Rail Corridor Circulation Challenges

May 20, 2017
Why Are We Here?

CONNECTING PALO ALTO
DESIGNING OUR RAIL CORRIDOR FOR THE FUTURE
Rail Program Community Workshop #1

• Safety for all modes of transportation
• East/west connectivity across the rail corridor
• Traffic disruptions
• Bicycle and pedestrian access
• Noise and visual impacts
• Future growth
Regional Context – Santa Clara County

VTA Measure B

• $700 million for Grade Separation projects
• 8 projects in 3 cities in Santa Clara County:
  • Palo Alto
  • Mountain View
  • Sunnyvale
• Guidelines currently being drafted
## Regional Context – Caltrain Corridor

### Grade Separation Projects Under Development

<table>
<thead>
<tr>
<th>City</th>
<th>Project</th>
<th>Cost Estimate *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mountain View</td>
<td>Castro/Moffet St</td>
<td></td>
</tr>
<tr>
<td>Mountain View</td>
<td>Rengstorff Ave</td>
<td>$120M</td>
</tr>
<tr>
<td>Sunnyvale</td>
<td>Bernardo Ave</td>
<td></td>
</tr>
<tr>
<td>Sunnyvale</td>
<td>Mary Ave</td>
<td></td>
</tr>
<tr>
<td>Menlo Park</td>
<td>Ravenswood Ave</td>
<td>$140M-$380M</td>
</tr>
<tr>
<td>San Jose</td>
<td>Auzerais Ave</td>
<td></td>
</tr>
<tr>
<td>Burlingame</td>
<td>Broadway</td>
<td>$250M</td>
</tr>
<tr>
<td>San Mateo</td>
<td>25th Ave</td>
<td>$180M</td>
</tr>
</tbody>
</table>

* Planning level cost estimates
Previous Studies

• **Our Palo Alto 2030: Comprehensive Plan (2017)**
  o Currently being updated
  o Transportation Infrastructure Investments:
    ✓ Full grade separations for automobiles, pedestrians, and bicyclists at Caltrain crossings
    ✓ Retrofit / improvements to existing grade separated Caltrain crossings for pedestrians and bicyclists at California Ave and University Ave
    ✓ Construction of new pedestrian and bicycle grade separated crossing of Caltrain in South Palo Alto and in North Palo Alto

• **Palo Alto Grade Separation and Trenching Study (2014)**
  o Conceptual engineering analyses for:
    ✓ Undercrossing at Churchill Ave, Meadow Dr, and Charleston Rd
    ✓ Rail trench under Meadow Dr and Charleston Rd
• Rail Corridor Plan in Palo Alto (2013)
  o Recommended goals for inclusion in Comprehensive Plan Update:
    ✓ **Goal 1**: Rail improvements should be constructed in a **below-grade trench**.
    ✓ **Goal 2**: Ensure the **highest possible safety at all rail crossings** and mitigate rail impacts on neighborhoods, public facilities, schools and mixed-use centers.
    ✓ **Goal 3**: Connect the east and west portions of the City through an improved circulation network that binds the City together in all directions.
    ✓ **Goal 4**: Provide improved access to parks, recreation facilities and schools and assess future needs for these facilities.
    ✓ **Goal 5**: Infrastructure should **keep pace with development**.
## At-Grade Crossing Comparison

<table>
<thead>
<tr>
<th></th>
<th>Palo Alto Ave</th>
<th>Churchill Ave</th>
<th>Meadow Dr</th>
<th>Charleston St</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traffic ADT</strong></td>
<td>14,700</td>
<td>11,400</td>
<td>9,300</td>
<td>16,000</td>
</tr>
<tr>
<td><strong>Bicycle</strong></td>
<td>550</td>
<td>1020</td>
<td>900</td>
<td>240</td>
</tr>
<tr>
<td><strong>Pedestrian</strong></td>
<td>300</td>
<td>270</td>
<td>180</td>
<td>140</td>
</tr>
<tr>
<td><strong>Road Transit/Bus</strong></td>
<td>33</td>
<td>7</td>
<td>11</td>
<td>45</td>
</tr>
<tr>
<td><strong>School Bus</strong></td>
<td>0</td>
<td>64</td>
<td>48</td>
<td>20</td>
</tr>
<tr>
<td><strong>Heavy Truck</strong></td>
<td>190</td>
<td>127</td>
<td>47</td>
<td>20</td>
</tr>
<tr>
<td><strong>Gate Down (Secs)</strong></td>
<td>43 (25-75)</td>
<td>39 (30-78)</td>
<td>39 (20-74)</td>
<td>40 (22-76)</td>
</tr>
<tr>
<td><strong>Collisions (2011-13)</strong></td>
<td>0</td>
<td>13</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td><strong>Max Queue</strong></td>
<td>11/21</td>
<td>20+/1</td>
<td>15/0</td>
<td>25+/0</td>
</tr>
<tr>
<td><strong>Emergency Vehicle</strong></td>
<td>15</td>
<td>30</td>
<td>18</td>
<td>8</td>
</tr>
</tbody>
</table>
Circulation Issues - Safety

Collisions
- 37 auto collisions in 3 years
- 14 bicycle collisions in 5 years
- 3 pedestrian collisions in 5 years
- 6 bicycle collisions at Churchill in 5 years (among City’s highest)

Emergency Access
- 70+ emergency vehicle trips cross per weekday

Suicides
- Caltrain suicides mostly take place between Burlingame & Sunnyvale
- 41% happen within 0.1 mile of a grade crossing
Circulation Issues – Traffic

- Today, 8-10 trains/peak hour/both directions
- By 2025, 20 trains/peak hour/both directions
- Currently, maximum queues reach 25+ vehicles
- Traffic capacity reductions caused by gate downtime will more than triple
- Over 51,000 vehicles use the at-grade crossings today during average weekday
- Traffic demand is likely to grow at 1%+ per year
Circulation Issues – Traffic

- There are **4 at-grade crossings** and **5 grade separations** (1 of them is bike/ped only) in Palo Alto
- Increased delays at grade crossings could **cause traffic to divert** to grade separated routes
- Newly grade separated routes could attract additional traffic
- Impact on changes to the crossing might affect more than immediate area
Circulation Issues - Bicycle & Pedestrian Access

- Palo Alto is among the **most bike-friendly cities** in the U.S.
- **9% of commute trips** are by bicycle today; 15% by 2020
- **2,700+ bicycle trips** are made at the crossings every weekday; 4,500 by 2020
- 3 out of 4 at-grade crossings are within walking distance of a school
- **50% and 40% of students** (middle and high school) walk or bike to school
- **900 pedestrians** use at-grade crossings every weekday
Circulation Issues – Noise & Visual Impacts

Noise

• Per Caltrain Modernization EIR process:
  o Palo Alto Mitigation Measure — not more than 36 dBA
  o Menlo Park & Mountain View Mitigation Measures— not more than 60 dBA

• Quiet Zones

Physical Barrier Effect & Visual Impacts

• East-west accessibility is restricted by Caltrain right of way
• All 4 at-grade crossings have vehicle gates & pedestrian guardrails
1. Palo Alto Ave (Alma St) Crossing
2. Churchill Ave & Alma St Crossing
3. Meadow Dr & Alma St Crossing

Landuse
- Residential
- Commercial
- Mixed Use
- Public Facility
- Open Space / Agricultural

PaloAlto_Bikeways_Existing
- Class I Multi-Use Path
- Class II Bicycle Lane
- Class III Shared Roadway
- Across Barrier Connection Crossings

- Existing At-Grade Crossing
- Existing Bike/Ped Crossing
- Existing Grade Separation
- Planned Bike/Ped Crossing
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