

# Transportation Research Board National Roundabout Conference

## Using Design Visualizations to Address Safety Issues

presented by  
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# Initial Application of Design Visualization

## Intersection of Douglas/North Douglas Highway, Juneau AK

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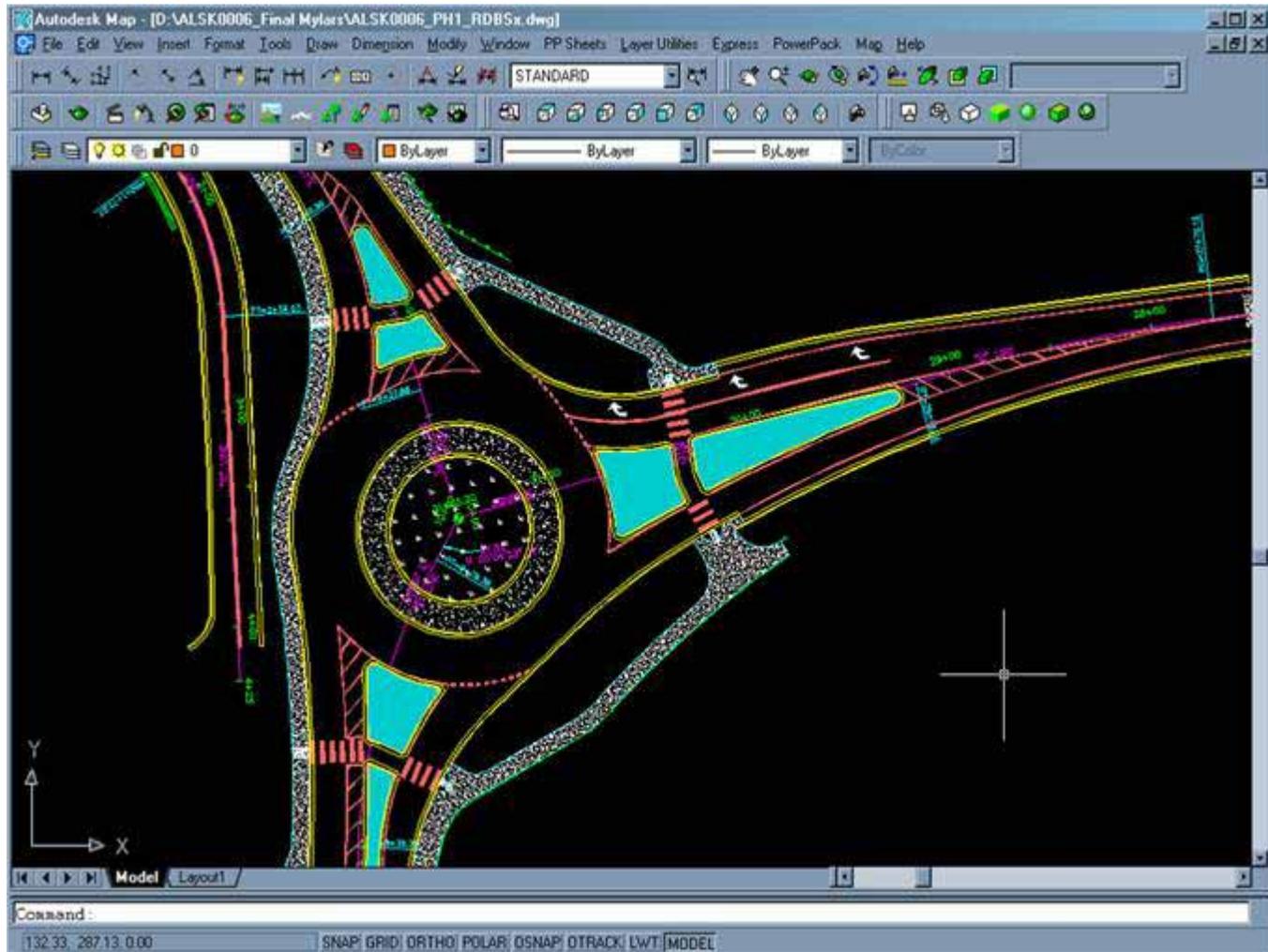


# Visualization Basics

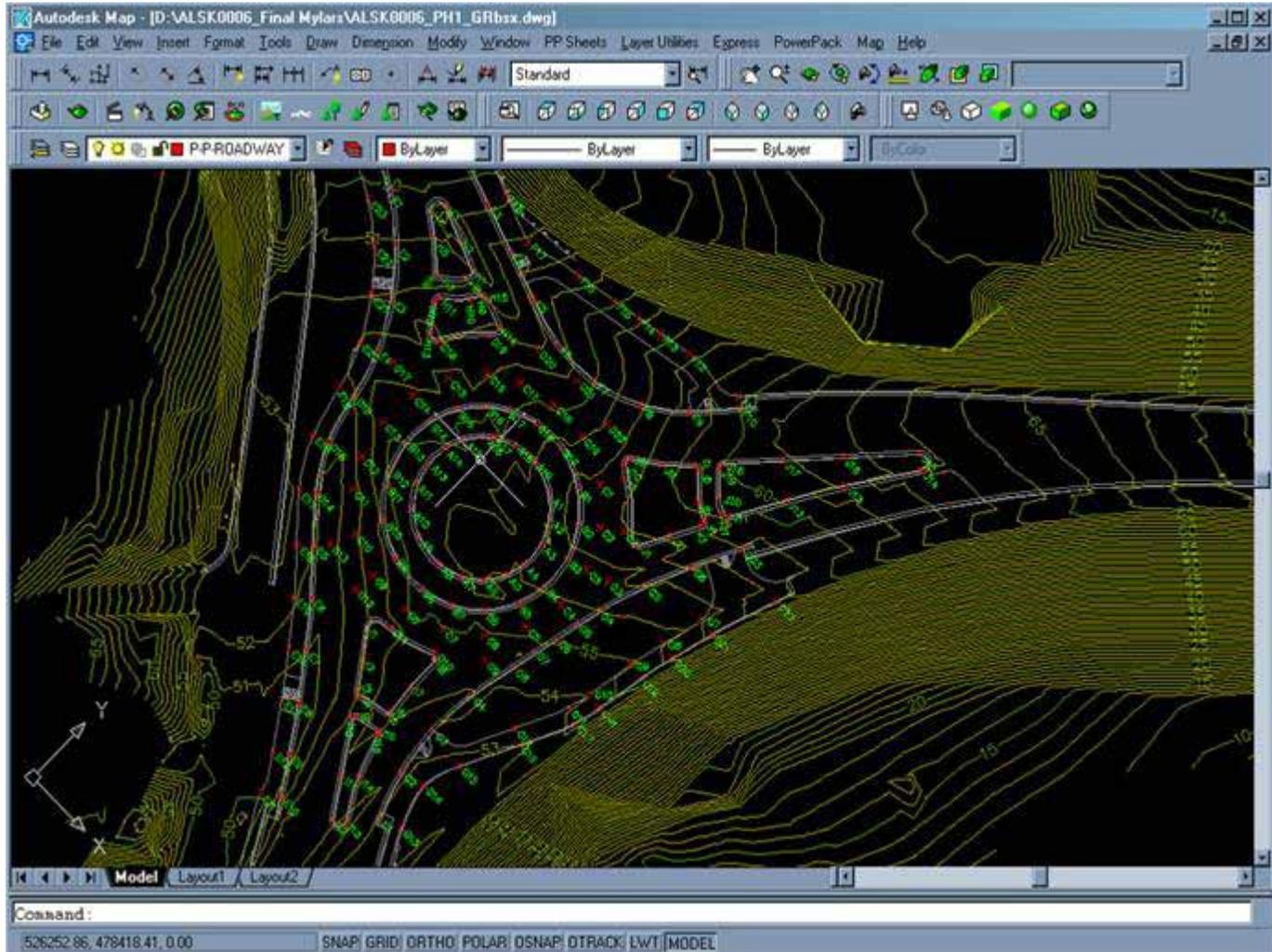
- Plan View
- Grading
- 3D Modeling
- Surface Rendering
- Surface Textures
- Obtain Viewpoint
- Insert Model into Viewpoint



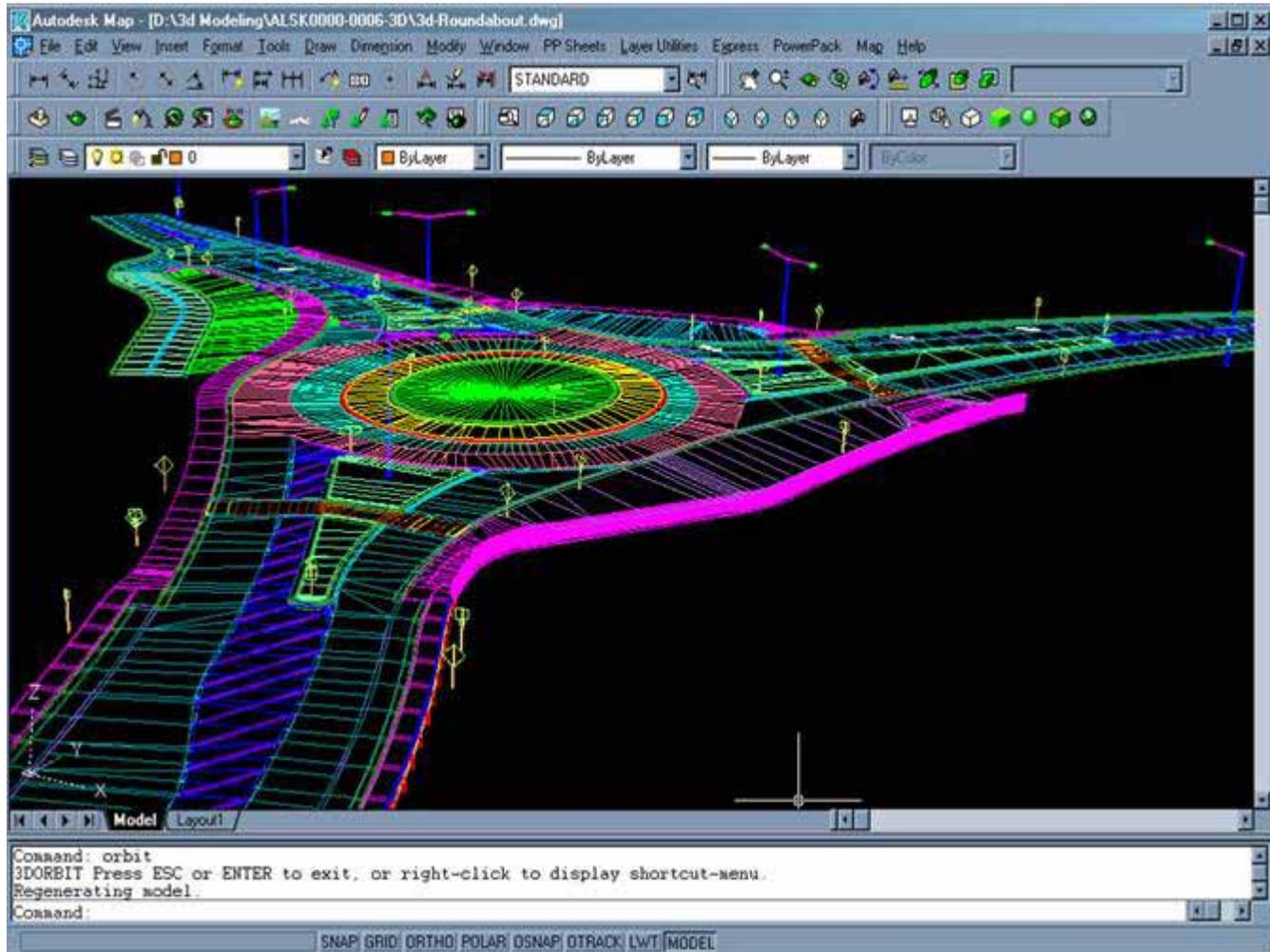
# Plan View



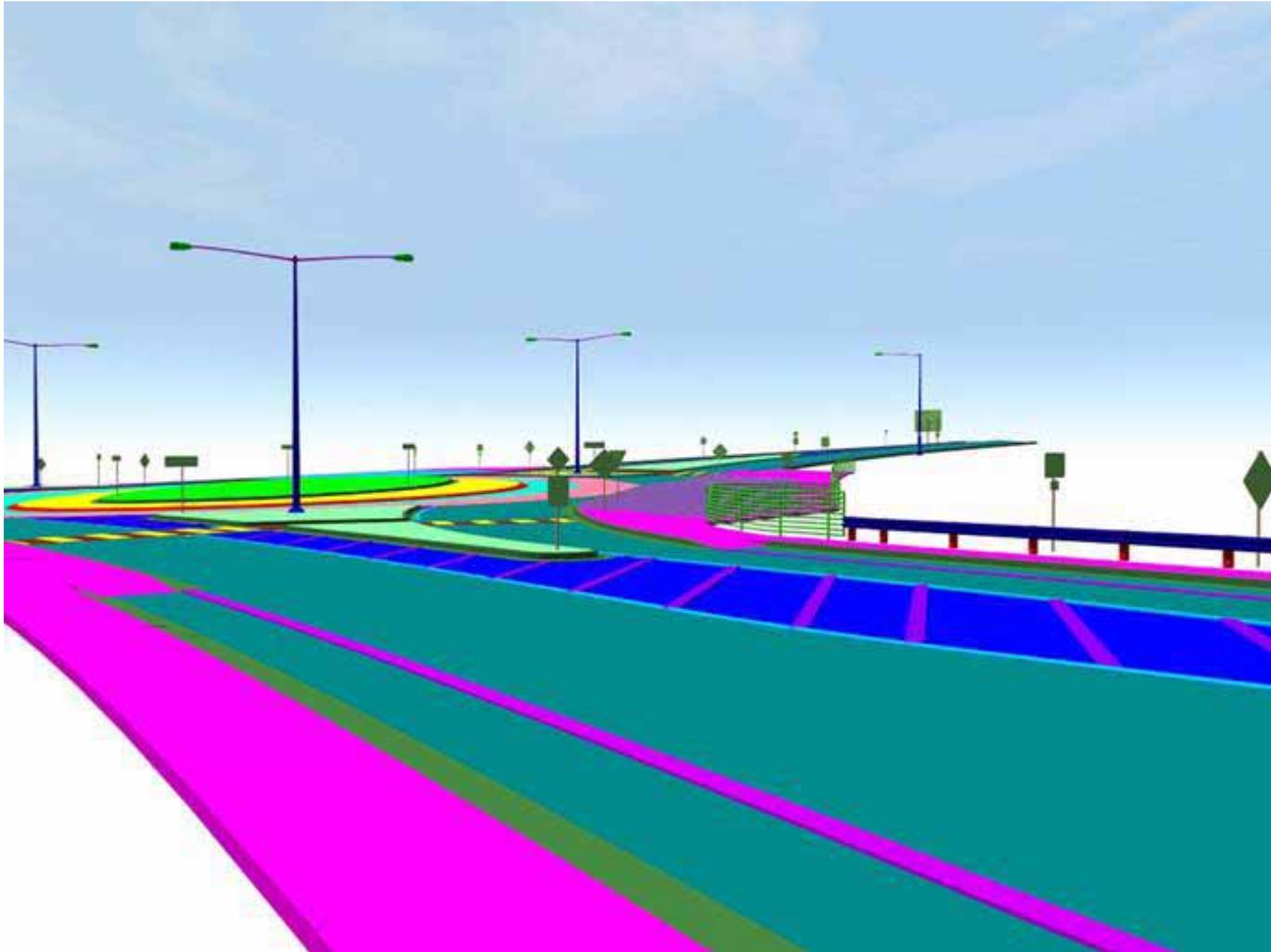
# Grading



# 3D Modeling



# Rendering



# Texturing



# Obtain Viewpoint



# Insert Model into Viewpoint



# Design Visualization Applications

- Grading
- Sight Distance
- Signing
- Utilities and Structures



# Grading Review

- Roundabout cross-slopes
- Integration of approach grades
- Wall requirements



# Roundabout Cross-slope

Juneau, AK



# Roundabout Cross-slope

Woodinville, WA



# Approach transitions

Juneau, AK



# Approach Transitions

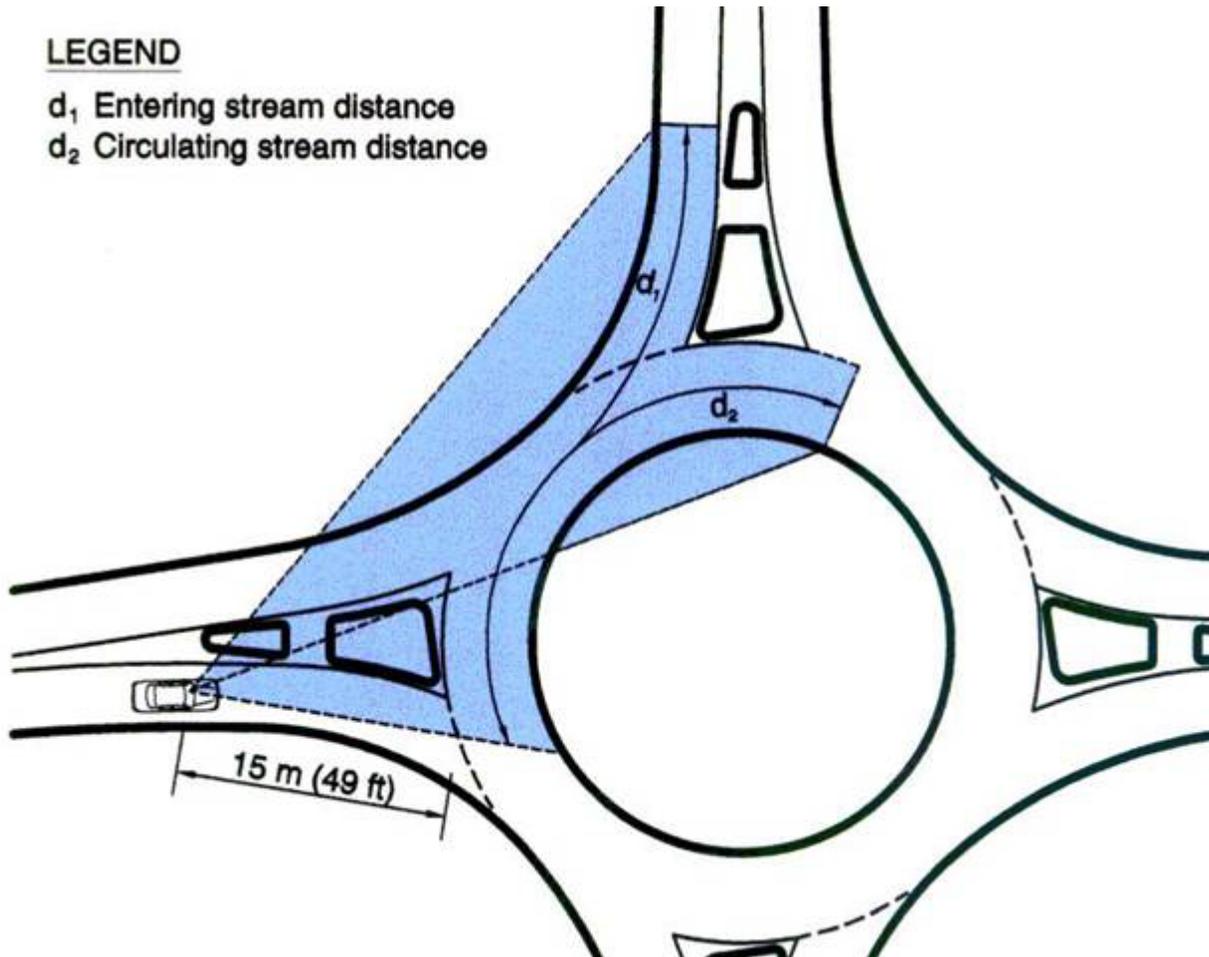
Woodinville, WA



# Sight Distance

## LEGEND

- $d_1$  Entering stream distance
- $d_2$  Circulating stream distance



# Approach Sight Distance

Juneau, AK

- Sight distance easily reviewed using model
- Visibility of central island, circulation vehicles, and signing easily checked



# Entering Sight Distance

Woodinville, WA



# Circulating Sight Distance

Woodinville, WA



# Pedestrian View

Juneau, AK

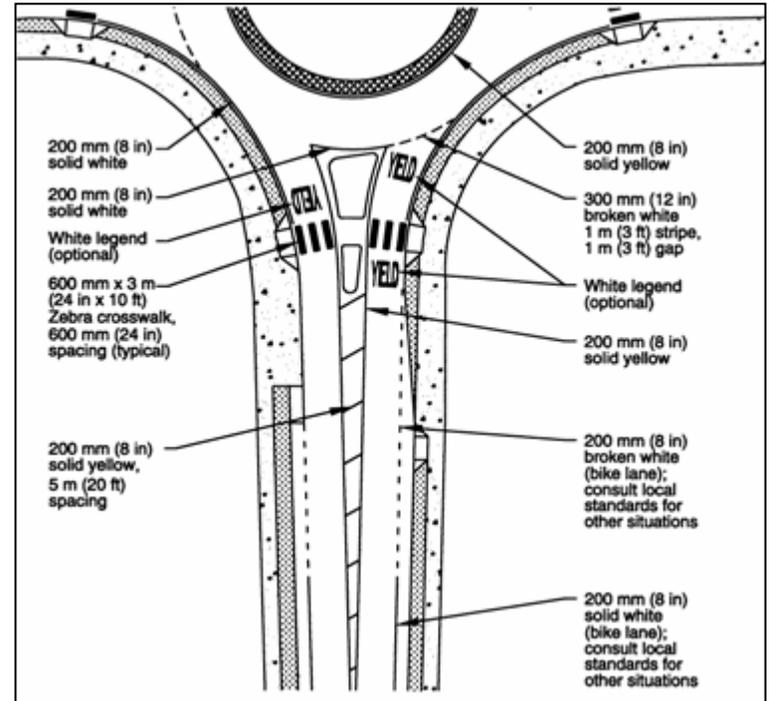
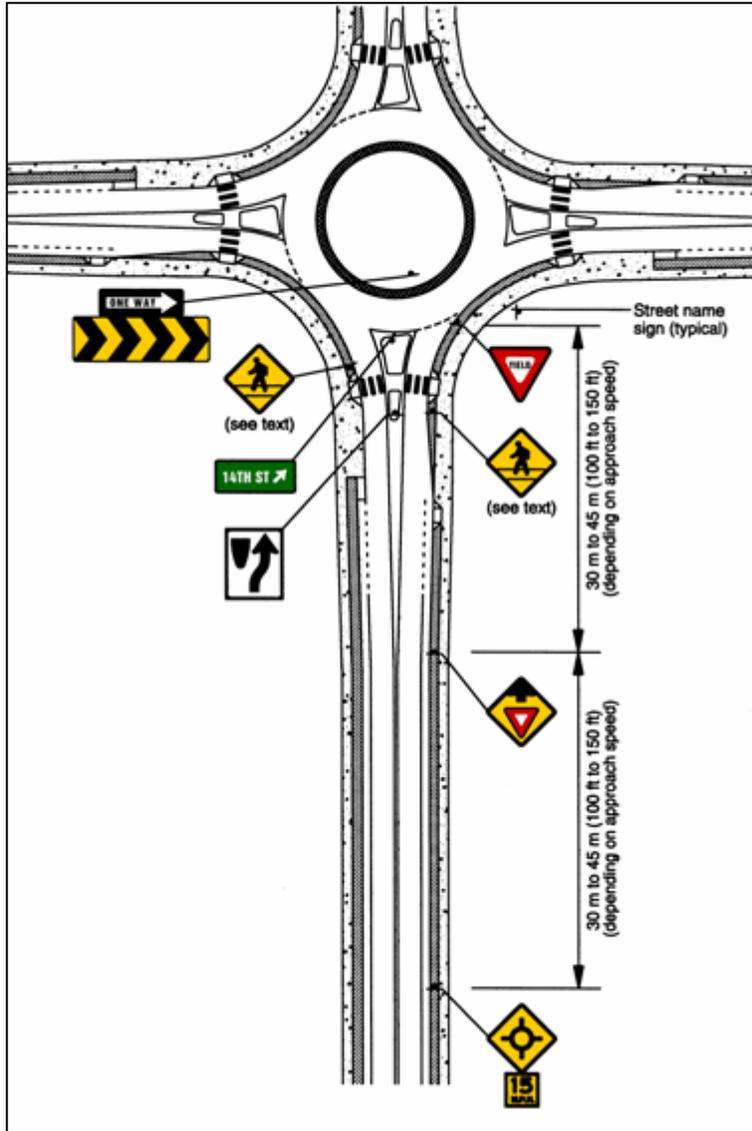


# Pedestrian View

Woodinville, WA



# Signing and Pavement Marking



# Signing and Pavement Marking

Juneau, AK



# Impacts to Adjacent Development

- Circulating roadway proximity to structures
- Wall requirements
- Business signage
- Access issues



# Proximity of roundabout to structure a major concern



# Proximity of roundabout to structure a major concern



# Retaining wall, service station sign and access

Woodinville, WA



# Other Applications

- Project in San Diego County
- Client requested a rural treatment with shoulders
- High speed approaches and significant peak hour volumes
- Vertical barrier defining outside edges of the roundabout desired for safety



# San Diego County

- Client requested a rural treatment with shoulders
- High speed approaches and significant peak hour volumes
- Vertical barrier defining outside edges desired
- Community interest high



# San Diego County

- Raised barrier curb proposed with shoulders
- Used by WSDOT in rural application
- Roundabout edges defined maintaining rural feel
- Community acceptance high



# San Diego County

## Drivers Eye View



# Conclusions

- Design visualization can be an effective tool for checking roundabout designs
- Sight distance, signing, and pavement markings are easily checked
- Grading and ride issues can be more fully investigated
- The public responds well to driver's eye viewpoints, often relieving concerns about how to drive roundabouts



# Juneau Roundabout Status May 19, 2005



# Questions?

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