4.11 TRANSPORTATION/TRAFFIC

4.11.1 Setting

a. Existing Roadway Network. The proposed MBSST Network project would intersect with the existing roadway network located within the jurisdictions of the County of Santa Cruz and the cities of Santa Cruz, Capitola, and Watsonville via numerous public and private street-trail crossings. The majority of these street crossing are located immediately adjacent to existing rail crossings. A listing of these roadway connections to the MBSST Network, including the roadway jurisdiction and its classification, are summarized in Table 4.11-1. Road classifications consist of the following:

- *Arterials provide direct, relatively higher speed service for longer trips and large traffic volumes. Mobility is emphasized, and access is limited.*
- *Collectors provide a bridge between arterials and local roads. Collectors link neighborhoods and activity areas to arterials as well as collect traffic from local roads.*
- *Local roads provide access within neighborhoods and direct access to individual homes and other non-residential uses.*

Table 4.11-1
Connections with the Existing Roadway Network

Crossing	Roadway	Jurisdiction	Classification
Segment 4			
~~1~~	Private Rd	County of Santa Cruz	Private Road
~~2~~	Private Driveway (RMC Pacific)	County of Santa Cruz	Private Road
~~3~~	State Route (SR) 1	County of Santa Cruz	Minor Arterial
	Private Road	County of Santa Cruz	Private Road
~~4~~	~~n/a (rail crossing)~~	~~County of Santa Cruz~~	~~n/a~~
Segment 5			
~~5 20~~	Private Roads, including Highway 1, Wilder Ranch Park (~~3~~ 7), Scaroni Road (2), and ~~Agricultural~~ Private Crossings (~~11~~ 7)	County of Santa Cruz	~~Private Road~~ Various
Segment 6			
~~21-24~~	~~Private Roads (~~Wilder Ranch Park (3)	County of Santa Cruz	Private Road
~~25~~	Shaffer Rd	City of Santa Cruz	Local
Segment 7			
~~26~~	Natural Bridges Dr	City of Santa Cruz	Collector
~~27~~	Swift St	City of Santa Cruz	Collector
~~28~~	Fair Ave	City of Santa Cruz	Collector
~~29~~	Almar Ave	City of Santa Cruz	Collector
~~30~~	Rankin St	City of Santa Cruz	Local
~~31~~	Seaside St	City of Santa Cruz	Local
~~32~~	Younglove Ave	City of Santa Cruz	Collector
~~33~~	Bellevue St	City of Santa Cruz	Local
~~34~~	Dufour St	City of Santa Cruz	Local
~~35~~	Palm St	City of Santa Cruz	Local
~~36~~	Lennox St	City of Santa Cruz	Local
~~37~~	Bay St	City of Santa Cruz	Arterial
~~38~~	California St	City of Santa Cruz	Collector

Table 4.11-1
Connections with the Existing Roadway Network

Crossing	Roadway	Jurisdiction	Classification
	Private Roads (2)	City of Santa Cruz	Private Road
Segment 8			
~~41~~	Pacific Ave/Beach St (2)	City of Santa Cruz	Arterial
~~42~~	~~Main St~~	~~City of Santa Cruz~~	~~Local~~
~~43~~	~~Westbrook St~~	~~City of Santa Cruz~~	~~Local~~
~~44~~	~~Cliff St~~	~~City of Santa Cruz~~	~~Local~~
Segment 9			
~~51~~	Mott Ave	City of Santa Cruz	Local
~~52~~	Seabright Ave	City of Santa Cruz	Arterial
~~53~~	7th Ave	City of Capitola	Collector
~~54~~	El Dorado Ave	City of Capitola	Local
Segment 10			
~~55~~	17th Ave	City of Capitola	Minor Arterial
~~56~~	30th Ave	City of Capitola	Collector
~~57~~	38th Ave	City of Capitola	Local
~~58~~	41st Ave	City of Capitola	Arterial
Segment 11			
~~59~~	47th Ave	City of Capitola	Collector
~~60~~	49th Ave/Cliff Dr	City of Capitola	Local/Minor Arterial
~~61~~	Monterey Ave	City of Capitola	Arterial
~~62~~	Grove Lane	County of Santa Cruz	Private Road
~~63~~	New Brighton Rd	County of Santa Cruz	Local
~~64~~	Estates Dr	County of Santa Cruz	Local
~~65~~	Mar Vista Dr	County of Santa Cruz	Local
	Private Road	County of Santa Cruz	Private Road
Segment 12			
~~66~~	State Park Dr	County of Santa Cruz	Minor Arterial
~~67~~	Aptos Creek Rd	County of Santa Cruz	Local
~~68~~	~~Bayview Hotel Driveway~~	~~County of Santa Cruz~~	~~Private Road~~
~~69~~	Trout Gulch Rd	County of Santa Cruz	Collector
Segment 13			
70	Clubhouse Dr	County of Santa Cruz	Local
Segment 14			
	Clubhouse Dr	County of Santa Cruz	Local
~~71~~	Seascape Blvd	County of Santa Cruz	Local
Segment 15			
~~72~~	~~EVA (Seascape)~~	~~County of Santa Cruz~~	~~Private Road~~
~~73~~	Camp St. Francis/agricultural Access	County of Santa Cruz	Private Road
~~74~~	Private ~~agricultural access~~ Roads (2)	County of Santa Cruz	Private Road
~~75~~	Camino Al Mar	County of Santa Cruz	Private Road
Segment 16			
~~76~~	Private Driveway	County of Santa Cruz	Private Road
~~77~~	Spring Valley Rd	County of Santa Cruz	Local
Segment 17			
~~78~~	~~Elicott Slough Rd~~ Private Roads (2)	County of Santa Cruz	~~Local~~ Private Road
~~79~~	Buena Vista Drive	County of Santa Cruz	Minor Collector
Segment 18			
~~80-81~~	~~Private Crossing~~	~~County of Santa Cruz~~	~~Private Road~~
~~82~~	Lee Rd	City of Watsonville	Minor Arterial
~~83~~	Ohlone Parkway	City of Watsonville	Minor Arterial

Table 4.11-1
Connections with the Existing Roadway Network

Crossing	Roadway	Jurisdiction	Classification
Segment 19			
~~84~~	~~Walker St/Beach St~~ Riverside Dr	City of Watsonville	Minor Arterial/Arterial

Source: Caltrans California Road System (CRS) Maps.

b. Existing Rail Network. The MBSST Network corridor would primarily align with the Santa Cruz Branch Rail Line railroad right-of-way, a 32-mile, continuous travel corridor, 31-miles of which are now owned by the RTC. The railroad generally runs along the coast, parallel to the Pacific Ocean, except where it turns inland near Manresa State Beach. From there, the tracks run inland toward Watsonville and ultimately end at the Watsonville Junction. The rail right-of-way would serve both rail service and bike/pedestrian trail functions. There would be ~~14~~ 20 locations where the trail would cross the railroad tracks (in one case via an existing undercrossing) as it switches from one side to the other or would travel over existing culverts adjacent to the rail line.

The Santa Cruz Branch Rail Line historically transported lumber, quarried material, and agricultural products out of the Santa Cruz area. Incoming freight included coal and gypsum for delivery to the cement factory located in Davenport. Following the closure of the cement plant in 2010, freight business on the rail line was reduced by 90 percent. Currently, there is no daily freight service on the rail line outside of the Watsonville/Pajaro area. There is a seasonal passenger rail service that operates between the City of Santa Cruz ~~and~~ to the northern reach~~,~~ south of Davenport and the City of Watsonville to east of Manresa State Beach. This seasonal service operates two to four passenger trains per day, with a higher number of trips on weekends. Within the Watsonville/Pajaro area, there are freight trips every weekday, and weekends as needed. These trips are localized and do not extend outside of the Watsonville/Pajaro area. The rail line in Watsonville is used to transport perishables (including raspberries, strawberries, and other agricultural products), lumber and biofuels. There is currently no rail operation between Watsonville and Santa Cruz, except when needs arise for a special movement of equipment.

c. Existing Pedestrian and Bicycle Network.

Pedestrian Facilities. The majority of public streets interfacing with the MBSST Network have either sidewalks or shoulders for pedestrian travel within the urbanized areas of the County and cities of Santa Cruz, Capitola and Watsonville. There are roads intersecting the trail in the more rural sections of the County which do not have pedestrian facilities, however, these are primarily in areas where there is minimal to no existing pedestrian activity.

Bicycle Facilities. The proposed MBSST Network would augment the existing bicycle network within Santa Cruz County and the cities of Santa Cruz, Capitola, and Watsonville. The MBSST Network would connect to the existing bicycle facilities, comprised mainly of Class II bicycle lanes and Class III bicycle routes, and close gaps in the existing network via the trail crossings as outlined above in Table 4.11-1. A summary of the existing or proposed Class II bike lanes connecting to the proposed MBSST Network is listed in Table 4.11-2.

Table 4.11-2
Class II Bicycle Facilities Connecting to the MBSST Network Corridor

Crossing	Existing Roadway	Bicycle Facilities
Segment 6		
~~25~~	Shaffer Rd	Bike Lanes (Proposed)
Segment 7		
~~26~~	Natural Bridges Dr	Bike Lanes
~~27~~	Swift St	Bike Lanes
~~28~~	Fair Ave	Bike Lanes
~~37~~	Bay St	Bike Lanes
~~38~~	California St	Bike Lanes
Segment 8		
~~41~~	Pacific Ave/Beach St	Bike Lanes / Cycletrack
Segment 9		
~~52~~	Seabright Ave	Bike Lanes
~~53~~	7th Ave	Bike Lanes
Segment 10		
~~55~~	17th Ave	Bike Lanes
~~56~~	30th Ave	Bike Lanes
~~57~~	38th Ave	Bike Lanes (Proposed)
~~58~~	41st Ave	Bike Lanes
Segment 11		
~~59~~	47th Ave	Bike Lanes
~~60~~	49th Ave/Cliff Dr	Bike Lanes (on Cliff Dr)
~~61~~	Monterey Ave	Bike Lanes
Segment 12		
~~66~~	State Park Dr	Bike Lanes
Segment 18		
~~83~~	Ohlone Parkway	Bike Lanes (Proposed)
Segment 19		
~~84~~	Walker St/Beach St	Bike Lanes, Bike Route

Sources: City of Santa Cruz Bicycle Transportation Plan, 2008; City of Capitola Bicycle Plan, 2005; City of Watsonville Draft Trail and Bicycle Master Plan, 2012; County of Santa Cruz Bicycle Plan, 2011.

d. Regulatory Setting. The proposed MBSST Network project would span across the jurisdictions of the County of Santa Cruz, the City of Santa Cruz, the City of Capitola, and the City of Watsonville, as noted in Table 4.11-1. The General Plans from each jurisdiction outline goals and policies regarding pedestrian, bicycle, and roadway infrastructure. Each jurisdiction also establishes in the General Plan traffic operation standards through minimum Level of Service (LOS) standards. In addition, goals and policies designed to encourage walking and bicycling as a mode choice through the increasing and improving of facilities are present in the General Plans of all four jurisdictions. There are no established measures of effectiveness or operational standards regarding pedestrian and bicycle facilities in any jurisdiction. Each jurisdiction establishes traffic operation standards differently in the jurisdictions' General Plans. Relevant policies and standards for each jurisdiction are discussed below.

Santa Cruz County. The intersection and highway segment level of service objective for the County of Santa Cruz is LOS C, with LOS D as the minimum acceptable level of service. For facilities already operating at LOS E or F, the maximum acceptable increase in traffic associated with a development is equivalent to one percent of the volume to capacity ratio of the sum of all critical movements.

Santa Cruz County General Plan. The Transportation and Circulation Element of the Santa Cruz County General Plan, which was adopted in 1994, includes objectives and policies that address the bikeway system, pedestrian travel and roadway capacity/level of service. Objectives and policies applicable to the MBSST Network project are listed below.

Objective 3.8a	*System Development. To develop a bikeway network maximizing the safety and convenience of users of all levels of experience within that system. The network should be primarily for commuter travel designed to increase the potential of combining bicycle travel with other forms of transportation and also include the opportunity for recreational use.*
Objective 3.8c	*Bicycle Use. To encourage bicycle travel as a major form of transportation in order to increase bicycle use to 20 percent of all work trips and to increase general bicycle trips to 5 percent of all trips by the year 2010.*
Policy 3.8.1	*System Continuity. Plan a bikeway network to integrate with other modes of transportation (train or transit stations and Park and Ride lots, etc.) in order to encourage and support the use of bicycling and reduce the use of motor vehicles.*
Policy 3.8.2	*Commuting. Design regional bicycle routes to connect residential areas with major activity centers (employment, educational, civic, etc.) by including bikeway network development as part of the Capitol Improvements Program to prioritize construction or retrofits for completion of specific routes.*
Policy 3.8.5	*Regional Continuity. Coordinate with other jurisdictions to adopt a system of bikeways that is functional throughout the County and region.*
Objective 3.10	*To encourage pedestrian travel as a viable means of transportation, by itself and in combination with other modes to achieve at least 7 percent of all trips through walking, by increasing and improving pedestrian facilities, particularly in urban areas and reducing the conflicts between pedestrians and other modes of travel.*
Objective 3.12	*Level of Service. To ensure that development shall not create traffic which will exceed acceptable levels of service on surrounding roadways.*
Policy 3.12.1	*Level of Service (LOS) Policy. In reviewing the traffic impacts of proposed development projects or proposed roadway improvements, LOS C should be considered the objective, but LOS D as the minimum acceptable (where costs, right-of-way requirements, or environmental impacts of maintaining LOS under this policy are excessive, capacity enhancement may be considered infeasible). Review development projects or proposed roadway improvements to the Congestion Management Program network for consistency with Congestion Management Plan goals.*

2010 Santa Cruz County Regional Transportation Plan. The Regional Transportation Plan (RTP) is intended to guide transportation planning decisions in Santa Cruz County. The RTP

includes broad transportation goals and policies, a program of short and long-range transportation projects, and a financial plan for funding the projects. Goals and policies applicable to the MBSST Network project are listed below.

Goal 2	*Increase mobility by providing an improved and integrated multi-modal transportation system.*
Policy 2.1	*Ensure that all major corridors provide a choice of transportation modes and are designed with multi-modal amenities such as bus stops, turnouts and shelters, bike lanes and sidewalks.*
Policy 2.4	*Serve inter-county and intra-county travel needs, including consideration of travel links outside of the county.*
Policy 2.5	*Provide multi-modal access to recreational resources.*
Policy 2.7	*Increase percentage of trips done by bicycle to five percent of all trips and 20 percent of all work trips by 2035; do so by prioritizing bikeway projects based on: 1) increased safety or access; 2) complete gaps in the regional bicycle network; 3) high-demand, high-density areas and commute routes; 4) along popular recreational routes. Develop a program to measure and monitor growth rates.*
Goal 4	*Ensure that the transportation system complements and enhances the natural environment of the Monterey Bay region and reduce greenhouse gas emissions.*
Policy 4.1	*Emphasize sustainable transportation modes consistent with regional environmental policies.*
Policy 4.2	*Ensure that transportation projects contribute to improved regional air quality, reduce energy consumption or reduce vehicle miles traveled, or, at a minimum, do not worsen existing conditions.*

City of Santa Cruz. The City of Santa Cruz has established a minimum LOS D for signalized intersections. Lower level of service and higher congestion at major regional intersections may be acceptable if necessary improvements would be prohibitively costly or result in significant, unacceptable environmental impacts. No LOS standards are established for unsignalized intersections.

City of Santa Cruz General Plan 2030. The Transportation and Circulation Element of the City of Santa Cruz General Plan, which was adopted in 2012, includes goals, policies, and action items related to multi-modal accessibility, safety, pedestrian and bikeways and level of service. Goals, policies, and actions applicable to the MBSST Network project are listed below.

Goal M2	*A safe, sustainable, efficient, adaptive, and accessible transportation system.*
Policy M2.1	*Provide leadership on sustainable regional mobility.*
Action M2.1.2	*Encourage use of alternative modes of transportation.*
Action M2.1.3	*Implement pedestrian, bike, mass transit, and road system improvements through the Capital Improvements Program.*
Policy M2.2	*Encourage passenger rail transit or other alternative transportation options via the continued support, acquisition, and expansion of railroad rights-of-way.*
Policy M2.3	*Increase the efficiency of the multi-modal transportation system.*
Action M2.3.1	*Design for and accommodate multiple transportation modes.*
Goal M3	*A safe, efficient, and adaptive road system.*
Policy M3.1.1	*Seek ways to reduce vehicle trip demand and reduce the number of peak hour vehicle trips.*
Goal M4	*A citywide interconnected system of safe, inviting, and accessible pedestrian ways and bikeways.*
Policy M4.1	*Enable and encourage walking in Santa Cruz.*
Policy M4.2	*Provide and maintain a complete, interconnected, safe, inviting, and efficient citywide bicycle network.*
Action M4.2.2	*Work with appropriate agencies to seek funding for pedestrian and bicycle projects.*
Action M4.2.3	*Facilitate bicycling connections to all travel modes.*
Action M3.1.3	*Strive to maintain the established "level of service" D or better at signalized intersections.*
Action M3.1.4	*Accept a lower level of service and higher congestion at major regional intersections if necessary improvements would be prohibitively costly or result in significant, unacceptable environmental impacts.*

City of Santa Cruz Bicycle Transportation Plan. The Santa Cruz Bicycle Transportation Plan, adopted in November 2008, is intended to make the City of Santa Cruz more bicycle-friendly. Although the plan includes background on bicycle-based transportation in the Santa Cruz and lists projects for the improvement of bicycle facilities, it does not contain discrete goals or policies applicable to the MBSST Network project.

City of Capitola. The City of Capitola has established a minimum LOS C traffic operation standard for the roadway system outside of the village area, and a minimum LOS D

traffic operation standard for the roadway system within the village area (Capitola's central business district).

City of Capitola General Plan. The Capitola General Plan is currently being updated, and a Public Review Draft General Plan is anticipated for June 2013. The Transportation and Circulation Element of the current General Plan, which was adopted in 1989, includes objectives and policies that address the bikeway system, pedestrian travel and level of service. Objectives and policies applicable to the MBSST Network project are listed below.

Objective	*Define a minimum standard of congestion acceptable to the community which guides public investment and allowed development.*
Policy 1	*Level of Service C shall be the acceptable standard for circulation within the City with the exception of the Village area.*
Policy 2	*In Capitola Village and its portals, slower speeds are desirable and some delay will be acceptable. Level of Service D shall be acceptable standard in this area.*
Policy 3	*Major developments or General Plan amendments will be required to demonstrate that the desired level of service is maintained.*
Objective	*To promote a safe, efficient bicycle system as a viable mode of transportation within the City of Capitola. To the extent possible provisions for bicycles will be made on all major roads in the City. The Bikeway Plan recommended is intended to connect to the County bikeway system and to provide a system through the City and to its major attraction points.*
Policy 30	*Support the development of the bikeway system as planned.*
Objective	*To promote a safe and convenient pedestrian system of pathways and sidewalks along the major streets and activity areas in the City. A number of corridors have been identified as critical elements for a comprehensive system of pedestrian walkways or sidewalks. This system is identified in the Pedestrian Plan. This system is not intended to discourage sidewalks in other locations within the City.*
Policy 35	*Support the development of a pedestrian system as planned.*

City of Capitola Bicycle Transportation Plan. The Capitola Bicycle Transportation Plan was adopted in February 2011 and includes goals and objectives in support of transportation by bicycle. Goals and objectives applicable to the MBSST Network project are listed below.

Goal	*Improve bicycle circulation, connectivity and access.*
Objective 1.1	*Construct and mark bicycle routes in conformance with the County-wide Bicycle Route Signage Program and state standards, as outlined in the Manual of Uniform Traffic Control Devices (MUTCD) and the California Supplement.*
Objective 1.9	*Improve the flow of bicycle traffic through the Capitola Village.*

Goal	*Increase bicycle ridership and replace motor vehicle trips with bicycle trips. Achieve a city-wide goal of 5% of all trips and 20% of work trips made by bicycle by 2020.*
Objective 2.4	*Plan a bikeway network to integrate with other modes of transportation (train or transit stations and Park and Ride lots, etc.) in order to encourage and support the use of bicycling and reduce the use of motor vehicles.*
Goal	*Improve bicycle safety.*
Objective 3.5	*When feasible, avoid lengthwise concrete seams in bicycle lanes and require prompt repair (including pavement) and restriping of bicycle lanes before the project is considered complete.*

City of Watsonville. The City of Watsonville has established a minimum LOS D traffic operation standard on all arterial and collector streets, except for those accepted to operate at less than an LOS D in the *Major Streets Master Plan*.

City of Watsonville General Plan. An updated City of Watsonville General Plan was adopted by the City Council in January 2013, but was subsequently challenged in court and is on hold until resolution on the legal issues can be reached. Therefore, at this time, the 2005 General Plan remains in effect. The Transportation and Circulation Element of the existing 2005 General Plan, which was adopted in 1994, includes objectives and policies that address the bikeway system, pedestrian travel and level of service. Objectives and policies applicable to the MBSST Network project are listed below.

Policy 10.C	*Level of Service. The City shall maintain an minimum Level of Service D (LOS D) on all arterial and collector streets serving the City except for those accepted to operate at less than an LOS D in the 1988-2005 Major Streets Master Plan as updated in 1992.*
Goal 10.4	*Bicycle Circulation. Plan for and provide a safe, convenient network of bicycle facilities.*
Goal 10.5	*Pedestrian Circulation. Recognize the importance of pedestrian travel, alone, or in combination with other travel modes, and to encourage walking.*
Policy 10.K	*Bicycle Facilities Development. The City shall plan for, and implement a comprehensive network of bicycle facilities in order to promote the bicycle as an alternative to the private automobile.*
Policy 10.N	*Pedestrian Travel. The City shall plan for, and implement a comprehensive network of safe pedestrian facilities in order to promote pedestrian travel.*

Watsonville Trails & Bicycle Master Plan for the Watsonville Scenic Trails Network. In November 2012, the City of Watsonville adopted a Trails & Bicycle Master Plan "to develop a

framework for building an integrated system of pathways and bikeways that will link residents to the outdoors." Visions and goals applicable to the MBSST Network project are listed below.

Develop a safe and interconnected city-wide network of trail and bicycle facilities that link together destinations and people, both locally and regionally.

Develop a trail network that provides facilities and programs designed to expand and encourage active recreation, community strength, and alternative transportation.

Enhance, protect, and preserve the environmental quality of open space, waterways and wildlife habitats.

Conserve and tell the story of local culture, history, and heritage through interpretive signage.

Preserve and protect agricultural land while still providing opportunities for trail construction as long as it does not disrupt farming operations and is done so with the full support of the respective land owner(s) and farm operator(s).

Monterey County. Segment 20 of the proposed MBSST Network project, which is 0.74 miles long, would be located in Monterey County. The purpose of this segment is to provide a regional connection to the Monterey County section of the Monterey Bay Sanctuary Scenic Trail. Implementation of this section would require cooperation and coordination with the Transportation Agency for Monterey County (TAMC) and the County of Monterey. Monterey County General Plan goals and policies, as well as Monterey County Municipal Code regulations, would apply to this segment.

4.11.2 Impact Analysis

a. Methodology and Significance Thresholds.

Evaluation Criteria. The following thresholds are based on Appendix G of the *State CEQA Guidelines*. Impacts would be significant if the proposed MBSST Network would result in any of the following:

1) *Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways, and freeways, pedestrian and bicycle paths, and mass transit;*
2) *Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways; and/or*
3) *Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).*

It should be noted that the proposed MBSST Network project would not affect public or private airport facilities and would not cause a change in the directional patterns of aircraft, nor would the project conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities. As a result, the checklist items related to these issues were excluded from the above list. Additional discussion can be found in the Initial Study (Appendix A of this document).

Impacts related to emergency access are discussed in Section 4.12, *Public Safety and Services.*

Trip Generation Methodology. The MBSST Network would be expected to generate the following types of transportation trips:

- *Recreational bike riders or walkers who arrive at a staging area by vehicle;*
- *Recreational bike riders or walkers who utilize the same mode from their residence to the trail access;*
- *Bicycle commuters who arrive at a staging area by vehicle;*
- *Bicycle commuters who ride bikes from their residence or work place to the trail;*
- *Miscellaneous short trips for various purposes by bike riders or walkers who utilize the same mode from their residence or workplace to the trail access; and*
- *Maintenance vehicles on the trail corridor via the access areas.*

Although the MBSST Network would be expected to generate new vehicle trips to the staging and access areas from recreational users, commuters and for general maintenance purposes, this increase may be balanced regionally by the potential reduction in vehicle trips as a result of the change in travel modes to bicycles by commuters. This reduction would occur on cross County arterial corridors such as:

- *Mission Street;*
- *Water Street;*
- *Bay Street;*
- *Murray Street;*
- *Soquel Avenue;*
- *Capitola Road;*
- *Soquel Drive;*
- *Brommer Street;*
- *East Cliff Drive;*
- *Portola Drive;*
- *Park Avenue;*
- *Sumner Avenue; and*
- *San Andreas Road.*

New vehicle trips would be generated in the areas around the access and staging areas for the purposes described above. The anticipated vehicle trip generation for a proposed project is generally estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation*, 8th Edition, 2008. However, there are no published rates for a regional trail such as the MBSST Network project. In order to estimate vehicle trips, the MBSST Network was treated as a park use and rates published by the San Diego Association of Governments (SANDAG) for a City Park were applied to the acreage of the trail and its supporting land. Based on the trail's approximate length of 49.6 miles and approximate average trail and shoulder width (disturbance area) of 25 feet wide, the approximate activity area of the MBSST is estimated to be 150.3 acres. The anticipated vehicle trip generation associated with trail users accessing the trail was then estimated using the SANDAG trip generation rates.

The volume of bicycle and pedestrian trips expected to be generated by a regional trail varies by location, access conditions and surrounding land use. Counts in a number of cities suggest that bicycle lanes and bicycle paths can realize volumes of 1,000 to 2,000 trips per day. Multi-use trails often attract 500 or so pedestrian and several thousand bicyclists per day. Counts made at only one location along a trail will miss many users who bike or walk along other sections of trail. By contrast, counts made at multiple locations along a trail will double-count users (FHWA, 1994).

Trail Crossing Methodology. The proposed MBSST Network project includes ~~93~~ 96 locations where the path would cross a public or private street or driveway, or would cross the railway, with most of these (approximately ~~84~~ 76) occurring at existing street crossings of the rail line. The potential for conflicts between trail users and vehicles, or an increase in hazard, is dependent on the following factors:

- *Location of the trail/street crossing;*
- *High speed roadway locations or turns;*
- *Unavailable gaps in traffic due to high traffic volumes; and/or*
- *Driver anticipation or expectation of crossings.*

In evaluating the trail crossings, the issues listed below were considered.

- *Railroad Crossing Equipment – whether trail users must be channelized in order to safely enter an existing rail-street 'intersection'. Where rail-crossing vehicular traffic is currently provided any form of control equipment such as signs, flasher assembly equipment, or gate arms, trail user equipment may need to be incorporated.*
- *Trail Crossings of Railways – whether trail users must cross railroad tracks, as opposed to trail crossings of streets in proximity of where streets cross railways.*
- *Public Access – whether the public is permitted to cross, as compared to some private crossings where access to the crossing is restricted due to private ownership of adjacent parcels.*
- *Trail Use Volume – the number of trail users estimated to cross in a peak hour (pedestrians per hour).*
- *Crossing Traffic Volume – vehicles per day, or average daily traffic (ADT) volumes on the street to be crossed.*
- *Crossing Traffic Speed – the posted speed limits on the existing street to be crossed.*
- *Crossing Street Geometry – the number of travel lanes to be crossed.*
- *Crossing Street Width - the width of the road to be crossed, from edge of pavement to edge of pavement, measured in feet.*
- *Line of Sight Visibility – the distance from the crossing along the street that approaching motorists have unobstructed views of trail users attempting to cross.*
- *Nearby Controlled Crossings – the proximity to the nearest controlled street crossing, measured in feet, with 350 feet used as a threshold for treatment selection.*

Roadway Crossing Evaluation Methodology. Like roadways, trails are designed and maintained by many jurisdictions, even within one city, and from the user's perspective, uniformity in trail traffic control devices will increase travel safety and efficiency. Three state and national references were used in the evaluation methodology in consideration of uniformity in the trail crossing designs.

The CA-MUTCD 2012 Edition was consulted in evaluating the level of control necessary for a crossing. Chapter 4 includes crossing treatment design standards and evaluation methods for determining where standard traffic signals and the new pedestrian hybrid beacon or 'hawk traffic signal', are warranted. The warrant criteria for traffic signal controls include the estimated number of trail users per hour, the speed of motorized traffic on the street, the number of travel lanes, and the crossing width. Additionally, Chapter 9 provides information on design standards for bicycle travel, including shared-use paths and the controls associated with path street crossings.

The U.S. Department of Transportation published *Rails-with-Trails: Lessons Learned* in 2002, which includes recommended criteria for determining if a mid-block path street crossing should be rerouted to a nearby controlled intersection.

A third reference, *Improving Pedestrian Safety at Unsignalized Crossings*, prepared by the National Cooperative Highway Research Program (NCHRP Report 562) and published by the Transportation Research Board in 2006, included graphical methods of determining whether a mid-block crossing should be enhanced.

The following steps were followed during preparation of the proposed MBSST Network Master Plan to determine the recommended crossing treatment:

1) *Is the crossing location a signalized rail-street 'intersection', and if so, will trail approaches result in users entering this 'intersection'? Appropriate design features and rail signal improvements for trail users were considered, including the use of the "pedestrian controls decision tree" included in the Transit Cooperative Research Program (TCRP) Report 69 published by Transportation Research Board.*
2) *Is the location a public or private crossing? If private then review the crossing photographs and images to determine if the 'standard private' crossing treatment is appropriate or if a custom treatment is necessary. If public then take the next step.*
3) *(Part A) Is there a controlled crossing within 350 feet of the location? Is it appropriate to redirect trail users to the controlled crossing? If so, then determine the connection treatments that may be necessary to provide continuity between the two sides of the trail for pedestrians, bicyclists, and wheel chair users. If there is no such crossing nearby then take the next step. (Part B) If the controlled crossing is a traffic signal then the necessary traffic signal modifications were determined, and if the controls were stop controls, then adding a crosswalk to the intersection was considered. Connection treatments include sidewalks, new intersection crosswalks, and bicycle shared lane markings (SLM).*
4) *The public street average daily traffic (ADT) volume data was obtained from agency online resources, together with posted speed limits. Where ADT were not available, nearby intersection peak hour turning movement counts were obtained from agency resources and converted to ADT values by assuming they represented ten percent of the daily traffic total. Google Earth was used to obtain approximate roadway widths and distances to the closest controlled street crossings. This information was tabulated and used for the next step.*
5) *The traffic operational information and street geometrics were applied to the CA-MUTCD Hawk Signal Warrants, (attached). If the Hawk Signal was not warranted, then move to Step 6.*
6) *Trail user volumes were estimated based on location, and if the estimated value exceeded 40 persons per hour (pph) for two hours then the CA-MUTCD In-Roadway Warning Lights*

Warrant was evaluated (page 994. This is Active Enhanced Crossing Type. If not warranted, then take apply Step 7.

7) *If the trail user volume value was estimated to be less than 40 pph for two hours but more than 20 pph for a single hour then Figure A-5 of NCHRP Report 562 was used to determine if an enhanced crossing treatment was appropriate. This is Passive Enhanced Crossing Type. If not warranted, then take refer to Step 8.*
8) *Where none of the above higher level of controls was warranted, the standard mid-block crossing treatment was recommended in this step.*
9) *The speed of approaching vehicles and proximity to intersections or other sight obstructions were considered. Traffic calming measures, including medians and curb extensions were considered where the crossing presented a safety concern for trail users.*

Railway Crossing Evaluation Methodology. The California Public Utilities Commission's (CPUC) *Pedestrian-Rail Crossings in California: a Report Compiling the Designs and Devices Currently Utilized at Pedestrian-Rail Crossings within the State of California* (CPUC, May 2008) provides a tool to determine the appropriate level of control at pedestrian-rail crossings in its Appendix B, *Decision Tree* that was obtained from the Transit Cooperative Research Program (TCRP) *Report 69 – Light Rail Service: Pedestrian and Vehicular Safety*. The Decision Tree, as outlined in this document, was used in order to determine the level of control as part of the impact mitigation.

For purposes of applying the Decision Tree, 'high pedestrian activity level' is defined as 20 or more pedestrians per hour,[1] which is consistent with the CA-MUTCD recommendations for utilizing Hybrid Pedestrian Warning Signals at mid-block street crossings. In accordance with the Decision Tree recommendation for rail-pedestrian crossings with 'high pedestrian activity levels', the Trail Network Master Plan includes pedestrian railroad gates for each of the related locations. Construction of these improvements, including a tie-in to the railroad signal control cabinet for new gate controls, pedestrian railroad gates for each path approach, and appropriate barriers between the tracks and path are recommended for the trail-rail crossing locations.

b. Project Impacts and Mitigation Measures.

Impact T-1 The proposed MBSST Network would incrementally increase the number of vehicles traveling to staging areas. However, the proposed trail would not contribute to an exceedance of a level of service standard. This is a Class III, *less than significant* impact.

Based on the trip generation methodology described in Section 4.11.2(a) (Methodology and Significance Thresholds), the estimate of expected vehicle trip generation potential of the proposed MBSST Network project is indicated in Table 4.11-3. The proposed MBSST Network project is expected to generate an average of 7,515 vehicle trips per day along the entire length of the trail, with 977 trips during the weekend midday peak hour and 676 trips during the weekday p.m. peak hour, which would be the two highest volume peak periods for the trail.

[1] *Per telephone discussion with CPUC Engineer, Felix Ko on 4/26/12.*

Table 4.11-3
Trip Generation Summary

Use	Units	Daily		Weekend Midday Peak Hour				Weekday PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
MBSST Network	150.3 acres	50	7515	6.5	977	489	488	4.5	676	338	338
Individual Access and Staging Areas (22)	per area		342		44	22	22		30	15	15

Source: Brief Guide of Vehicular Traffic Generation Rates, SANDAG, 1990.
Note: Vehicle trip rates based on the City Park use.

The following estimates are suggested based on the data that is available and other general assumptions of potential use:

- *Approximately 35 to 50 percent[2] of the trail users may be expected to gain access to the trail via a vehicle trip to a staging area or access point. Considering multiple users per vehicle and trips made to the trail for walking, approximately 5,000 to 7,500 bicycle and pedestrian trips on the trail per day may be generated by users who arrive by vehicle.*
- *Approximately 50 to 66 percent[2] of the trail users may travel to the trail via bicycle or walking. This mode of access may generate approximately 5,000 to 7,500 bicycle and pedestrian trips on the trail per day.*
- *A total of approximately 10,000 bicycle trips and 2,500 pedestrians on the trail per day may be expected. During a peak weather day, there may be approximately 1,000 bicycle trips and 250 pedestrian trips on the trail during a peak hour. This assumes a similar peak hour percentage of daily trips experienced by vehicle traffic.*
- *Approximately 50 percent of the bicycle trips on the trail may be made in lieu of a vehicle trip previously made on a parallel arterial roadway. Based on this assumption, the trail may reduce approximately 5,000 vehicle trips per day on parallel arterials.*
- *Considering daily vehicle traffic volumes on cross County arterial corridors, and discounting for potential overlapping of trips on these routes, the reduction of 5,000 vehicle trips per day may represent approximately a two to three percent reduction in traffic volumes on parallel arterials.*

There are 22 existing access and staging areas with vehicle parking in close proximity to the trail alignment. Although there are anticipated to be additional access and staging areas in the future, for the purposes of this estimate, it was assumed that the vehicle trips generated by the MBSST Network would be evenly distributed among the existing 22 access and staging areas since this approach results in a worst case condition by maximizing the number of vehicle trips per staging area. At each of the access and staging areas, the proposed MBSST Network project is expected to generate 1/22 of the total trips or an average of 342 trips per day, with 44 trips during the weekend midday peak hour and 30 trips during the weekday p.m. peak hour.

On an individual basis for each staging area, assuming a minimum of two primary routes of travel to each trail access point, the peak hour increase in trips of 44 to 30 peak hour trips which would be localized around staging areas are at a level which should not be perceptible, nor create operational impacts on adjacent roads and intersections. Therefore, the increase in vehicle traffic destined to trail staging and access areas for the purposes of commuting, recreational uses, and maintenance of the trail, is considered less than significant.

[2] *This range is based on the project setting, proximity of other land uses along the corridor, and the traffic consultant's professional experience with other trail facilities.*

At locations where the MBSST Network would intersect with the current circulation system, a small delay to vehicular traffic may be expected during the times when trail users cross the road to access the next part of the trail; however, these delays are expected to have a minimal impact on the operation of the vehicular circulation system and are not expected to cause traffic operations to exceed standards.

Mitigation Measures. No mitigation measures are required.

Significance After Mitigation. Impacts would be less than significant without mitigation.

Impact T-2 The proposed MBSST Network would incrementally increase the number of vehicles traveling on regional arterials. However, this would be balanced by a reduction in vehicle trips resulting from the MBSST Network project. Therefore, the proposed trail would not contribute to an exceedance of a level of service standard. This is a Class III, *less than significant* impact.

Traffic on the regional circulation network, such as Highway 1, State Route 17, and parallel arterials may incur a slight increase in vehicle recreational travel destined to staging areas. However, this would be balanced by a decrease in vehicle traffic due to the change in travel modes to bicycles by commuters. In addition, from a regional perspective, the trips calculated in Impact T-1 would not all be newly generated trips, but instead would in part be relocated trips from other recreational opportunities. Because the MBSST Network project would not contribute substantial new traffic on the regional circulation network, the proposed MBSST Network project is not expected to conflict with any applicable congestion management program.

Mitigation Measures. No mitigation measures are required.

Significance After Mitigation. Impacts would be less than significant without mitigation.

Impact T-3 Potential conflicts between trail users and automobile traffic could occur at any of the trail road crossings. These conflicts could result in hazardous conditions for both trail users and motorists. In addition, conflicts could occur between trail users and agricultural equipment. This is a Class II, *significant but mitigable* impact.

The MBSST Network Master Plan includes guidance on the placement of the trail crossing with streets and roadways. The guidelines suggest that if there is a controlled crossing within 350 feet of the trail, trail users should be redirected to the controlled crossing. As such, the Master Plan includes various measures to connect the trail to adjacent controlled crossings.

The resulting trail crossing recommendations, including custom designs, are summarized in Table 4.11-4. These measures eliminated a number of potential conflicts that could occur with trail crossings on streets and roadways.

Although the trail crossing design recommendations in the proposed MBSST Master Plan (as summarized in Table 4.11-4) would minimize the potential conflicts between vehicles and

pedestrians or bicyclists, there is remaining potential for unexpected pedestrian and bicycle crossings, which may lead to conflicts between vehicles and trail users. This is especially critical on curved sections of roadways or where landscaping may obstruct sight distance or in more rural sections of the trail where there would be crossings of roads with agricultural equipment. These impacts would be potentially significant**.**

Mitigation Measures. The following mitigation measures are required:

T-3(a) **Trail Crossing Warning Signs.** In addition to the proposed lighted crosswalks, caution signs shall be installed along vehicular roadways preceding each crosswalk to warn motorists of trail users.

T-3(b) **Agricultural Access Safety**. Informational signs shall be installed at the trail crossings of public roads along the northern and Watsonville reaches, warning trail users of the presence of agricultural vehicles. Signs shall also be installed where agricultural access points intersect with adjacent roadways, warning operators about the presence of pedestrians and bicyclists.

T-3(c) **Right-of-Way Priority.** Right-of-way priority at all roadway crossings shall be determined by the RTC and/or implementing entity, in consultation with private property owners (where appropriate), during the design of individual trail segments. Where feasible, right-of-way preference shall be given to the facility with the higher volume of traffic (i.e., in locations where the roadway has a higher volume of vehicle traffic than pedestrian and bicycle traffic on the trail, right-of-way shall be given to the roadway; in cases where the trail is crossing a small private road or driveway that has a lower volume of traffic than the trail, right-of-way priority shall be given to the trail). Right-of-way shall be indicated with appropriate stop or yield sign given to the cross traffic.

Significance After Mitigation. The implementation of the above measures, along with the implementation of the planned roadway crossing designs and fencing, would result in a reduction of safety impacts to trail users and motorists/agricultural operators to a less than significant level.

Table 4.11-4
Summary of Selected Road Crossing Treatments

Crossing	Description	Recommended Crossing Treatment		Jurisdiction	Custom Crossing?
		Type	Description		
Segment 4					
~~1~~	Private Rd	J	The trail is on the east side of the tracks. Provide a standard private road crossing	County	
~~2~~	Private Driveway (RMC Pacific)	F	The trail is on the east side of the tracks. Provide a standard midblock crossing, as use is expected to exceed 20 pph at least once daily by employees.	County	
~~3~~	State Route (SR) 1	A,D	To/from the north the trail aligns on the east side of the tracks and to/from the south it's on the west side. This creates a trail at-grade rail crossing, which will need to be integrated into the existing SR 1 crossing of the rail. The addition of the trail crossing requires modifying the rail signal, together with the addition of an active enhanced crossing for trail users to cross SR 1.	County	X
Segment 5					
~~4~~	Davenport Parking Lot	A	The proposed trail is on the west side of the tracks. A new railroad crossing is proposed to formalize a popular pedestrian crossing between a parking lot on the east side of the tracks and Davenport Beach on the west side, and to allow east-west access to the trail. The new railroad crossing could be accomplished with installation of a new pedestrian-only rail signal.	County	X
~~5-24~~	Private Roads, including Wilder Ranch Park (3), Scaroni Road (2), and Agricultural Crossings (11)	J	The trail is on the west side of the tracks. Provide standard private road crossings at all 20 locations.	County	
Segment 6					
~~21-24~~	Private Roads (Wilder Ranch Park)	J	The trail is on the west side of the tracks. Provide standard private road crossings at all 4 locations.	County	
~~25~~	Shaffer Rd	A, F	The trail is on the west side of the tracks. A new railroad crossing is proposed to formalize a popular pedestrian crossing between two existing dead ends of Shaffer Road on either side of the tracks. The new railroad crossing should include pedestrian rail signal improvements. The City plans new roadway crossing with bike lanes. Additional markings would be required on street crossing for bike guidance.	Santa Cruz	X
Segment 7					
~~26~~	Natural Bridges Dr	F	The trail is on the west side of the tracks. Provide a standard midblock crossing.	Santa Cruz	
~~27~~	Swift St	E	The trail is on the west side of the tracks. Provide a passive enhanced crossing.	Santa Cruz	
~~28~~	Fair Ave	E	The trail is on the west side of the tracks. Provide a passive enhanced crossing.	Santa Cruz	
~~29~~	Almar Ave	E	The trail is on the west side of the tracks. Provide a passive enhanced crossing.	Santa Cruz	
~~30~~	Rankin St	H	The trail is on the west side of the tracks. Provide connection facilities, adding a crosswalk at the intersection of Rankin St/ Seaside St., together with a path on the south side of Seaside St. between Rankin St and the rail crossing location 100 ft east.	Santa Cruz	X
~~31~~	Seaside St	F, I	The trail is on the west side to/from the north and on the east side to/from the south. Rather	Santa Cruz	X

Table 4.11-4
Summary of Selected Road Crossing Treatments

Crossing	Description	Recommended Crossing Treatment		Jurisdiction	Custom Crossing?
		Type	Description		
			than the trail crossing along Seaside St, it may be possible to locate the trail in a vacant triangular parcel on the SW corner of Seaside/Younglove St. While the trail will not cross Seaside, it will cross the rail, with the crossing to be oriented perpendicular to the tracks. The existing vehicular rail crossing of Seaside St will remain, and since it is unsignalized, it's recommended that the new rail-trail crossing also be provided without signal equipment.		
~~32~~	Younglove Ave	H	The trail is on the east side of the tracks. Provide a pedestrian connection to the intersection of Younglove Ave and Seaside St and adding a crosswalk on the southeast leg of the intersection.	Santa Cruz	X
~~33~~	Bellevue St	F	The trail is on the east side of the tracks. Provide a standard midblock crossing.	Santa Cruz	
~~34~~	Dufour St	F	The trail is on the east side of the tracks. Provide a standard midblock crossing.	Santa Cruz	
~~35~~	Palm St	J	The trail is on the east side of the tracks. Provide a standard private crossing (existing barricades prohibit vehicle travel across rail tracks).	Santa Cruz	
~~36~~	Lennox St	F,H	The trail is on the east side of the tracks. Provide pedestrian connection along the north side of the street and a bicycle connection via SLM in Lennox Street, to minimize the distance pedestrians and bicyclists have to travel in the street at this acute angled crossing. Provide a standard midblock crossing at the far easterly end of the existing rail-street crossing.	Santa Cruz	X
~~37~~	Bay St	D	The trail is on the east side of the tracks. Provide an active enhanced midblock crossing.	Santa Cruz	X
~~38~~	California St	E,G	The trail is on the east side of the tracks. Provide traffic calming at the intersection of Bay St/California St (north) to reduce the curb radii and travel speeds of NB right turning vehicles. Move the trail crossing 20 feet north of the existing crossing on California Street, to increase the distance from the Bay St intersection. The path should shift to the north side of the City's water treatment plant access road via a standard midblock crossing on the access road so that it minimizes interference with truck movements at the intersection with California Street. Curb extensions and a passive enhanced crossing should be provided at the relocated street crossing. Barriers should be installed as necessary to discourage crossings at the existing location.	Santa Cruz	X
~~39, 40~~	Neary Lagoon Park (2)	A	The trail is on the east side of the main line tracks. The 2 new railroad crossings are spur track crossings rather than mainline crossings. May need to tie into rail signal controls due to high volume of trail pedestrians/bicyclists expected at this popular Santa Cruz location.	Santa Cruz	X
Segment 8					
~~41~~	Pacific Ave/Beach St	A	The trail is on the east side of the tracks. The city has designed a roundabout to control the intersection of Pacific Ave/Beach St, which includes pedestrian and bicycle crossing facilities of the streets but does not extend north to the railroad. There is an existing sidewalk crossing of the tracks on the west side of Pacific Avenue, and while the street crossing has signalized rail equipment, the sidewalk/ pedestrian facility is not. Modify this railroad signal to include pedestrian crossing signals, allowing trail users to use the new roundabout to cross Beach Street, and travel along the boardwalk, some distance west of the tracks. Concept plans also include the recommended trail crossing features for the existing intersection conditions should the roundabout not be pursued by the City.	Santa Cruz	X

Table 4.11-4
Summary of Selected Road Crossing Treatments

Crossing	Description	Recommended Crossing Treatment		Jurisdiction	Custom Crossing?
		Type	Description		
~~42~~	Main St	K	The trail is on the west side of the tracks. No additional improvements.	Santa Cruz	
~~43~~	Westbrook St	K	The trail is on the east side of the tracks. No additional improvements.	Santa Cruz	
~~44~~	Cliff St	K	The trail is on the east side of the tracks. No additional improvements.	Santa Cruz	
~~45-50~~	Boardwalk Crossings (6)	K	The trail is on the east side of the tracks. No additional improvements.	Santa Cruz	
Segment 9					
~~51~~	Mott Ave	F	The proposed trail is on the east side of the tracks and this street crossing of Mott Ave is approximately 20 feet north of the north leg of the intersection of Mott Ave/Murray Street. However there is a partial road closure of Mott Ave at the crossing, with SB traffic prohibited at the crossing. The NB crossing is situated such that a standard midblock crossing is recommended.	Santa Cruz	
~~52~~	Seabright Ave	B	The trail is on the east side of the tracks. Modify the traffic signal at the intersection of Seabright Ave/Murray Street to add pedestrian phases to north leg of the intersection for crossing Seabright Ave. There may be a concern for westbound queuing in the through/right turn combined lane on Murray Street. Although not part of these concept plans, the need and feasibility in providing a westbound right turn lane should be explored.	Santa Cruz	X
~~53~~	7th Ave	A,D	To/from the north the trail is on the east side and to/from the south the trail is on the west side. This represents a rail crossing, which will need to be integrated into the existing signalized rail crossing. Trail users can use the existing sidewalks on both sides of the street to travel south of the tracks approximately 50 feet, and cross 7th Avenue on the north leg of the intersection of 7th Ave/Harbor Beach Court. As an alternative, the crosswalk could be located north of the crossing. This street crossing includes an active enhanced crosswalk, and the rail signal should be modified to add pedestrian gates and barriers on either side of 7th Ave. One parking space would be eliminated on the west side of the street.	Capitola	X
~~54~~	El Dorado Ave	A	The trail is on the west side of the tracks. A new railroad crossing is proposed, to formalize a popular pedestrian crossing between El Dorado Ave and the Simkins Swim Center. The new railroad crossing should include a new pedestrian-only rail signal.	Capitola	X
Segment 10					
~~55~~	17th Ave	A,C	To/from the north the trail is on the west side and to/from the south the trail is on the east side. This represents a rail crossing, which will need to be integrated into the existing signalized rail crossing. Trail users can use the existing sidewalks on both sides of the street to travel south of the tracks approximately 30 feet, and cross 17th Avenue on the north leg of the intersection of 7th Ave/Simkins Swim Center driveway. This street crossing includes an active enhanced crosswalk and improved median. The rail signal should be modified to add pedestrian gates and barriers on either side of 17th Ave.	Capitola	X
~~56~~	30th Ave	E	The trail is on the east side of the tracks. Provide a passive enhanced midblock crossing	Capitola	
~~57~~	38th Ave	E	The trail is on the east side of the tracks. Provide a passive enhanced midblock crossing.	Capitola	
Segment 11					
~~58~~	41st Ave	D	The trail is on the east side of the tracks. There is sidewalk on both sides of the street	Capitola	X

Table 4.11-4
Summary of Selected Road Crossing Treatments

Crossing	Description	Recommended Crossing Treatment		Jurisdiction	Custom Crossing?
		Type	Description		
			between the railroad and Melton St to the north. Provide an active enhanced crosswalk on the south side of Melton Ave. Alternatively, install a HAWK signal on either the south leg of Melton St or just on the north side of the tracks.		
~~59~~	47th Ave	A,H	To/from the north the trail is on the east side and to/from the south the trail is on the west side. This represents a rail crossing, which will need to be integrated into the existing signalized rail crossing. Trail users can use the existing crosswalk on 47th Ave at the intersection of 47th Ave/Portola Dr. This leads the trail users outside the railroad crossing barrier on the east side and also to a controlled crossing of 47th Ave. The existing walkway on the west side of 47th Ave should be extended across the tracks to the crosswalk. Pedestrian gates and barriers should be added to the rail signal.	Capitola	X
~~60~~	49th Ave/Cliff Dr	A, D	The trail is on the west side of the tracks. A new railroad crossing is proposed, to formalize a popular pedestrian crossing between 49th Ave/Prospect Ave and Cliff Drive/Capitola Wharf. The new railroad crossing should include a new pedestrian-only rail signal located at 49th Ave/Prospect Ave and also a connection to a passive enhanced midblock crosswalk located in proximity to the existing crosswalk on Cliff Drive.	Capitola	X
~~61~~	Monterey Ave	D	The trail is on the west side of the tracks. To avoid expensive railroad signal changes, the trail users will be directed to cross Monterey Avenue in a new midblock crosswalk 50 feet south of the tracks. Barriers at the back of sidewalk must be placed to prevent pedestrians crossing within the existing rail barriers. Existing sidewalk is available on both sides of Monterey Ave. Provide an active enhanced midblock crosswalk.	Capitola	X
~~62~~	Grove Lane	J	The trail is on the west side of the tracks. Provide a standard private crossing treatment.	County	X
~~63~~	New Brighton Rd	J	The trail is on the west side of the tracks. Provide a standard private crossing treatment.	County	
~~64~~	Estates Dr	J	The trail is on the west side of the tracks. Provide a standard private crossing treatment.	County	
~~65~~	Mar Vista Dr	A,H	To/from the north the trail is on the west side and to/from the south the trail is on the east side. The existing rail signal must be modified to add pedestrian gates and barriers on both sides of Mar Vista Dr, and the trail users must be provided guidance (barriers) and connection facilities to cross 2 streets, including a new sidewalk on the west side of the street between the tracks and Cedars Street, a new crosswalk on Cedar Street at its intersection with Mar Vista Dr, and a new crosswalk on the south leg of Mar Vista Dr at Cedar St. A sidewalk connection is also needed on the east side of Mar Vista Dr between Cedar St and the new trail entrance on the north side of the tracks.	County	X
Segment 12					
~~66~~	State Park Dr	C, G, H	The proposed trail is on the east side of the tracks. Provide a HAWK signal and medians on State Park Dr at the south leg of its intersection with Sea Ridge Rd. This HAWK signal location should eliminate the need to modify the railroad signal on State Park Dr. Sidewalk must be added on the east side of State Park Dr between the new trail and Sea Ridge Rd, to connect to the new HAWK crossing.	County	X
~~67~~	Aptos Creek Rd	E,G	The trail is on the east side of the tracks. Provide a passive enhanced midblock crossing on Aptos Creek Rd and install a striped or raised curb extension on the SE corner of the	County	X

Table 4.11-4
Summary of Selected Road Crossing Treatments

Crossing	Description	Recommended Crossing Treatment		Jurisdiction	Custom Crossing?
		Type	Description		
			intersection of Aptos Creek Rd/Soquel Dr., in an effort to reduce the speed of right turning vehicles. Crossing should consider planned traffic signal installation at Soquel Drive intersection.		
~~68~~	Bayview Hotel Driveway	J	The trail is on the east side of the tracks. Provide a standard private crossing, and if the private crossing is paved, add a marked crosswalk.	County	
~~69~~	Trout Gulch Rd	A,H	To/from the north the trail is on the east side and to/from the south the trail is on the west side. A trail at-grade rail crossing should be added to the north side of Trout Gulch Rd, including a 10 foot long sidewalk between Aptos St and Soquel Dr, and incorporated into the rail signal controls, including pedestrian barriers and gates. Provide a marked crosswalk on Trout Gulch Rd on the west leg of its intersection with Aptos St. The trail to/from the north appears to require removal of 7 parking spaces in a shopping center. Crossing should consider planned traffic signal installation at Soquel Drive intersection.	County	X
Segment 13					
~~70~~	Clubhouse Dr	H	The proposed trail is on the east side (it appears on RRM May update as switching from the west to the east at Hidden Beach Park to the north, which is not a study crossing). Provide connection facilities, including a curvilinear sidewalk from both trail heads that lead to a new crosswalk on Clubhouse Dr at its intersection with Sumner Ave, which is presently a stop-controlled approach. Install pedestrian barriers to guide trail users to the new intersection crosswalk.	County	X
Segment 14					
~~71~~	Seascape Blvd	H	The trail is on the east side of the tracks. The trail must deviate towards Sumner Ave to align the trail outside the existing rail signal at Seascape Blvd. There is a landscaped area that appears sufficiently wide to accommodate the necessary sidewalks. Provide a new crosswalk on the west leg of the intersection of Seascape Blvd/Sumner Ave. The landscaped median in Seascape Blvd will need to be reconstructed to accommodate the new crosswalk.	County	
Segment 15					
~~72~~	EVA (Seascape)	J	The proposed trail is on the east side of the tracks. The EVA for Seascape currently is equipped with rail signal equipment, including lights and signs but no barriers. Consistent with this approach, pedestrian should be permitted to pass the EVA without modifying the rail signal equipment. Provide a standard private crossing treatment, as the EVA is cordoned off, restricting vehicular crossing of EVA and therefore functioning like a private street.	County	
~~73~~	Camp St. Francis/ agricultural access	J	The trail is on the east side of the tracks. Provide a standard private crossing treatment.	County	
~~74~~	Private agricultural access	J	The trail is on the east side of the tracks. Provide a standard private crossing treatment.	Count	
~~75~~	Camino Al Mar	I, J	To/from the north the trail is on the east side of the tracks and to/from the south the trail is on the west side of the tracks. A connection across the tracks is necessary but signalization	County	X

Table 4.11-4
Summary of Selected Road Crossing Treatments

Crossing	Description	Recommended Crossing Treatment		Jurisdiction	Custom Crossing?
		Type	Description		
			appears unnecessary. In addition, provide a standard private crossing across Camino Al Mar.		
Segment 16					
~~76~~	Private Driveway	J	The trail is on the west side of the tracks. Provide a standard private crossing treatment.	County	
~~77~~	Spring Valley Rd	A,E,H	To/from the north the proposed trail is on the west side of the tracks and to/from the south the trail is on the east side. This creates a trail at-grade rail crossing, which will need to be integrated into the existing Spring Valley Rd crossing of the rail. The proposed trail crossing requires modifying the rail signal, together with the addition of connecting sidewalks or paths to the adjacent school campus and a passive enhanced midblock crosswalk on Spring Valley Road east of the tracks. Barriers should be installed at trail/street intersections to guide trail users towards the new crosswalk.	County	X
Segment 17					
~~78~~	Elicott Slough Rd	J	The trail is on the east side of the tracks. Provide standard private crossing treatment.	County	
~~79~~	Buena Vista Drive	J	The trail is on the east side of the tracks. Provide standard private crossing treatment.	County	
Segment 18					
~~80 81~~	Private Crossing	J	The trail is on the east side of the tracks. Provide standard private crossing treatment. (2)	County	
~~82~~	Lee Rd	H	The trail is on the east side of the tracks. Lee Rd is stop-controlled at the rail crossing. This is an unsignalized rail-street crossing. Provide a new crosswalk on Lee Road at the trail, with no additional railroad modifications due to the existing controls.	Watsonville	
~~83~~	Ohlone Parkway	F,H	The trail is on the east side of the tracks. This is an existing signalized rail crossing and in order to avoid the expense associated with modifying the signal for pedestrian controls, the trail should be redirected north 50 feet. Both the existing and proposed crossing locations represent a standard midblock crossing of a low-volume road that has excellent sight distance. New connection facilities are needed on both sides of the street.	Watsonville	
Segment 19					
~~84~~	Walker St/ Beach St	H	The trail is on the east side of the tracks. Add a new crosswalk on the east leg of the intersection of Walker St/Beach St, to provide a connection to the existing bike lanes on Walker St.	Watsonville	

Notes: SLM = Bicycle Shared Lane Markings; pph = pedestrians per hour; EVA = emergency vehicle access; AWSC = All-Way Stop Controlled; NB = Northbound; SB = Southbound

Impact T-4 Potential conflicts between trail users and railroad traffic could occur at any of the trail railway crossings. These conflicts could result in hazardous conditions for both trail users and rail operators and passengers. This is a Class III, *less than significant* impact.

The MBSST Network includes 14 locations where trail users would be required to cross the railway facilities in order to continue traveling along the path, either because the trail alignment switches sides of the track or because a rail spur is providing an additional connection to another path. There is a potential safety impact associated with these crossings due to the potential freight or passenger train travel along the rail that may be in service at the time of the path user crossings. Regardless of the train speed or frequency, it is assumed that each rail crossing location represents a potential hazard to pedestrians and bicyclists who may not be aware of an approaching train at the time they choose to cross the tracks. The 14 trail crossing locations include recommendations for pedestrian railroad crossing gates. These facilities could be implemented upon completion of the trail.

The CPUC has jurisdiction over the safety of rail crossings in California. As such, all applicable rules and regulations would apply to the proposed MBSST, including: California Public Utilities Code, Sections 1201 et al; the CPUC Rules of Practice and Procedure; and CPUC General Order 88-B. The CPUC recognizes that at-grade crossings present inherent hazards to the traveling public, particularly crossings on right or passenger main lines, and preference is to eliminate these crossings where possible. However, where it is not practicable to eliminate a pedestrian-rail at-grade crossing, pedestrian-rail at-grade crossing design and improvements are required to follow guidelines contained in the CPUC *Pedestrian-Rail Crossings in California: a Report Compiling the Designs and Devices Currently Utilized at Pedestrian-Rail Crossings within the State of California* (May 2008). Following these guidelines would ensure that hazards at any rail crossings are minimized. Thus, impacts would be less than significant.

Mitigation Measures. No mitigation measures are required.

Significance After Mitigation. Impacts would be less than significant without mitigation.

Impact T-5 Potential conflicts between pedestrian and bicyclists may occur at street crossings, where line of sight issues are encountered, or in other areas where there is not a separated path for different types of users. This is a Class II, *significant but mitigable* impact.

The MBSST Network includes approximately 84 roadway crossings or connections, as summarized in Table 4.11-1. In these locations, bicycles and pedestrians would cross the roadway in the same location, without the benefit of separate paths for different types of users. Such crossings may lead to conflicts between the two users groups, which could be a hazardous condition. In addition, some segments of the trail may not include separate paths for different trail users, leading to potential conflict in those areas.

Mitigating Design Features. The proposed MBSST Network Master Plan contains user conflict reduction strategies that would minimize user conflict in multiple-use trails, including conflicts between pedestrians and bicyclists. Key strategies include the following:

1. *Design to minimize conflicts with separate trails or shoulders for pedestrian and equestrian use, where possible, and provide adequate width and sight lines, furnish turnouts at stopping points, etc.*
2. *Use clear signage or pavement markings to define etiquette and yielding protocol*
3. *Set expectations for multi-use*
4. *Enforcement of rules by volunteer trail patrols and/or a uniformed presence – especially when a trail is new to establish precedent and expectations*

The proposed Master Plan emphasizes trail etiquette through both informal and formal means. The proposed Master Plan recommends visual and simple displays of expectations, including the following potential courtesy advisories:

- *Wheels yield to heels*
- *Be courteous to all trail users*
- *Travel at a reasonable speed in a consistent and predictable manner*
- *Always look ahead and behind before passing*
- *Pass slower traffic on their left; yield to oncoming traffic when passing*
- *Give a clear warning signal before passing – use voice signal, not horn or bell, when passing horses*
- *Keep all pets on a short leash*
- *Move off the trail when stopped to allow others to pass*
- *Yield to other users when entering and crossing the trail*
- *All trail users should use a light and reflectors after dusk and before dawn*
- *Travel no more than two abreast*

Despite these design features, mitigation is required to reduce this potentially significant impact.

Mitigation Measures. The following mitigation measures are required:

T-5(a) **Crosswalk Markings.** The crosswalk marking used at all MBSST Network crossings of public roadways shall incorporate a distinctive crosswalk pattern to orient different types of trail users. The crosswalk markings may incorporate bike trail markings flanking the crosswalk (possibly green in color), separating pedestrians in the middle, with directional signs for bicyclists on either side.

T-5(b) **Line-of-Sight.** Wherever feasible, the interface between the trail and intersecting roadway shall be designed so that the approaching driver and bicyclist or pedestrian have a view of each other within the appropriate stopping sight distance suggested by AASHTO Guidelines. This sight distance shall be provided through a combination of measures such as minor vegetation trimming and/or removal, sidewalk/shoulder curb extensions, roadway realignment or narrowing, etc.

Roadway Design Speed (mph)	Stopping Sight Distance (feet)
25	155
30	200
35	250
40	305
45	360

Significance After Mitigation. The implementation of the above measure would reduce impacts related to conflicts between pedestrians and bicyclists to a less than significant level.

Impact T-6 **Construction activity associated with the MBSST Network could introduce a hazard by creating conflicts between construction vehicles and materials and existing vehicle traffic. This is a Class II, *significant but mitigable* impact.**

During construction of the MBSST Network project, construction vehicles and related activity, including staging of materials and vehicles, may block existing vehicle travel lanes and/or interfere with traffic flow on intersecting roadways. The loss of travel lanes and roadway shoulder areas could potentially create conflicts due to unexpected merging. This is a significant but mitigable impact

Mitigation Measures. The following mitigation measure is required:

T-6 **Construction Activity.** Prior to issuance of grading permits, the implementing entity for each trail segment shall prepare a traffic control plan based on Caltrans standards. The traffic control plan shall outline requirements for construction cone placements, temporary construction signage and flagger placement for conditions such as lane closures, shoulder closures, and/or lane narrowing.

Significance After Mitigation. Implementation of the above mitigation measure would reduce the potential for safety problems during construction to a less than significant level.

Impact T-7 **The proposed MBSST Network would include fencing. The installation of fencing may inhibit pedestrian access and reduce local connectivity. This is a Class II, *significant but mitigable* impact.**

The proposed MBSST Network Master Plan would include various types of trail fencing to be used in various environments along the trail network. Although the inclusion of trail fencing will be at the discretion of the RTC and/or implementing entity on a segment-by-segment basis, trail fencing may potentially be included along the length of the MBSST Network due to trail and train operation protection needs. In urban areas, where most pedestrian and bicyclist activity would be anticipated, trail fencing would likely include 54-inch high smooth wire fencing or 72-inch high privacy fencing. In addition, where a high number of illegal rail crossings are expected, 72-inch high woven-wire security fencing may be included.

Installation of fencing in areas where pedestrians currently access the rail corridor may hinder this access and prohibit crossings at non-roadway crossings. Although such crossings are currently illegal, eliminating this accessibility may be perceived as a loss of local connectivity, and may impact the ability of locals to make short non-vehicular trips. This is considered a potentially significant impact to multi-modal connectivity.

Mitigation Measures. The following mitigation measure is required:

T-7 **Trail Access.** Where applicable, the RTC and/or implementing entities shall consider including openings in trail fencing to allow for pedestrian and bicycle access in locations other than staging areas and roadway crossings. If such openings are located on the trail side of the railroad tracks, no additional measures would be required. However, if the openings are located opposite the trail, such that bicyclists and pedestrians would be required to cross the railroad tracks to access the trail, then appropriate crossing equipment acceptable to the CPUC shall be included. These may include pedestrian railroad crossing gates and signage similar to what is proposed on other planned trail crossings of the railroad.

Significance After Mitigation. Implementation of the above mitigation measure would reduce impacts to a less than significant level.

d. Cumulative Impacts. Additional development resulting from buildout of Santa Cruz County and the cities of Santa Cruz, Capitola, and Watsonville may result in significant impacts to the local and regional circulation system, including through the exceedance of established LOS standards at intersections, streets, highways, and freeways. The proposed MBSST Network project itself would not contribute to an exceedance of an LOS standard. In fact, project-generated traffic would be balanced by a reduction in trips due to the change in travel modes to bicycles by commuters. Therefore, the proposed MBSST Network project would promote the use of active transportation modes and would not contribute to significant countywide cumulative traffic impacts. In conjunction with other bikeway and pedestrian projects planned throughout Santa Cruz County, the MBSST Network project would serve to reduce traffic impacts of cumulative development by facilitating alternative modes of transportation.

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