QUESTA
ENGINEERING CORP.

Trestle Glen Bikeway Study

Tiburon, California

Prepared for:

Town of Tiburon
Mr. Patrick Echols, P.E.
Director of Public Works
1505 Tiburon Boulevard
Tiburon, California 94920

Prepared by:

Questa Engineering Corp.
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Suite 206
Richmond, California 94807

April 30, 2003

Civil,
Environmental
& Water
Resources

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TRESTLE GLEN BIKEWAY STUDY

1. INTRODUCTION

This feasibility/preliminary engineering study was commissioned by the Town of Tiburon, with funding from the Association of Bay Area Government (ABAG) Bay Trail project. The Bikeway study is to identify alternatives for the improvements to a 0.7-mile Bay Trail connection on Trestle Glen Boulevard between Tiburon Boulevard and Paradise Drive. This Bikeway Study identifies possible trail improvements that would utilize road shoulders, pullouts, and possible separated trail sections to provide access that is dedicated for bicycle and pedestrian use, and separated from vehicular traffic where feasible. The intent of the project is to improve the pedestrian and bicycle safety for trail users crossing from Bay Trail segments on the south side of the Tiburon peninsula to the north side, with a future connection to the Richardson Bay Multi-Use Trail along Tiburon Boulevard (**Figure 1**). The Bay Trail is a regional trail system designed to provide shoreline access opportunities linking communities along San Francisco Bay. It is administered by the ABAG, who provided funding for this preliminary engineering/design study. The existing and proposed trails in the Tiburon study area are shown in **Figure 2**.

1.1 Project Purpose

The purpose of this project is to determine the preferred alignment for the Bay Trail in the study area; identify possible safety and access conflicts; and examine environmental constraints including potential geologic hazards, stream and wetland crossings and potential effects on other sensitive areas. Issues evaluated in this study include:

Maintenance and Access Needs. The lanes provided for bicycle and pedestrian use should be separated from automobile traffic to the extent feasible, and should be accessible for maintenance.

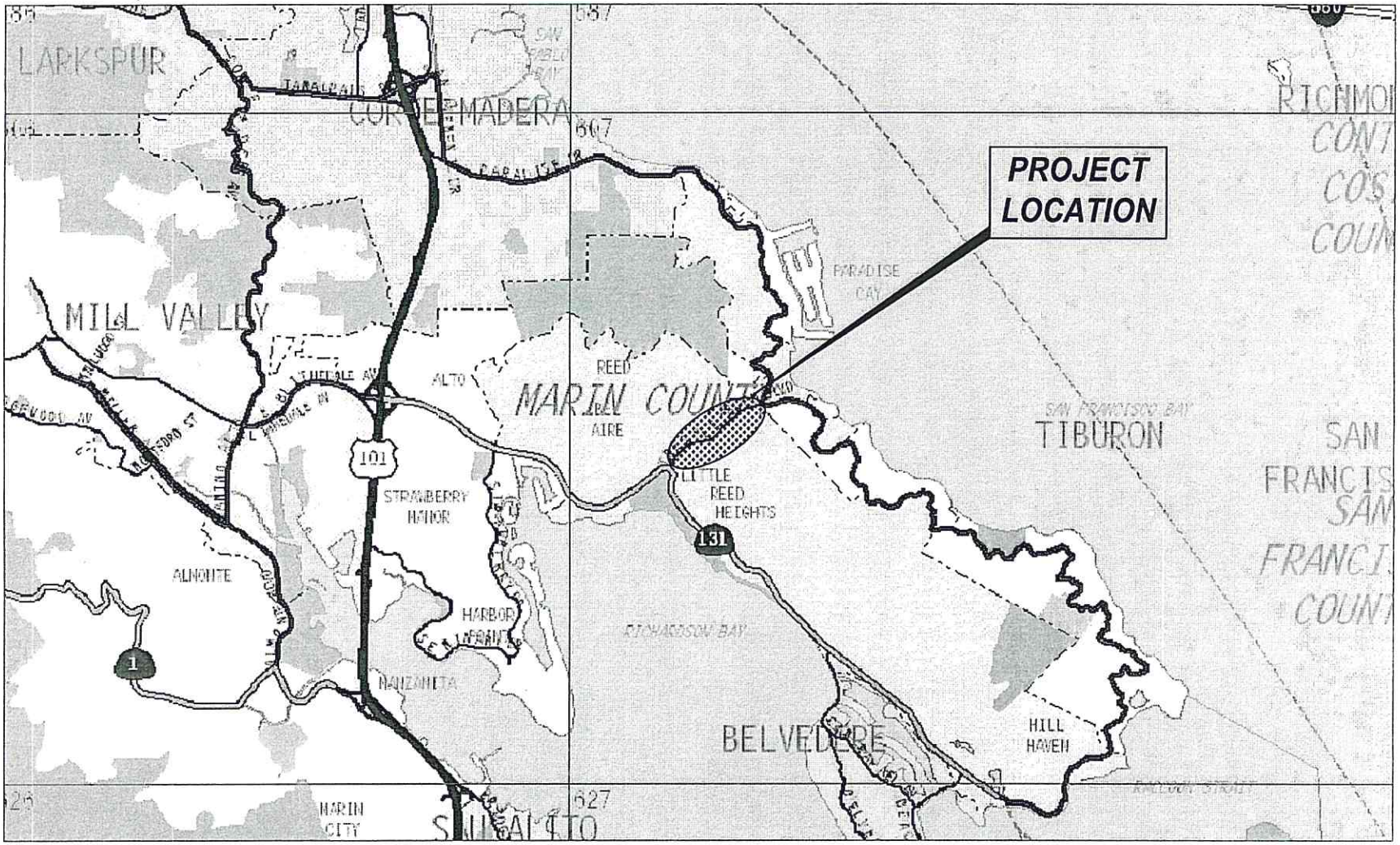
Shared Use. Shared pedestrian/bicycle use can be considered, however, the intent is to separate these differing trail users wherever feasible. Minimization of vehicular/pedestrian conflicts is a major project goal.

Screening. Trail configurations should consider adjacent residential uses, and to the extent feasible, should provide areas for screening and separation.

1.2 Project Elements

Project elements included in this Bikeway Study consist of:

- Identification of a preferred Bay Trail alignment;



Date:	1 / 22 / 2003
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TRESTLE GLEN BIKEWAY STUDY
LOCATION MAP
TIBURON, CALIFORNIA

FIGURE
1

W:\2002\22060-TRESTLEGLEN-LI\WORKINGDWGS\22060_rev0_plan&loc.dwg, LOCMAP, 04/30/2003 11:51:35 AM

Project No.: 220060
Project Name: Trestle Glen
Date: 28 Jan. 2003
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Trestle Glen Bikeway Study

Local and Regional Trails

Figure 2

- Preparation of a report identifying trail alignment alternatives, design elements, plan view and typical cross sections, and a discussion of other issues, such as sensitive areas, structural needs and trail use conflicts

- Completion of preliminary geotechnical and structural engineering studies to support design of any shoulder widening and toe slope support retaining structure needs

- Completion of a topographic survey and preliminary design documents, including alignment alternatives, improvements, cross sections, and structures

- Preparation of preliminary cost estimates for improvements necessary to develop the trail, needed easements/access control, and any associated structures (grading, drainage and paving, signage, fences, retaining walls, etc) needed to complete the trail.

2. LOCAL AND REGIONAL PLANS AND POLICIES

Trestle Glen Boulevard is designated as a bikeway on local and regional plans. The street serves as an important connector between the Richardson Bay Multi-Use Path and Paradise Drive. The route is identified in local and regional plans, including:

- Town of Tiburon General Plan
- ABAG Bay Trail
- Marin County Bicycle and Pedestrian Master Plan (2000)
- Caltrans/Metropolitan Transportation Commission
- Town of Tiburon Bicycle and Pedestrian Master Plan

2.1 Tiburon General Plan

The Tiburon General Plan contains several policies and objectives for pedestrian and bicycle circulation. It recognizes the conflict between pedestrians and vehicles as both traffic congestion and pedestrian use increase and states that safety is an increasing concern of the Tiburon Planning Area and must be a factor in planning for future circulation.

The General Plan contains goals and policies in the Circulation Element (1994), Parks and Recreation Element, and Open Space Element that are applicable to the project, including:

- Circulation Goal (C-E). To improve the safety of the circulation system for pedestrians and bicyclists.

- Circulation Policy (C-8). The Town shall encourage overhead utility lines to be placed underground along Tiburon Boulevard, Paradise Drive, and Trestle Glen Boulevard.

- Circulation Policy (C-17). Tiburon Boulevard between Trestle Glen Boulevard and Mar West will remain two (2) travel lanes. Any widening of the Trestle Glen/Tiburon

Boulevard intersection will allow for transition of Tiburon Boulevard to two (2) travel lanes just east of Trestle Glen Boulevard.

- Circulation Policy (C-34). Multi-use paths for bicycles and pedestrians should be constructed along existing streets and within open space areas in order to provide safe access to schools, playgrounds and other areas with scenic attractions. A bike lane may be constructed on Trestle Glen Boulevard.

- Parks & Recreation Goal (PR-e). The Town Staff, Planning Commission, and Town Council shall examine every development application for the existence of easements that connect or continue to allow public access to recreation and open space areas; Town Staff shall monitor construction with a view toward the maintenance of those easements.

- Open Space and Conservation Implementing Program (OSC-I). The Town shall work cooperatively with ABAG and neighboring jurisdictions to study the feasibility and acceptability of a Bay trail.

- Open Space and Conservation Evaluation of Prime Open Space: Open space views from key roadways, including Tiburon Boulevard, Trestle Glen Boulevard, Seminary Drive and Paradise Drive, should be maintained to the extent feasible through the development review process as well as the adoption of specific criteria for locating new development through the review process.

2.2 ABAG Bay Trail Plan

The Trestle Glen bikeway route is shown on ABAG's Bay Trail Plan. ABAG is a regional agency coordinating planning among the cities and counties within the greater San Francisco Bay Area. It was established by the state legislature in 1961 to protect local control, plan for the future, and promote cooperation on area wide issues. Through its role as an association of cities and counties, the state and federal governments have designated ABAG as the official comprehensive planning agency for the Bay Area. Its locally adopted Regional Plan provides a policy guide for planning the region's housing, economic development, environmental quality, transportation, recreation, and health and safety. Part of ABAG's duties is implementation of the Bay Trail Plan.

> *"The Bay Trail is a planned recreational corridor that, when complete, will encircle San Francisco and San Pablo Bays with a continuous 400-mile network of bicycling and hiking trails. It will connect the shoreline of all nine Bay Area counties, link 47 cities, and cross the major toll bridges in the region. To date, approximately 210 miles of the alignment, or slightly more than half the Bay Trail's ultimate length, has been completed.*
>
> *Senate Bill 100, authored by then-state Senator Bill Lockyer and passed into law in 1987, directed the Association of Bay Area Governments (ABAG) to develop a plan for this "ring around the Bay," including a specific alignment for the Bay Trail. The Bay Trail Plan, adopted by ABAG in July 1989, includes a proposed*

alignment; a set of policies to guide the future selection, design and implementation of routes; and strategies for implementation and financing. Since its inception, the Bay Trail Plan has enjoyed widespread support in the Bay Area; for example, the majority of the jurisdictions along the Bay Trail alignment have passed resolutions in support of the Bay Trail and have incorporated it into their general plans." (ABAG website)

On the Tiburon Peninsula, the Tiburon Boulevard path is designated as a Bay Trail Path, Trestle Glen Boulevard is designated as a Bay Trail Bike Lane, and Paradise Drive, and portions of Tiburon Boulevard west of Trestle Glen Boulevard are designated as Bay Trail (Proposed). One of the major goals of the improvement of this 0.7-mile Bay Trail segment is to separate the user from a heavily traveled vehicular route along Trestle Glen Boulevard. **Figure 2** shows the completed and planned Bay Trail sections in the Town of Tiburon, near the project site.

2.3 Marin County Bicycle and Pedestrian Master Plan

The Marin County Bicycle and Pedestrian Master Plan (June 2000) coordinates and guides the provision of all pedestrian and bicycle-related plans, programs, and projects in the County. It was created to assist local jurisdictions to implement their priorities, but does not mandate any particular action.

In the Plan, Trestle Glen Boulevard is a designated bikeway, with a major focus on the Tiburon multi-use path. The plan's primary goals and objectives provide the long-term vision for bicycle and pedestrian improvements in Marin County and include:

- Improving bicycle transportation, by implementing and maintaining a bikeway network, providing end-of-trip facilities, improving bicycle/transit integration, encouraging bicycle use, and making bicycling safer.

- Improving pedestrian transportation, 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 pedestrian safety and convenience.

- Encouraging Marin County to become a model for bicycle and pedestrian access.

- Complete a network of bikeways and pedestrian paths that are feasible, fundable, and that serve bicyclists needs, especially for travel to employment centers, schools, commercial districts, transit stations, and institutions.

2.4 State of California (Caltrans)

To obtain state or federal bikeway funding, the Trestle Glen project should conform to state bikeway design guidelines. In the Caltrans Highway Design Manual, "Bikeway" means all facilities that provide primarily for bicycle travel. The following trail and bikeway classifications are contained in the Highway Design Manual:

(1) Class I Bikeway (Bike Path). Provides a completely separated right-of-way for the exclusive use of bicycles and pedestrians with crossflow minimized.

(2) Class II Bikeway (Bike Lane). Provides a striped lane for one-way bike travel on a street or highway.

(3) Class III Bikeway (Bike Route). Provides for shared use with pedestrian or motor vehicle traffic.

Trestle Glen Boulevard is designated as a Class II Bikeway. Caltrans Design Standards state:

> *"Class II bikeways (bike lanes) for preferential use by bicycles are established within the paved area of highways. Bike lane stripes are intended to promote an orderly flow of traffic, by establishing specific lines of demarcation between areas reserved for bicycles and lanes to be occupied by motor vehicles."*

Class II bikeways are required to be one-way, with a minimum width of 1.2 M, provided there is no adjacent curb and gutter.

In addition to providing statewide bikeway design standards, the state of California would be involved in any transportation improvements involving Tiburon Boulevard (State Route 131) and such projects would be subject to review and approval by Caltrans. At the Tiburon Boulevard/Trestle Glen Boulevard intersection, the Town of Tiburon General Plan Circulation System improvements (1994) called for adding:

> *"...a through lane each way on Tiburon Boulevard. If only one new lane can be accommodated, it should be for the westbound direction. Complex alternative signalized improvements, featuring a new entrance to Blackie's Pasture Park and rebuilt intersections with Jefferson Drive and Trestle Glen Boulevard, all working in union and providing similar capacity increases, may also be considered. No significant encroachment into Blackie's Pasture, other than during construction, is proposed."*

2.5 Metropolitan Transportation Commission (MTC)

In 2001 Tiburon received a TETAP (Traffic Engineering Technical Assistance Program) grant from the Metropolitan Transportation Commission to study traffic operations along Tiburon Boulevard. The project was to develop recommendations to improve traffic flow and vehicular, pedestrian, and bicycle safety along the corridor. For the Tiburon/Trestle Glen intersection, the report presents two scenarios for traffic improvements to Tiburon Boulevard, including:

- Guardrail removal west of Trestle Glen Boulevard and installation of a curb, gutter and sidewalk
- Widening the street to provide a second westbound lane, and
- Restriping.

An alternate scenario includes provision of a left turn merge lane for Blackie's Pasture. The report did not include specific measures for pedestrian or bicycle improvements, or transition to Trestle Glen Boulevard. Although intersection improvements at Tiburon Boulevard are not within the scope of this study, it is recommended that improved bicycle/pedestrian crosswalks, transitions and connections are incorporated into any traffic improvement projects at this intersection.

3. PHYSICAL CONDITIONS AND CONSTRAINTS

The project site consists of a two-lane road within the Town of Tiburon. Trestle Glen Boulevard is a well-traveled road that connects Tiburon Boulevard with Paradise Drive, the two primary perimeter roads on the Tiburon peninsula. Trestle Glen Boulevard has a semi-rural character and acts as a transition between the more rural north side of Tiburon Peninsula and the more suburban south side.

This study focuses on evaluating the existing right-of-way as well as potential alignments to create a more efficient lane and shoulder configuration. The study evaluates reconfiguring the street lanes, shoulders, pedestrian path and additional right-of-way areas to provide separate pedestrian and bicycle lanes. Sensitive environmental features and physical design constraints occur within the project study area and are discussed in this Section.

3.1 Project Soils and Geology

Regional Geology. Trestle Glen Boulevard is located on the Tiburon Peninsula and connects Tiburon Boulevard on the southeast to Paradise Drive on the northwest. The Boulevard traverses a gap in the ridge on the Tiburon Peninsula. The Tiburon Peninsula Ridge consists of three easterly projecting promontories jutting out into the San Francisco Bay. The Ridge is part of the Coast Range Geomorphic Province of Central California, a series of northwesterly trending ridges and valleys that run parallel to the Pacific Coast and the San Andreas Fault. The geologic and topographic characteristics of the Coast Range Province are a product of the combination of the tectonic processes, geologic materials, and climate of the region.

The regional geology consists of the complexly folded, faulted, and sheared bedrock of the Franciscan Complex of Upper Jurassic to Cretaceous age (65 to 190 million years old). The Franciscan Complex is comprised of a variety of rock types including greywacke sandstone, shale, chert, serpentinite, blueschist, and greenstone. The complex is an accretionary mélange formed during earlier subduction of the Farallon Tectonic Plate and the relative northwest movement of the Pacific Plate to the North American Plate. Subsequent compression, uplift and faulting occurred during the Miocene and Pliocene epochs of the Tertiary Period (between 5 and 15 million years ago). The current tectonic setting is related to the movement along the northwest-southeast trending faults of the San Andreas Fault System such as the San Andreas Fault, Hayward fault, Rogers Creek fault and others, with movement of the Pacific Plate to the north and west relative to the North American Plate.

Site Geology. Geology of the site and vicinity is presented in the California Division of Mines and Geology (now the California Geological Survey) publication *Geology for Planning: Central and Southeast Marin County, California* (DMG Open-File Report 76-2,

1976). The geologic map shows a complex geology, which includes: bedrock of mélange, sandstone, greenstone, schist, and chert of the Franciscan Complex; Quaternary colluvium; and landslides. No faults are mapped in the site vicinity.

Site Topography. The topography of the project site is variable. Elevations on the site range from less than 20 feet above mean sea level (MSL) at the intersection of Trestle Glen Boulevard with Tiburon Boulevard to just above 120 feet msl at the intersection with Paradise Drive. The high point on the road is at about elevation 130 feet msl. Slopes steepness adjacent to the road ranges from near level to as steep as approximately 40 percent.

Slope Stability. The project site is located in a region of active slope movement with numerous landslides and debris flows. Regional slope stability of the Tiburon area was mapped by the California Division of Mines and Geology (*Geology for Planning: Central and Southeast Marin County, California,* DMG Open-File Report 76-2, 1976). Several large landslides are shown adjacent to the project site in the CDMG report. The relative slope stability of the areas adjacent to the road are indicated to be low to very low stability in the steeply sloping section along the southeast side of the road, and moderate to low stability along the northwest side of Trestle Glen Boulevard.

Surficial landslides and soil creep are evident at several locations along the sides of Trestle Glen Boulevard. This includes the section from Tiburon Boulevard to Juno Road. Unstable areas are present in this section including areas of soil creep, old landslide deposits, and unstable weathered rock. The section from Juno Road to Turtle Rock Court includes gently sloping topography, but is underlain by artificial fill and old debris flow deposits (Jensen Van Lienden, 2002). Cracking in the road pavement is also evident in this section on the opposite side of Paradise Drive and includes some attempts at retention with a small wooden plank structure. The section from Turtle Rock Court to Hacienda Drive includes areas of mélange bedrock in the existing road cut which could become unstable from excavations for a path. The section from Hacienda Drive to Paradise Drive parallels a large existing active landslide, but no excavations into this slope are planned.

Seismicity. The project site is located in the seismically active San Francisco Bay area. No active or potentially active faults are known to traverse the project site and the site is not located within an active Earthquake Fault Zone boundary. Faults are termed active by the State of California Division of Mines and Geology if they have had surface displacement within the past 11,000 years or have had historical seismic activity associated with them. However, the project site is located in the seismically active San Francisco Bay area. The regional faults of greatest significance to the project site are the San Andreas and Hayward faults. The active San Andreas Fault is located approximately 5 miles to the east-northeast of the site and the active Hayward fault is located approximately 10 miles to the west-southwest. The active Rogers Creek-Healdsburg fault is located approximately 12 miles north of the site.

The San Francisco Bay segment of the San Andreas Fault last ruptured in 1906 in what was known as the "Great San Francisco Earthquake." In 1999, the USGS Working Group on Earthquake Probabilities published a report that addressed the likelihood of large earthquakes in the Bay Area within the next 30 years. They estimated a 21% probability of a magnitude

6.5 or greater quake occurring along the San Francisco Bay Area segment of the San Andreas Fault. In 1868, a 7.0 M earthquake occurred along the Hayward fault and was known as the "great" Bay Area Earthquake prior to 1906. The USGS Working Group on Earthquake Probabilities has predicted a 32% chance of a magnitude 6.5 or greater earthquake occurring along the Hayward-Rodgers Creek fault system within the next 30 years.

No primary seismic hazards, i.e. surface fault rupture, are anticipated to occur at the site. No faults zoned as active by the State of California Division of Mines and Geology cross the subject property. However, secondary seismic hazards could affect the project site. Secondary seismic hazards include ground shaking, landslides induced by strong ground motion and other seismically induced ground failures such as liquefaction, dynamic densification, lurch cracking and lateral spreading.

Strong ground shaking is likely to occur at the subject site during the design life of the project. Peak ground acceleration with a 10 percent probability of being exceeded within 50 years is 40 percent to 50 percent that of gravity (G). Spectral acceleration for a 0.3 second period (high frequency) with a 10 percent probability of being exceeded within 50 years is 100 percent to 120 percent of G. Spectral acceleration for a 1.0 second period (low frequency) with a 10 percent probability of being exceeded in 50 years is 50 to 70 percent of G.

Shaking amplification of the geologic materials underlying Trestle Glen Boulevard is anticipated to be low (ABAG, 2002). For a magnitude 7.2 earthquake on the Northern segment of the Hayward fault and Rodgers Creek fault, shaking intensities are anticipated to be strong with Modified Mercalli Intensity of VII. Shaking intensities are anticipated to be the same for a magnitude 7.9 earthquake on the San Andreas fault, such as occurred in the 1906 San Francisco earthquake. The Modified Mercalli Intensity is a measurement of the potential damaging affects of an earthquake at a specific location.

Other potential hazards include seismically induced ground failures, such as landslides and liquefaction. Liquefaction occurs when the strength and stiffness of a soil is decreased by seismic shaking or rapid loading. Liquefaction is dominated by three main factors: depth of groundwater, soil type (sands and silty sands are most vulnerable), and the seismicity of the area. Liquefaction is most common in saturated sandy soils, and can be responsible for widespread structural failure. Liquefaction hazard is not anticipated to be of concern in the sandy clay soils along Trestle Glen Boulevard. The area to the northwest of Trestle Glen Boulevard in low-lying areas may have a high potential for liquefaction according to ABAG maps of the area, but should not affect the proposed trail route.

Seismically induced landslides are much more likely to affect the proposed trail route. A number of active and potentially active landslides are present on the slopes adjacent to Trestle Glen Boulevard. Any of the identified landslides could potentially activate during a violent ground-shaking event.

On-Site Soils. The soils mapped adjacent to Trestle Glen Boulevard are the Los Osos-Bonnydoon Complex, 20 to 50 percent slopes (Soil Survey of Marin County, U.S.

Department of Agriculture, Soil Conservation Service, 1985). The Los Osos-Bonnydoon Complex is common on upland areas of Marin County. Small areas of Tocaloma soils on north and east facing slopes, such as adjacent to Trestle Glen Boulevard are included in this unit. This soil is a moderately deep grayish brown loam derived from sandstone and shale. The loam is moderately to well drained, and is generally characterized by moderately rapid permeability, moderate to very rapid runoff, and low shrink-swell potential. Tocaloma loam has a very high erosion hazard.

Roadside Mapping and Soil Testing for Trestle Glen Boulevard Bike Trail. A number of Site visits were completed in September of 2002 to determine geologic and soil conditions along the south margin of the eastbound lane of Trestle Glen Boulevard.

Maps of the area show Franciscan Mélange imprinted with landslides. Additionally, a small area of colluvium is shown about halfway between Tiburon Boulevard and Paradise Drive. The latter area was the subject of a geotechnical study by Jensen – Van Lienden Associates, Inc. for the Tiburon Court and lower Trestle Glen projects. In their report they classified the colluvium as probable debris flow deposits. The log for the borehole nearest Trestle Glen Boulevard, taken from a 1973 Harding Lawson Report, identifies this deposit as silty and sandy clay that was penetrated at a depth of about 12 feet. Gray sandstone was found beneath this deposit and no free water was encountered during drilling. No geomorphic evidence was identified during our field visit indicating recent movement of this deposit that would threaten the proposed bike trail. The most prominent landslide or soil creep identified is where the fence above the road has been partially over-turned toward the road. Another landslide shown between Shepherd Way and Turtle Rock Court was difficult to discern, and no visual evidence of current movement was recognized.

Active erosion in the shallow surface storm drain that runs to the east alongside the road between Hacienda Drive and Paradise Drive was observed. The drainage ditch runs as deep as 3 feet along this section. At regular intervals storm drain runoff is channeled to culverts that convey water to the creek on the opposite (north) side of Paradise Drive.

Soil samples were collected from a series of shallow hand auger holes along the south side of Trestle Glen Boulevard. Samples collected were analyzed for physical properties in the soil laboratory. Soil samples were taken along the road margin with the aid of a hand sampler, hand auger and spade. Due to the presence of large rocks in the subgrade, samples were taken at depths not greater than 2 feet.

Soils are typically clayey and silty sands with gravel. Hand boreholes 3 and 4 were located where elevated areas intersect the road. These are areas of thin, poorly developed residual soils derived from weathered rock of the Franciscan Melange. These areas will require cuts in order to establish the five-foot wide bike path. Other boreholes were excavated in areas of topographic lows below the road elevation where deeper colluvial and soils and landslide deposits are present. These soils are typically deeper and have a greater organic content. Observed lithology of gravel contained in these soils reflects the variety of rock types found in Franciscan Melange Terrain including sandstone, shale, chert and greenstone.

Laboratory testing was necessary to accurately classify soils using the Unified Soil Classification System (USCS). Liquid Limits ranging from 27 to 39 and plasticity indices ranging from 6 to 14 indicate soils with low to moderate plasticity and expansion potential. Low moisture contents reflect dry, autumn conditions prevalent at the time of sampling in September. Dry densities ranged from 72 pounds per cubic foot (pcf) for organically rich colluvium to 120 pcf for deeply weathered shale. High penetrometer (unconfined compressive strength) readings indicate relatively well-consolidated sediments and significant concentrations of gravel in soils. Moderate to high torvane readings indicate the cohesiveness of the soils.

Geotechnical Conclusions and Recommendations. The results of the Geologic Evaluation of the proposed project indicate that the project is feasible from a Geotechnical standpoint. Several areas of potential slope instability were observed, including the landslide deposits in the vicinity of the proposed Tiburon Court and lower Trestle Glen projects and the apparently active landslide located above Trestle Glen Boulevard near Paradise Drive. However, these areas are not proposed to have major cuts or retaining walls, but may include some minor fills, which would tend to increase the resisting force of a landslide. The main area of proposed cuts is the section from Tiburon Boulevard to Juno Road, on the south side. This section includes existing road cuts in weathered bedrock, old landslide deposits, and areas experiencing surface soil creep. The stability of this section would be improved by construction of a retaining wall necessary to cut the bike trail an additional five to ten feet to the south. The retaining wall may be an H-beam and treated wood wall or similar structure composed of man-made materials. Retaining walls may also be necessary along the south side of Trestle Glen Boulevard between Turtle Rock Court and Hacienda Drive where a cut into the slope will be necessary to construct the trail.

The existing storm drain system along the south side of the road will require re-construction of drop inlets, and possibly moving the subsurface storm drain piping in a few areas. Additional drainage improvements may be needed in the vicinity of Trestle Glen Boulevard and Paradise Drive where seepage from the apparently active landslide is present along the side of the road. A shallow subsurface drain may be appropriate in this area to collect the observed seepage and transmit it into storm drain facilities, if trail improvements are considered for this area. Cutting into the hillside in this location is not advisable unless additional, more detailed geotechnical investigations are conducted here.

3.2 Biological Resources

The project area consists of an existing road segment, shoulders, and up to ten to fifteen feet of additional right-of-way parallel to the roadway. Habitat types adjacent to the road shoulders includes grassland, scrub, brush and riparian/marsh. Species present include native and non-native grasses, shrubs and trees, such as coyote brush, poison oak, blackberry, broom, coast live oak, and pine. A small riparian stream corridor crosses underneath Trestle Glen Boulevard near the Juno Road-Trestle Glen Boulevard intersection and has a cover of willow, California bay, and buckeye.

Special-Status Species. Special-status species include plants and animals that are legally protected under state and federal Endangered Species Act (ESA) or other regulations, and other species that are considered sufficiently rare by the scientific community to potentially qualify for such listing.

Biological surveys were conducted for the Tiburon Court and lower Trestle Glen residential development proposals and determined that suitable habitat for special status plant species was not present. Most of the special status species in the Tiburon area are found within native grasslands or serpentine soils, neither of which is present at the site of the bikeway improvements.

Special status animal species within the Tiburon area are generally associated with salt marsh habitat, not present at the project site. In addition, the Tiburon Court site and adjacent area was surveyed for suitability for the California red-legged frog. It was determined there are no known breeding ponds or pools in this or nearby drainages. The area was also determined to have limited function as general wildlife refugia or movement corridor. Avoidance of the stream channel was recommended to limit potential impacts to this habitat.

3.3 Road Conditions, Drainage, and Utilities

Trestle Glen Boulevard consists of approximately 3,700 lineal feet of a two-lane, asphalt road within a sixty-foot right-of-way (see **Figure 3**). The paved section averages about 29- 30 feet in width but varies from a maximum of about 32 feet on the west end, near Tiburon Boulevard, and on the east end near Paradise Drive, to as little as 25 feet in some narrow areas near Juno Road. (A minimum road width is considered to be 22 feet, or two-11 foot traffic lanes)

The street is center striped with typical lane widths of 11 to 11.5 feet, and with a stripe along the south side, providing a very narrow paved shoulder of only about 1 to 1.5 feet to as much as 2 feet in a few areas. The south side of the road is predominantly along the base of a moderately steep hillside cut slope and has an earthen shoulder area and adjacent flatter slope typically about 2 or 3 feet in width below the cut slope or road embankment. This unpaved flatter area increases in width to 3 to 4 feet on the east end near Hacienda Drive. A narrow roadside drainage ditch occurs along the edge of paved section, below the cut slope. The roadside ditch is shallow, mostly less than 6-8 inches in depth and has a number of drop inlet structures connected to a subsurface storm drain system parallel to Trestle Glen Boulevard that carries stormwater runoff along the road to the Belveron Drainage Channel on the north side of the road via a box culvert near Juno Road. The existing storm drain extends from Hacienda Drive west. The road itself slopes to the south, so road runoff as well as hill slope runoff is conveyed to the ditch and then via the drop inlets to the subsurface storm drain along the south side of the road, then under Trestle Glen Boulevard, into the Belveron Drainage Channel just east of Juno Road.

From Hacienda Drive east, runoff is conveyed easterly in an open ditch to a drop inlet at the Paradise Drive intersection. This area is wet nearly year round and apparently ponds water and floods during periods of heavy rains.

Open Space

Open Space

Turtle Rock Ct

Shepherd Wy

Views

Hillcrest Dr

Paradise Dr

Drainage Problem

Paradise Dr

Warren Ct

Benton Ct

Entry Signs

Steep Drop-Off

Steep Grade

Mercury Ave

Apollo Rd

Venus Ct

Glen Blvd

Trestle

Drainage Problem

Juno Rd

Hacienda Dr

Tanfield Rd

Acacia Dr

Retaining Wall/ Path Drops Off

Hill Close To Road

Signalized Intersection

Cross Walk

Concrete Box Culvert

Stewart Dr

Geldert Dr

Tiburon Blvd

Blackies Pasture

Comstock Dr

Silverado Dr

Virginia Dr

0 300 600 Feet

LEGEND

- Drainage
- Ring Mtn Trail
- Proposed Trail Easement
- Dense Vegetation
- Existing ROW
- Tiburon Ct - 10ft Widening Strip Offer for Dedication
- Landslide
- Ring Mtn/Tiburon Open Space
- Overhead Powerlines
- 25-ft Contour
- Street

Figure 3

Trestle Glen Bikeway Study

Opportunities and Constraints

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Project No.: 220060
Project Name: Trestle Glen
Date: 21 Jan. 2003
Path: Z:\2002\220060_Trestle_Glen

On the north side the storm drain runoff is first conveyed within the Belveron Drainage Channel beginning just east of Juno Road. West of Juno Road the open drain becomes a 6-foot wide by 4-foot deep open concrete rectangular channel. The Belveron Drainage Channel conveys runoff to Tiburon Blvd and then under Tiburon Boulevard through Blackie's Pasture into Richardson Bay.

A small-unnamed creek crosses under Trestle Glen Boulevard just east of Juno Road to connect to the Belveron Drainage Channel. There is a small wooden boardwalk pedestrian crossing of this small creek on the north side of Trestle Glen Boulevard.

The north side of the road is predominantly a fill slope between Tiburon Blvd, Mercury Avenue and to just west of Turtle Rock Court. Along much of the way the road is supported by a short 12" to 18" wood retaining wall structure located on the north edge of pavement. The road edge is cracked and shows some signs of partial failure along most of this segment.

The road is also striped along the north side. The paved road section (beyond the road edge stripe) on the north side varies from 4 to about 6 feet, but is mainly about 5 feet in width, from edge of stripe to edge of pavement. In most areas from just west of Turtle Rock Court to Tiburon Boulevard the road edge drops off 5 to 10 feet or more at about a 2.0 H: 1V slope to the fenced residential backyards of houses along Juno Road.

For a distance of about 550-feet, east of the Juno Road- Trestle Glen Boulevard intersection, a 4.5 to 5-foot wide pedestrian path is separated from the road by a 6-inch high asphalt curb or berm. The edge of road striping is two feet out from the asphalt curb, providing a 2-foot wide bikeway along the road and separated from the paved pedestrian path in this segment.

Power poles occur within the road right-of-way along both sides of Trestle Glen Boulevard Several of these in the southwest area, just north of Trestle Glen Terrace (opposite and above the Mercury Avenue intersection) are very near the road shoulder (within 3 to 5 feet of edge of road) and will likely need to be moved for pathway construction. A water line also occurs within the paved section along the south side of Trestle Glen Boulevard.

4. TRAIL ROUTE OPTIONS

The design goal of having a 4-5 foot wide pedestrian path and one-way bikeway on one side of Trestle Glen Boulevard, and 4-5 foot wide bikeway on the opposite side of Trestle Glen Boulevard will mean that the improved width of the Trestle Glen Boulevard right-of-way will need to be increased by approximately 6 to 10 feet. Although there are several options available to accomplish this, it appears that the most straightforward improvements to achieve the 6 to 10 feet of additional width are:

1. Modify/sliver fill the existing 2-4 foot wide ditch on the south side. The raised drop inlets that are connected to the underground storm drain would need to be converted to a grated structure that still allows bicycle passage, and the area graded and paved to direct sheet flow to the drop inlets. Additional inlets may be required. The new level surface over the existing buried storm drain would be available for the pathway.

2. Cut back the hill slopes on the south side approximately 4-7 feet and install a 2-5 foot high retaining wall along portions of the right-of-way. The newly created space at the base of the reconfigured toe would be available for pedestrian path/bikeway construction.
3. Increase the road width in the generally flatter area on the south side from opposite Juno Road east to the proposed Tiburon Court cul-de-sac.
4. Provide a separate pedestrian path within the existing landscaped right-of-way on the east end, from Turtle Rock Court to Paradise Drive. This would necessitate moving (undergrounding) some power poles, utilities and landscaping in this area.

With some variations, including the need for mid-Trestle Glen Boulevard crosswalks, the same basic design concept can accommodate either a separate pedestrian trail on the south side, or on the north side of Trestle Glen Boulevard, with one-way bike paths on both sides.

The difference in implementation of the design would basically be in reconfiguring and re-striping the street centerline or center stripe and auto lanes/bike lane edge stripe to either shift the road further to the south (for the pedestrian path on the north side) or further to the north (to have the pedestrian path on the south side) of Trestle Glen Boulevard

Depending on the side that the pedestrian pathway is designated, a pedestrian or bicycle bridge, would need to be added to the small creek crossing that occurs just east of Juno Road.

In addition, depending on final lane configuration, and how additional automobile traffic is shifted slightly to the north, some remedial road fill slope stabilization work may need to be completed for the partially failing section on the north between Juno Road and Turtle Rock Court.

Trail Surfacing

The pedestrian trail can be composed of either stabilized decomposed granite (d.g.) or asphalt paving. Where existing pavement is proposed for use as a pedestrian trail, then the proposed surface would remain asphalt. Where a new pedestrian path is proposed, then stabilized d.g. has been designated for preliminary planning and costing, consistent with the pedestrian trail along Paradise Drive in Corte Madera. The bike lanes would be constructed using asphalt paving to sliver widens the existing road section.

Bikeway/Trail /Road Separator

The pedestrian trail should be separated from the bikeway. There are several methods to accomplish this:

- Raise (or lower) the pedestrian trail 6-8" from adjacent bike lane.
- Use of a 6" asphalt curb
- Use of bollards, fencing or a guardrail to provide permanent separation
- Differentiate trail surfaces (e.g., asphalt/decomposed granite surface)
- Striping/signage/traffic markings on pavement

Subject to additional review, the preliminary recommendation is for the use of a raised (or lowered) separated d.g. pedestrian path, with signage and striping. An asphalt curb is not recommended, as in some cases the curb (when hit by the cyclist) can direct the cyclist into the road.

The bikeway should also be separated from road traffic along Trestle Glen Boulevard Currently the bikeway is separated by striping. An alternative would be to use warning "rounds" (4-inch round lane delineators). Curbs or fencing between the bikeway or bike lane and road is not recommended.

In a few wider areas (west of proposed Tiburon Court on south side and east of Shepherd Way on north side) a narrow landscape berm, and/or a bench can be considered.

Signage and Street Furniture

Signage along the path is expected to be minimal, and may include such items as:

- Dogs Must Be On Leash
- Pedestrians Only
- Bicyclists Stay on Roadway
- Bay Trail
- Directional Signs, Tiburon Ridge Trail, etc.

A single bench may be appropriate where the trail can widen on the south side between Juno Road and Turtle Rock Court. Trail lighting is not proposed.

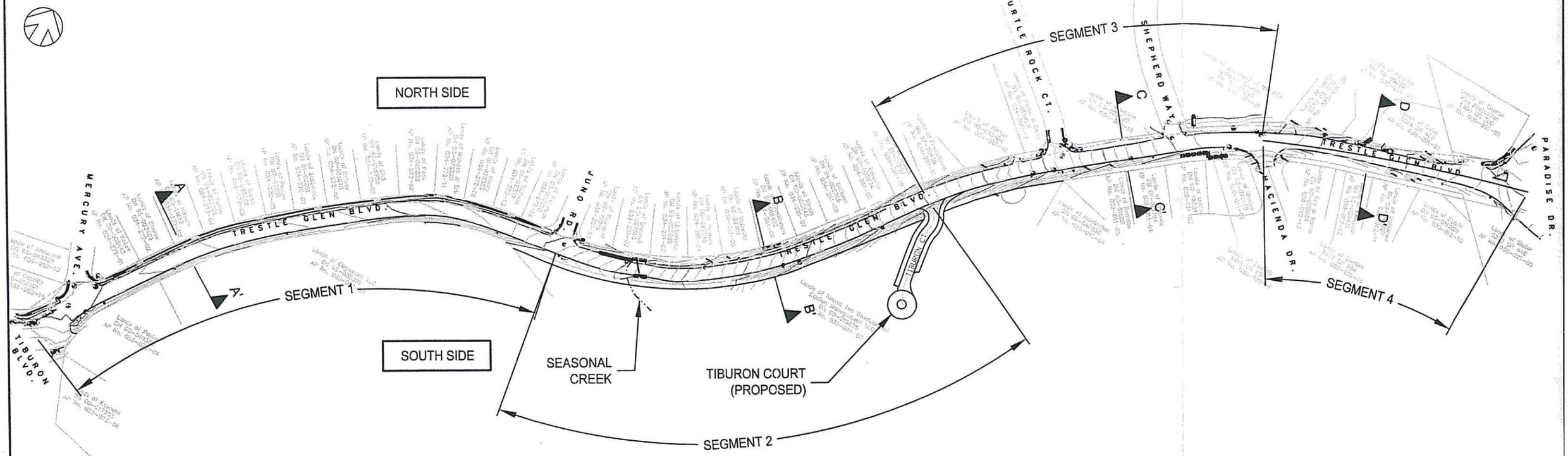
Trail Segments and Preliminary Design Options

Based on a review of existing site conditions, the proposed Trestle Glen Boulevard trail alignment consists of four segments from the west end of the project site adjacent to Tiburon Blvd, northwest to Paradise Drive. For planning and discussion purposes, the segments include (see **Figure 4**):

Segment 1: Trestle Glen Boulevard from Tiburon Boulevard to Juno Road
Segment 2: Trestle Glen Boulevard from Juno Road to (proposed) Tiburon Court entry road.
Segment 3: Trestle Glen Boulevard from (proposed) Tiburon Court entry road to Hacienda Drive
Segment 4: Trestle Glen Boulevard from Hacienda Drive to Paradise Drive

The recommended alignment will include the preferred segment for each reach, with overall project components including mobilization, demolition, and pavement rehabilitation. Typical cross-sections are provided in **Figure 5**.

4.1 Segment 1: Trestle Glen Boulevard from Tiburon Boulevard to Juno Road



PLAN VIEW

SCALE : 1" = 200'

Date:	1 / 22 / 2003
Drawn:	L.I.
Appr'd:	S.T.
Proj. No:	22060

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TRESTLE GLEN BIKEWAY STUDY
SITE PLAN
TIBURON, CALIFORNIA

FIGURE
4

W:\2002\22060-TRESTLE GLEN-LI\WORKINGDWGS\22060_rev0-plan&loc.dwg, siteplan-b, 01/22/2003 03:27:27 PM, LASERB-H.pc3

Length. Approximately 1200 feet

Description. This segment is bordered by the existing Belveron East subdivision on the north side, with a 6-foot wide (4 foot deep) box culvert separating the adjacent homes from the street area (**Figure 5A**). There is a four-foot high, chain-link with redwood slat fence at the top of the box culvert, separating the culvert from the adjacent slope that rises 2 to 4-feet to the Trestle Glen Boulevard pavement. The pavement is edged by a one to two-foot retaining wall. Overhead power lines and utility poles are located on the north side near the pavement edge.

On the south side of the road, there is a two-foot wide swale with occasional storm drain inlets. Adjacent to the swale, the slope rises at a 2:1 or 1:1 grade within the existing right-of-way. The south side is largely undeveloped, except for the homes accessed by Trestle Glen Terrace, although the lower Trestle Glen project would be situated on this side in the future.

The existing 4.5 to 5 foot asphalt pedestrian walkway in this area is located on the north side of the road and is a continuation of the existing crosswalk and pedestrian sidewalk crossing Tiburon Boulevard to Blackie's Pasture.

Trail Options

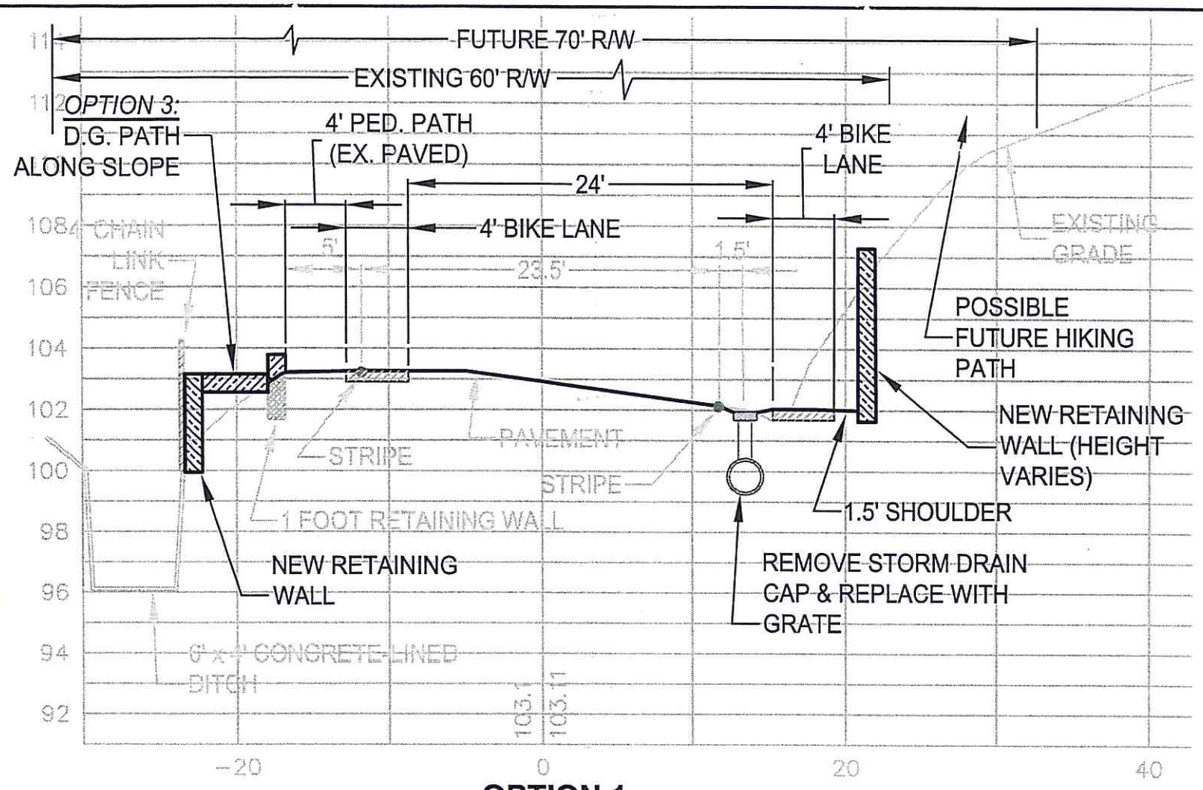
Option 1: Pedestrian Path on North Side. This option would continue the pedestrian path on the north side of Trestle Glen Boulevard. This would be accomplished by widening the south side of the road by approximately six or seven feet and shifting the bicycle and traffic lanes to the south to accommodate a separate pedestrian lane on the north side. Since the new pedestrian lane would be located within the current street configuration, the trail surface would be asphalt, and a curb or other divider would be desirable to separate bicyclists from the pedestrian lane. The eastbound (south side) bike lane would be widened from the current 1 to 2 feet outboard of the edge of road striping to 4 feet and a bike lane designation added.

Trail construction would include:

- Excavation and grading (south side of street)
- Construction of a retaining wall, height varies from 2 to 5 feet
- Storm drain and cross drain modification
- Paving, striping and signage

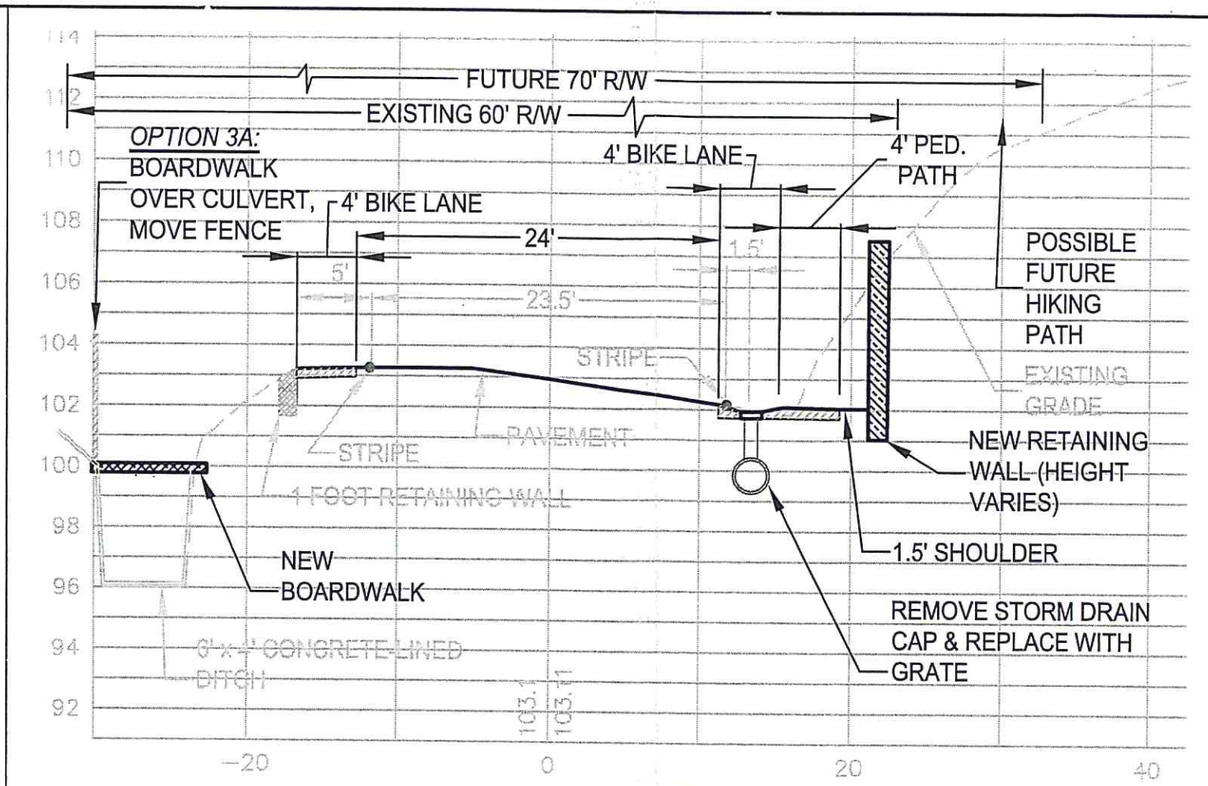
Option 2: Pedestrian Path on South Side. This option would include sliver widening of the south side of the street with retaining wall construction as in Option 1, with construction of a separate pedestrian path, preferably raised 6" to one foot above the road elevation to minimize grading along the right-of-way and provide trail separation. The bicycle lane would remain as existing on the north side. A crosswalk would need to be provided to direct pedestrians to the south side of the street, and issues would need to be addressed regarding sight distance at the Tiburon Boulevard/Trestle Glen Boulevard intersection.

Trail construction would include:



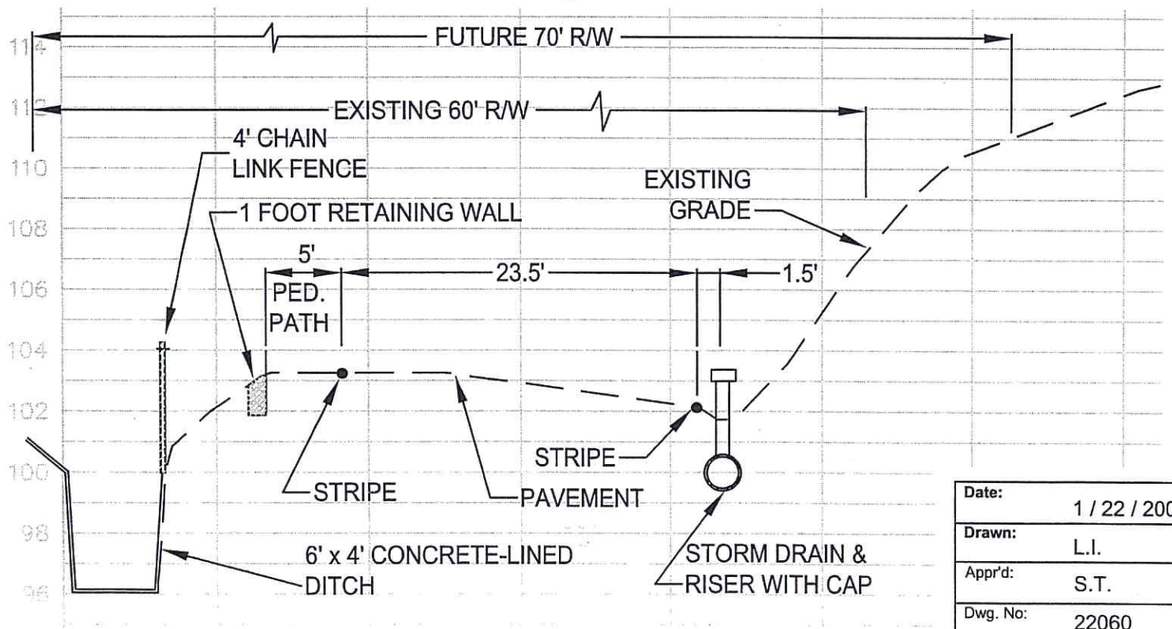
OPTION 1

PEDESTRIAN PATH N/S



OPTION 2

PEDESTRIAN PATH S/S



SECTION A-A'

(EXISTING CONDITIONS)

SCALE : 1" = 10' (H); 1" = 5' (V)

SEGMENT 1

Date:	1 / 22 / 2003
Drawn:	L.I.
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Dwg. No:	22060

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TRESTLE GLEN BIKEWAY STUDY
SECTION A-A'
TIBURON, CALIFORNIA

FIGURE
5a

- Excavation and grading (south side of street)
- Construction of a retaining wall, height varies
- Storm drain and cross drain modification
- Paving, striping and signage
- Stabilized d.g. pedestrian path and curb/separator

Option 3: Mid-level Pedestrian Path. In Segment 1, there is an option to locate the pedestrian path north of the current paved section, between the existing pavement and the open box culvert (see **Figure 5A**). In the sloping area between the road and culvert, a 2.5-3.0 foot retaining wall would be constructed on the slope between the existing path and the concrete culvert and the pedestrian path would be located below the road section. This alignment would necessitate removal and/or undergrounding the existing utility lines along the north side of the road. In addition, slope stability and structural integrity of the box culvert would need to be assessed.

Option 3A: Boardwalk over Existing Box Culvert. This alternative would construct a boardwalk over the existing box culvert, so that the pedestrian path would be separated from the roadway as much as possible. This would be a costly option, and the structural integrity of the box culvert would need to be further assessed. This would also place the trail closer to the rear yards of existing residents along Juno Road. The yards would be more visible from the boardwalk and sight visibility for emergency/police would be limited because the trail would be as much as four feet lower than the existing road.

Segment 1 Geologic/Geotechnical Constraints:

- Storm drain drop inlet near intersection is below grade (north side). Inlet may need to be raised and area around it filled in order to widen road to include bike trail.

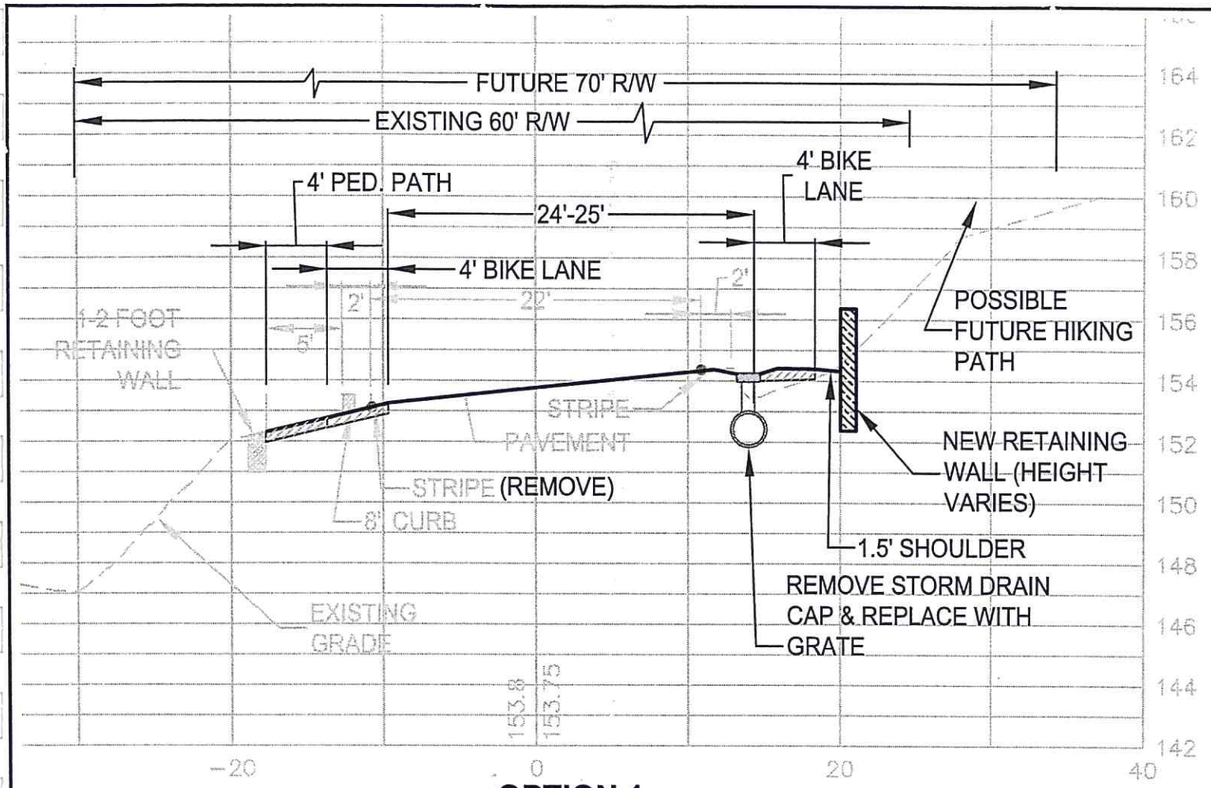
- Road cut along south side of road will need to be laid back and retained. Unstable areas are present in this section including areas of soil creep, old landslide deposits, and unstable weathered rock. Retaining structures will be necessary in some areas that include drilled pier and tie back foundations into competent bedrock.

- Existing storm drain system along south edge of road includes culverts and pipes crossing under road. Portions of system may possibly require reconstruction during widening of adjacent slope.

4.2 Segment 2: Trestle Glen Boulevard from Juno Road to (proposed) Tiburon Court Entry Road

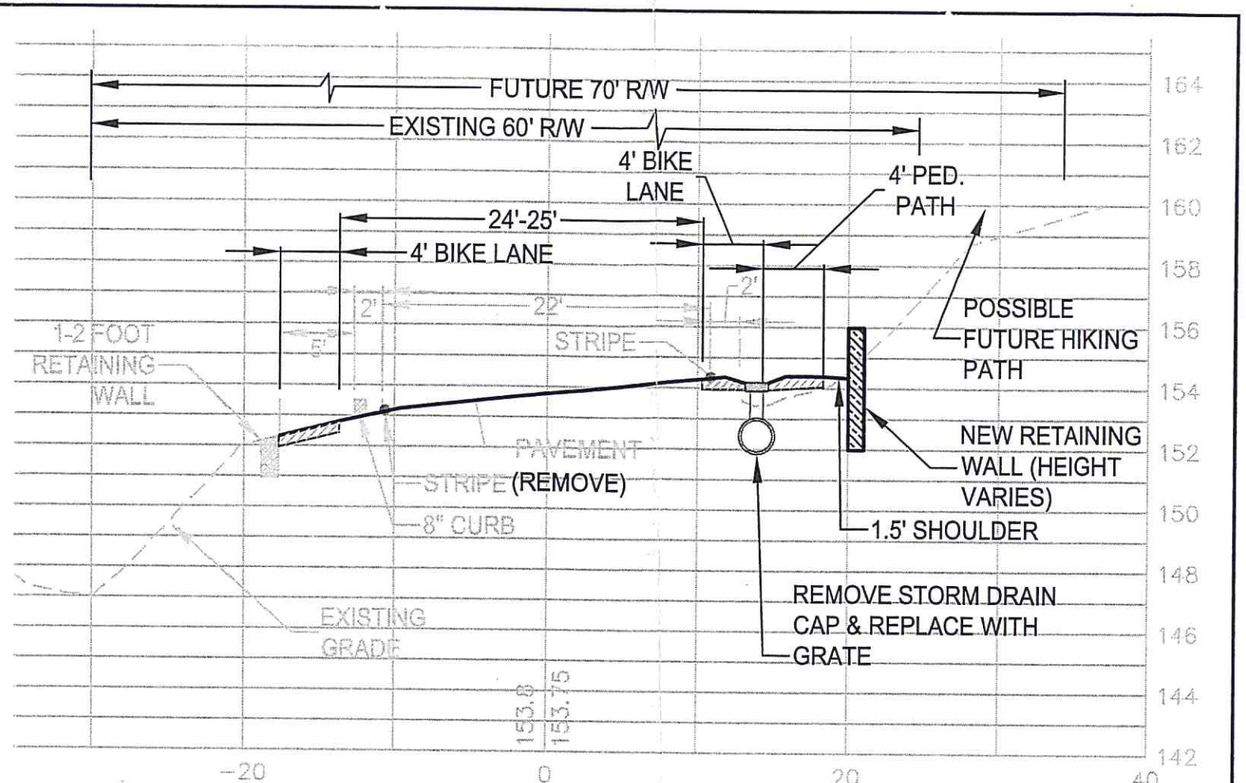
Length. Approximately 800 feet

Description. This segment includes the roadway east of Juno Road to the proposed Tiburon Court entry road (**Figure 5B**).The right-of-way north of Trestle Glen Boulevard, in this area



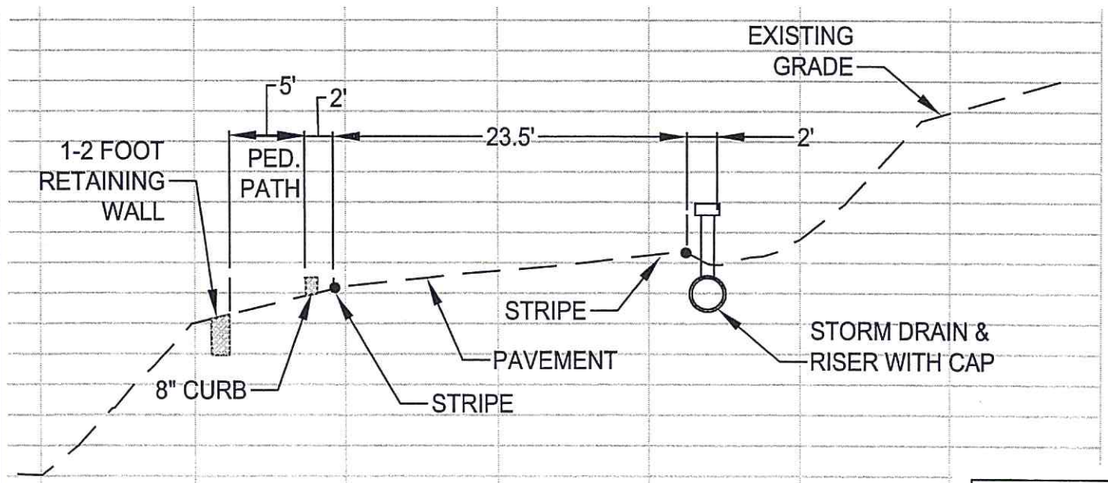
OPTION 1

PEDESTRIAN PATH N/S



OPTION 2

PEDESTRIAN PATH S/S



SECTION B-B'

(EXISTING CONDITIONS)

SCALE : 1" = 10' (H); 1" = 5' (V)

SEGMENT 2

Date:	1 / 22 / 2003
Drawn:	L.I.
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Dwg. No:	22060

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TRESTLE GLEN BIKEWAY STUDY
SECTION B-B'
TIBURON, CALIFORNIA

FIGURE
5b

includes a rip-rapped culvert outfall just east of Juno Road, and gradually rises to the crest of Trestle Glen Boulevard. This area slopes significantly away from the paved edge to houses below (north of) the road. The edge of road section and adjacent slopes appear to be partially failing in some areas, and placement of the trail outside the existing paved section is not recommended due to slope stability concerns.

On the south side, adjacent lands are proposed for the three-lot Tiburon Court development. The grade is relatively flat, with unconsolidated fill along the right-of-way edge. In this area, the Trestle Glen Boulevard alignment could be shifted south to accommodate trail construction. The alignment would utilize the proposed 10-foot path widening dedication of the Tiburon Court project. A bridge or other crossing is recommended at the seasonal creek to avoid potential impacts. At the crossing, the existing traffic lanes are approximately ten feet wide. Pedestrian and bicycle traffic should be shifted off the traffic lanes where feasible.

Trail Options

Option 1: Pedestrian Path on North Side. As in Segment 1, this option would continue the pedestrian path on the north side of Trestle Glen by widening the south side of the road by approximately six to ten feet and shifting the bicycle and traffic lanes to the south to accommodate a separate pedestrian lane on the north side (within the existing street right-of-way). Since the new pedestrian lane would be located within the current street configuration, the trail surface would be asphalt, and a curb or other divider would be desirable to separate bicyclists from the pedestrian lane. The eastbound (south side) bike lane would be widened to 4 feet. Because this area is flatter on the south side, there would be a lower retaining wall, or no wall in some areas. A separate 50-foot pedestrian bridge would be proposed to avoid conflicts at the existing creek/culvert outfall.

Trail construction would include:

- Excavation and grading (south side of street)
- Construction of a retaining wall, height varies
- Storm drain and cross drain modification
- Paving, striping and signage
- 50-foot pedestrian/bicycle bridge (shared use)
- Small landscaped berm with bench in widened south side

Option 2: Pedestrian Path on South Side. Like Segment 1, this option would include sliver widening of the south side of the street, with construction of a separate pedestrian path, preferably raised 6" to one foot above the road elevation to minimize grading along the right-of-way and provide trail separation. The bicycle lane would remain as existing on the north side. A prefabricated steel pedestrian bridge would be constructed over the existing creek on the south side of the street.

Trail construction would include:

- Excavation and grading (south side of street)
- Construction of a retaining wall, height and location varies
- Storm drain and cross drain modification
- Paving, striping and signage
- Stabilized d.g. pedestrian path and curb/separator
- 50 foot pedestrian/bicycle bridge (shared use)

Segment 2 Geologic/Geotechnical Constraints:

- Area adjacent to south side of road is relatively flat, with soils consisting of artificial fill and debris flow deposits. Soils will need to be re-graded and re-compacted.

- Bridge crossing stream is too narrow for bike trail. Bridge will require widening or foot bridge constructed. Soils underlying the area will necessitate a drilled pier and grade beam foundation for the footbridge.

- Existing storm drain system along south edge of road includes culverts and pipes crossing under road. System may require reconstruction during widening of adjacent slope.

4.3 Segment 3: Trestle Glen Boulevard from Tiburon Court Entry Road to Hacienda Drive

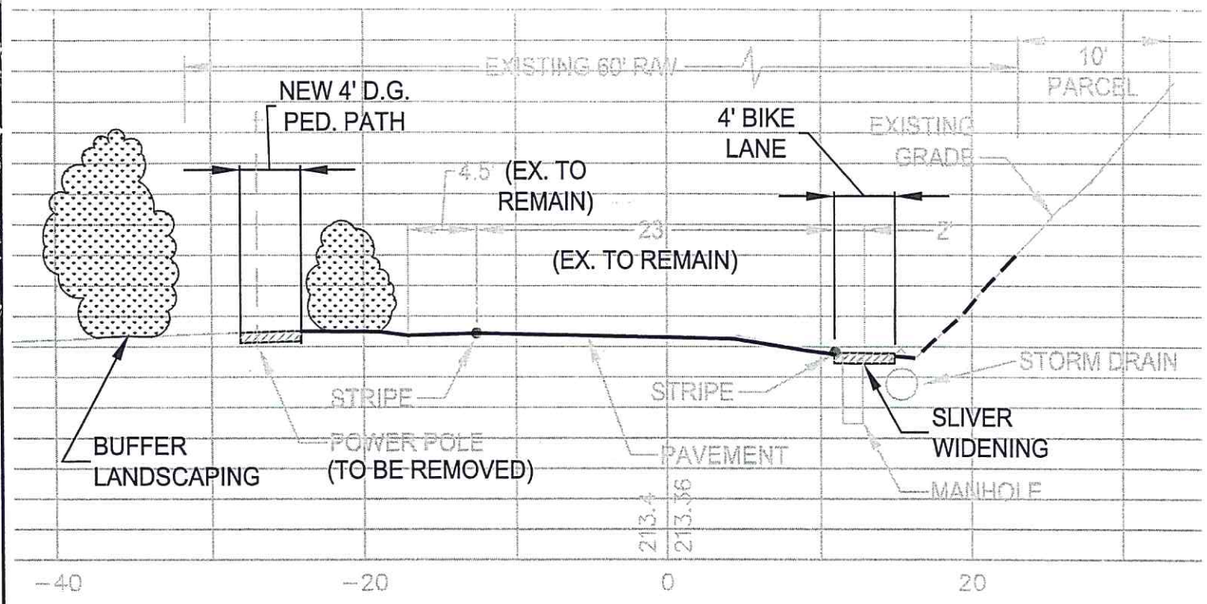
Length. Approximately 700 feet

Description. On the north side of Trestle Glen Boulevard, the right-of-way slopes sharply away from the road until approximately 200 feet west of Turtle Rock Court (**Figure 5C**). From Turtle Rock Court eastward past Shepherd Way, the north side of the road is generally flat with approximately 15-feet of under-landscaped area between the road edge and right-of-way. In this area, there is sufficient space to create a separated path off the -existing road surface. There are two Turtle Rock subdivision entry signs within the right-of-way.

On the south side of Trestle Glen Boulevard, the land slopes up away from the street, and there are homes along Benton Court approximately 30 feet from the edge of road. There is a fence that apparently encroaches into the right-of-way. In this area, there is an existing ten-foot parcel that parallels the road alignment. The status of this parcel for trail expansion is unclear. It is shown as a road widening strip on the 1949 Hacienda Terrace subdivision map, but the Town has not accepted a dedication, and it remains in private ownership at this time.

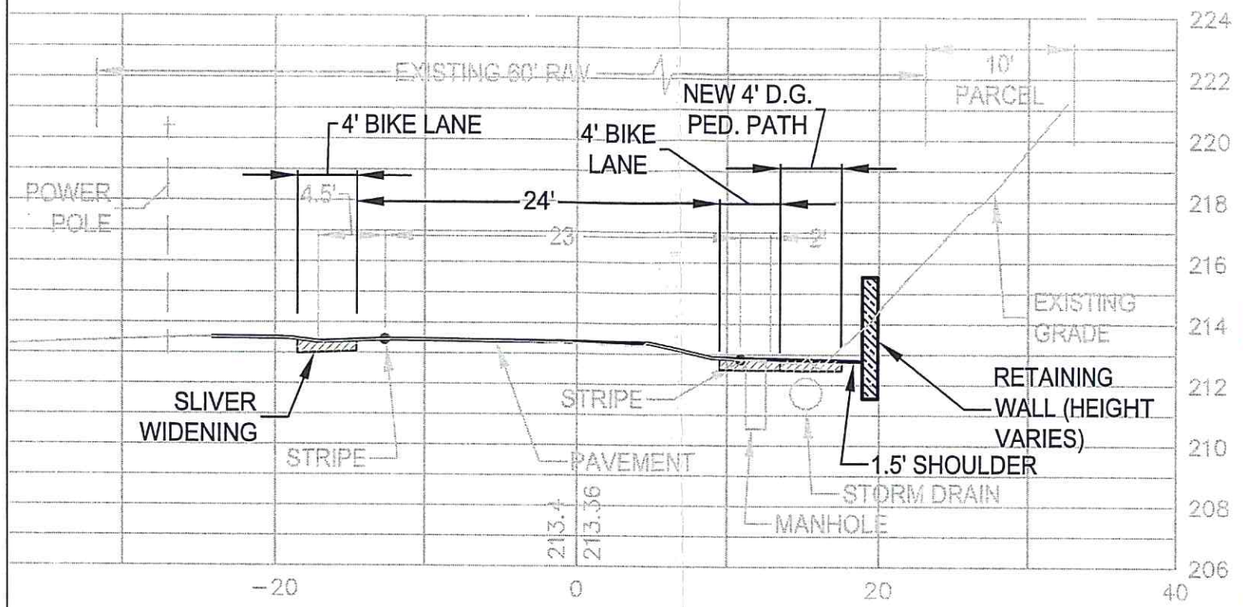
Trail Options

Option 1: Pedestrian Path on North Side. From the flatter (grassy) area west of Turtle Rock Court to east of Shepherd Way, a separate pedestrian trail and bike lane are possible within



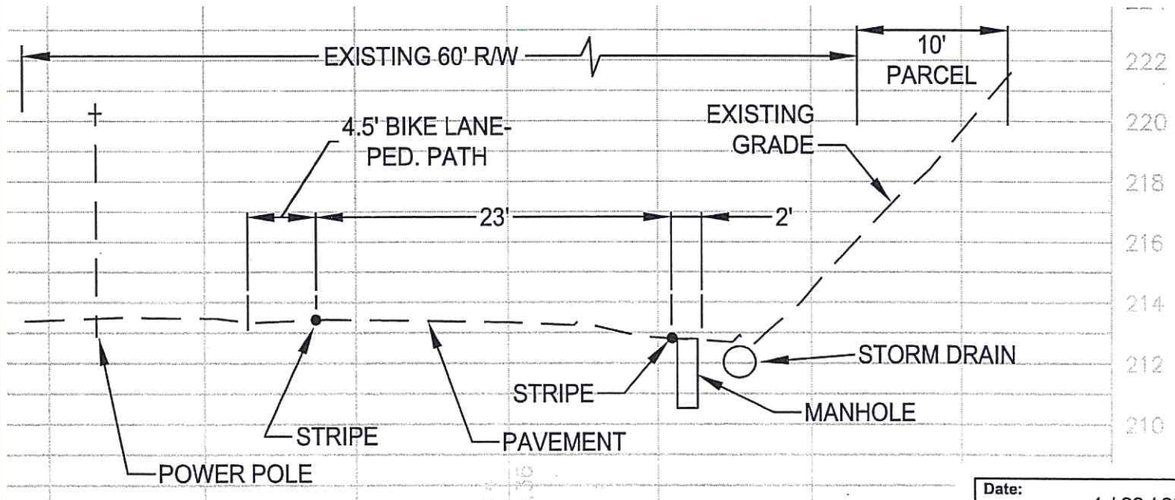
OPTION 1

PEDESTRIAN PATH N/S



OPTION 2

PEDESTRIAN PATH S/S



SECTION C-C'

(EXISTING CONDITIONS)

SCALE : 1" = 10' (H); 1" = 5' (V)

SEGMENT 3

Date:	1 / 22 / 2003
Drawn:	L.I.
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Dwg. No:	22060

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TRESTLE GLEN BIKEWAY STUDY
SECTION C-C'
TIBURON, CALIFORNIA

FIGURE
5c

the flat right-of-way area. A sliver widening (2-3') on the south side would be needed to create an eastbound bike lane.

Trail construction would include:

- Separate d.g. pedestrian path, buffer landscaping on north side
- Storm drain and cross drain modification
- Paving, striping and signage
- Transition to paved section at Tiburon Court entry road
- Relocation of Turtle Rock entry signs, irrigation/utilities

Option 2: Pedestrian Path on South Side. If a pedestrian trail alignment is selected for the south side, the trail configuration would include construction of a retaining wall to accommodate additional paved area, and/or paving on the north side of the road to create a widened section. The segment would need to be restriped where lanes are shifted to the north to accommodate a pedestrian trail on the south shoulder. If this option is selected, the Town should explore obtaining the ten-foot wide strip of land below the Benton Court homes, adjacent to the right-of-way, to maximize design options. A crosswalk at the Hacienda Drive intersection should also be considered.

Trail construction would include:

- New d.g. pedestrian path, buffer landscaping on south side
- Retaining wall to create flat area for path
- Storm drain and cross drain modification
- Paving, striping and signage

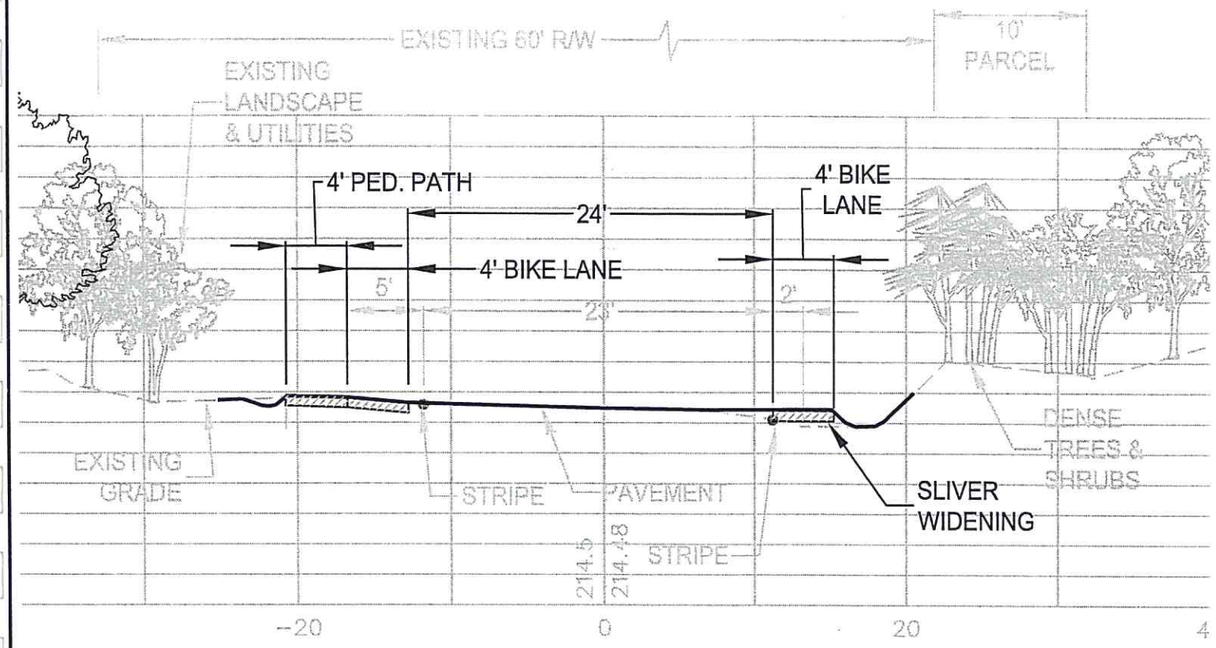
Segment 3 Geologic/Geotechnical Constraints:

- The south side widening will require cuts into mélange bedrock and will require retaining structures with drilled pier or tieback foundations.

4.4 Segment 4: Trestle Glen Boulevard from Hacienda to Paradise Drive

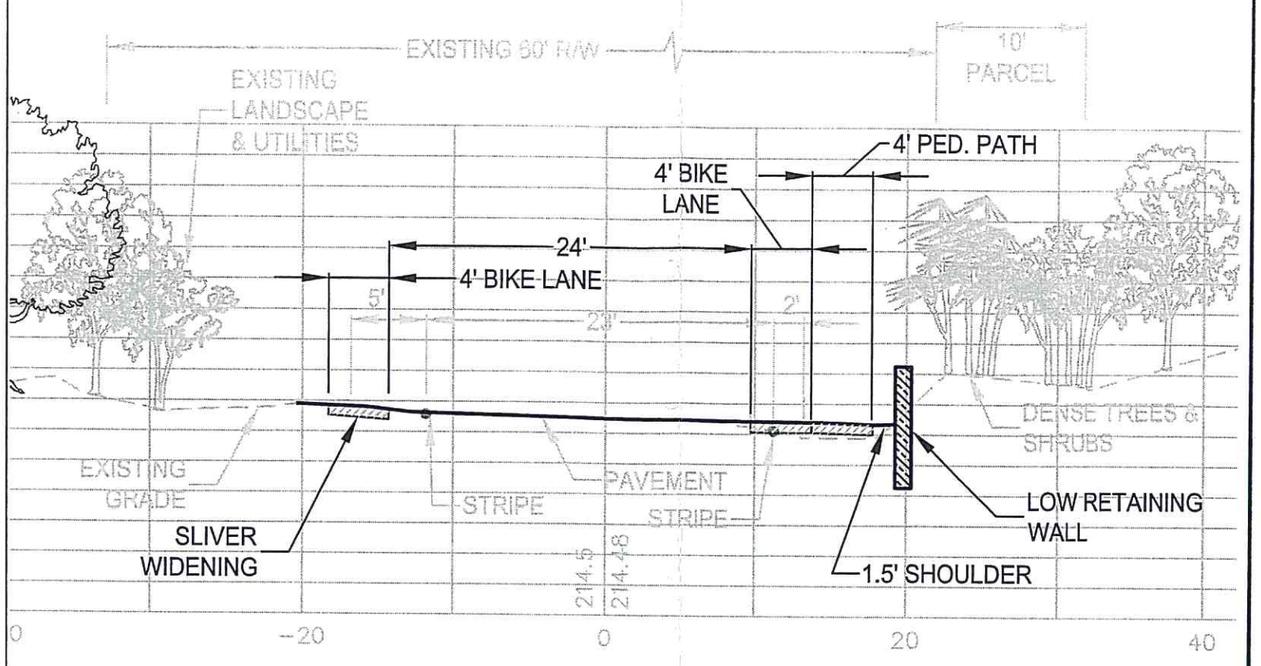
Length. Approximately 500 feet

Description. This area is developed on both sides of the street. On the north side, there are several residences with driveways, as well as a fire station (**Figure 5D**). Dense landscaping occurs within the right-of-way on both the north and south side. On the south side, the rear yards of residences along Warren Court adjoin a 10-foot wide strip of land that abuts the right-of-way, approximately 20 to 30 feet or more from the existing edge of pavement. This area is flatter than other sections of Trestle Glen Boulevard, and has been mapped as the location of an old, apparently active, landslide.



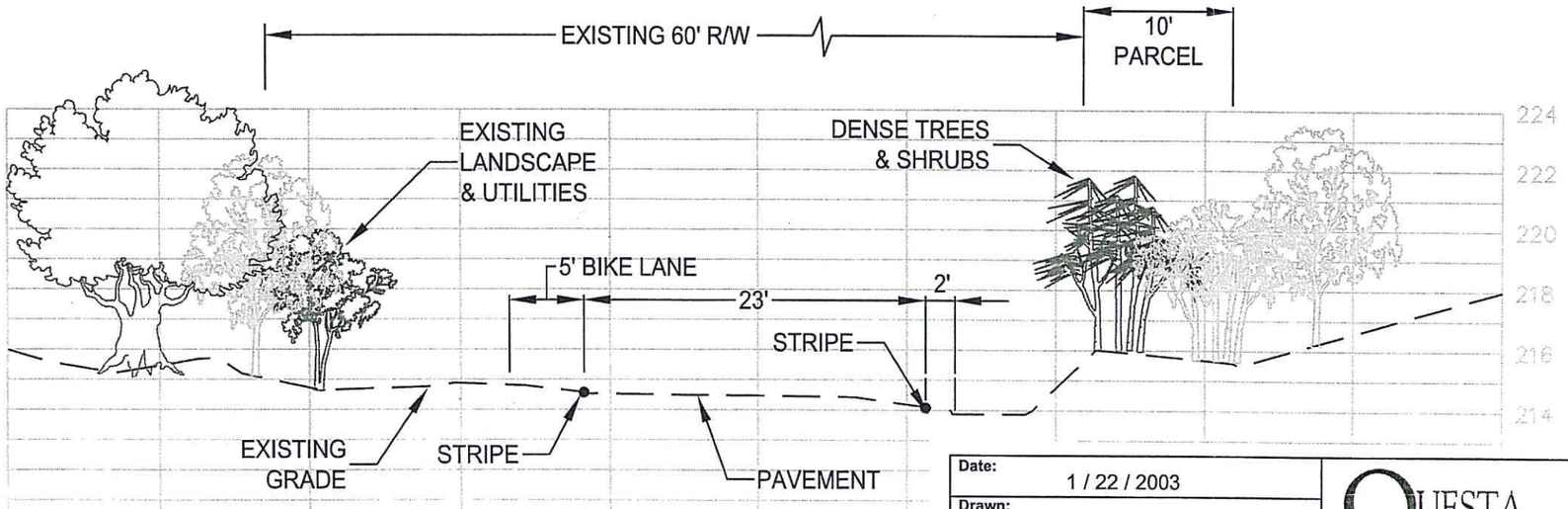
OPTION 1

PEDESTRIAN PATH N/S



OPTION 2

PEDESTRIAN PATH S/S



SECTION D-D'

(EXISTING CONDITIONS)

SCALE : 1" = 10' (H); 1" = 5' (V)

SEGMENT 4

Date:	1 / 22 / 2003
Drawn:	L.I.
Appr'd:	S.T.
Dwg. No:	22060

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TRESTLE GLEN BIKEWAY STUDY
SECTION D-D'
TIBURON, CALIFORNIA

FIGURE
5d

Trail Options

Option 1: Pedestrian Path on North Side. If the pedestrian path is located on the north side, it is recommended that a sliver widening (2-3') be installed along the south side to accommodate two travel lanes and two bike lanes within the paved area. A d.g. pedestrian path could be installed adjacent to the pavement edge on the north side; however, several utilities, poles and a fire hydrant would need to be relocated. Some tree removal will also likely be needed to accommodate the path, although the path could meander within the right-of-way to avoid some infrastructure and vegetation. A 2-foot-high retaining wall may also be required for a short distance along the edge of the north side right-of-way.

Trail construction would include:

- Separate d.g. pedestrian path on north side
- Retaining wall construction
- Storm drain and cross drain modification
- Paving, striping and signage
- Utility/infrastructure relocation
- Tree removal

Option 2: Pedestrian Path on South Side. To accommodate a pedestrian path and widened bike lane in this area, additional paving would be needed, as well as a possible retaining wall to create a flat section. Like Option 2 in Segment 3, the roadway segment would need to be restriped where lanes are shifted to the north to accommodate a pedestrian trail on the south shoulder. If this option is selected, the Town should explore obtaining the ten-foot wide strip of land adjacent to the right-of-way to maximize design options. A crosswalk at Paradise Drive and improvement of the triangular island at the Trestle Glen Boulevard/Paradise Drive intersection should also be considered.

Trail construction would include:

- New d.g. pedestrian path, buffer landscaping on south side
- Retaining wall to create flat area for path
- Storm drain and cross drain modification
- Paving, striping and signage

Geologic/Geotechnical Constraints:

- The south side is located below existing residences and a mapped landslide. However, the slide appears inactive at the current time.

- An incised storm drain ditch is present along the south road edge, which will require improvements such as culverts and drop inlets. A seep near the intersection with Paradise Drive may require dewatering efforts.

5. DESIGN CONSIDERATIONS

It is a priority that the alignment be cost effective as well as avoid environmental impacts, provide separation where feasible and minimize safety concerns. Trail issues include:

- **Trail Width.** The existing right-of-way along Trestle Glen Boulevard is insufficient to provide the trail widths recommended in the Bay Trail Design Guidelines (**Table 5-1**). In general, trail improvements should be designed to maximize the available right-of-way to the extent feasible, without excessive cost, structural design or right-of-way acquisition.

Table 5-1: Bay Trail Design Guidelines

Item	High-use facilities (separate paths)*	Multi-use paths*	Bicycle-only paths*	Hiking-only paths	Natural trails
Minimum width (one-way)	8-10'	10'	8'	5'	3-5[a]
Minimum width (two-way)	10-12'	10-12'	10-12'	8-10'	5'
Surface	asphalt[b]	asphalt	asphalt	hardened	natural/boardwalks[c]
Horizontal clearance (incl. shoulders)	12-16'	14-16'	10'	9-12'	7-9'
Shoulder[d]	2'	2'	2'	2'	unspecified
Vertical clearance	10'	10'	10'	10'	unspecified
Cross slope	2% max	2% max	2% max	2% max	unspecified
Maximum grades[e]	5%	5%	5%	5%	unspecified

* Standards meet Caltrans Class I bikeway standards

[a] Minimum widths that are less than 5' will be required to have 5'x5' turnouts at intervals to meet accessibility standards

[b] High-use pedestrian path could be hardened surface other than asphalt

[c] Natural surfaces may require surface hardening to provide accessibility

[d] Area specified is area on both sides of the trail

[e] Percentage grade for short distances with flat rest areas at turn outs, except where site conditions require a greater slope for short distances.

Source: ABAG Bay Trail website

Meeting the full width Bay Trail design guidelines does not appear to be feasible, but is not a requirement for project approval or obtaining outside funding.

Minimum paved bikeway widths of 4-feet and pedestrian pathway widths of 4 to 5-feet are recommended, with 5-foot boardwalk widths

- **Trail Surfacing.** Trail segments that are primarily for bicycle use and contiguous to existing asphalt surfacing would be asphalt. Separated pedestrian segments should consider alternative pavement options such as permeable paving (Stabilized decomposed granite) to reduce costs and provide an attractive visual separation from vehicular use.

- **Trail Separation.** Wherever feasible, the pedestrian trail should be separated from the bikeway by a grassed or landscaped strip, berm or curb, or grade change or elevation difference. The potential safety effects of use of curbs along bicycle lanes needs to be carefully considered.

- **Fencing and Screening.** Issues include where new fencing, landscaping or screening is needed; and the height, style and type of screening to be provided. Cut slopes should also be revegetated for erosion control and to reintroduce native shrubs on hillsides in disturbed areas.

- **Trail Linkages and Connections.** A crosswalk at Paradise Drive, as well as, an improved pedestrian crossing at Tiburon Boulevard should be incorporated into future transportation improvement projects at these intersections. Any traffic improvements and lane expansion projects at the Tiburon Boulevard/Trestle Glen intersection should incorporate pedestrian/bicycle elements. Plans should also interface with the Tiburon Ridge Trail segment from Shepherd Way to the Tiburon Court property.

6. PREFERRED TRAIL ROUTE

6.1 BPAC Recommendations

The Town of Tiburon Bicycle and Pedestrian Advisory Committee reviewed the preliminary trail options at its public meetings of January 28 and February 25, 2003. Neighborhood residents and members of the general public also provided comments at these meetings. The Committee members expressed opinions on design issues and options and achieved a consensus regarding primary project objectives, including:

- The primary pedestrian path should be located on the north side of Trestle Glen Boulevard at least in the short term, because the majority of residences are located adjacent to that side of the road. The BPAC expressed a preference for the most physical separation possible between cyclists and pedestrians, with a preference for a route incorporating Option 3A (preferred) or Option 3 (second preference) within Segment 1.

- A pedestrian path along the south side is desirable because uphill bound cyclists may have

fewer conflicts with pedestrians, and the south side is a more "natural" area providing a more pleasant walking experience. However, the need for crosswalks, and issues regarding potential Caltrans traffic improvements at the intersection of Tiburon Boulevard and Trestle Glen Boulevard need to be resolved before such a path is developed. Therefore, a south side trail should be considered for a future phase.

- The path should be physically separated from bicyclists, especially the faster, westbound cyclists traveling downhill. For this reason, Options 3 and 3A are preferred to provide a separated pedestrian trail in Segments 1 and 2, and this might reduce the height/necessity of a retaining wall on the south side of the street.

- In the long term, the Town of Tiburon should pursue obtaining additional right-of-way along the south side of Trestle Glen Boulevard for creation of an additional pedestrian trail. This is consistent with the 10-foot easement that is being dedicated as part of the Tiburon Court development. Consideration should be given to creating a natural trail at mid-slope or top-of-slope that requires less grading and can facilitate a connection to the Tiburon Ridge Trail.

- Construction and dedication of a pedestrian trail along the south side of Trestle Glen Boulevard should be encouraged as part of development submittals for vacant parcels along Trestle Glen Boulevard.

6.2 Preferred Plan Project Description

Based on BPAC and public input, a precise route has been developed, with estimation of trail costs for the selected route. The preliminary engineering plan includes the proposed layout, conceptual grading and drainage structures, retaining walls, culverts, fencing, landscaping, signage, and other elements associated with trail implementation. This information can be utilized as a resource to guide final design and for future funding and implementation opportunities. The Cover Sheet (**Sheet 1 of 8**) to the Plans in **Appendix A** provides an overall summary of key elements of the Preferred Plan.

Key elements of the Preferred Plan include:

- Relocation of the drainage ditch, piping, and drop inlets along nearly the entire south side of Trestle Glen Boulevard, along with hillside cuts and short retaining wall construction to allow the entire roadway section and centerline to be shifted between 2 and 10 feet to the south. The vehicular travel lane width will also be reduced by 1 to 2 feet in highly constrained right-of-way areas, but will be within the minimum allowable width of 23.6 feet. This will provide room for widening the present 2-foot edge of road bike lane on the south side to 4 feet, and also provide for a widened 4-foot bike lane on the north side, separated from a new 5-foot pedestrian pathway.

- Constructing between 100 and 200 feet of a 5-foot wide boardwalk along the north slope below Trestle Glen Boulevard and the existing concrete drainage ditch. The boardwalk would begin at Mercury Avenue.

- From the end of the boardwalk to Juno Road, removing existing paving and placing a 5 foot wide decomposed granite pedestrian path. The path would be set approximately 0.5 feet below road elevation. A maximum 2-foot high concrete block gravity retaining wall would be provided as required to support the north edge of the path.

- From Juno Road to within about 30 feet of Turtle Rock Court, removing existing paving and constructing a 5-foot wide decomposed granite pedestrian path. The path would be set between 4" and 12" below road elevation. A concrete curb plus retaining wall would be provided to channel road runoff and support the north edge of road.

- Utility lines could be undergrounded below the boardwalk and pathway in the section between Mercury Avenue and Juno Road.

- Adding a crosswalk on Trestle Glen Boulevard near Turtle Rock Court and across Turtle Rock Court, Juno Road, and Mercury Avenue. The Trestle Glen Boulevard crossing near Turtle Rock Court would provide a linkage between the planned Tiburon Ridge Trail to the north and south.

- Widening the bike lane on the north side of Trestle Glen Boulevard between Turtle Rock Court and Paradise Drive (where needed) to 4 feet. A 5-foot wide pedestrian path would meander on gently sloping land within the existing Town right-of-way, separated in most areas from the bike lane. Some existing landscaping and hardscape elements would need to be removed in this area.

- Installing signs and pavement marking to indicate that the pedestrian path is foot traffic only, and show where the road narrows and bike lane narrows near Juno Road.

- Utility undergrounding is presented as a cost option (largely for aesthetic purposes) between Juno Road and Paradise Drive, as the power poles in this area can either be avoided in final pathway layout, or be moved.

- Phase 2 improvements would include constructing a 5 foot pedestrian path along the top of road bank, south side of Trestle Glen Boulevard between (to be constructed) Tiburon Court and Juno Road, and the installation of a prefabricated steel pedestrian bridge across the small creek near Juno Road.

- Improvements to the Tiburon Boulevard-Trestle Glen Boulevard and the Paradise Drive-Trestle Glen Boulevard intersections are not proposed as part of this Plan.

6.3 CEQA Review and Permitting

A CEQA Initial Study (**Appendix B**) has been prepared for the recommended trail alignment, and the project will be submitted for Town and ABAG approval (for possible funding).

When this project is funded, detailed engineering plans and specifications will be prepared. The Phase 2 pedestrian bridge crossing of the unnamed creek across from Juno Road will likely need permits from the Corps of Engineers, and the California Department of Fish and Game, as well as a Water Quality Certification or Wavier from the San Francisco Bay Regional Water Quality Control Board.

7. TRAIL DESIGN ELEMENTS

The following design criteria can be utilized in preparation of Plans and Specifications for project construction.

7.1 Crosswalks, Phase 2 Trail Connections, and Signage

The Preferred Project shows new pedestrian crosswalks: across Trestle Glen Boulevard at the intersection of Turtle Rock Court, and on the north side of Trestle Glen at the intersection of Turtle Rock Court, Shepherd Way, Juno Road and Mercury Drive, where no pavement marking currently exists. The crosswalk at Turtle Rock would provide the connection between the Tiburon Ridge Trail to the north (to the Ring Mountain open space area) and the Tiburon Ridge Trail to the south, within the trail easement granted in association with development of the Tiburon Court subdivision. Access to the Tiburon Ridge Trail to the north is currently via Shepherd Way, and is poorly marked and unimproved.

The proposed crossing of Trestle Glen Boulevard at Turtle Rock Court is in a nearly level area. Other potential crosswalks that were considered were at the Hacienda Drive and Juno Road intersections. These were not considered feasible for safety reasons because of steeper slopes and short line of sight viewing distances.

The proposed Trestle Glen Boulevard-Turtle Rock Court crosswalk would be at an uncontrolled intersection. The Town generally prefers to avoid such crossings, however, there is currently no crossing along the entire alignment. To reduce safety risks, the proposed crossing would need some sort of warning light, either on a sign or in-pavement flashing markers, set off when pedestrians are in the crossing area. The determination of the recommended crossing and signage should be confirmed by a Traffic Engineer. Such a system can cost on the order of $20,000.00 or more, and is included in the Cost Estimate as an option.

In addition to the Tiburon Ridge Trail connection, the Preferred Project also shows a pedestrian path that would be constructed primarily on the hilltop edge along (above) the south side of Trestle Glen Boulevard (not along the immediate road shoulder area). This should be considered as an Optional Phase 2 element. The Town would need to acquire an additional 10 foot minimum right-of-way along a portion of the western part for construction of this Phase 2 trail segment. The trail would be constructed as a graded and chemically

stabilized decomposed granite (s.d.g.) path with a 5-foot minimum width, or left as an undeveloped footpath for public use. Trail construction costs for this kind of trail (if graded and improved) are typically on the order of $35.00 to $40.00 per lineal foot.

The Phase 2 trail would also include a new pedestrian crossing of the unnamed creek across from Juno Road. A prefabricated steel pedestrian bridge of the length required (approximately 50 feet) would cost approximately $50,000.00, installed.

In addition to the crosswalks and Phase 2 pedestrian paths discussed above, pedestrian/bicycle crossing improvements will be needed at the Tiburon Boulevard and Paradise Drive intersections. Since Tiburon Boulevard is a state highway, any modifications to this intersection will require Caltrans approval, and would normally be made associated with traffic flow or safety improvements. Conceptual improvements to both intersections are shown on **Figure 7-1.**

Signage shown on **Figure 7-1** also includes Bay Trail signs at the Paradise Drive and Tiburon Boulevard intersections, as well as signs that indicate that portions of the trail are for "Pedestrians Only" or where "Bicycles Use Road" in narrow areas. In addition to the signs, the bike lane will require striping and bike use designation with pavement paint.

Signage indicating connections to the Tiburon Ridge Trail will be needed, as Phase 2 trails are built and the connection at the end of Shepherd Way is improved.

7.2 Retaining Walls

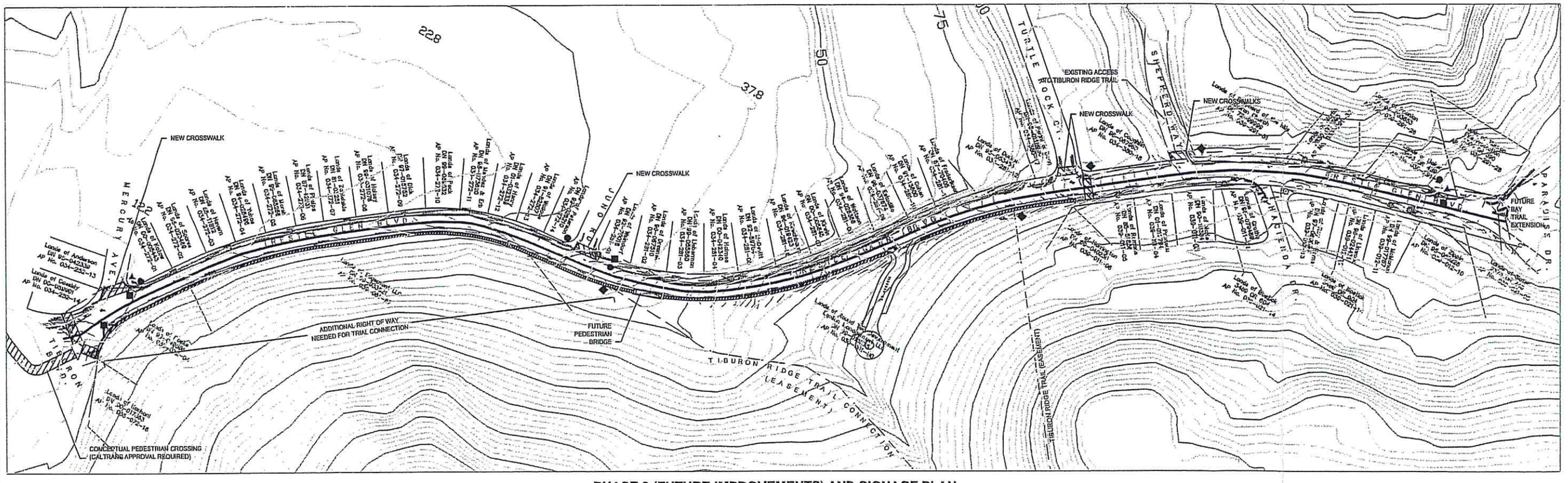
The preliminary engineering design for the Preferred Project will utilize retaining walls on the south side of the road in some areas of hillside toe slope cut, where a cut bank is necessary for road widening in potentially unstable highly weathered rock, soil, or colluvial materials. The majority of the wall would be 2 ft. or less in height on the south side. The final design may require the construction of short wall segments of up to 4 feet in height.

In some areas, the hillside is more stable (competent bedrock is exposed) and the existing cut bank appears to be standing at a 1.5H:1V angle. The cut bank can be extended back into the slope in these areas at a similar angle, without the use of retaining wall structures. A two-foot minimum earthen shoulder should be maintained in these areas to prevent slope ravel and slough from falling on the paved bikeway travel section.

East of Juno Road, an existing short wood retaining wall that forms the northern edge of the roadway is partially failing. The road shoulder and roadway embankment is supported by a 2"x12" treated wood retaining wall (12" to 18" in height) with 6"x6" posts at 4 foot spacing in this area. The preferred plan has the roadway shifted 5 feet to the south with a 5 foot wide pedestrian path replacing the removed portion of the roadway. The path would be set between 4" and 12" below road elevation. A concrete curb plus retaining wall would be provided to channel road runoff and support the north edge of roadway.

TRESTLE GLEN BIKEWAY STUDY

TIBURON, CALIFORNIA



PHASE 2 (FUTURE IMPROVEMENTS) AND SIGNAGE PLAN

SCALE : 1" = 100'

LEGEND

- ▲ BAY TRAIL SIGN
- ● "PEDESTRIANS ONLY" SIGN (ADJACENT TO PEDESTRIAN PATH)
- ■ "BICYCLES ONLY" SIGN
- ◆ TIBURON RIDGE TRAIL DIRECTIONAL SIGN
- FUTURE PEDESTRIAN PATH AT TOP OF BANK (ADDITIONAL RIGHT OF WAY MAY BE NEEDED)
- TIBURON RIDGE TRAIL RIGHT OF WAY EASEMENT
- NEW CROSS WALK

NOTE: BICYCLE LANES TO BE PAINTED FOR BYCYCLE USE ONLY

TRESTLE GLEN BIKEWAY STUDY
TOWN OF TIBURON
1505 TIBURON BLVD.
TIBURON, CA 94020

QUESTA Civil Environmental & Water Resources

P.O. Box 70351, 1220 Brickyard Cove Road, Point Richmond, CA 94807

Shl:	Rev:	Date:	By:	Description:	Appr'd:
1	1	12-17-02	L.I.	Issue for review	N.H.
1	1	03-31-03	C.H.	Issue for review	

Design: M.H.
Drawn: L.I./C.H.H.
Checked: J.P.
Approved: S.T.

PHASE II FUTURE IMPROVEMENTS AND SIGNAGE PLAN

Size: D | Dwg. No.: 22060 01 | Rev.: 0
Scale: 1" = 100'
Date: 03/31/2003
FIGURE 7-1

The most cost effective south side embankment retaining wall would be constructed using a steel H-beam or soldier beam system set in reinforced concrete piers. The soldier beams would typically be placed at 6 foot spacing. Three inch (3") by twelve inch (12") pressure treated wood lagging would form the face of the wall. In areas where the wall is 2.5 feet or less, the steel soldier beams can be replaced with 6"x6" pressure treated fir posts. Posts should be placed a maximum of 4 feet apart in these areas, with a depth of at least 4 feet in the ground. The following table provides design guidance for the retaining wall:

Wall Height	Footing Depth	Pier/Footing Diameter	Soldier-Beam *	Lagging (PTF)
1-1.5 foot	3 ft.	12"	6"x6" ptf@ 5'o.c.	2"x12"
2-2.5 foot	4 ft	18"	6"x6" ptf@ 4'o.c	3"x12"
3 foot	6 ft	18"	w6x9 @ 8'o.c.	3"x12"
4 foot	8 ft	18"	w6x12 @ 7' o.c.	3"x12"
5 foot	12 ft	18"	w6x16 @ 6' o.c.	3"x12"
6 foot	15 ft	18"	w6x16 @ 6' o.c.	3"x12"

* w6x9, etc.= steel H-Beam, ptf= pressure treated fir o.c.= on-center

The preliminary design should be confirmed by a structural engineer during preparation of final plans and specifications.

7.3 Cut Slope Revegetation

The Preferred Project utilizes a combination of hillside cuts and short (1.5 to 2.5 feet) retaining wall construction to allow the roadway to be realigned to the south. Existing hillside cuts are standing at slopes of 1:1 to 2:1, and many have naturally revegetated with native and exotic shrubs. Although costs are less where hillslope grading is used (instead of retaining walls) there is a trade off with appearance. The use of extensive retaining walls may be considered out of character with the more rural appearance of Trestle Glen Boulevard but would allow the retention of more of the existing upper slope shrub vegetation. Hillside cuts will result in the temporary loss of the shrub cover along the road embankment. However a program of native shrub revegetation (using native coyote bush, blue blossom ceanothus, elderberry and other species) is included in the Cost Estimate. Typically the revegetation program would require 3 to 5 years to return to a similar density and appearance to the existing condition. The final design can be modified to reduce the amount of retaining wall and increase the amount of hillside cut slope, if desired. Some minor additional right-of-way may be needed in a few areas for hillside cut slope preparation.

7.4 Boardwalk Structure

The preliminary design option (including Option 3A in Segment 1) included construction of a free-standing boardwalk atop the open concrete box drainage ditch between Mercury Avenue and Juno Road, a distance of approximately 1000 lineal feet. This would provide a pedestrian travel way separated from the adjacent bicycle pathway in this area.

The preliminary structural analysis indicated that the wood boardwalk structure should not be attached to the concrete ditch because of the age and unknown construction and condition of this important structure, as well as the need to significantly elevate the structure above the ditch to transition to adjacent streets. At the recommendation of the Structural Engineer, the preliminary design includes a combined approach, proposing construction of a boardwalk for the first 100 to 200 feet east of Mercury Avenue, in the most constricted area where cuts can be minimized along the south side of Trestle Glen Boulevard. The rest of this segment would be a combination of cut slopes along the south side of Trestle Glen Boulevard, as well as a retaining wall/separated path on the north side of the road. The boardwalk would be founded on 4"x4" wood posts placed outside of the concrete wall of the ditch at spacing of 6 feet. The decking of the boardwalk would be constructed using a composite plastic lumber material (i.e. Trex or equivalent). A safety or hand rail would need to be provided along the northern side of the ditch because of the vertical drop off.

7.5 Road Resurfacing and Repair

The Preliminary Plans and Cost Estimate include the option of resurfacing Trestle Glen Boulevard by grinding to prepare the surface, and paving with 2" of asphalt concrete. The road surface is currently in fair to good condition and does not presently need resurfacing, so the repaving would proceed ahead of any maintenance requirement, (presuming the work is completed in the next year or two), but could be done associated with restriping and widening for bike lane construction. The north side of Trestle Glen Boulevard is partially failing along a fill slope between Juno Road and Turtle Rock Court where it is supported by a 1-foot wood retaining wall. This structure has an undetermined but finite life before reconstruction is required. The retaining wall would be rebuilt (the Plans have the road alignment shifted to the south) to accommodate the new pedestrian path that would be constructed on the north road embankment. The centerline and bikeway striping would also be redone.

7.6 Road Drainage

The Preferred Project includes filling an existing shallow roadside ditch along the south side of Trestle Glen Boulevard to bring it up to grade with the roadway. Some minor hillslope cut, and in places a 1-2 foot retaining wall would also be constructed on the south side to allow the road to be shifted to the south, making use of the ditch area and hillside cut area for the new bike lane. The constructed at-grade 4-foot bike lane would be striped and signed with pavement markings.

Currently road drainage into the ditch is intercepted at elevated drop inlet structures that deliver stormwater to a subsurface drainpipe where it is conveyed to the unnamed drainage at Juno Road. It does not appear that the original subsurface concrete pipe storm drainage system was designed for vehicular traffic loads.

The Preferred Project would reconstruct the existing drainage system, relocating it 1.5 feet to the south of the new edge of road. Typical costs for installation of the storm drain system are about $55.00 per lineal foot, including pipe, trenching, and backfill. Costs for installation of grated drop inlets are on the order of $2,000.00 each.

7.7 Decomposed Granite Pedestrian Pathway

A stabilized decomposed granite pathway would be used for the trail surface for most of the pedestrian pathway. The pathway would consist of 2" of compacted d.g. (Felton gold) that has been stabilized with an organic compound such as Terrapave (derived from pine tree resin). The decomposed granite would be applied over 4" of compacted aggregate base (AB). Both the d.g. and AB should be compacted to 90% relative compaction.

7.8 Undergrounding of Utilities

The preferred project involves construction of a cantilevered pedestrian boardwalk along the north road bank slope beginning at Mercury Avenue and extending 100 to 200 feet east toward Juno Road. The roadway would be shifted to the south along the remainder of the segment in this area (to Turtle Rock Court), making use of the existing north side road shoulder and outer part of the travel lane.

Overhead utilities are currently located on 16 joint use poles along the north side of Trestle Glen Boulevard, between Tiburon Boulevard and Paradise Drive, a distance of approximately 3,200 feet. In some sections between Mercury Avenue and Juno Road there is limited available existing right-of-way to move the utility poles out of the alignment of the pedestrian path. Although the boardwalk could conceivably be narrowed to 3 feet in some areas, skirting around the poles, or the poles potentially moved to an acquired right-of-way to the north along the edge of the adjacent residential property line, or immediately adjacent to the concrete ditch, the preferred option would be to underground all of the utilities along Trestle Glen Boulevard Undergrounding of the utilities along Trestle Glen Boulevard is encouraged by Policy C-8 of the Circulation Element of the Town's General Plan.

One option would be to initially underground only the first segment, from Mercury Avenue. to Juno Road, a distance of approximately 1,000 lineal feet. Because of the high costs of undergrounding, ($250.00 to $300.00 per lineal foot) the remainder of the utility poles along Trestle Glen Boulevard between Juno Road and Paradise Drive could be deferred to a later period, if the Town is unable to fund the entire undergrounding project associated with the pedestrian path/bikeway construction. However, phasing the undergrounding project may add an additional 20 to 25% to overall project costs, because of additional costs of mobilization, design, and the efficiency of construction of a larger undergrounding project. On the other hand, the Town may also decide to do the utility undergrounding concurrently with the road and bikeway project, because of the desire not to inconvenience Trestle Glen neighborhood residents a second time in the next few years, which would occur if the undergrounding were constructed as a separate project.

The California Public Utilities Commission's (CPUC) Rule 20 sets policies and procedures for the conversion of overhead power lines and other equipment to underground facilities. Rule 20 also determines the level of ratepayer and/or community funding for different undergrounding arrangements. Under Rule 20, undergrounding projects are financed by utility rate money, combined rate funds and local tax proceeds, or other public or private funds, depending on whether Rule 20A, Rule 20B, or Rule 20C provisions apply. The actual Rule

20 tariff, as approved by the California Public Utilities Commission, can be viewed at following URL: www.ci.berkeley.ca.us/PW/Utility/rule20/html.

Rule 20A. Rule 20A projects are paid for by all PG&E ratepayers, not just those who live in locations where aboveground utilities will be undergrounded. The Town of Tiburon selects and prioritizes Rule 20A funded projects, using a process that includes public participation. The Town has previously decided that Trestle Glen Boulevard is a high priority for undergrounding, and it is listed as such in the General Plan. However, currently Rule 20A funding available to the Town has not been allocated to the Trestle Glen Boulevard area.

To qualify for full Rule 20A funding through utility rate proceeds, projects must produce a benefit to the general public, not just customers in the affected area, by satisfying one or more of the following criteria:

- The location has an unusually heavy concentration of overhead facilities.
- The location is heavily traveled.
- The location qualifies as an arterial or major collector road in a local government's General Plan.
- The overhead equipment must be located within or pass through a civic, recreational or scenic area.

There is some flexibility in designating which streets are considered major arterials and collectors, and in classifying an area as a scenic or recreational area. Trestle Glen Blvd, would likely qualify for Rule 20A funds, since it meets several of the above criteria.

Using CPUC formulas, PG&E allocates rate funds to communities for undergrounding based on previous allocations, the ratio of customers served by overhead facilities to all the customers in the community, and the fraction that customers in the community represent of all PG&E customers.

Local governments use these formulas to project allocations that allow them to prioritize projects and develop project schedules. Because funds are limited, local governments typically must wait and accumulate their allocations before starting an undergrounding project.

Currently the Town receives about $55,000 annually for Rule 20A use. Nearly all Rule 20A funds currently available to the Town of Tiburon have been previously allocated to other projects within the Town, but the Town could reprioritize projects, or borrow against future anticipated Rule 20A funds to partially or fully fund an undergrounding project along Trestle Glen Boulevard.

Rule 20B. If a project is not eligible for Rule 20A or if a local government cannot or chooses not to rely on the Rule 20A allocation process, Rule 20B allows rate funds to subsidize an undergrounding project, provided the project is at least 600 feet long and covers at least one block. Rule 20B projects must be sited along public streets or roads or other locations

mutually agreed to by the applicant organization and the utility. (The Mercury Avenue. to Juno Road high priority segment would qualify).

The subsidy includes an amount equal to the cost of an equivalent overhead electric system, usually about 10-15% of the total undergrounding project cost, plus the cost of removing the existing overhead system, which can be 5-10% of the total cost. The remaining cost is funded by local governments or through neighborhood or citywide special assessment districts, where the benefit accrues to the city as a whole, as it does in this case.

Rule 20C. Rule 20C enables property owners to pay for undergrounding electric lines and equipment if neither Rule 20A nor 20B applies. Rule 20 C is not applicable to the Trestle Glen Bikeway project. There are few individual service connections to the main line utility along Trestle Glen Boulevard

Recent Rule 20 changes allow up to five years of mortgaging, or "saving up," allocations levels by local governments, provided adequate utility capital and personnel are available. The changes also allow local governments to use allocation levels as "seed money," a value that the local government can *borrow* against to perform initial engineering & design studies for Rule 20B projects. In the event the project is not approved within 2-1/2 years after planning stages are complete, the Town has 90 days to reimburse the seed money to PG&E for the planning and design costs.

Based on discussions with PG&E, the Trestle Glen Boulevard bikeway undergrounding project would qualify for funding under Rule 20B, and potentially under Rule 20A. Estimated costs for undergrounding, including joint utility trenching, and placement of electric and phone service lines in the trench would average about $300.00 per lineal foot.

If Rule 20B were used, costs would be about $260.00 per lineal foot, considering the subsidy or offset for demolition of existing utilities and the in-lieu credit for costs associated with moving poles and lines. The Mercury Avenue. to Juno Road segment (1,080 l.f.) would cost about $280,800.00 and the entire project between Tiburon Boulevard and Paradise Drive (3,200 l.f.) would cost approximately $832,000.00.

8. PRELIMINARY PLANS AND SECTIONS

Preliminary Plans and typical cross sections are provided in **Appendix A (Sheets 1-8).** Additional engineering design will be required to confirm the preliminary engineering design and convert the typical sections into details that fit constrained sections, including more detailing of boardwalk and retaining wall sections, transitions at intersections and storm drain improvements.

9. PRELIMINARY COST ESTIMATE

Based on the preferred trail route recommended by the BPAC, preliminary trail costs have been developed. These are Planning Level costs that will need to be refined as the project proceeds through final design.

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT COST	ENG. EST AMOUNT
1	MOBILIZATION	LS	LS	25,000.00	25,000.00
2	TRAFFIC CONTROL	LS	LS	10,000.00	10,000.00
3	DEMOLITION INC. (E)AC PAVING & BASE, ASPHALT CURB (530 LF)	LS	LS	10,000.00	10,000.00
5	EXCAVATION AND GRADING-CUTSLOPE	2,000	CY	12.00	24,000.00
6	CONCRETE CURB	1,000	LF	17.00	17,000.00
7	1 FT RETAINING WALL*	840	LF	90.00	75,600.00
8	2 FT. RETAINING WALL*	1,200	LF	140.00	168,000.00
9	3 FT. RETAINING WALL*	770	LF	200.00	154,000.00
10	RELOCATE 24" STORMDRAIN, SLIVER FILL	3,060	LF	60.00	183,600.00
11	CROSS DRAIN/DROP INLET	8	EA	2,000.00	16,000.00
12	2" AC PAVING OVER 4"AB (SLIVER WIDEN)	12,000	SF	2.50	30,000.00
13	REPAIR & RESEAL ROADWAY SURFACE	JOB	LS	12,000.00	12,000.00
14	PAVEMENT STRIPING & CROSSWALKS	LS	LS	16,000.00	16,000.00
15	INSTALL SIGNS	14	EA	175.00	2,450.00
16	4 FT DG PED PATH (STABILIZED)	2,700	LF	35.00	94,500.00
17	RELOCATE "TURTLE ROCK" SIGN	2	EA	4,000.00	8,000.00
18	LANDSCAPE STRIP-3 FT WIDE	2,000	SF	5.00	10,000.00
19	TREE REMOVAL/DEMOLITION	3	EA	500.00	1,500.00
20	EROSION CONTROL/REVEG., CUT BANK	20,000	SF	.60	12,000.00
21	5 FT. BOARDWALK STRUCTURE & HANDRAIL	200	LF	300.00	60,000.00
22	MOVE GUY POLE	2	EA	NIC	NIC
23	RELOCATE POWER POLE	11	EA	NIC	NIC
24	RELOCATE UTILITY BOX	1	EA	NIC	NIC
				SUBTOTAL	$929,650.00
				10% FINAL DESIGN-INSPECTION FEES	$92,965.00
				20% CONSTRUCTION CONTINGENCY	$185,930.00
				TOTAL COST ESTIMATE	$1,208,545.00

OPTIONS/ENHANCEMENTS					
A.	GRIND (E) PAVEMENT and 2" AC OVERLAY	93,000	SF	1.10	102,300.00
B.	UNDERGROUND UTILITIES (MERCURY-JUNO)	1,080	LF	260	280,800.00
C.	UNDERGROUND UTILITIES (REMAINDER OF SEGMENT)	2,100	LF	260	546,000.00
D.	CROSSWALK SIGNAL SYSTEM @ TURTLE ROCK COURT	1	EA	20,000.00	20,000.00
				SUBTOTAL PHASE I WORK	949,100.00
				TOTAL OPTIONS/ENHANCEMENTS	949,100.00

PHASE 2 IMPROVEMENTS:					
2-1	50 FT X 6 FT STEEL PREFAB BRIDGE	1	EA	50,000.00	50,000.00
2-2	5 FT GRADED D.G. PATH	2,100	LF	40.00	84,000.00
2-3	SIGNAGE & BENCHES	LS	LS	5,000.00	5,000.00
				SUBTOTOAL PHASE 2 WORK	139,000.00
				20% ENGINEERING DESIGN/PERMITTING FEES	27,800.00
				20% CONSTRUCTION CONTINGENCY	27,800.00
				TOTAL PHASE 2 IMPROVEMENTS	194,600.00

**Retaining wall cost assumes wood wall. Cost for masonry or rock wall option could increase by 50%. See details on Sheet 8 (3 vs 3A, 4 vs 4A) for design options.*

10. REFERENCES

Alta Transportation Consulting. Marin County Bicycle and Pedestrian Master Plan, June 2000.

California Division of Mines and Geology http://www.consrv.ca.gov

C*alifornia Highway Design Manual,* California Department of Transportation, 1995. http://www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm

Guide for the Development of Bicycle Facilities, American Association of State Highway and Transportation Officials, 1999. http://www.wsdot.wa.gov/TA/PAandI/Bicycle/BikeBook.pdf

Kinley-Horn and Associates,. *TETAP Town of Tiburon --Tiburon Boulevard (SR131) Traffic Operations Study,* June, 2001.

Nichols-Berman Environmental Planning. *Tiburon Court Residential Development Final Mitigated Negative Declaration,* July 2001.

Town of Tiburon General Plan.

Town of Tiburon Bicycle and Pedestrian Master Plan

United States Geological Survey, Earthquake Information (http://quake.wr.usgs.gov/research/seismology/wg99/index.html).

Appendix A

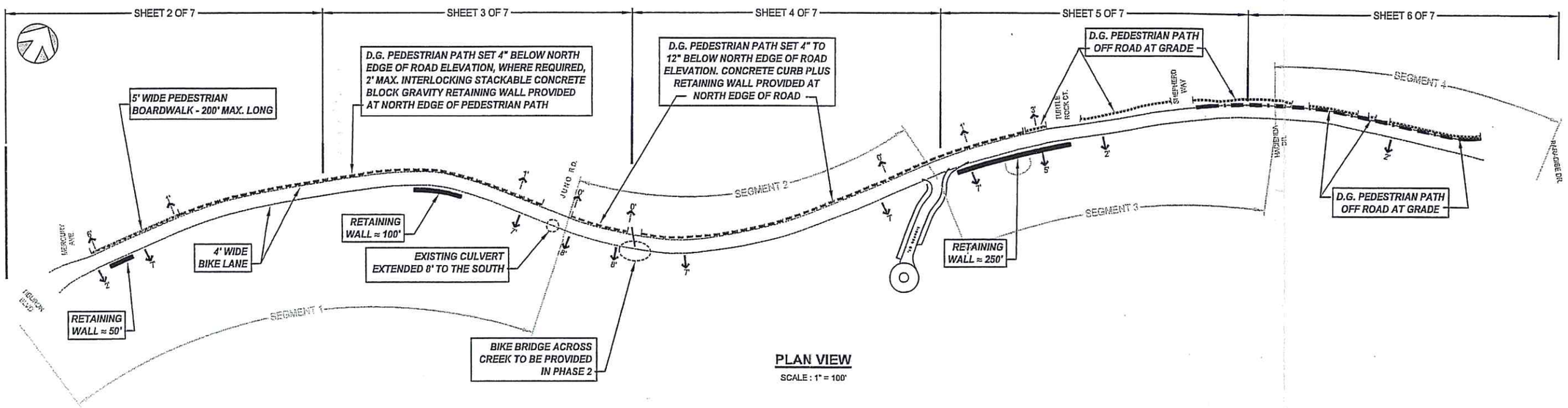
Project Preliminary Plans

TRESTLE GLEN PROJECT

TIBURON, CALIFORNIA

LEGEND:

- BOARDWALK
- D.G. PEDESTRIAN PATH
- BIKE LANE
- 2' ↑ — NORTH EDGE OF NEW PEDESTRIAN PATH TO BE 2' NORTH OF EXISTING PAVING. EXISTING PAVING TO BE REMOVED AS REQUIRED.
- 6' ↓ — NEW SOUTH EDGE OF PAVING TO BE 6' SOUTH OF EXISTING PAVING. STORM DRAINAGE SYSTEM TO BE RELOCATED TO 1.5' SOUTH OF NEW EDGE OF PAVING. REGRADE EMBANKMENT ON SOUTH SIDE, MAINTAINING MAXIMUM SLOPE OF 2:1. WHERE 2:1 SLOPE CANNOT BE ACHIEVED, GRADE LOCALLY TO MAXIMUM SLOPE OF 1:1 WITH SOIL STABILIZATION PROVIDED AS REQUIRED. AS AN ALTERNATIVE, OR WHERE 1:1 SLOPE CANNOT BE ACHIEVED, PROVIDE RETAINING WALL PER DETAIL 8.
- **SOUTHSIDE RETAINING WALL:** 6' MAXIMUM HEIGHT SOLDIER PILE RETAINING WALL OR 1H:1V MAXIMUM REGRADED SLOPE.

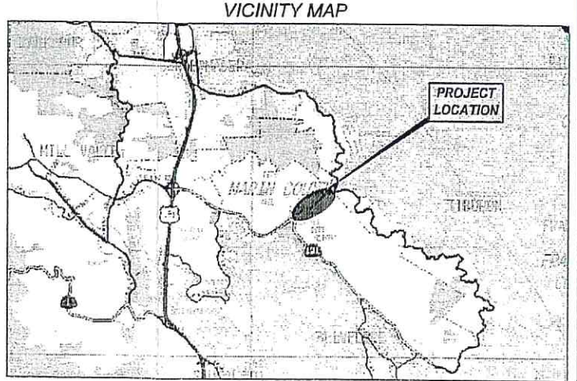


PLAN VIEW

SCALE : 1" = 100'

SHEET INDEX:

VICINITY MAP



TRESTLE GLEN BIKEWAY STUDY

TOWN OF TIBURON, CALIFORNIA

QUESTA — Civil Environmental & Water Resources

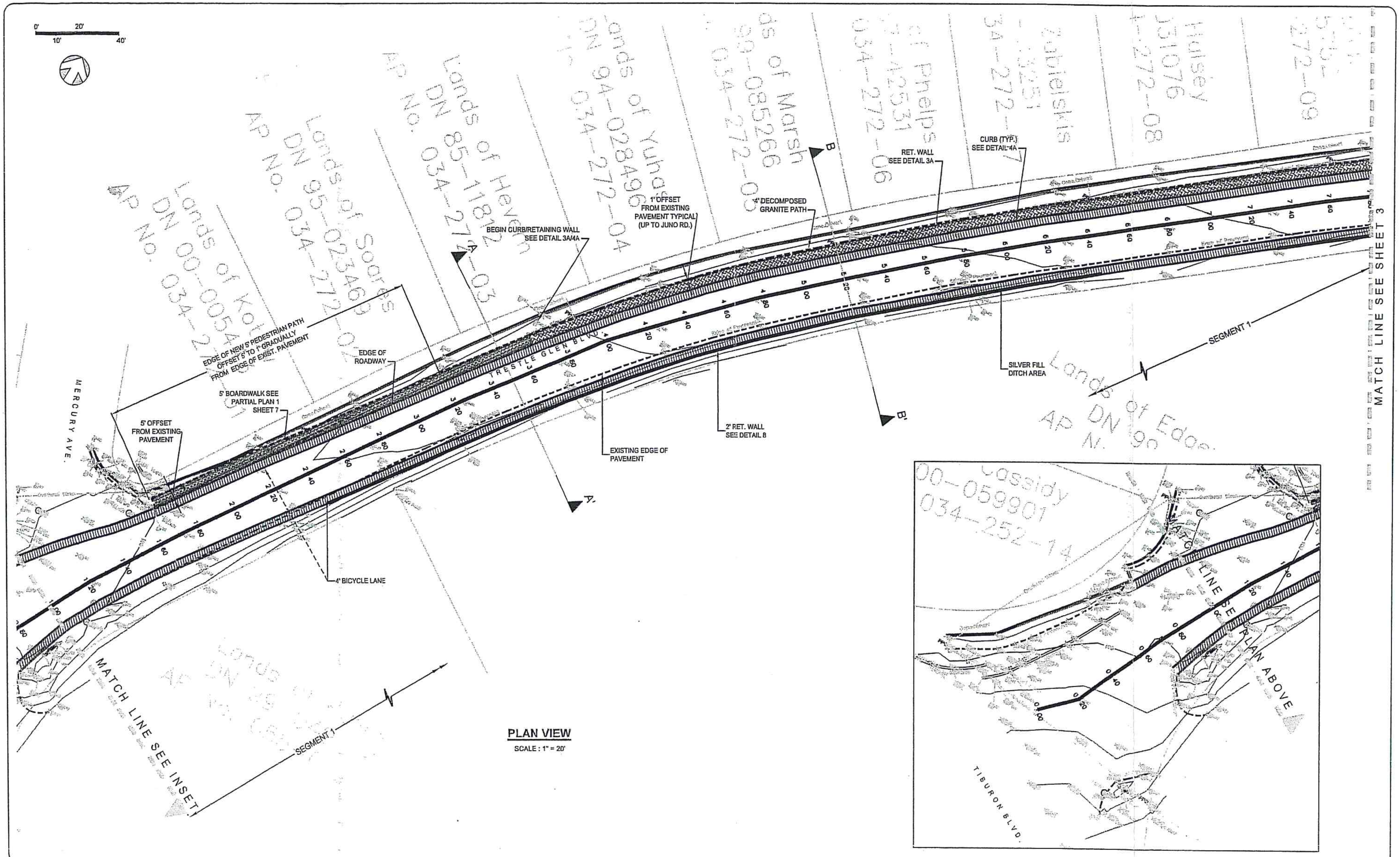
Sht.	Rev.	Date:	By:	Description:	App'd:
1	1	1-27-03	L.I.	Issue for review	S.T.
1	1	4-03-03	L.I.	Conceptual design	S.T.

Design: M.H.
Drawn: L.I.
Checked: J.P.
Approved: S.T.

COVER SHEET

TIBURON, CALIFORNIA

Size: D | Dwg. No.: 22060 01 | Rev.: 1
Scale: AS SHOWN
Date: 4 / 03 / 2003
Sheet: 1 OF 8



PLAN VIEW

SCALE : 1" = 20'

TRESTLE GLEN BIKEWAY STUDY

TOWN OF TIBURON, CALIFORNIA

QUESTA Civil Environmental & Water Resources

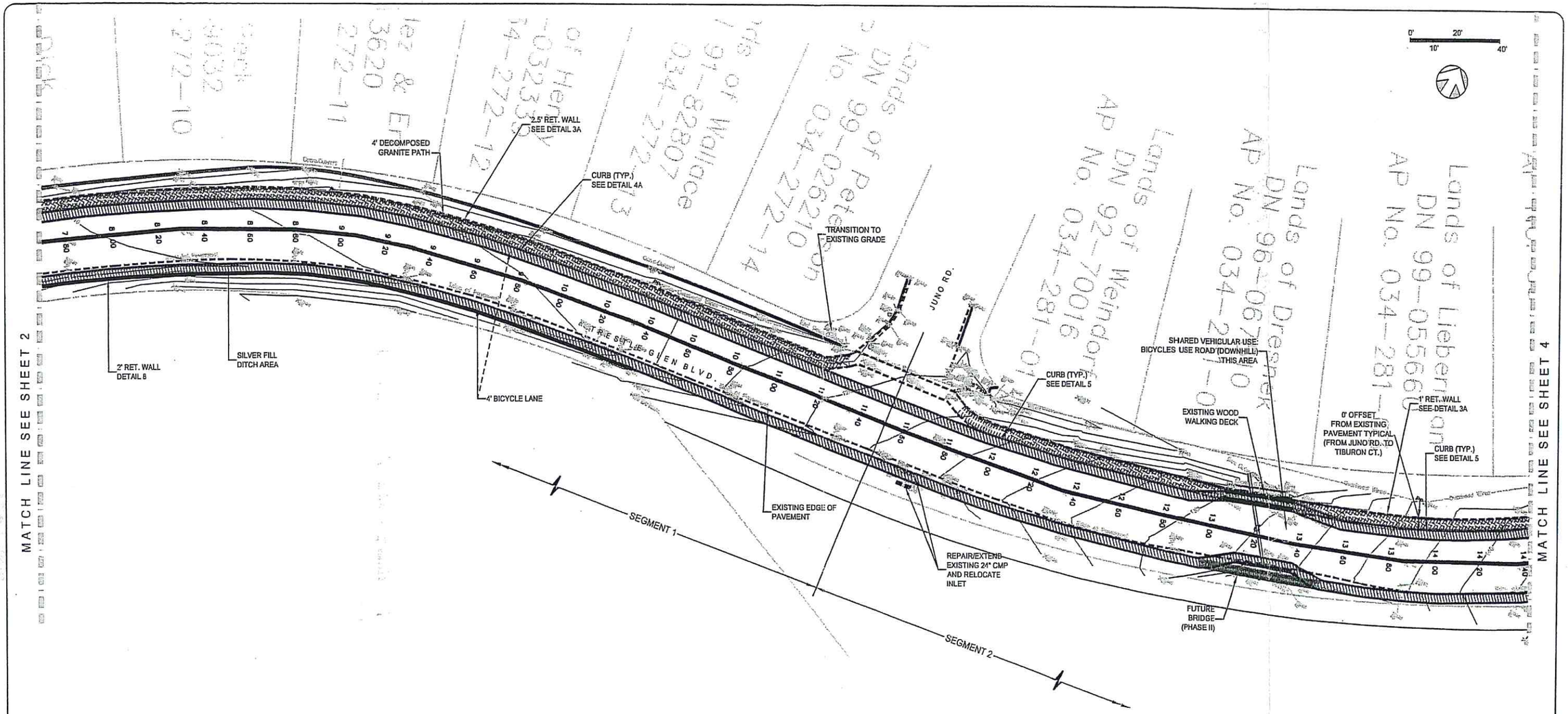
Sht:	Rev:	Date:	By:	Description:	App'd:
2	1	1-27-03	L.I.	Issue for review	S.T.
2	1	4-03-03	L.I.	Conceptual design	S.T.

Design:	M.H.
Drawn:	L.I.
Checked:	J.P.
Approved:	S.T.

SITE PLAN FROM STA. 0+00 TO 7+80

TIBURON, CALIFORNIA

Size	D
Dwg. No.	22060 02
Rev.	1
Scale:	AS SHOWN
Date:	4 / 03 / 2003
Sheet:	2 OF 8



PLAN VIEW

SCALE : 1" = 20'

TRESTLE GLEN BIKEWAY STUDY

TOWN OF TIBURON, CALIFORNIA

QUESTA Civil Environmental & Water Resources

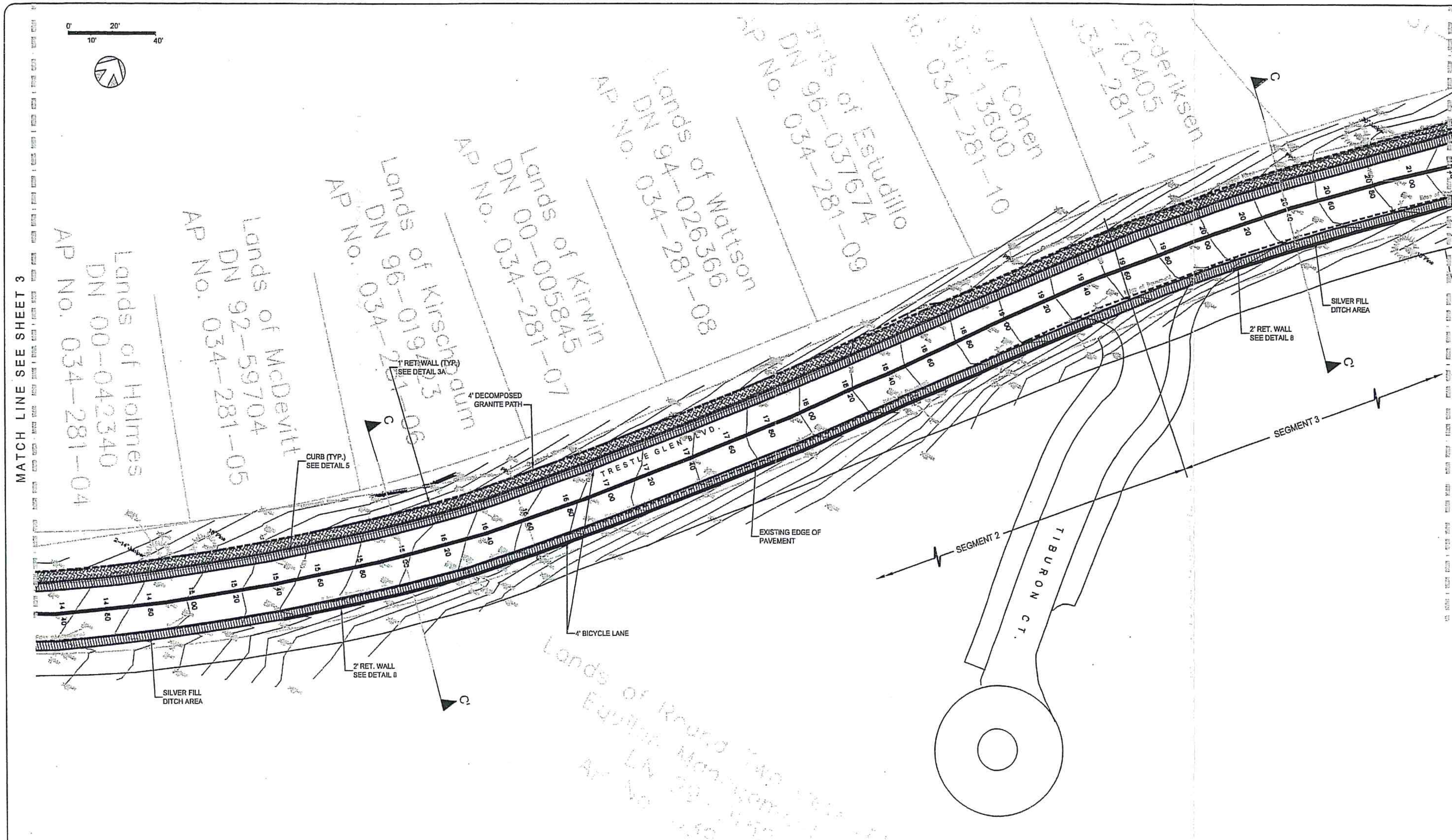
Sht.	Rev.	Date:	By:	Description:	Appr'd:
3	1	1-27-03	L.I.	Issue for review	S.T.
3	1	4-3-03	L.I.	Conceptual design	S.T.

Design: M.H.
Drawn: L.I.
Checked: J.P.
Approved: S.T.

SITE PLAN FROM STA. 7+80 TO 14+30

TIBURON, CALIFORNIA

Size: D | Dwg. No. 22060 03 | Rev. 1
Scale: AS SHOWN
Date: 4 / 03 / 2003
Sheet: 3 or 8



PLAN VIEW

SCALE : 1" = 20'

TRESTLE GLENN BIKEWAY STUDY	QUESTA Civil Environmental & Water Resources	
TOWN OF TIBURON, CALIFORNIA		

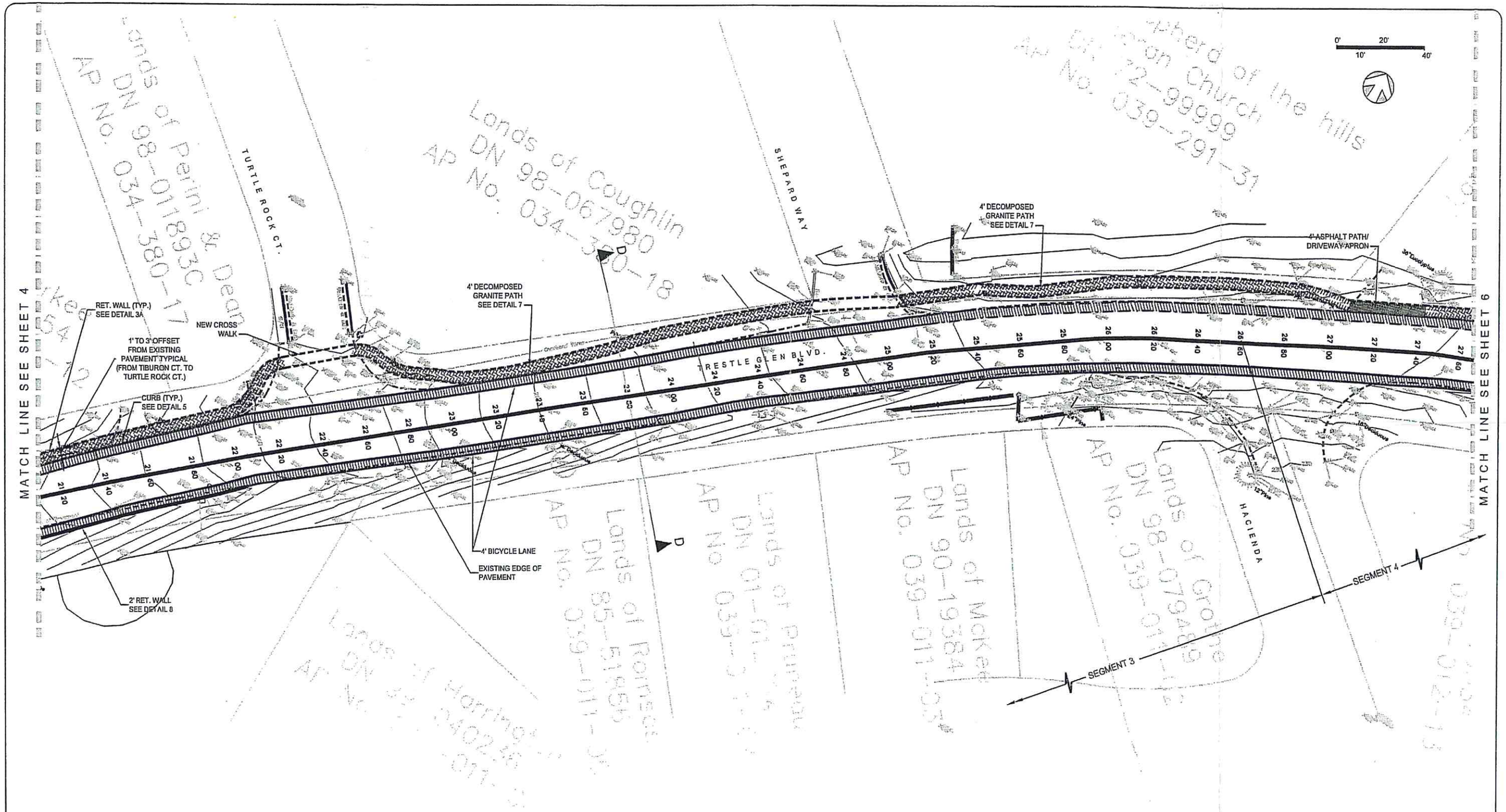
Sht	Rev	Date	By	Description	App'd
4	1	1-27-03	L.I.	Issued for review	S.T.
4	1	4-03-03	L.I.	Conceptual design	S.T.

Design	M.H.
Drawn	L.I.
Checked	J.P.
Approved	S.T.

SITE PLAN FROM 14+30 TO 21+20

TIBURON, CALIFORNIA

Size	D
Dwg. No.	22060 04
Rev	1
Scale	AS SHOWN
Date	4 / 03 / 2003
Sheet	4 OF 8



PLAN VIEW

SCALE : 1" = 20'

TRESTLE GLEN BIKEWAY STUDY

TOWN OF TIBURON, CALIFORNIA

QUESTA Civil Environmental & Water Resources

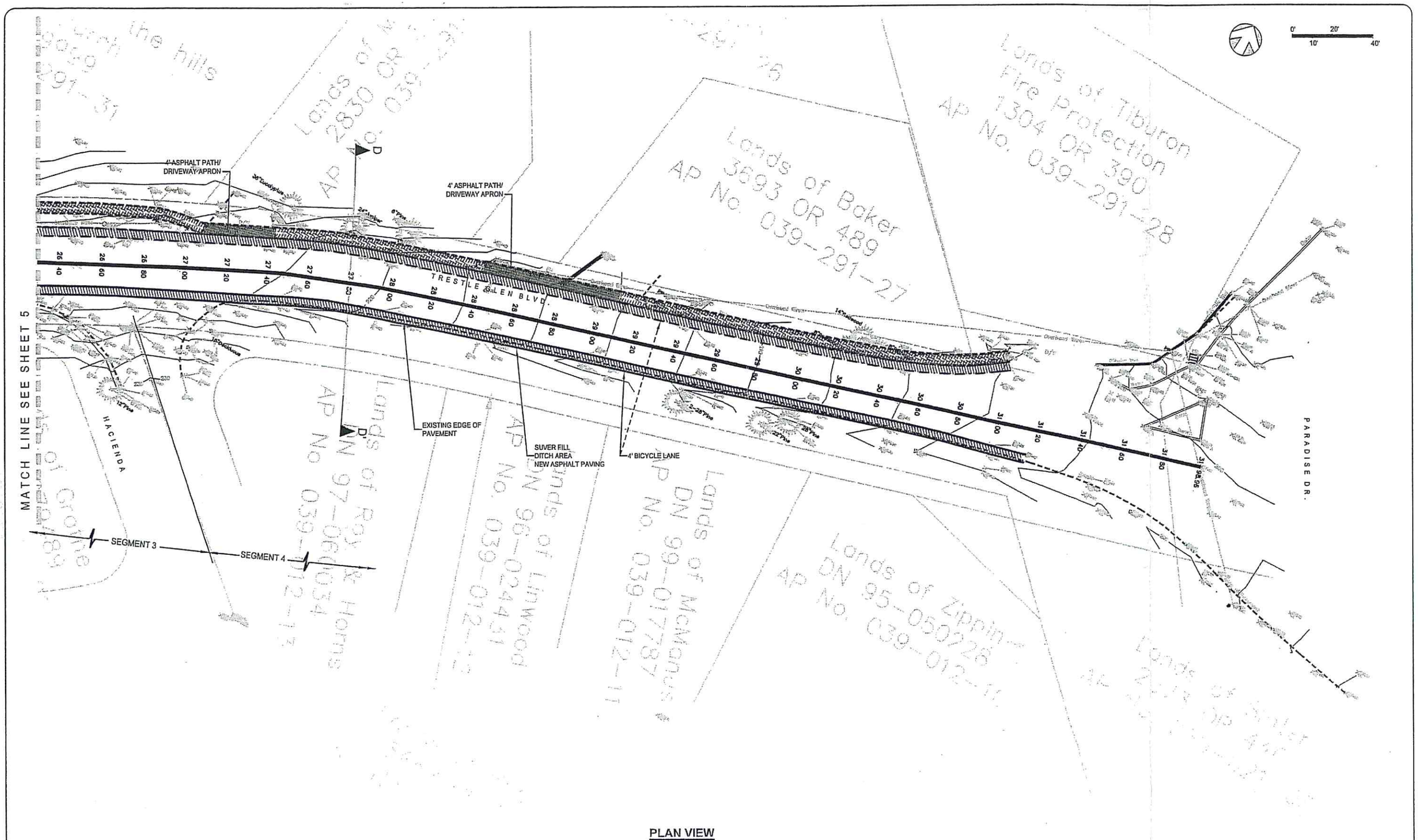
Sht:	Rev:	Date:	By:	Description:	App'd:
5	1	1-27-03	L.I.	Issue for review	S.T.
5	1	4-03-03	L.I.	Conceptual design	S.T.

Design: M.H.
Drawn: L.I.
Checked: J.P.
Approved: S.T.

SITE PLAN FROM 21+20 TO 27+60

TIBURON, CALIFORNIA

Size: D | Dwg. No: 22060 05 | Rev: 1
Scale: AS SHOWN
Date: 4 / 03 / 2003
Sheet: 5 OF 8



PLAN VIEW

SCALE : 1" = 20'

TRESTLE GLEN BIKEWAY STUDY

TOWN OF TIBURON, CALIFORNIA

QUESTA Civil Environmental & Water Resources

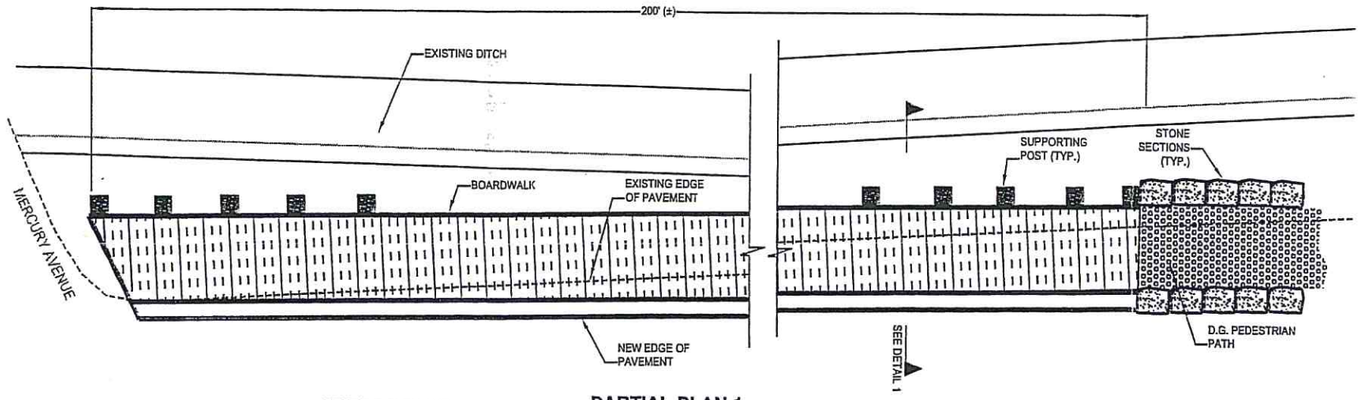
Sht.	Rev.	Date.	By.	Description:	Appv'd.
6	1	1-27-03	L.I.	Issue for review	S.T.
6	1	4-03-03	L.I.	Conceptual design	S.T.

Design: M.H.
Drawn: L.I.
Checked: J.P.
Approved: S.T.

SITE PLAN FROM 26+40 TO 32+17

TIBURON, CALIFORNIA

Size: D | Dwg. No.: 22060 06 | Rev.: 1
Scale: AS SHOWN
Date: 4 / 03 / 2003
Sheet: 6 OF 8

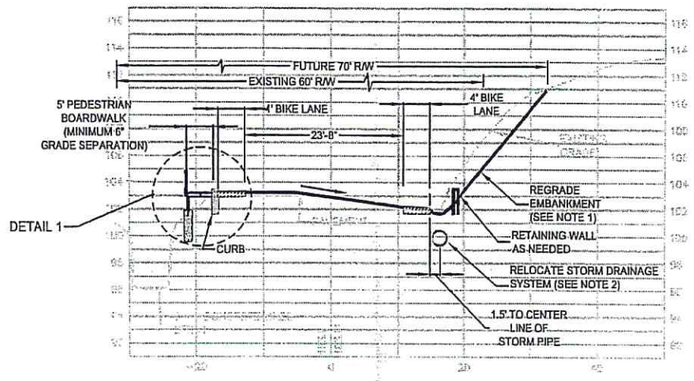


PARTIAL PLAN 1

NOT TO SCALE

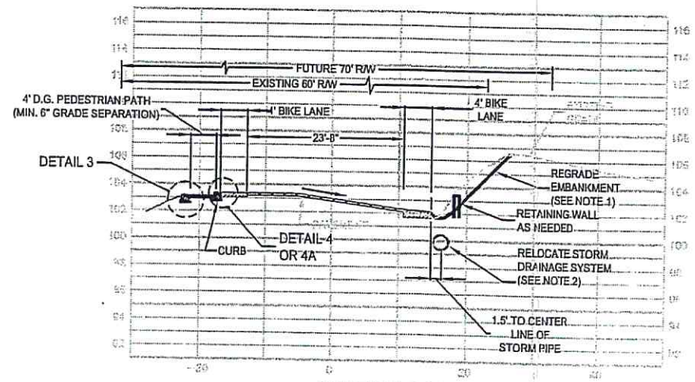
NOTES:

1. REGRADE EMBANKMENT ON SOUTH SIDE, MAINTAINING MAXIMUM SLOPE OF 2:1. WHERE 2:1 SLOPE CANNOT BE ACHIEVED, GRADE LOCALLY TO MAXIMUM SLOPE OF 1:1 WITH SOIL STABILIZATION PROVIDED AS REQUIRED. WHERE 1:1 SLOPE CANNOT BE ACHIEVED, PROVIDE RETAINING WALL PER DETAIL 8.
2. RELOCATE EXISTING STORM DRAINAGE DROP INLETS AND PIPE ON SOUTH SIDE OF ROADWAY. SUCH THAT PIPE CENTERLINE IS 1'-6" SOUTH OF ROADWAY EDGE.
3. RELOCATE 8 POWER POLES TO CLEAR NEW PEDESTRIAN PATH.



SECTION A-A'

NOT TO SCALE



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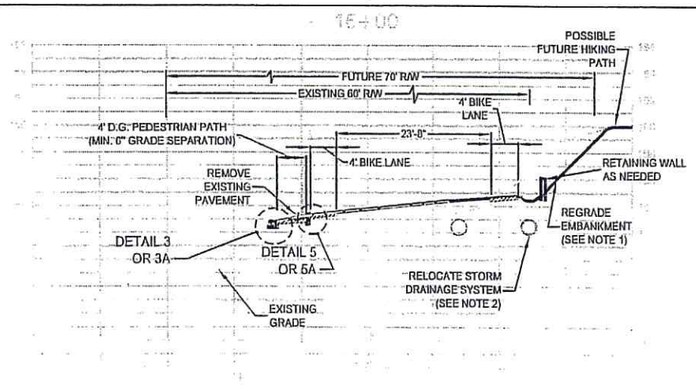

SECTION C-C'

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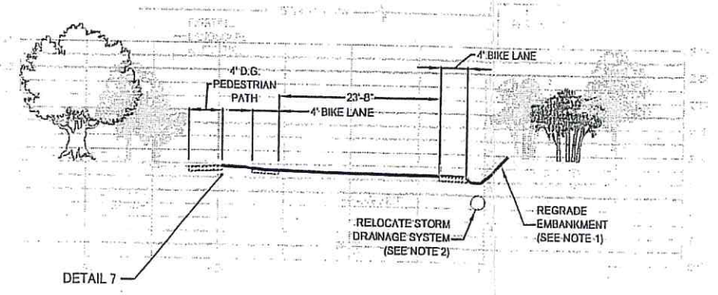


SECTION D-D'

NOT TO SCALE

TRESTLE GLEN BIKEWAY STUDY

TOWN OF TIBURON, CALIFORNIA

QUESTA Civil Environmental & Water Resources

Std.	Rev.	Date:	By:	Description:	Appr'd:
7	1	1-27-03	L.I.	Issue for review	S.T.
7	1	4-03-03	L.I.	Conceptual design	S.T.

Design: M.H.
Drawn: L.I.
Checked: J.P
Approved: S.T.

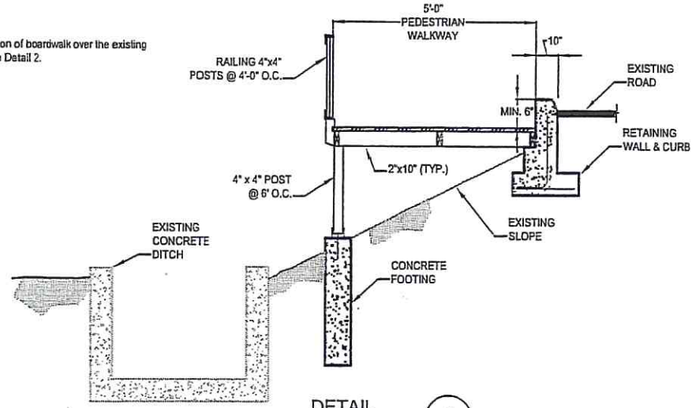
SECTIONS & PARTIAL PLAN

TIBURON, CALIFORNIA

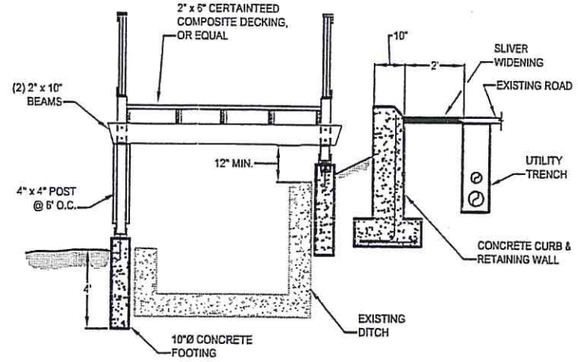
Size: D | Dwg. No.: 22060 07 | Rev.: 1
Scale: AS SHOWN
Date: 4 / 03 / 2003
Sheet: 7 OF 8

NOTE:

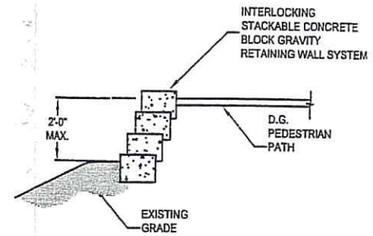
For alternate location of boardwalk over the existing concrete ditch, see Detail 2.
(Option 3A)



DETAIL (NOT TO SCALE) 1



DETAIL (NOT TO SCALE) 2 (Option 3A design alternatives - not included as preferred project)

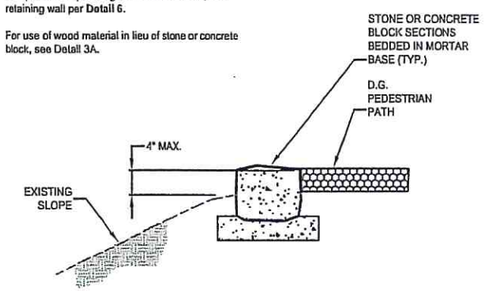


DETAIL (NOT TO SCALE) 6 (Refer to detail 3)

NOTE:

Where difference in elevation between existing slope and pedestrian path is greater than 4 inches, use retaining wall per Detail 6.

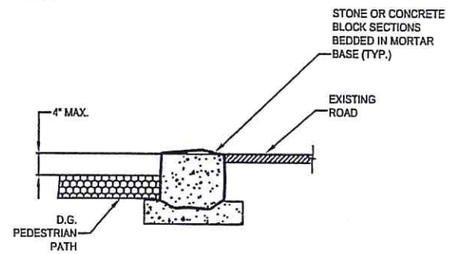
For use of wood material in lieu of stone or concrete block, see Detail 3A.



DETAIL (NOT TO SCALE) 3

NOTE:

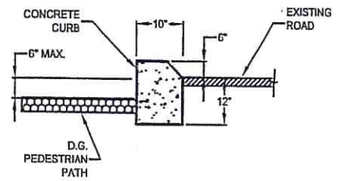
For use of wood material in lieu of stone or concrete block, see Detail 4A.



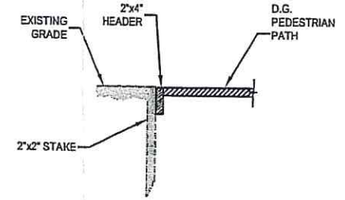
DETAIL (NOT TO SCALE) 4

NOTE:

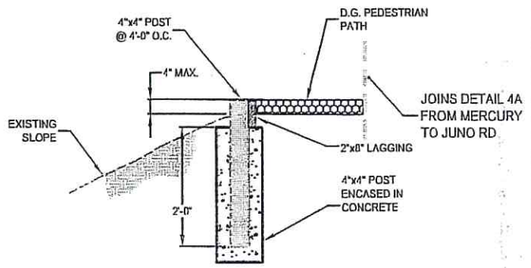
Where difference in elevation between pedestrian path and road is greater than 6 inches, use retaining wall per Detail 5A.



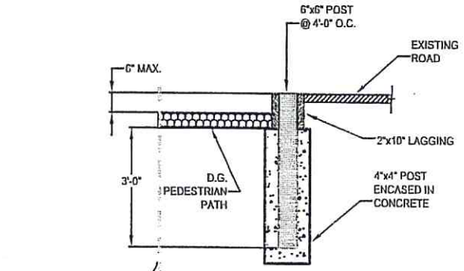
DETAIL (NOT TO SCALE) 5



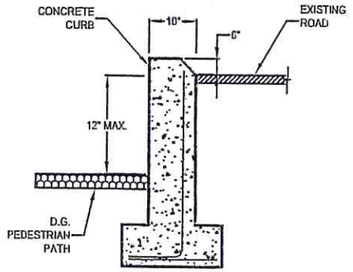
DETAIL (NOT TO SCALE) 7



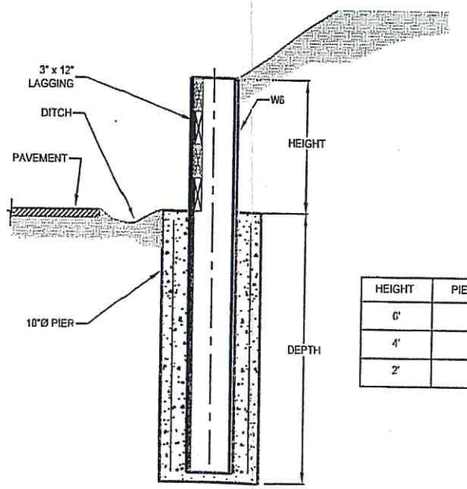
DETAIL (NOT TO SCALE) 3A



DETAIL (NOT TO SCALE) 4A



DETAIL (NOT TO SCALE) 5A



HEIGHT	PIER DEPTH	STEEL SECTION
6'	15'	W6x16
4'	8'	W6x12
2'	4'	W6x9

DETAIL (NOT TO SCALE) 8

TRESTLE GLEN BIKEWAY STUDY

TOWN OF TIBURON, CALIFORNIA

QUESTA Civil Environmental & Water Resources

Sht:	Rev:	Date:	By:	Description:	App'd:
II	1	1-27-03	L.I.	Issue for review	S.T.
II	2	4-03-03	L.I.	Conceptual design	S.T.

Design: M.H.
Drawn: L.I.
Checked: J.P.
Approved: S.T.

SECTIONS & DETAILS

TIBURON, CALIFORNIA

Size: D | Dwg. No: 22060 07 | Rev: 1
Scale: AS SHOWN
Date: 4 / 03 / 2003
Sheet: 8 of 8

Appendix B

Initial Study Checklist

INITIAL STUDY
ENVIRONMENTAL CHECKLIST

1. **PROJECT TITLE:** Trestle Glen Bikeway Study

2. **LEAD AGENCY NAME AND ADDRESS:** Town of Tiburon

3. **CONTACT PERSON AND PHONE NUMBER:**
Pat Echols, Director of Public Works/Town Engineer
Town of Tiburon
1505 Tiburon Boulevard
Tiburon, CA 94920
(415)435-7388

4. **PROJECT LOCATION:** Trestle Glen Boulevard, Tiburon Boulevard to Paradise Drive

5. **PROJECT SPONSOR'S NAME AND ADDRESS:**
Town of Tiburon
Pat Echols, Director of Public Works/Town Engineer
Town of Tiburon
1505 Tiburon Boulevard
Tiburon, CA 94920
(415)435-7388

6. **GENERAL PLAN DESIGNATION: Residential**
7. **ZONING:** R-1 Single Family Residential
RPD Residential Planned Development

8. **DESCRIPTION OF PROJECT:** The project is a planning/preliminary engineering design study to determine possible road surfacing, lane configurations, and infrastructure to create separate bicycle and pedestrian lanes where feasible on Trestle Glen Boulevard between Tiburon Boulevard and Paradise Drive. The study does not include lane reconfiguration at Tiburon Boulevard, which is a State Highway, or the Paradise Drive intersection, an unincorporated area of Marin County.

9. **SURROUNDING LAND USES AND SETTING:** The land adjacent to the project site is single family residential, and vacant (planned single family residential).

North: Single Family residential, church, fire station

South: Vacant, planned development, single family residential

East: Unincorporated residential

West: Blackie's Pasture open space

10. OTHER PUBLIC AGENCIES WHOSE REVIEW OR APPROVAL MAY BE REQUIRED:

Marin County Public Works Department, for connections to Paradise Drive
State of California, Caltrans, for connections to Tiburon Boulevard (State Highway)
Association of Bay Area Governments (ABAG) Bay Trail, for approval of planning/engineering study and trail alignment.

Permits may be needed from the California Department of Fish and Game, U.S. Army Corps of Engineers, and the San Francisco Regional Water Quality Control Board (Water Quality Certification), if a pedestrian bridge crossing is proposed across the unnamed creek east of Juno Road.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below (X) would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

X	Aesthetics		Hazards & Hazardous Materials	X	Public Services
	Agricultural Resources		Hydrology/Water Quality	X	Recreation
	Air Quality	X	Land Use/Planning	X	Transportation/Traffic
X	Biological Resources		Mineral Resources	X	Utilities/Service Systems
	Cultural Resources		Noise		Mandatory Findings of Significance
X	Geology/Soils		Population/Housing		

DETERMINATION:

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	
I find that although the proposed project could have a significant effect on the environment,	

there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	
I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	
I find that the proposed project MAY have a "potential significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	
I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.	

Signature Date

Printed Name For

EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Potentially Significant Unless Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section 17, "Earlier Analysis," may be cross-referenced).

5) Earlier analysis may be used where, pursuant to the tiring, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (c) (3) (d). In this case, a brief discussion should identify the following:

   (a) Earlier Analysis Used. Identify and state where they are available for review.

   (b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   (c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were

incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g. general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The analysis of each issue should identify: (a) the significance criteria or threshold used to evaluate each question; and (b) the mitigation measure identified, if any, to reduce the impact to less than significance.

1. **AESTHETICS.** Would the project:				
a) Have a substantial adverse effect on a scenic vista?			X	
b) Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				X

Discussion:

1.a. The project involves creation of a 4 ft. wide pedestrian path and sliver road surfacing to create two bicycle lanes adjacent to the existing paved street. Portions of the adjacent hillslope may need to be re-graded, with a retaining wall adjacent to the street edge. Trail design elements should be designed to fit with the rural character of the street.

1.b. The project is not designated as a state scenic highway.

1.c. The preferred alternative will utilize a mid-slope trail on the north side of Trestle Glen to avoid visual impacts associated with an extensive retaining wall system. A proposed boardwalk constructed adjacent to the existing box culvert between Mercury Avenue and Juno Road may require minor tree and brush clearing. This area is currently screened from adjacent residences by a chain link fence with wood slats. The new deck structure may be visible in some areas to adjacent residences. Lattice screening, or increasing the height of the chain link fence to six feet is recommended to minimize views of the walkway if needed. The project is not anticipated to substantially degrade the existing visual character or quality of the site and its surroundings.

1.d. New lighting is not proposed as part of this project.

Mitigation Measure 1-1:

Any retaining walls, site furnishings or other structural elements needed to create the trail shall be constructed of materials such as unpainted wood, stone or earth-colored concrete, etc. and

designed to blend with the adjacent hill slopes to avoid visual impact. Where possible, retaining walls should be 3 ft. or less in height to avoid visual impacts.

Mitigation Measure 1-2:

Lattice and/or fencing shall be provided where necessary to screen views of the boardwalk/deck between Mercury and Juno from adjacent residences.

Mitigation Measure 1-3:

All tree and shrub thinning shall be done under the direction of a licensed arborist. The arborist may recommend additional screen plantings in select locations to be determined in the field.

2. **AGRICULTURE RESOURCES**: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project?

a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				X

Discussion:

2.a. The project does not involve any lands designated for agricultural use.

2.b. The project does not involve farmland or Williamson Act lands.

2.c. The project does not involve conversion of agricultural lands to non-agricultural use.

3. **AIR QUALITY:** Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?				X
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.				X
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?				X
d) Expose sensitive receptors to substantial pollutant concentrations?			X	
e) Create objectionable odors affecting a substantial number of people?			X	

Discussion:

3.a. The project does not conflict with implementation of an air quality plan.

3.b. The project does not violate an air quality standard or contribute substantially to an air quality violation.

~~3.d.~~3.c. The project will not cause a net increase of pollutants for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

3.d. Dust from construction, including installation of d.g. surfaces, may be noticeable from nearby residences, but not significant.

3.e. Odor from paving may be noticeable, but not significant.

4. **BIOLOGICAL RESOURCES**. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U. S. Fish and Wildlife Service?				X

b) Have a substantially adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U. S. Wildlife Service?			X	
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			X	
d) Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites?				X
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			X	
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, other approved local, regional, or state habitat conservation plan?				X

Discussion:

4.a. The project will not substantially alter habitat for candidate, special-status or identified sensitive species, as it generally involves widening and modification of existing road shoulders and existing disturbed habitat.

4.b. The existing street and proposed trail crosses a small seasonal drainage with riparian vegetation east of Juno Road. Design of the trail will either utilize the existing paved section in this area (shared trail use), or a separate pedestrian/bicycle bridge structure to avoid conflicts with the existing drainage.

4.c. The existing street and proposed trail crosses a small seasonal drainage with associated waters/wetlands east of Juno Road. Design of the trail will either utilize the existing paved section in this area (shared trail use), or a separate pedestrian/bicycle bridge structure to avoid conflicts with the existing drainage. Any incremental effects associated with trail design or bridge construction will be mitigated by improvements to the rock outfall area on the north side of Trestle Glen.

4.d. The project will not interfere substantially with migratory wildlife species movement or wildlife corridors. There are no known native wildlife nursery sites in the project area.

4.e. To the extent feasible, the trail (including the boardwalk section requiring selective tree and brush thinning) will be designed to avoid impacts to existing trees and native vegetation. Any tree removal will comply with the Town of Tiburon's tree preservation guidelines.

4.f. The project does not conflict with any adopted or approved Habitat Conservation Plans.

Mitigation Measure 4-1: The trail and bicycle lanes shall be designed to minimize impacts at the existing creek crossing. The design should utilize the existing paved surface, or provide a separate pedestrian/bicycle bridge structure to avoid impacts to the existing perennial creek. Any incremental impacts associated with trail construction should be mitigated by improving the existing rock slope/ creek channel north of Trestle Glen and east of Juno Road, or by planting replacement trees and shrubs for screening.

Mitigation Measure 4-2: Trail design should avoid existing mature trees wherever feasible. All tree removal shall comply with Town of Tiburon regulations.

5. **CULTURAL RESOURCES**. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?				X
b) Cause a substantial adverse change in the significance of an archaeological resources pursuant to Section 15064.5?				X
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	
d) Disturb any human remains, including those interred outside of formal cemeteries?			X	

Discussion:

5.a. The project will not cause a significant change to any identified historic resources.

5.b. The project will not cause a significant change to any archaeological resources.

~~5.d.~~5.c, 5.d. There are potential paleontological resources/human remains adjacent to the project area; particularly in lower areas close to Tiburon Boulevard/Paradise Drive; some previously found in this type of area on the peninsula. However, it is expected that most work will be within the existing roadway surface or adjacent road surface. Excavation will be limited to footings for retaining walls and limited slope restoration.

Mitigation Measure 5-1:

If cultural deposits are encountered at any location, all activities which may disturb the resource shall be stopped, and any town building permit or other authorization which may disturb the resource shall be suspended until an archaeological investigation is completed.

If human remains are located, procedures as per the CEQA Guidelines § 15064.5(e) shall be followed. This includes no further excavation of the site of any nearby areas reasonably suspected to overlie adjacent human remains until the County coroner determines no investigation of the cause of death is required. If the coroner determines the remains to be Native American, the coroner shall contact the Native American Heritage Commission (NAHC) within 24 hours. The NAHC shall identify the person or persons it believes to be the most likely descended from the deceased Native American. The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98.

6. **GEOLOGY AND SOILS**. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:				
(i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
(ii) Strong seismic ground shaking?				X
(iii) Seismic-related ground failure, including liquefaction?				X
(iv) Landslides?			X	

(b) Result in substantial soil erosion or the loss of topsoil?			X	
(c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X	
(d) Be located on expansive soil, as defined in Table 18-a-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
(e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X

Discussion:

6a,b,c: A geotechnical investigation of the project area identified potentially unstable colluvial slopes, including some landslide masses and debris deposits adjacent to the proposed path locations. The geotechnical analysis of the project revealed that it is feasible to make minor cuts in the toe of slope of colluvial materials and stabilize the slope using retaining walls.

~~6.d.~~6.d The project is not located on expansive soil that would create substantial risks to life or property.

6.e. The project does not involve septic tanks or wastewater disposal.

Mitigation Measure 6-1: All retaining walls and other infrastructure required to construct the trail shall be designed in consultation with a California Registered Engineering Geologist, Geotechnical Engineer, and/or Structural Engineer to minimize potential geologic hazards. Where feasible, retaining walls should be 3 ft. or less in height.

7. **HAZARDS AND HAZARDOUS MATERIALS.** Would the project?				
a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?				X
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions				X

involving the likely release of hazardous materials into the environment?				
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an exiting or proposed school?				X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result would it create a significant hazard to the public or the environment?				X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g) Impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X

Discussion:

7.a. The project does not create a significant hazard to the public or the environment through the routine use, transport or disposal of hazardous materials.

~~7.b.~~7.b,c,d: The project does create a significant hazard to the public or the environment involving the release or emission of hazardous substances, and is not located within one quarter mile of a school. It is not designated as a hazardous materials site.

~~7.e.~~7.e,f: The project is not within two miles of a public airport or private airstrip.				
7.g. The project would not impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan.				
7.h. The project would not expose people or structures to a significant risk of loss due to Wildland fires.				
8. **HYDROLOGY AND WATER QUALITY**. Would the project:				
a) Violate any water quality standards or waste discharge requirements?				X
b) Substantially degrade groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?				X
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or surface runoff in a manner which would result in flooding on- or off site?				X
e) Create or contribute runoff which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			X	
f) Otherwise substantially degrade water quality?				X
g) Place housing within a 100-year floodplain, as mapped on a				X

federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
j) Inundation by seiche, tsunami, or mudflow?				X

Discussion:

8.a. The project will not substantially affect existing groundwater supplies.

8.b. The project will not substantially alter existing drainage patterns on site or result in substantial erosion or siltation.

~~8.e.~~8.c,d,e. Trail construction will include reconstruction of the stormwater drainage system along the road edge on the south side of Trestle Glen. This will eliminate the existing drainage ditch and surface runoff. This will improve existing runoff conditions. Improvement Plans for project implementation will include an Erosion Control Plan (ECP) and Stormwater Pollution Prevention Plan (SWPPP) to provide stormwater management, prevent erosion during construction, and provide for long-term, post-construction stabilization.

8.f. The project is not expected to otherwise substantially degrade water quality.

8.g. The project does not involve housing or floodplain lands.

8.h. The project does not involve structures within a 100 year flood hazard area that would impede or redirect flood flows.

8.i. The project does not involve a significant risk of loss due to flooding.

8.j. The project does not involve inundation by seiche, tsunami or mudflow.

9. **LAND USE AND PLANNING.** Would the project:				
a) Physically divide an established community?				X
b) Conflict with an applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
c) Conflict with any applicable habitat conservation plan or natural communities conservation plan?				X

Discussion:

9.a. The project would not physically divide an established community.

9.b. The project is consistent with the applicable land use plans and policies of regulatory agencies and the Town of Tiburon.

9.c. The project does not conflict with any known habitat conservation plans or natural communities conservation plans.

10. **MINERAL RESOURCES.** Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X

Discussion:

~~10.b.~~10.a,b: The project will not result in the loss of availability of a known mineral resource, either of local, regional, or statewide importance.

11. **NOISE.** Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?				X
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?				X
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
d) A substantially temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
e) For a project located within an airport land use plan, or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X

Discussion:

11.a: The project is not expected to generate or expose persons to noise levels in excess of standards established in the General Plan and Noise Ordinance. *See also 11.d.*

11.b. The project is not expected to expose persons to or generation of excessive groundborne vibration or noise levels. *See also 11.d.*

11.c. Trestle Glen is currently used primarily by vehicles and cyclists, and currently has limited pedestrian use. Construction of a new trail is not expected to substantially increase trail usage or ambient noise levels by either pedestrians or cyclists, in the short term. Until a suitable pedestrian route is developed along Paradise Drive, significant trail usage is not expected to substantially change.

11.d. Noise levels will temporarily increase during project construction. Regulation of construction operations is anticipated to minimize any potential impacts.

~~11.e.~~11.e,f: The project is not located within an airport land use plan or near an airport or private airstrip.

Mitigation Measure 11-1:

- Limit construction activities, including grading, excavating, paving, and truck traffic coming to and from the construction site, to non-holiday weekdays between 7:00 AM and 5:00 PM, consistent with Building Permit requirements.

- Adequately muffle and maintain all equipment used on the project site. All internal combustion engine-driven equipment shall be fitted with intake and exhaust mufflers which are in good condition. Good mufflers with quieted compressors should result in all non-impact tools generating a maximum noise level of 85 dB when measured at a distance of 50 feet.

- Powered construction equipment shall be turned off when not in use.

- Locate all stationary noise-generating construction equipment, such as air compressors, as far as practical from existing nearby homes.

- Select quiet construction equipment, particularly air compressors.

- Neighbors located within 500 feet of the construction site shall be notified, in writing, of the construction schedule.

12. **POPULATION AND HOUSING.** Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X
Discussion: 12.a,b,c: The project does not involve the provision of housing, or displacement of residents.				

13. **PUBLIC SERVICES.** Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a) Fire protection?				X
b) Police protection?				X
c) Schools?				X
d) Parks?				X
e) Other public facilities?				X

Discussion:

13a,b,c,d,e,f: The project will not result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities or need for them. Expansion of existing fire protection, police protection, schools, parks, or other public facilities is not anticipated to maintain acceptable service ratios, response times, or other performance objectives for these public services.

14. **RECREATION.**				
a) Would the project increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			X	
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?			X	

Discussion:

14.a. The project may improve general access opportunities in the vicinity of nearby open space and recreational facilities, such as Blackie's Pasture and Ring Mountain Preserve. However, access improvements to these areas are not proposed as part of this project, and substantial

increase in use or substantial physical deterioration of the facility is not expected.

14.b. The project involves provision of a separated pedestrian trail and bicycle lanes as a component of the Bay Trail, a recreational trail. Construction of a recreational trail adjacent to the existing roadway is not expected to have an adverse physical effect on the environment.

15. **TRANSPORTATION/TRAFFIC.** Would the project:				
a) Cause an increase in the traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?			X	
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?				X
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X
d) Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?				X
e) Result in inadequate emergency access?				X
f) Result in inadequate parking capacity?				X
g) Conflict with adopted policies or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?				X

Discussion:

15a. Creation of separate bicycle lanes and a separated pedestrian trail will reduce traffic conflicts.

In addition, painted crosswalks would be provided where the trail will cross existing streets, including Juno Road and Mercury Drive, to improve pedestrian safety.

15.b. The project is not expected to exceed the level of service standard established by regulatory agencies.

15.c. The project does not involve air traffic.

15.d. The project is not expected to substantially increase hazards to a design feature or incompatible use. The project will incorporate pavement striping, signage, curbs and road markings as appropriate to minimize traffic hazards.

15.e. The project will not negatively affect emergency access.

15.f. The project will not result in inadequate parking capacity.

15.g. The project is consistent with adopted policies and programs supporting alternative transportation.

16. **UTILITIES AND SERVICE SYSTEMS.** Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
b) Require or result in construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				X
e) Result in a determination by the wastewater treatment provider which services or may serve the project determined that it has adequate capacity to serve the project's projected demand in addition				X

to the provider's existing commitments?				
f)) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				X
g) Comply with federal, state, and local statues and regulations related to solid waste?				X

Discussion:

~~16.b.~~16.a,b: The project does not involve the need for or provision of new water and wastewater facilities.

16.c. *See 8-c, d, and e.*

~~16.e.~~16.d,e: Sufficient water and wastewater supplies and services are available to complete the project. The project will not require water or wastewater services.

16.f. Existing landfill services are sufficient to accommodate project construction. Ongoing landfill needs are not anticipated.

16.g. The project will comply with applicable federal, state and local statutes and regulations related to solid waste.

17. **MANDATORY FINDINGS OF SIGNIFICANCE.**				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?				X
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of the past projects, the effects of other current projects, and the effects of probable future projects)?				X

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				X

Discussion:

17.a. The project is not expected to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.

17.b: The project does not have substantial impacts that are individually limited, but cumulatively considerable.

17.c: The project does not have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly.

Appendix C

Mitigation Monitoring & Reporting Program

Appendix C: Mitigation Monitoring and Reporting Program
Trestle Glen Bikeway Study

Mitigation Measure	Implementation Procedure	Monitoring Responsibility	Monitoring/Reporting Action & Schedule	Monitoring Compliance Record (Name/Date)
Aesthetics *Mitigation Measure 1-1:* Any retaining walls, site furnishings or other structural elements needed to create the trail shall be constructed of materials such as unpainted wood, stone or earth-colored concrete, etc. and designed to blend with the adjacent hill slopes to avoid visual impact. *Mitigation Measure 4-2:* Where possible, retaining walls should be 4 ft. or less in height to avoid visual impacts. Lattice and/or fencing shall be provided where necessary to screen views of the boardwalk/deck between Mercury and Juno from adjacent residences. *Mitigation Measure 4-3:* All tree and shrub thinning shall be done under the direction of a licensed arborist. The arborist may recommend additional screen plantings in select locations to be determined in the field.	1. Town of Tiburon incorporates into project plans and specifications. 2. Town includes this mitigation into all contracts involved in site preparation and development activities. 3. Town contractor complies with design requirements during construction.	1. Public Works/Planning 2. Public Works 3. Public Works	1. Incorporate into project plans and specifications. 2. Prior to approval of construction contract. 3. During construction site shall be monitored by Public Works Department.	
Biological Resources Mitigation Measure 4-1: The trail and bicycle lanes shall be designed to minimize impacts at the existing creek crossing. The design should utilize the existing paved surface, or provide a separate pedestrian/bicycle bridge structure to avoid impacts to the existing perennial creek. Any incremental impacts associated with trail construction should be mitigated by improving the existing rock slope/ creek channel north of Trestle Glen and east of Juno Road, or by planting replacement trees and shrubs for screening. Mitigation Measure 4-2: Trail design should avoid existing mature trees wherever feasible. All tree removal shall comply with Town of Tiburon regulations.	1. Town of Tiburon incorporates into project plans and specifications. 2. Town includes this mitigation into all contracts involved in site preparation and development activities. 3. Town contractor complies with design requirements during construction.	1. Public Works/Planning 2. Public Works 3. Public Works	1. Incorporate into project plans and specifications. 2. Prior to approval of construction contract. 3. During construction site shall be monitored by Public Works Department.	
Cultural Resources:		1. Public	1. Review plans and	

Appendix C: Mitigation Monitoring and Reporting Program
Trestle Glen Bikeway Study

Mitigation Measure	Implementation Procedure	Monitoring Responsibility	Monitoring/Reporting Action & Schedule	Monitoring Compliance Record (Name/Date)
Mitigation Measure 5-1: If cultural deposits are encountered at any location, all activities which may disturb the resource shall be stopped, and any town building permit or other authorization which may disturb the resource shall be suspended until an archaeological investigation is completed. If human remains are located, procedures as per the CEQA Guidelines § 15064.5(e) shall be followed. This includes no further excavation of the site of any nearby areas reasonably suspected to overlie adjacent human remains until the County coroner determines no investigation of the cause of death is required. If the coroner determines the remains to be Native American, the coroner shall contact the Native American Heritage Commission (NAHC) within 24 hours. The NAHC shall identify the person or persons it believes to be the most likely descended from the deceased Native American. The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98.	1. City incorporates into project plans and specifications. 2. Contractor would be responsible for implementing this mitigation. The Tiburon Public Works Development Department shall conduct site inspections during grading and construction activities.	Works/Planning 2. Public Works	specifications for compliance prior to advertising for bids. 2. During construction Town shall monitor grading any finds.	
Geology and Soils Mitigation Measure 6-1: All retaining walls and other infrastructure required to construct the trail shall be designed in consultation with a California Registered Engineering Geologist, Geotechnical Engineer, and/or Structural Engineer to minimize potential geologic hazards. Where feasible, retaining walls should be 3 ft. or less in height.	1. Town of Tiburon incorporates into project plans and specifications. 2. Town includes this mitigation into all contracts involved in site preparation and development activities. 3. Town contractor complies with	1. Public Works/Planning 2. Public Works 3. Public Works	1. Incorporate into project plans and specifications. 2. Prior to approval of construction contract. 3. During construction	

Appendix C: Mitigation Monitoring and Reporting Program
Trestle Glen Bikeway Study

Mitigation Measure	Implementation Procedure	Monitoring Responsibility	Monitoring/Reporting Action & Schedule	Monitoring Compliance Record (Name/Date)
	design requirements during construction.		site shall be monitored by Public Works Department.	
Noise: Mitigation Measure 11-1: · Limit construction activities, including grading, excavating, paving, and truck traffic coming to and from the construction site, to non-holiday weekdays between 7:00 AM and 5:00 PM. · Adequately muffle and maintain all equipment used on the project site. All internal combustion engine-driven equipment shall be fitted with intake and exhaust mufflers which are in good condition. Good mufflers with quieted compressors should result in all non-impact tools generating a maximum noise level of 85 dB when measured at a distance of 50 feet. · Powered construction equipment shall be turned off when not in use. · Locate all stationary noise-generating construction equipment, such as air compressors, as far as practical from existing nearby homes. · Select quiet construction equipment, particularly air compressors. · Neighbors located within 500 feet of a construction site shall be notified, in writing, of the construction schedule.	1. Town incorporates into project plans and specifications. 2. Town includes this mitigation into plans and specifications involved in site preparation and development activities. 3. Town contractor would implement during construction.	1. Planning Department 2. Public Works 3. Public Works	1. Review plans and specifications prior to advertising for bids. 2. Prior to approval of construction contract. 3. During construction site shall be inspected and monitored by Public Works..	

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