MDOT –Roadway 3D Modeling Recommendations

Model Size Recommendations:

- 3 miles or less of Boulevard Roadways (modeled together with one Template)
- 5 miles or less of Boulevard Roadways (modeled as separate bounds)
- 5 miles or less of Rural Roadways (two to three lane sections with ditches and occasional drives and intersections)
- 4 Miles or less of Urban Roadways (up to 7 lane Sections, numerous Intersections and Driveways)

Model Splitting Among Project Team Recommendations

- Boulevard roadways:
    - Option 1: One designer for mainline bounds, one designer for side roads
    - Option 2 (projects longer than 3 miles): Split Project in half at a logical location among two designers, Side Roads a separate designer if needed.
- Interstate projects:
    - Option 1: One designer for mainline roadway, one designer for each interchange.
    - Option 2 (projects longer than 3 miles) Split the project in half at a logical location among two designers, Interchanges broken out by one designer per interchange or several ramps per designer dependent on project team size, complexity and experience.

Work Type Break -out Recommendations

- Always best to have same designer design the Horizontal and Vertical alignment of any roadway they model regardless of project split.
- If drainage design is broken out, communication between road and drainage designers is critical and must be constant.
- Items designed with civil cells can be divided out by corridor or assigned to a separate designer.

Best Practice for Model Seams at Intersections or Gores

- For ramps it is best for the ramp model to begin\end at the 2’ point. The gore is best modeled with the mainline, not the ramp corridor.
- In SS2, widening is best modeled with the mainline with the intersection return as a separate model. The seam should be at the thru lane edge of pavement.
- In SS3, intersections are best modeled with civil cells which should include any widening or right turn lanes. The seam is at the thru lane edge of pavement.
- When a roadway crosses a bridge or structure longer than 20’ or where the pavement over the structure is not included in the roadway pavement quantities, model the roadway as two separate corridors. One corridor on each side of the structure using the same alignments for both corridors. Each corridor must have a unique name and can be stored in the same file or separate ones depending upon the project size and number of designers on the project.

Modeling Best Practices – SS3

The following items can greatly impact model processing time:

- Excessive use of key stations in a corridor (Over 20) - Current civil cell clean up procedures requires Key Stations. This process is expected to change in the future to eliminate the need for Key Stations.
- Excessive use of plan view graphics referenced to a corridor - Plan view graphic references require additional key stations to closely follow the graphics. Use point controls instead to follow plan view graphics whenever possible. Plan graphics targeted with point controls do not need to be added as references to the corridor nor key stations.

The following items can save design time:

- Don't draw the plan view. Create the alignments and a template that represents the bulk of the project. Then create the corridor and assign the template to view the plan view graphics of the edges of pavement and other roadway elements. Adjust the template and alignments as need to correct the plan view. One exception might be drawing edge of pavement and shoulder tapers.
- Roadway corridors that cross over or under another roadway corridor must be processed independently. It is not possible to create a proposed triangle file that includes crossing roadways at different elevations.
- Save and use Custom Cross Section sets including all necessary cross sections for the project or by work type such as driveways, intersections, approaches, etc.
- Import Paramedic constraints using a text file in the format shown below.

*label	type	start value	stop value	start station	stop station	enabled
FillSlope_Slope_L	Slope	0.25	0.166666667	676+75.00 R7	677+75.00 R7	X

Modeling Best Practices – SS2

- Roadway corridors that cross over or under another roadway corridor must be processed independently. It is not possible to create a proposed triangle file that includes crossing roadways at different elevations.
- 3D line Strings should be displayed in the line string file as independent elements without the components for ease of use during the review and construction phases. This can be accomplished by referencing the component file to the 3D line String file and merging the line string data into master or by processing the corridors and displaying only the features within Roadway Designer. See the Design Wiki Chapter 4.2 for more information.

Earthwork Quantities from Cross Sections – SS3

- When using existing pavement in cross section for overlay\rehab projects, two cross section sets are required if the existing pavement should not be included in the earthwork calculations but is shown for information purposes. One set would be created using the sheet preference including all the cross section data (this is the submittal set). One set would be created without sheets showing only the elements to be included in the earthwork calculations (this is the earthwork calculation set).
- Marking components as exclude from the calculations in the earthwork dialog only impacts the component quantity report, not the earthwork report, nor the annotated earthwork graphics.