Project Area

Major Constraints
- Millbrae Station to the north
- Burlingame Station to the south
- Highway 101 to the east
- Downtown Broadway Commercial District to the west
- Caltrain Operational Constraint

Slide 2
Overview

• Develop Public Outreach Plan and Strategy
  – 3 Public Outreach Meetings
    • Community Meeting No. 1 - March 11, 2015
    • Community Meeting No. 2 - September 16, 2015
    • Community Meeting No. 3 – March 31, 2016
  – 2 City Council Meetings
    • City Council Meeting – January 19, 2016
    • City Council Meeting – May 16, 2016
  – Meetings with Major Property Owners
  – Meetings with Downtown Business Associations
Public Outreach Meeting 1

• Attendees sign-in and station on how they use the crossing now
• Brief presentation overview
  – Background History
  – Define Need
  – Existing Conditions
  – Example Grade Separation
• General Q/A
• Breakout groups – concerns and issues with grade separation
• Summary Report for Public Outreach Meeting posted to City website
Public Outreach Meeting 1

CONCERNS / ISSUES

1. Speed of trains
   80 mph too fast
2. HSR done deal?
   Grade separation needs to dovetail into CalTrain plans
3. Don’t just look at the one grade crossing at Broadway & Great Oak Street
5. Look at HSR feet vs subway
6. Reduce noise (train & loader)
7. HSR

Opportunities

1. Get better circulation by looking at “Big” picture and opportunities for all crossings to alleviate congestion on Broadway
2. Opportunity to add landscaping: trees, noise mitigation
   - Keep old eucalyptus tree!
3. Restore old train station to its original use as a train station
4. Lower trackway below grade
Public Outreach Meeting 2

• Attendees sign-in
• Exhibits around room for Community to view and ask questions
  – All alternatives evaluated
• Presentation Overview
  – Overview of Public Outreach Meeting No. 1
  – Traffic Delay Analysis
  – Qu
  – Overview of Impacts of 6 Alternatives
  – Impact Matrix
• General Q/A
• Summary Report for Public Outreach Meeting posted to City website

REQUEST FOR 3D GRAPHICS FOR BETTER VISUALIZATION
## 2040 Traffic Delays

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Weekday AM</th>
<th>Weekday PM</th>
<th>Weekend (Midday)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broadway/US 101 Off-Ramp/Rollins Road</td>
<td>584</td>
<td>771</td>
<td>381</td>
</tr>
<tr>
<td>Broadway/Carolan Avenue</td>
<td>273</td>
<td>47</td>
<td>38</td>
</tr>
<tr>
<td>Broadway/California Drive</td>
<td>713</td>
<td>631</td>
<td>431</td>
</tr>
</tbody>
</table>

* Average delay per vehicle
Quantified Benefits

- Travel Time Savings: 82.3% or $7,730,000
- Fuel Savings: 7.9% or $970,000
- Improved Safety: 0.9% or $85,000
- GHG Emission Reduction: 0.3% or $31,000
- CAP Reduction: 8.6% or $805,000
Alternative Analysis

• Total 6 Alternatives Evaluated
• 4 eliminated due to ‘fatal’ flaws / issues
  • Rail Trench / Rail Viaduct
  • Roadway Depressed / Roadway Elevated
• 2 Alternatives Carried through to 3rd Public Outreach Meeting
  • Hybrid Alternative A
  • Hybrid Alternative B
Alt‌er‌na‌tive F

Cost Range*: $180M to $240M

Maximum Fill Height = 29 ft

Rail Fully Elevated and Roadway At-Grade

Major Constraints and Cons:

- Impacts to Caltrain Operations
- Impacts to Millbrae Station and BART Operations
- Requires significant Caltrain track closure for construction
- Within 100-year Floodplain with significant impacts to existing natural drainage and culverts – potential flooding issues
- Visual Impact

Major Constraints and Cons:

- Complex construction
- Temporary Closure of Broadway
- Eliminated Broadway Parking Lot
- Impacts to existing utilities

* Approximate cost ranges based on numbers from a 2009 Grade Separation Program Footprint Study

Broadway Grade Separation Study
Alternative E

Major Constraints and Cons:
- Impacts to Caltrain Operations
- Impacts to Millbrae Station and BART Operations
- Impacts to Burlingame Station
- Caltrans closure required for construction
- High groundwater will require deep cutoff walls that will impede natural drainage across corridor - potential flooding issues
- Tree removal
- Impacts Oak Grove At-Grade Crossing

Major Constraints and Cons:
- Impacts to historic Burlingame Station
- Impacts to existing utilities and infrastructure

Cost Range* $500M to $600M

Maximum Excavation Depth = 33 ft

* Approximate cost ranges based on numbers from a 2009 Grade Separation Program Footprint Study
Alternative D

Rail At-Grade and Roadway Fully Elevated

Maximum Fill Height = 32 ft

Major Constraints & Cons

- Significant profile modification to Broadway, California, Carolan and Rollins
- Significant property takes
- Severe impact to adjacent business and residences
- Visual Impacts
- Significantly impacts to Broadway Station Access
- Eliminates Broadway Station Parking
- Significant impact to existing utilities
- Complex construction staging

Cost Range*
$120M to $210M

* Approximate cost ranges based on numbers from a 2009 Grade Separation Program Footprint Study
Alternative C

Cost Range*
$160M to $250M

Rail At-Grade and Roadway Fully Depressed

Maximum Excavation Depth = 28 ft

Major Constraints & Cons

- Significant profile modification to Broadway, California, Carolan and Rollins
- Significant property takes
- Severe impact to adjacent business and residences
- Significantly impacts Broadway Station Access
- Eliminates Broadway Station Parking
- Significant impact to existing utilities
- Constructions staging will require lane closures
- RR structure will required temporary RR service outage

* Approximate cost ranges based on numbers from a 2009 Grade Separation Program Footprint Study

Downtown Broadway Commercial District

1,182 ft

Maximum Excavation Depth = 28 ft

Broadway Rail At-Grade and Roadway Fully Depressed

Cost Range*
$160M to $250M

Rollins & Hwy 101 Interchange

Carolan – 22 ft excavation

California – 22 ft excavation

Chula Vista – 11 ft excavation

Downtown Broadway Commercial District
Alternative B

Cons:
- High groundwater will require cutoff wall construction required along railroad corridor – significant impact to natural creeks and drainage facilities – potential flooding issues
- Complex construction staging
- Impacts to existing utilities and infrastructure

Pros:
- No Impacts Caltrain Operational Constraint
- No impacts to Millbrae Station or BART Operations
- Minimized impacts to Downtown Broadway Commercial District and Rollins / Hwy 101 Interchange
- Minimal Right-of-Way Takes
- Minimal Visual Impact
- Maintains existing Oak Grove Crossing

Cost Range* $330M to $400M

Maximum Rail Excavation Depth = 17 ft
Maximum Roadway Fill Height = 18 ft

No Impact to Caltrain Operational Constraint, Millbrae Station or BART Operations

7,550 ft

Downtown Broadway Commercial District

No Impact to Oak Grove At-Grade Crossing

* Approximate cost ranges based on numbers from a 2009 Grade Separation Program Footprint Study
Alternative A

Maximum Roadway Excavation Depth = 13 ft

Maximum Rail Fill Height = 13 ft

Cost Range* $210M to $260M

Pros:
- No Impacts to Caltrain Operational Constraint
- No Impacts to Millbrae Station or BART Operations
- Minimized impacts to Downtown Broadway Commercial District
- Minimal Right-of-Way Takes
- Minimal Visual Impact
- No Impacts to Oak Grove At-grade Crossing

Cons:
- High groundwater will require cutoff wall construction – only required around Broadway area
- Complex construction staging
- Impacts to existing utilities and infrastructure

* Approximate cost ranges based on numbers from a 2009 Grade Separation Program Footprint Study
City Council Meeting No. 1

• Presentation Overview
  – Overview of Public Outreach Meeting No. 2
  – SHOWED 3D ANIMATION FOR – ALTERNATIVE A
  – Next Steps

REQUEST FOR 3D ANIMATION – ALTERNATIVE B
3D Animation of Alternative A
Public Outreach Meeting 3

- Attendees sign-in
- Exhibits around room for Community to view and ask questions
  - Alternatives A and B only
- Presentation Overview
  - Overview of Public Outreach Meeting No. 1 & 2
  - Traffic Delay Analysis
  - Construction Sequencing for Alternatives A and B
  - 3D animation for Alternative A and B
    - Virtual Reality Viewing Goggles
    - Renderings at street level
  - Impact Matrix for Alternatives A and B
- General Q/A
- Summary Report for Public Outreach Meeting posted to City website
3D Animation of Alternative B
Visual Comparison of Alternatives Location #1
From Pedestrian Eye Level
Visual Comparison of Alternatives Location #1
From Pedestrian Eye Level
Visual Comparison of Alternatives Location #1
From Pedestrian Eye Level
Visual Comparison of Alternatives Location #2
From Pedestrian Eye Level
Visual Comparison of Alternatives Location #2
From Pedestrian Eye Level
Visual Comparison of Alternatives Location #2
From Pedestrian Eye Level
Visual Comparison of Alternatives Location #3
From Pedestrian Eye Level
Visual Comparison of Alternatives Location #3
From Pedestrian Eye Level
Visual Comparison of Alternatives Location #3
From Pedestrian Eye Level
Visual Comparison of Alternatives Location #4
From Pedestrian Eye Level
Visual Comparison of Alternatives Location #4
From Pedestrian Eye Level
Visual Comparison of Alternatives Location #4
From Pedestrian Eye Level
## Alternative A

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Improved safety</td>
<td>• Visual concerns due to partially elevated tracks (can be mitigated through architecture and landscaping)</td>
</tr>
<tr>
<td>• Improved traffic, pedestrian and bicycle circulation</td>
<td>• Slightly higher train noise than depressed tracks (new electrical trains will have much less noise compared to diesel engines). Noise can be mitigated with acoustical panels placed at wheel level.</td>
</tr>
<tr>
<td>• Minimal impacts on adjacent properties</td>
<td>• Disruption during construction</td>
</tr>
<tr>
<td>• Minimal impacts to Broadway commercial district and auto dealerships</td>
<td></td>
</tr>
<tr>
<td>• Minimal impact to drainage facilities</td>
<td></td>
</tr>
<tr>
<td>• No obstruction to natural drainage and risk of flooding to properties</td>
<td></td>
</tr>
<tr>
<td>• No safety concern by running electric trains in a potential flooding situation</td>
<td></td>
</tr>
<tr>
<td>• No maintenance costs associated with flood protection systems</td>
<td></td>
</tr>
<tr>
<td>• Faster construction period &amp; lesser construction related impacts (2 years)</td>
<td></td>
</tr>
<tr>
<td>• Significantly less expensive than Alt. B ($250M v/s $415M)</td>
<td></td>
</tr>
<tr>
<td>• Pedestrian crossing at Morrell Ave can be accommodated</td>
<td></td>
</tr>
<tr>
<td>• Minimal impact to trees</td>
<td></td>
</tr>
</tbody>
</table>
## Alternative B

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Improved safety</td>
<td>• Major disruption to traffic circulation in the Broadway commercial district and Auto Dealerships during construction</td>
</tr>
<tr>
<td>• Improved traffic, pedestrian and bicycle circulation</td>
<td>• Significant right-of-way impacts to nearby properties</td>
</tr>
<tr>
<td>• No visual impact due to partially depressed railroad tracks</td>
<td>• Significantly longer construction period (4 years)</td>
</tr>
<tr>
<td>• No visual impact due to partially depressed railroad tracks</td>
<td>• Visual impacts from safety fencing</td>
</tr>
<tr>
<td>• Safety issues with high-voltage lines that are lowered where they can be reachable</td>
<td>• Safety issues with high-voltage lines that are lowered where they can be reachable</td>
</tr>
<tr>
<td></td>
<td>• Obstruction to natural drainage from upstream and increased risk of flooding of properties</td>
</tr>
<tr>
<td></td>
<td>• Long term maintenance costs associated with flood protection facilities</td>
</tr>
<tr>
<td></td>
<td>• Caltrain service disruption in the event of potential flooding</td>
</tr>
</tbody>
</table>
| | • Significantly more costly than Alt. A | • Alt A - $250M  
• Alt B – $415M |
| | | • Extremely difficult to obtain outside funding |
| | | • Impact to trees by trench/shoring and shoofly construction |
| • Significantly longer construction period (4 years) | • Significant right-of-way impacts to nearby properties |
| • Safety issues with high-voltage lines that are lowered where they can be reachable | • Safety issues with high-voltage lines that are lowered where they can be reachable |
| | • Obstruction to natural drainage from upstream and increased risk of flooding of properties | |
| | • Long term maintenance costs associated with flood protection facilities | |
| | • Caltrain service disruption in the event of potential flooding | |
| | • Significantly more costly than Alt. A | • Alt A - $250M  
• Alt B – $415M |
| | | • Extremely difficult to obtain outside funding |
| | | • Impact to trees by trench/shoring and shoofly construction |
## Alternative Comparison Recap

<table>
<thead>
<tr>
<th>Project Issues/Concerns</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visibility of Train from Local Roads</td>
<td>Depressed track less visible but security fencing is more visible and could require removal of mature trees</td>
<td></td>
</tr>
<tr>
<td>Impacts to Downtown Broadway</td>
<td>Many businesses are full takes in Alt B - Relocations needed for many</td>
<td></td>
</tr>
<tr>
<td>Inconvenience during Construction with Local Roadway Closures</td>
<td>Alt A Broadway closure estimated at 1-3 months</td>
<td>Alt B Broadway closure estimated at 18 to 24 months</td>
</tr>
<tr>
<td>Construction Duration</td>
<td>Alternative A Construction Duration: 2 years</td>
<td>Alternative B Construction Duration: 4 years</td>
</tr>
<tr>
<td>Potential for Flooding &amp; Caltrain Service Disruption</td>
<td>Alt B more susceptible to flooding and potential to flood tracks causing service disruption</td>
<td></td>
</tr>
<tr>
<td>Long-Term Maintenance Impacts and Cost</td>
<td>Alt B long term maintenance issues for pump stations, sewer and drainage syphons, flooding</td>
<td></td>
</tr>
<tr>
<td>Right-of-Way Impacts</td>
<td>Alt B has major impacts to downtown business and commercial buildings on east side of tracks</td>
<td></td>
</tr>
<tr>
<td>Acceptance by Caltrain</td>
<td>Caltrain strongly prefers Alt A because it minimizes construction impacts to operations, less flooding risk, less risk to operations, less long term maintenance costs and issues</td>
<td></td>
</tr>
<tr>
<td>Order of Magnitude Cost</td>
<td>Alternative B has 60-70% more initial costs (excludes long term maintenance)</td>
<td></td>
</tr>
</tbody>
</table>

$250M

$415M

Checkmark (✓) indicates this alternative is preferred with respect to specific project issue
Survey Results

25 comment cards were received at the meeting

- 20 supported Alternative A
- 2 supported Alternative B
- 3 were in favor of the No-Build Alternative
Petition from Business

- A petition was handed in at the meeting signed by 36 community members representing businesses along Broadway in support of Alternative A.
City Council Meeting No. 2

• Presentation Overview
  – Overview of Public Outreach Meeting No. 3
  – SHOWED 3D ANIMATION FOR – ALTERNATIVE A and B
  – Council Action – Select Preferred Alternative
Next Steps

• Complete final Project Study Report
  • Incorporate final directive from City Council Meeting

For More Information:

Visit Us at: www.burlingame.org/broadwaygradesep

Email Us at: broadwaygradesep@burlingame.org