Modern Roundabout Makes Preferred Alignment Possible for TRAX Light Rail in Salt Lake City

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Presentation

- University of Utah LRT Background
- Existing Conditions
- Why Roundabout?
- Why Not Roundabout?
- Roundabouts + LRT
  - Applications
- Video/Results
Utah’s Traffic Circle
Circa 1930
Melbourne, Australia - Yield Control

(Notice the White Van)
Rail Crossing – Yield Control + Flashers

New Zealand and Nantes
**TRAX Map**

- **15 Miles North/South**
  - Dec. 2000

- **2.5 Miles University**
  - November 2001

- **1.5 Miles HSC Extension**
  - November 2003

- **9,500 HSC Employees**

- **500,000 Clinic Visits/yr.**

- **7,000 Walk-ins/day**

*12th National Light Rail Conference*
TRAX to Univ. Hospital Campus
U of U Stadium LRT

- Left-turns Impacts
- Train/Vehicle Impacts
- Delays to LRT
- Delays to Traffic
- Gates Upstream
U of U Stadium LRT - Gates Near Stadium
Side-Running to Center-Running Transition

*Crosswalk Removed

->>Tunnel
Looking WB from Bypass Lane

12th National Light Rail Conference
Existing T-Intersection in 2000

- Stop-Controlled EB Thrus and WB Lefts
- Double Free-Rights NB
- Free Rights EB and Free-Thru WB Bypass →

Looking south at T-Intersection in June 2000
LRT Planning & Engineering

- Where to Put Stations/Spacing?
- Center Running vs. Side Running?
- Intersection Traffic Control: Signals or Roundabouts?
- LRT Interface with:
  - Driveways
  - UTA Bus
  - Campus Shuttle Bus
  - Vehicles
  - Pedestrians
Why Roundabout?

• Allows Center Running LRT Tracks
• Center Running Allows Bus Stops/Shuttle Stops
• Center Running Eliminates 9 Crossings
• High Capacity - Bypass Lanes
• Enhances Left-turns
• Safety - Lower Number of Conflict Points
Intersection Capacity + Low Delay

![Graph showing the relationship between total major street volume and average delay for different intersection types. The graph compares signal-controlled intersections with 10% and 50% left turns, and roundabouts with 10% and 50% left turns.](image-url)
Why Roundabout?

- LRT + Roundabouts are Working in Europe/Australia
- Spacing to Nearby Signalized Intersection
- Less Storage Area Needed for Left-turns
- Light-rail trains have FULL priority and little delay in rbt.
Why Not Roundabout?

• Drivers are unfamiliar with roundabouts
• Conflicts w/LRT trains
• Ped crossings
• Near busy signal

➢ Previous intersection was confusing
➢ Gates at tracks Peds cross at signals to the East and West
➢ Traffic Signal is far enough away
Design Features-Concept Plan

- Concept plan in June 2000
- Existing T-intersection
- Double bypass lane NB
- Single bypass lane EB
- Two-lane design w/o truck apron
- Two-exit lanes south leg
Design Features – Single Lane Option

- Double bypass lane NB to EB.
- One-lane design
- 4-Gates:
  - 2 at tracks
  - 1 at EB entry
  - 1 at WB entry
Simple Changes to Roundabout

- Single-lane layout is near capacity
- WB bypass lane is needed
- Add escape lane to the south.
No Pedestrians
Nantes, France – Boulevard Salvador Allende has 9 Roundabouts w/LRT
Problem: Traffic backs onto the tracks
Escape Lanes

Creation of a slip road can give a possibility of release to vehicles stopped on the tracks.
Escape Lanes on West Jordan LRT
Accident History

- Before/After
- 50% Crash Reduction
Capacity Analysis

- Vehicles/hour
- VISSIM – Simulated Rbt and Signals
- AM/PM Before/After
- Capacity increased by 80%
- Delay reduced by 60%
WB Exit - add extra lane/escape lane

Looking west at WB Exit

Looking east at WB Exit
Gates Located Next to Tracks
What About Heavy Rail?
Chambery, France Roundabout

- Train is gated
- Signal flashes yellow when no Train
- Solid red during train Xing

High Speed Train – not LRT
Conclusions

- Roundabouts can function with LRT (9 years so far)
- High-capacity/bypass lanes make it work
- University of Utah is USA 1st location
- Previous intersection similar to roundabout
- Need for WB Bypass Lane
- Add escape lane exit SB
For more information:

www.RoundaboutsUSA.com