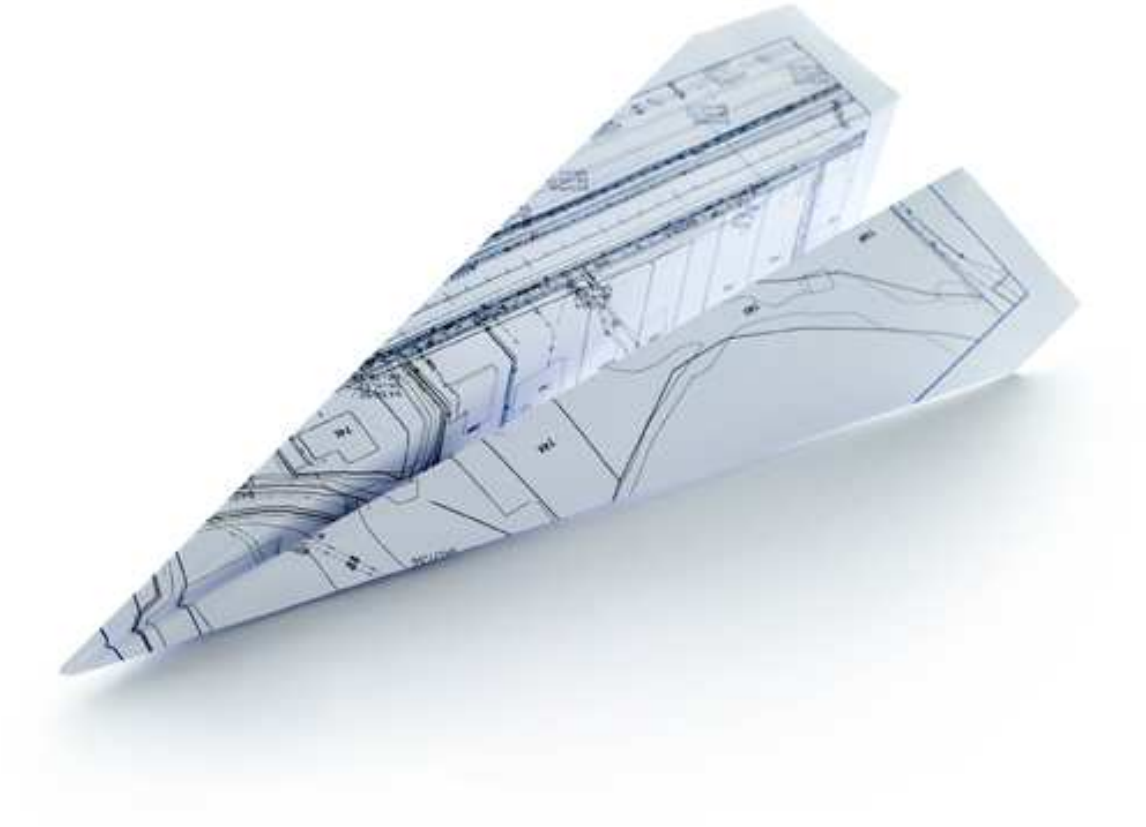
BUILDING MULTI-TEMPLATES



NORDIC CIVIL 2009 – Sadri Zaabi

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Who am I?

- Sadri Zaabi
- Just call me Sami
- 24 years old
- Bachelor of Science
  - Copenhagen University College of Engineering 2008
- Grontmij | Carl Bro – Road department

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Agenda

- Presentation of todays case
- Workflow 1 – Darupvej
- Workflow 2 – Ringstedvej
- Freeway templates

Disclaimer

- WARNING!!!!!
- I still concider my self as a novice when it comes to null points, displayrules etc.

- There are a million ways to do things in InRoads
- There is no right way, it’s all depending on the situation

- This session will be more workflow based rather than solution based

- The examples shown can possibly be done in more intelligent ways, but this is how I solved my problems.

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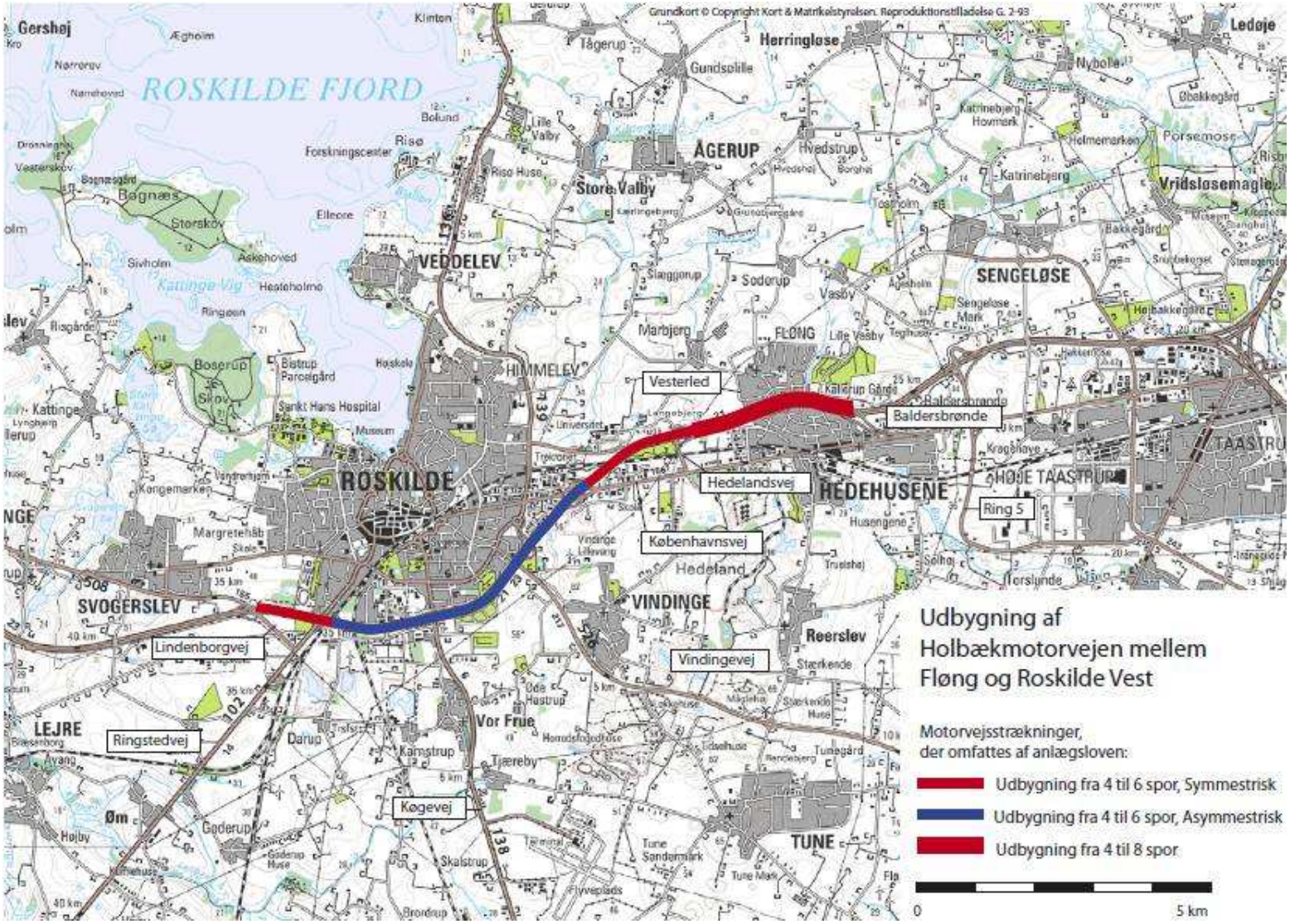
Todays case – M11 : Fløng – Roskilde Vest



M11 facts

- 11 km freeway – approximately 7 miles
- 18 bridges
- 900 m/3000 feet retaining walls
- 5,9 km/3,6 miles new sound barriers
- 2 km / 1,2 miles of preserved wooden sound barriers
- 6 Partial interchanges
- 2 Full interchanges

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Interfaces

- Geometry
- Trafic safety
- Bridges
- Retaining walls & sound barriers
- Drainage
- Roadway lightning
- Pavement design
- Soil engineering
- Environmental engineering
- Aesthetics / Landscape architecs
- Ekspropriation
- Traficregulation
- Logistics
- Tenders
- Survey etc.

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Lets start…

- Age old question in InRoads is
  - How many templates should I use?
- Should I do static or dynamic templates?
- Many templates:
  - Pros:
    - They are simple and everybody understands them
  - Cons:
    - It’s a nightmare updating them
    - Don’t adapt well in complicated projects
- Few templates:
  - Pros:
    - It’s easy to update(in most cases) and adapts well to the project
  - Cons:
    - They can be very complex and not everybody understands them

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Lets start…

- A good rule of thumb is, make one template for each normal cross section

- Just remember:
  - Solutions differ from project to project

Conclusion

There is no rule

. . . As a designer YOU have to decide how many templates suits your project.

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Workflow 1 - Darupvej

- What is the problem I need a solution for?

Workflow 1 - Darupvej

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Workflow 1 - Darupvej

- What is the problem I need a solution for?
- What can help me solve my problem?
  - Survey, 2D design file, DTM, Alg etc…

Workflow 1 - Darupvej

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Workflow 1 - Darupvej

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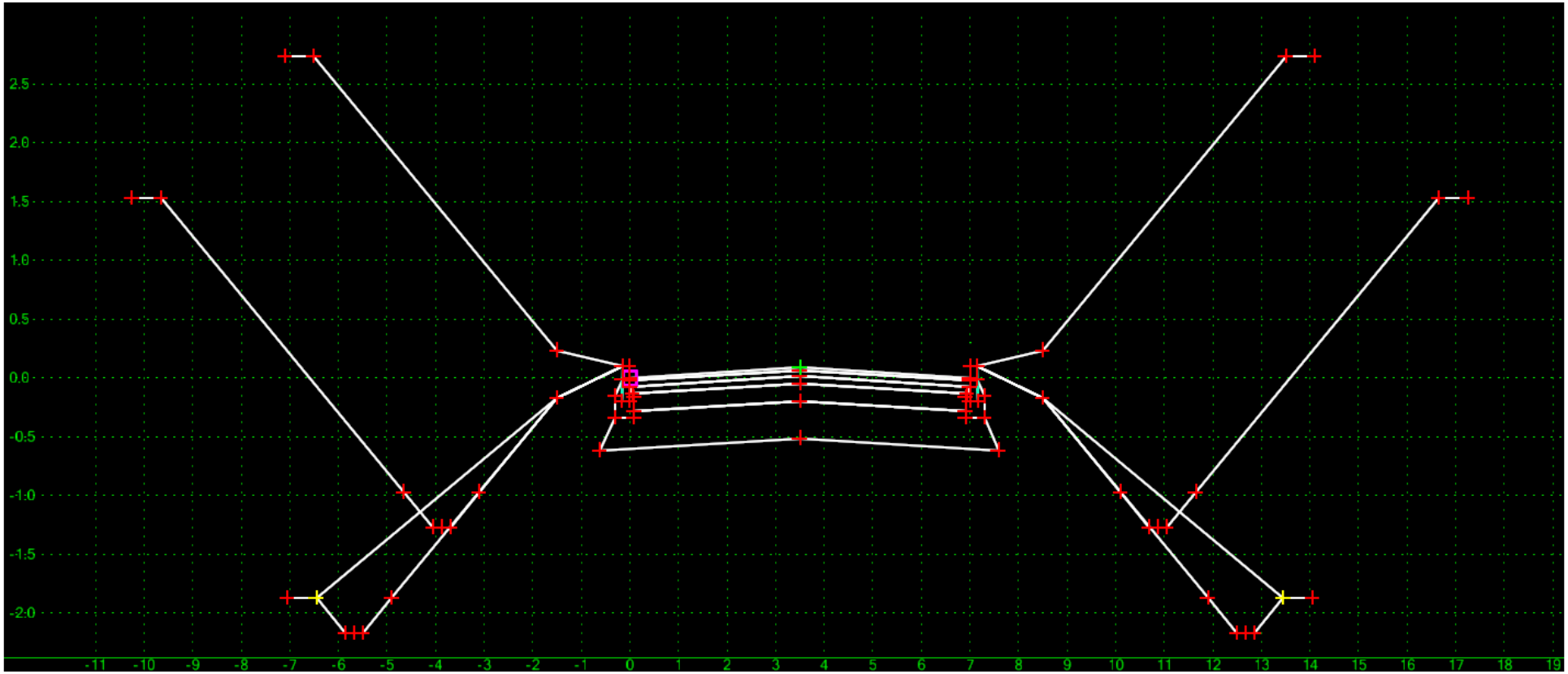
- Look at your static template, what does it need?

Workflow 1 - Darupvej



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Workflow 1 - Darupvej

- I need to turn on a kerbstone on LHS and RHS independently

- I'll use null points to interrogate my template
  - Null points will activate display rules
    - Remember parent/child relationship

Remember the hierarchy!

1. Template constraints
2. Style constraints
3. Parametric constraints
4. Point controls

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Workflow 1 - Darupvej

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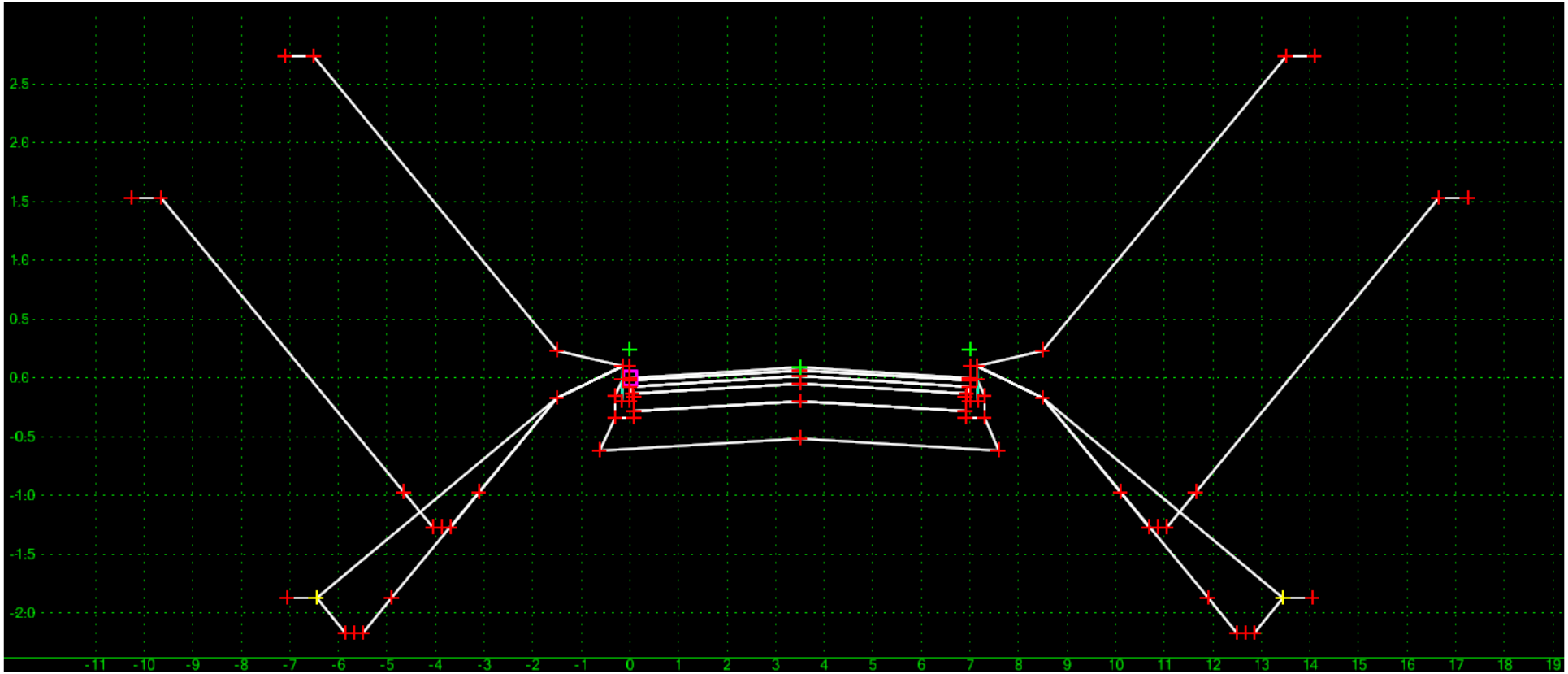
- Look at your static template, what does it need?
- Now build your dynamic template

Workflow 1 - Darupvej



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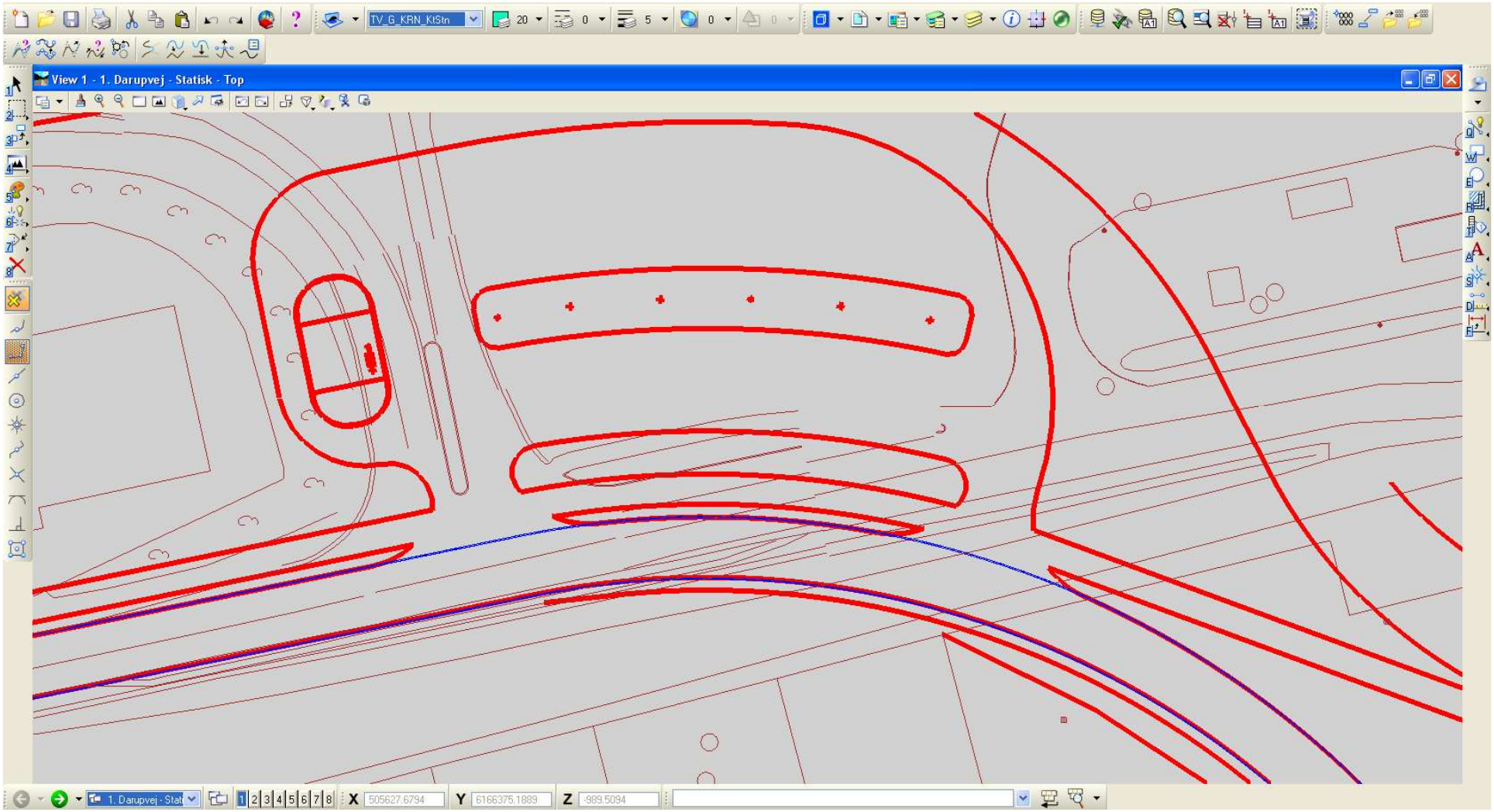
Workflow 1 - Darupvej

- I need to turn on a kerbstone on LHS and RHS independently
- I'll use null points to interrogate my template
  - Null point will activate display rules
    - Remember parent/child relationship
- Lets test it

What happens if I use a static template:



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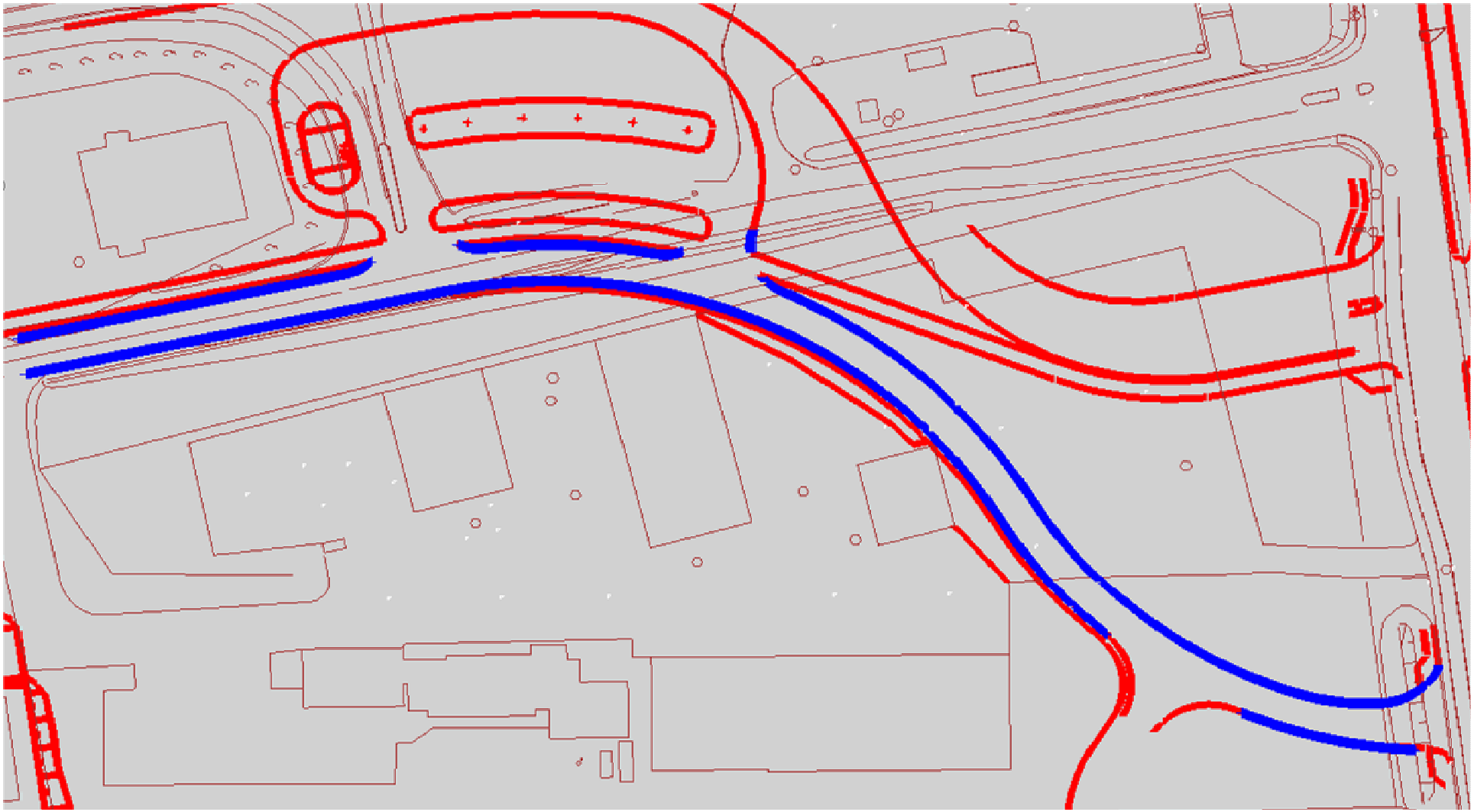
What happens if I use a dynamic template:



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Workflow 2 – Ringstedvej

- What is the problem I need a solution for?
- What can help me solve my problem?
  - Survey, 2D design file, DTM, Alg etc…
  - I used the exsisting edge of pavement and bikepath from the survey
  - Import them as features
- Look at your static template, what does it need?

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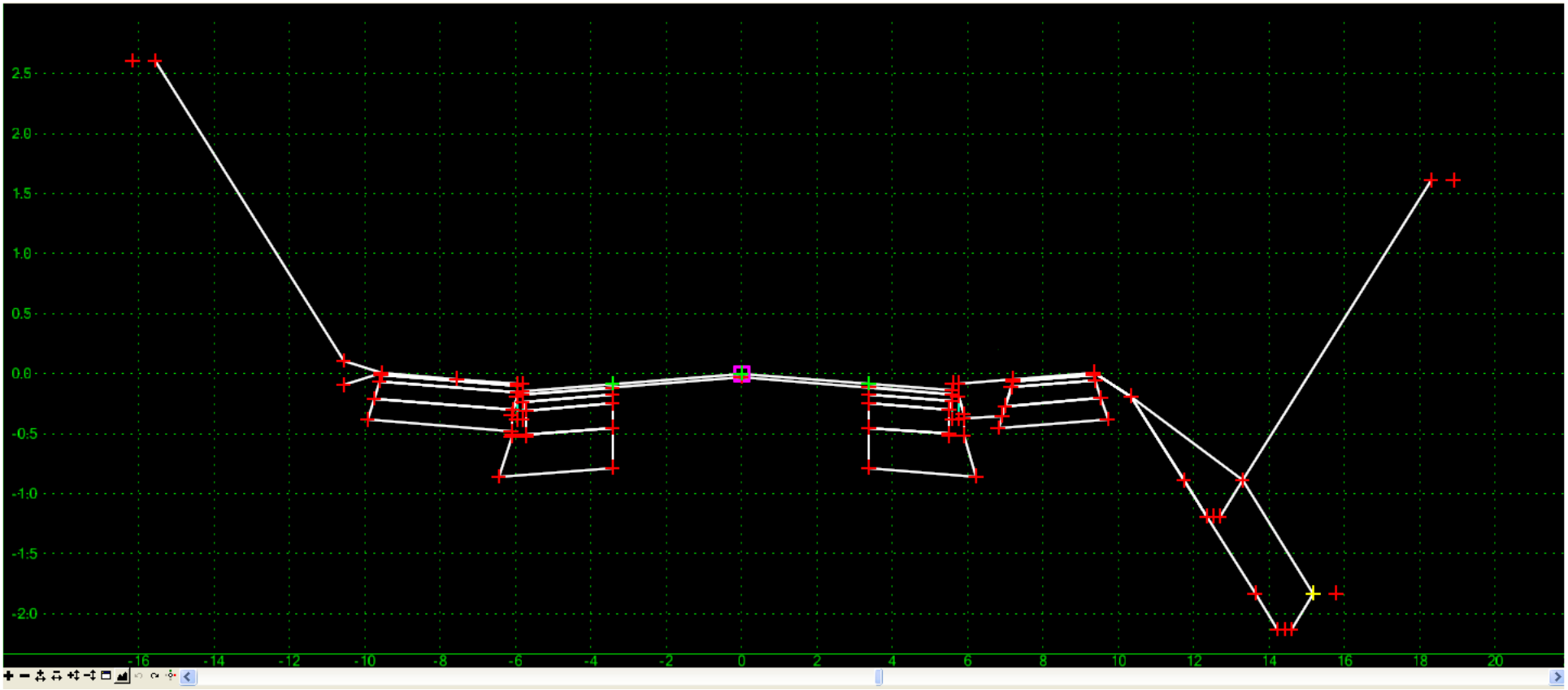
Workflow 2 – Ringstedvej



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Workflow 2 – Ringstedvej

- What is the problem I need a solution for?
- What can help me solve my problem?
  - Survey, 2D design file, DTM, Alg etc…
  - I used the exsisting edge of pavement and bikepath from the survey
  - Import them as features
- Look at your static template, what does it need?
  - Null points, they will interrogate my template
  - Imported features from survey will control my Null points
- Now build your dynamic template

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Remember the hierarchy!

1. Template constraints
2. Style constraints
3. Parametric constraints
4. Point controls

Workflow 2 - Ringstedvej

- I'll be placing a new kerbstone on both sides.
- Unless my new EOP is more than X cm wider than the existing road, then I only want to see my new kerbstone.
  - Remember parent/child relationship
- I only need my bikepath displayed, when I have to build a new one
  - Remember parent/child relationship
- I'll use null points to interrogate my template
- Lets test it

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Freeway template

- What about freeway templates?
- Doesn’t matter, a template is a template.
- Two last examples I had features controlling my null points
- This time we will use style constraint

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Workflow 3 – Freeway bridge

- We dont want to do two different templates
  - One for the freeway in terrain
  - One for a freeway bridge
- Guess what we added?
  - Thats right a null point!
- This time it wont be controlled by a feature
- We will use a style constraint

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Lets define a style constraint

- Searches for an alignment with a specific style.
  - Searches in a horisontal range
  - Searches in a vertical range
  - Or both!
  - The user specifies the search distance pr. point
- When it finds that alignment it does something
- Doesn’t have to be at a specific place
- Every style constraint needs an alignment
  - Risk of haveing to many alignments, that can confuse
  - The same thing goes for feature point control
  - Its a personal matter what you prefer

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Workflow 3 – Freeway bridge

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  - One for the freeway in terrain
  - One for a freeway bridge
- Guess what we added?
  - Thats right a null point!
- This time it wont be controlled by a feature
- We will use a style constraint
- Lets try it out

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Workflow 3 – Freeway subgrade

- M11 is an expansion of an existing freeway
  - Results in constraints between the exsisting freeway and
- In this case the client(VD), wanted us to reuse the exsisting subgrade on exsisting emergencylanes
- Before: We had, more or less, a fixed subgrade width on each template
- Now: We needed a variable width of the subgrade
- Guess what we added in our template?
  - Thats right a null point!
- This null point was controlled by a feature
- Lets test it

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Workflow 3 – Freeway sound barriers

- We dont want to use two different templates for the highway
  - One of the freeway without the sound barrier
  - One of the freeway with the sound barrier
- Hold on a second…
  - What about sound barriers on end conditions?
- I have 3 end conditions on each side
  - Plus the two mentioned at the top of the slide
- That’s alot of templates, if we made them static

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Workflow 3 – Freeway sound barriers

- How do we solve that?
  - Any guesses????
- Thats right null points
- This time I'll use two nullpoints
  - One to check need for sound barrier on the highway
  - One to check need for sound barrier on the endconditions
  - If they both fail I wont get any!
- Lets test it

Overall conclusion

- Sky is the limit
- Be innovative / keep it simple
- Remember you are not the only one at the company who uses these templates
  - Make documentation
  - Or at least use the decription fields

Thank you for your time