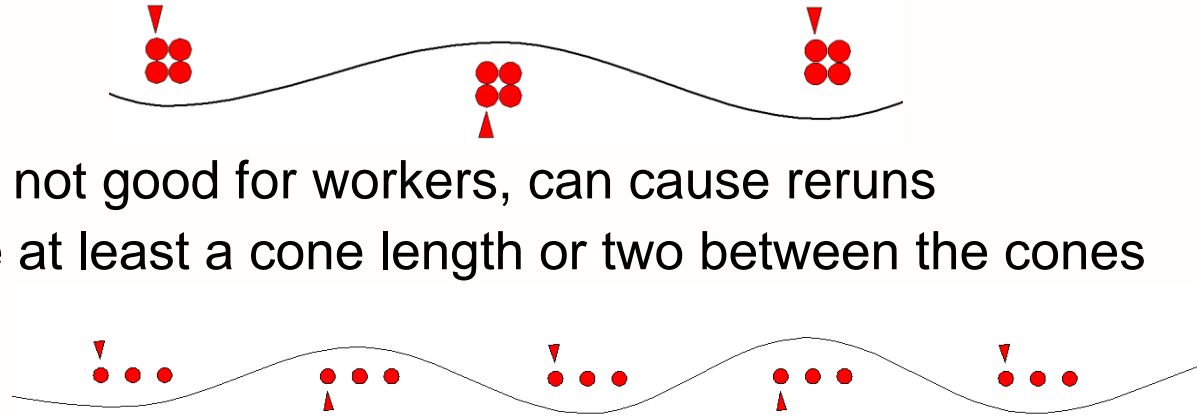
- A 15' gate is not that narrow (big cars are around 6.5' wide).
- A 35' gate or wider can be hard to see at speed. 20-25' is typical.
- A 45' straight-line slalom is pretty tight. A 90' slalom is pretty useless at our allowed speeds.
- A 200' straight is okay, **if** the site has room. A 600' straight is too fast for our rules. Start worrying around 300-400', regardless of site. If something bad happens we **MUST** be playing by the rules. Our insurance depends on it.
- 100' buffer between adjacent sections may be enough for multiple cars on course. Need more if one aims at the other. 75-80' may be enough if they are mostly parallel and there's no significant likelihood of visual confusion.



# Common Mistakes - 1

- Cone Clusters

- One hit = many hit, not good for workers, can cause reruns
- For “walloms” have at least a cone length or two between the cones



- Too-Wide-Open Spaces

- Longitudinal (distance between cones/gates along the route),  $> \sim 200'$
- Lateral (distance between cones in a gate),  $> \sim 30-35'$
- Too much space makes it hard to see where the next feature is at speed, especially if other parts of the course are in the background.

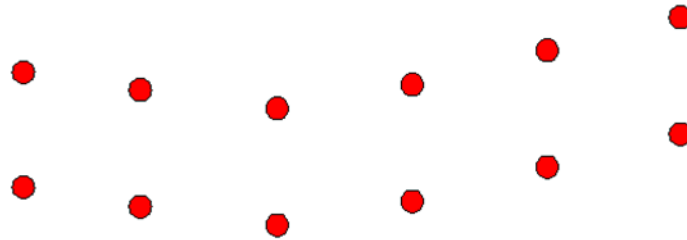




# Common Mistakes - 2

- Monospacing along the route

- Hard to see the real gates when all gaps are similar; use spacing 2x or 3x times width



- Inconsistent Visual Cues

- It's a “symbolic language”, try to use just one meaning per pattern
    - Pointers typically go on the inside of a turn
    - Outer wall spacings should be reasonably uniform
    - “Pointer walls” should use consistent numbers of cones



# Questions So Far?

- See you in the 201 session
- Rate info:
  - Via the Whova App
  - Via <https://www.scca.com/conventionsurvey>
  - Via paper form available at Convention Registration

