Mill Valley to Corte Madera Bicycle and Pedestrian Corridor Study

Public Workshop December 9, 2009
Planning, public outreach, preliminary engineering, and preliminary design study for three specific bike/pedestrian routes from Mill Valley to Corte Madera:

A- Horse Hill Route
B- Alto Tunnel Route
C- Camino Alto-C.M. Ave. Route

a study, not a plan

Project Purpose
Regional Bike Network
Project Manager/information coordinator:

- Carey Lando, Senior Transportation Planner, Marin County Dept. of Public Works
- clando@co.marin.ca.us
- phone (415) 499-5078  fax (415) 507-7847
Technical Advisory Committee:
- City of Mill Valley
- Marin County Public Works Dept.
- Marin County Parks and Open Space Dept.
- Town Of Corte Madera
- Transportation Authority of Marin
- Caltrans District 4

Consultants:
- Alta/LandPeople
- Bike and Pedestrian Planning
- Jacobs Associates,
  Tunnel Engineering, Geology
- Nolte Associates
  Drainage, Survey
- Parisi Associates
  Traffic Engineering
- LSA Associates
  Environmental Analysis
GOAL TR-2
Increased Bicycle and Pedestrian Access. Expand bicycle and pedestrian facilities and access in and between neighborhoods, employment centers, shopping areas, schools, and recreational sites.

Policies

TR-2.1 Improve the Bicycle and Pedestrian Network. Promote adequate bicycle and pedestrian links, to the extent feasible, throughout the county, including streetscape improvements and standards that are safe and pedestrian and bicycle friendly.

TR-2.e Prioritize Completion of the North-South and East-West Bikeways. Work with applicable governmental agencies to identify gaps in the North-South and East-West Bikeways, and to place a high priority on obtaining funding for projects that complete these gaps.

TR-2.g Add Bicycle Lanes. Identify roads with shoulders wide enough to be designated as bicycle lanes, and, where feasible, stripe and sign appropriate roadway segments as bike lanes and bike routes.

TR-2.h Encourage Innovative Bicycle Lane Design. Encourage the incorporation of innovative design concepts in the development of bicycle lane projects. Where feasible, consider using techniques and ideas employed in other communities throughout Europe and the United States, such as colored bike lanes, signage, lighting, and other safety features.

TR-2.i Renovate Tunnels Along the Planned North-South Bikeway into Multi-Use Pathways. Support reopening the California Park Hill Tunnel and, if feasible, reopening the Alto Tunnel as key connections in the bicycle and pedestrian network system. The California Park Hill Tunnel provides a key multimodal connection between the San Rafael Transit Center and the Larkspur Landing Ferry terminal, both major transit hubs. The Alto Tunnel provides a direct, nearly level link between Mill Valley and Corte Madera.
Goal 1 – Increased Bicycle and Pedestrian Access
Expand bicycle and pedestrian facilities and access in and between neighborhoods, employment centers, shopping areas, schools, and recreational sites, in pursuit of the Marin Countywide Plan goal of having 20% of all trips made by walking or biking by 2020.

Goal 2 – Bicycle Transportation
Make the bicycle an integral part of daily life in Marin County, particularly for trips of less than five miles, by implementing and maintaining a bikeway network, providing end-of-trip facilities, improving bicycle/transit integration, encouraging bicycle use, and making bicycling safer and more convenient.

Goal 3 – Pedestrian Transportation
Encourage walking as a daily form of transportation in Marin County by completing a pedestrian network that services short trips and transit, improving the quality of the pedestrian environment, improving the health of all citizens, and increasing safety, convenience and access opportunities for all users.
1. **Open House** – 1 station for each route – chance to review exhibits, talk to staff and consultants (6:30 – 6:50)

2. **PowerPoint Presentation** (7:00 – 7:45)
   - Project background, objectives and steps
   - Slide tour of the Study Routes
   - Review and summarize route evaluation

3. **Summarize next steps, other ways to participate, close** (7:45 – 7:50)

4. **Breakout groups** (7:50 – 8:30) – station for each route with facilitator and recorder, chance for everyone to comment or ask questions
   - Seeking comments on all 3 routes, draft evaluation

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**Tonight’s Agenda**
1. Research, document existing conditions
2. Technical/engineering and environmental studies
3. Public input on conditions, issues, desires and concerns
4. Analysis of routes based on criteria
5. Concept-level design and costs for improvements
6. Public review of draft report
7. Finalization of Study report through County DPW
Report Contents

1. Introduction/Summary
2. Improvement Concepts
3. Alternatives Evaluation
4. Cost Estimates
5. Implementation
List of Appendices – Technical Studies
Geotechnical Study (Appendix A)
Tunnel Feasibility Study (Appendix B)
Drainage Analysis (Appendix C)
Multi-Modal Traffic Analysis (Appendix D)
Emergency Response Analysis (Appendix E)
Environmental Considerations Study (Appendix F)
Right-of-Way Conditions Analysis (Appendix G)
Route Use Counts and Projections (Appendix H)

Appendices – Background Information
Inventory and Description of Routes (Appendix I)
Public and Agency Comments Summary (Appendix J)
Background Documents (Appendix K)
Detailed Cost Estimates (Appendix L)
Horse Hill Route Overview
Horse Hill Route

Segment 11A Improvement Concepts

East Blithedale Avenue crossing improvement concepts – shared by all 3 routes
East Blithedale Avenue (segment 11A):

- W.B. off-ramp for bikes
- More northbound queing space on path
- Curb ramp widening
- Move stop bar back
- Future bike/pedestrian undercrossing or overcrossing?

Horse Hill Route
Segment 1 Improvement Concepts

Existing multi-use path north of East Blithedale (segment 1):

- Add parallel pedestrian path
- Add ramp from the path to Ashford

Horse Hill Route
Segment 1 Improvement Concepts

Horse Hill Route
Ashford ramp improvements between MV-Sausalito Path and Lomita Drive
Segment 2A Improvement Concepts:

Lomita Drive (segment 2A):
- Multi-use path to bypass school parking lot.
- Extend sidewalks along the north side.
- Striping and signage improvements for bicyclists.
Maguire school parking lot bypass concept:

Horse Hill Route
Segment 2B Improvement Concepts:

Lomita Drive (segment 2B):
- Extend sidewalks and pedestrian path along the north side to Shell, and
- Extend sidewalks along south and east side from Shell to Horse Hill Path
- Associated crossing improvements
- Striping and signage improvements for bicyclists

Horse Hill Route
Section through Lomita Dr. at open space frontage

Section through Lomita Dr. at residential frontage

Horse Hill Route
Improvements near Lomita/Shell intersection:

- New storm drain
- New 5' AC pathway
- High visibility crosswalk
- Curb ramp
- Curb ramp
- New 5' AC pathway

Mill Valley to Corte Madera Bicycle and Pedestrian Corridor Study

Horse Hill Route
Segment 3 Improvement Concepts:

Horse Hill Path (segment 3):
- Widen path for bikes and official vehicles
- Improved crash and headlight glare barriers
- Direct path connection to Meadowsweet Drive
- Optional sunken/raised pathway concept

Horse Hill Route
Horse Hill Route

Widened path concept
New path connection to Meadowsweet

Horse Hill Route
Segment 3 alternative - sunken/raised path concept

Horse Hill Route
Segment 4A South Improvement Concepts:

Meadowsweet Drive (segment 4A):
- Minor localized shoulder widening
- Center striping at curves
- Adding pedestrian facilities not warranted due to topography, vegetation, adjacent private improvements; low pedestrian use/demand

Horse Hill Route
Segment 4A North Improvement Concepts:

- Provide striped shoulders for bikes

Northern end of Meadowsweet:

Horse Hill Route
Segment 4B South Improvement Concepts:

Casa Buena Drive (segment 4B):
- Widen shoulder to provide bike lanes on the southern portion
- Widen to provide wider striped shoulders on the northern portion
- Adding pedestrian facilities not warranted due to topography, vegetation, adjacent private improvements; low pedestrian use/demand

Horse Hill Route
Section through southern portion of Casa Buena

Horse Hill Route
Horse Hill Route

Section through northern portion of Casa Buena
Casa Buena/Meadow Valley Intersection Improvement Concepts:

Horse Hill Route
Segment 4B North Improvement Concepts:

- Provide striped bike lanes (recently completed)

Horse Hill Route

Northern end of Casa Buena:
Segment 5 Improvement Concepts

Sanford Street (segment 5):
- Widen intersection to provide bike lanes
- Adding crosswalk at Meadowsweet

Mill Valley to Corte Madera Bicycle and Pedestrian Corridor Study

Horse Hill Route
Segment 5 Improvement Concepts

Sanford Street (segment 5):
- Widen intersection to provide bike lanes
- Add crosswalk at Meadowsweet

Horse Hill Route
Segment 6 Improvement Concepts:
(area currently under study by TAM)

Madera Boulevard and Tamal Vista Boulevard to existing Sandra Marker Trail (segment 6):
- Stripe and sign for Class II bike lanes
- Future ADA upgrades to sidewalks and driveways
- Part of separate study Greenbrae/Highway 101 Corridor Study by TAM

Horse Hill Route
Alto Tunnel Route Overview
Segment 11A – East Blithedale crossing improvements as described in Horse Hill section

Segment 1 – Multi-use path improvements as described in Horse Hill section
Segment 7 Improvement Concepts

Railroad route from Vasco Court to Alto Tunnel (segment 7):

- Trim and remove some native trees and vegetation
- Improve or construct drainage ditches
- Construct 10’ wide bike path and parallel 8’ wide pedestrian path
- Emergency vehicle turnaround
- Gates, bollards, signs, fire hydrants, related safety features portal

Alto Tunnel Route
Segment 7 Improvement Concepts

Alto Tunnel Route
Segment 7 Improvement Concepts:

South Portal Emergency Vehicle Turnaround

Alto Tunnel Route
Segment 8 Improvement Concepts: Alto Tunnel

- Monitor and protect existing structures - underpinning, retaining structures, grouting, etc.
- Remove plugs and fill in tunnel
- Place steel and concrete supports
- Shotcrete (sprayed concrete) liner dimensions 13 feet wide by 16 feet tall
- Pave 12’ wide multi-use path
Segment 8 Alto Tunnel Safety Features

- Lockable gates at each end
- Lighting system with emergency back-up
- Call boxes and fire alarms at 200’ intervals
- Video surveillance
- Fire hose connections every 200’
- Sprinkler system
- Ventilation system
- Protective graffiti coating
- Noise, dust, and traffic control during construction
Segment 8 Spanish Tunnel example

Alto Tunnel Route
Alto Tunnel – 2,173 lineal feet, 16’ wide
Cal Park Tunnel – 1,100 lineal feet, 31’ wide  Cost $25 million

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<thead>
<tr>
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<th>Lower Range</th>
<th>Upper Range</th>
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<tr>
<td>Estimated construction cost (direct &amp; indirect)</td>
<td>$17,866,000</td>
<td>$21,856,000</td>
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<td>Escalation, 1 yr @ 2%</td>
<td>357,000</td>
<td>437,000</td>
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<tr>
<td>Subtotal with escalation</td>
<td>$18,223,000</td>
<td>$22,293,000</td>
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<td>Construction contingency (34%)</td>
<td>$6,114,000</td>
<td>$7,548,000</td>
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<td>Cost estimate accuracy allowance (26%)</td>
<td>4,867,000</td>
<td>5,968,000</td>
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<td><strong>Opinion of Probable Construction Cost</strong></td>
<td><strong>$29,205,000</strong></td>
<td><strong>$35,809,000</strong></td>
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<tr>
<td>Estimated engineering, environmental, project administration &amp; construction mgmt (37.5%)</td>
<td>$10,952,000</td>
<td>$13,429,000</td>
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<td><strong>Opinion of Probable Project Cost</strong></td>
<td><strong>$40,157,000</strong></td>
<td><strong>$49,258,000</strong></td>
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<tr>
<td>Cost to address ROW issues (placeholder)</td>
<td>$500,000</td>
<td>$1,500,000</td>
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<tr>
<td><strong>Total cost range</strong></td>
<td><strong>$40,657,000</strong></td>
<td><strong>$50,758,000</strong></td>
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</tbody>
</table>
Segment 9A Improvement Concepts:

Railroad route from Alto Tunnel to existing path near Montecito Drive (segment 9A):

- Trim and remove some native trees and vegetation
- Construct storm drain system
- Construct 10’ wide bike path and parallel 8’ wide pedestrian path
- Emergency vehicle turnaround
- Gates, bollards, signs, fire hydrants, related safety features portal
Segment 9A Improvement Concepts:

- Trim vegetation for horizontal and overhead clearance as needed.
- 20' Emergency Access Corridor.
- Relocate and improve drainage swale.
- Existing Shallow Swale.

Alto Tunnel Route
Segment 9A Improvement Concepts:

North Portal Emergency Vehicle Turnaround

Alto Tunnel Route
Segment 9B Improvement Concepts:

Existing sidewalk/path along railroad route to Redwood Avenue (segment 9B):

- Reconstruct existing 8 foot sidewalk to a 12 foot multi-use path
- Provide high-visibility crosswalk at Redwood Ave.
Segment 9B Improvement Concepts:
Near Redwood/Montecito intersection

Alto Tunnel Route
Segment 10 improvement concepts:

- Construct a 12’ wide path through parking area
- Add parallel pedestrian path along existing Sandra Marker Trail
Segment 10 Improvement Concepts:

Section through re-constructed planter and new path

Section through existing Sandra Marker Trail with new pedestrian path

Alto Tunnel Route
Camino Alto Route Overview
Segment 11 Improvement Concepts

Short connection along E. Blithedale Avenue from the existing Mill Valley – Sausalito Path to Camino Alto

Segment 11A – East Blithedale crossing improvements as described in Horse Hill section

Camino Alto Route
Along Camino Alto Road from the intersection of E. Blithedale Avenue to Mill Valley/Corte Madera city limit (segment 12A and 12B):

- Retaining walls and re-stripe to widen, primarily on the west side
- Provide either two 5’ bike lanes or a single 8’ bike climbing lane
- Option: extend sidewalks near Overhill Road south to E. Blithdale
- Adding pedestrian facilities on northern portion not warranted due to topography, vegetation, adjacent private improvements; low pedestrian use/demand
Segment 12A Improvement Concepts:

This section of Camino Alto could also be configured to have a 5 foot bike lane on each side rather than an 5-7' foot climbing lane and 2 foot shoulder.

Section – southern portion Camino Alto

Camino Alto Route
Segment 12A Improvement Concepts:

Improvements between Azalea Dr and Kite Hill Lane

Camino Alto Route
Segment 12A Improvement Concepts:

Improvements between Kite Hill Lane and Overhill Road

Camino Alto Route
Segment 12B Improvement Concepts:

Camino Alto Route
Segment 12B Improvement Concepts:

Improvements between Overhill Road and city limits

Camino Alto Route
Segment 13A Improvement Concepts:

Along Corte Madera Avenue from Mill Valley/Corte Madera city limit along Open Space boundary (segment 13A):

- Widen to provide 5’ bike climbing lane on the west/uphill side

Camino Alto Route
Segment 13A Improvement Concepts:

Improvements - southern Corte Madera Avenue

Alto Tunnel Route
Segment 13B Improvement Concepts:

Along Corte Madera Avenue from Open Space boundary to and along Redwood Avenue (segment 13B):

- Widen to provide 5’ bike climbing lane on the west/uphill side
- Reconstruct existing informal path
- Potentially narrow vehicle lanes to provide 5 foot bike lanes on the lower, northern portion of Corte Madera Avenue and on Redwood Avenue

Camino Alto Route
Segment 13B Improvement Concepts:

Improvements – northern portion
Corte Madera Avenue

Camino Alto Route
Route evaluation and comparison
Routes in study

Elevation Profiles
Elevation Profiles

Other routes in Marin County

- Cal Park Route
- Marinwood Route
- Puerto Suello Route
- Wolf Grade Route
• Emergency access and safety
• Bikeway and community connections
• Mode shift/use levels
• Roadway crossings/intersections
• Right-of-way availability/issues

• Possible environmental issues
• Adjacent property issues
• Cost
• Permitting requirements
• Consistency with local plans
• Maintenance and operation requirements
### Route Alternatives Performance

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Horse Hill Route</th>
<th>Alto Tunnel Route</th>
<th>Camino Alto/Corte Madera Ave Route</th>
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<tbody>
<tr>
<td><strong>Emergency Access and Response</strong></td>
<td><strong>Good</strong>, except along the Horse Hill Path. Concepts to widen path would improve access.</td>
<td><strong>Fair</strong>. Tunnel would present access challenges for emergency personnel, partially mitigated by safety improvement concepts. <strong>Benefits</strong>. Tunnel would provide a new emergency egress route between communities.</td>
<td><strong>Excellent</strong>. All portions are along public roads.</td>
</tr>
<tr>
<td><strong>User/Public Safety – separation from traffic</strong></td>
<td><strong>Good</strong>. Separated from traffic or on low volume roads, but Sanford Street intersection is challenging.</td>
<td><strong>Good</strong>. Entirely separated from roads if Montecito pathway improvements are implemented, but mixing user types in tunnel a concern.</td>
<td><strong>Fair</strong>. All portions are along busy, winding, narrow public roads, but widening will significantly improve safety from current.</td>
</tr>
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<tr>
<td>Bikeway and Community Connections</td>
<td><strong>Good.</strong> A less direct route from central Mill Valley to central Corte Madera, but connects directly to Town Center shopping and to N/S Greenway bicycle and pedestrian route improvements</td>
<td><strong>Excellent.</strong> A direct, virtually flat link between the two most popular pathways in the County, and between central MV and CM.</td>
<td><strong>Fair.</strong> Links central MV and CM, but a longer, winding route.</td>
</tr>
<tr>
<td>Functionality/Efficiency – Bicycles</td>
<td><strong>Fair.</strong> Involves two steep hills of 10% and 8% slope. Longer and less direct route. Exposure to freeway traffic noise, view and nighttime glare.</td>
<td><strong>Good.</strong> Flat and relatively straight. Potential conflict with other users in the tunnel, aesthetic and safety concerns may deter some users.</td>
<td><strong>Fair.</strong> Involves climbing a steep hill and mixing with cars on a winding road. Even with climbing lanes or bike lanes some bicyclists would feel uncomfortable</td>
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# Evaluation Matrix

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Horse Hill Route</th>
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<tbody>
<tr>
<td>Functionality/Efficiency –</td>
<td><strong>Poor/Fair.</strong> Southern and northern portions have sidewalks or path and low</td>
<td><strong>Good.</strong> Excellent relative to gradient and surface, but potential conflicts with</td>
<td><strong>Poor.</strong> A steep route exposed to heavy traffic with discontinuous sidewalks and path.</td>
</tr>
<tr>
<td>Pedestrians/Persons with disabilities</td>
<td>gradients. Horse Hill Path and Casa Buena have steep grade. Southern Meadowsweet</td>
<td>bikes in tunnel and general safety and aesthetic concerns about tunnel pertain.</td>
<td>Extension of sidewalk on Camino Alto north to Overhill and improvements to Corte</td>
</tr>
<tr>
<td></td>
<td>and Casa Buena lack sidewalk or path, and use patterns do not justify adding.</td>
<td></td>
<td>Madera Avenue path would improve access on those portions.</td>
</tr>
<tr>
<td>Mode Shift/Use Levels</td>
<td><strong>Fair.</strong> An estimated 10% increase in use due to limited ability to improve</td>
<td><strong>Excellent.</strong> Estimated use and vehicle miles travelled savings approximately five</td>
<td><strong>Good.</strong> An estimated 25% increase in use, primarily by bicyclists, due to potential</td>
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<tr>
<td></td>
<td>existing route conditions, and current relatively low popularity.</td>
<td>times the projected level for Horse Hill Route, and twice the level for Camino</td>
<td>significant improvement in safety and conflict with vehicles.</td>
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<td></td>
<td></td>
<td>Alto/Corte Madera Ave.</td>
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<td>Criteria</td>
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<tr>
<td>Roadway Crossings and Intersections</td>
<td><strong>Fair.</strong> Most of route avoids major crossings, but conflicts at freeway on-ramp on Casa Buena, and complex intersection at Sanford Street.</td>
<td><strong>Excellent.</strong> Crossings at E. Blithedale and Redwood Avenue could be improved, but otherwise no crossings.</td>
<td><strong>Good.</strong> Crossing at and connection from E. Blithedale and at Redwood Ave. could be improved, but otherwise no major road crossings/issues.</td>
</tr>
<tr>
<td>Right-of-Way Availability/Issues</td>
<td><strong>Good.</strong> Requires Caltrans permission, permit to make improvements on Horse Hill path.</td>
<td><strong>Poor.</strong> Parts of the route in a variety of ownerships. Requires significant study and negotiation process to resolve.</td>
<td><strong>Fair.</strong> Involves changes to private improvements in the R.O.W., as noted under Adjacent Property Issues. Limited available ROW for improvements requires careful design</td>
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## Mill Valley to Corte Madera Bicycle and Pedestrian Corridor Study

### Evaluation Matrix

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<tr>
<td><strong>Cost</strong></td>
<td><strong>Fair.</strong></td>
<td><strong>Poor.</strong></td>
<td><strong>Fair.</strong></td>
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<tr>
<td></td>
<td>$3,900,000 using 4a</td>
<td>$40,100,000 low range</td>
<td>$4,600,000</td>
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<tr>
<td></td>
<td>$5,000,000 using 4b</td>
<td>$55,100,00 high range</td>
<td>Including optional sidewalk extension to Overlook Road: $5,500,000</td>
</tr>
<tr>
<td>Sunken Path Option:</td>
<td>$8,600,000 using 4a</td>
<td>Plus Optional E. Blithedale Overcrossing: $3,400,000</td>
<td>$55,100,00 high range</td>
</tr>
<tr>
<td></td>
<td>$9,800,000 using 4b</td>
<td></td>
<td>Plus Optional E. Blithedale Overcrossing: $3,400,000</td>
</tr>
<tr>
<td></td>
<td>Plus Optional E. Blithedale Overcrossing:</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>$3,400,000</td>
<td></td>
<td>$3,400,000</td>
</tr>
<tr>
<td><strong>Permitting and Agreement Requirements</strong></td>
<td>Fair. Requires Caltrans permission, permit to make improvements on Horse Hill path.</td>
<td>Poor. Requires delineation of potential wetlands, permits from state and federal environmental agencies, agreement between County and two cities.</td>
<td>Fair. Requires delineation of potential wetlands/drainages and/or permits from state and federal environmental agencies. Otherwise requires only approval of Mill Valley and Corte Madera.</td>
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<tr>
<td><strong>Consistency with Local Plans</strong></td>
<td>Undetermined. Listed as an option in Co. Unincorporated Area Bike and Ped. Master Plan, but not in City plans. Lomita portion is in unincorporated area. Part is an adopted County bike route.</td>
<td>Good. Incorporated in adopted bicycle plans. Adopted plans direct current study.</td>
<td>Good. Consistent with County, Mill Valley, and Corte Madera adopted bicycle and pedestrian plans.</td>
</tr>
<tr>
<td><strong>Maintenance and Operation Requirements</strong></td>
<td>Good/Fair. Basic improvements primarily additions and modifications to existing facilities, but Sunken Path option brings added maintenance (drainage; retaining walls long-term maintenance responsibility).</td>
<td>Poor. Tunnel and connecting pathways, drainage facilities, and tunnel safety and emergency features would be a large operation and maintenance responsibility.</td>
<td>Fair. Primarily additions and modifications to existing road and drainage facilities, but extensive retaining walls would be a long-term maintenance responsibility.</td>
</tr>
</tbody>
</table>
Tonight:

- Breakout exercise - capture comments and corrections

Thereafter:

- Additional comments to Carey Lando by January 11, 2010
- Comments included with Study Report
- Workshop summary and materials posted on project website: www.walkbikemarin.org/projects_millvalley.php
- Consultants address comments relevant to study scope
- Study finalized and provided to County Public Works Dept.
• Station for each route with facilitator and recorder, 40 minutes
• Asking for comments on all 3 routes and on overall route evaluation
• Give everyone multiple chances to comment
• Capture key ideas – detail can be submitted as follow-up
• All comments documented, specific corrections to the Study addressed