The Mustang Bridge

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Making Accessibility Safer Crossing Santa Rosa St.
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Summary of Proposed Project (The Mustang Bridge)

The purpose of this project is to develop a pedestrian overpass in San Luis Obispo, California at the entry of the city that will successfully provide crossing and safety on Boysen Ave. and Santa Rosa Street connecting Mustang village to university square.

The current circulation routes have a significant impact on a community’s pedestrians, cyclists, and automobile drivers. Safety becomes a growing concern when the streets are illegally crossed in unsafe sections, putting everybody at risk. The planned environment will be revised and accurately assessed to provide safety, flexibility, and proper use of the circulation route in place. The community’s needs can be fulfilled by adding circulation changes, such as strategic placement of an overpass that will be optimally used.

The proposal will explore how sections of cities can have safety issues due to a lack of assessed planning. The concerns can be detrimental to community members when unlawful crossings take place. Prime examples of successful overpasses are bridges or gateways that are used by people frequently to not cross in front of oncoming traffic. The background of the specific area will give insights as to how space functions and the problems that can be aided and prevented. Goals, objectives and design concepts will serve as guidelines as to what is envisioned for this section and what can be accomplished. The overpass will fulfil the purpose of this project, to increase safety and provide effective navigation for community members.
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Chapter #1

Chapter 1: Background of San Luis Obispo
1.1 Project Overview

This project is the proposal of a pedestrian overpass located on Boysen Avenue and Santa Rosa Street. Due to the number of individuals crossing within this section of roadway in San Luis Obispo, our proposal will help to increase public safety and the overall network of a diverse mix of modes of transportation in terms of their circulation patterns. The Mustang Bridge will connect commercial and residential spaces with heavy traffic and allow optimal navigation for automobiles, pedestrians, and cyclists. The bridge will have character and a unique design to match the atmosphere of the city and its representative community. This project will benefit the city and help them to reach their goal of creating better connected street systems throughout their communities.
1.2 Existing Conditions

The existing conditions of the proposed projects site include an intersection with a main arterial roadway (Santa Rosa St.) consisting of two lanes on both sides of its right of way, and its traffic patterns heading Northwest towards Morro Bay, CA, and South towards the City of San Luis Obispo's downtown center. Santa Rosa St. is also accompanied by bike lanes that run along both sides of the right of way, including pedestrian sidewalks. The roadway also has a center median that divides the right of way, incorporating vegetation and a brick hardscape. An intersection is also located here at the project site connecting Santa Rosa St. to Boysen Ave., and the entrance to the Mustang #2 Apartments. A Bus stop is also located here at the project site, placed on the Northwest bound side of Santa Rosa St. (Santa Rosa & Foothill), with the bus lines 9N, 12N, and 14N making frequent stops here throughout the day that are serviced by SLO Transit. Ample street lighting is also provided here and around the project site, that helps make it safer at night for all modes of transportation. Viewsheds that currently exist at the project site include but are not limited to Bishop and Madonna Mountains that are located West of the planned area, as well as the KVEC 920 Radio Tower that is located just North of the site.
1.3 Surrounding Land Uses

The surrounding land uses that are currently designated at and around the project site include general retail uses, public uses, high density residential uses, office uses, and within a special focus area. Other land uses that are located around the site include unincorporated agriculture & open space that is outside the LUCE SOI planning subarea. According to the City of San Luis Obispo’s General Plan the designation for high density residential land uses is primarily for attached dwellings in two- and three-story buildings, that incorporate common outdoor areas and very compact private outdoor spaces (SLO, 2014, pg. 1-27). General retail designated uses are to provide for goods and services that appropriately meet the needs of the city or nearby communities within the County of San Luis Obispo such as specialty stores, department stores, restaurants, etc. (SLO, 2014, pg. 1-27). Public designated uses provide the city with public, cultural, and quasi-public uses to meet the needs of the nearby residents within the city (SLO, 2014, pg. 1-27). The purpose of office land use designation provides the city with office uses to meet the needs of city and specialized needs of county residents however, some types of offices can be prohibited, if found to be in an inappropriate area (SLO, 2014, pg. 1-27). Unincorporated Agriculture and Open Space land use designations are to protect lands that can be cultivated and keeping of livestock and/or land or water areas that remain in a predominantly natural or undeveloped state (SLO, 2014, pg. 1-33).

The project site is also located within a special focus area which gives the City of San Luis Obispo the opportunity to revitalize certain areas of the City’s Planning are based on locations within their general plan map. For these special focus areas, it is important to cons
1.3 Surrounding Land Uses

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Unincorporated Agriculture and Open Space land use designations are to protect lands that can be cultivated and keeping of livestock and/or land or water areas that remain in a predominantly natural or undeveloped state (SLO, 2014, pg. 1-33).
Chapter #2
Chapter 2: Case Studies
2.1 Da Vinci Bridge

This pedestrian overpass located in Norway serves as a gateway for people to cross into separated parts of land. It is Leonardo’s simplest bridge idea but is arguably the most ingenious. The bridge is 108 meters (about 354.33 ft) in length, 10 meters in height, and was constructed in 2001. This type of bridge does not need fastening and gets stronger when more weight is added. Although cars are driving below at high speeds which would result in unsafe crossings for community members, the bridge allows for ease of navigation and the ability to cross safely without interrupting traffic. Without the bridge, people would not be able to cross safely and there would be a significant circulation issue. The benefits of having an overpass are tremendous and provide character and an artistic touch to the city. It is enjoyed by the community and is an unforgettable scene which draws the attention of the public. This relates to the proposal and project because the goal is to provide crossing for members of San Luis Obispo, especially those near Santa Rosa Street and Boysen Avenue. The overall safety and flexibility of travel will be increased and allow for smoother flow throughout the city while avoiding interrupting traffic.
2.2 Zappalar Bridge

This unique pedestrian overpass is located in the traditional resort town of Zappalar, Chile. There are dwellings located on the eastern side of route F 30 - E that unites various villages near the Pacific. The new houses and the town are located on small hills on different sides of the road. Besides in its crossing point the route is elevated and curved, complicating the visibility of the pedestrians. This was dangerous, especially for students and housekeepers that travel between both sides during the day and at night. For this reason, there was an overpass designed to avoid future problems and increase overall safety. The bridge would also serve to transfer water pipes, electricity, etc. from one side to another. The artistic character of the bridge is stunning and can represent a boat of the bay or an arch of access to the town. This relates to the project because we are trying to prevent safety issues and provide a better flow of navigation for residents and people who are forced to cross illegally. This will benefit both sides of the road from the students at Mustang Village to the public who go to the local shopping center for groceries or sit-down meals.
Chapter 3: Santa Rosa Street and Boysen Ave Crossing & Site Analysis
3.1 Santa Rosa Street and Boysen Avenue

In this location of the project, we can see the need for another form of available crossing for community members. The street here is large and is a long distance from the next crosswalk, which is why it is so frequently crossed. In between both busy roads there is enough space for pedestrians to wait to cross the other half of the road. This is not necessarily safe, but it gives pedestrians the idea that they can wait in the middle to cross the other half of the road. It gives more of a false sense of security because at any given moment an automobile could easily merge onto the dividing lane and hit a pedestrian causing a fatality. The overpass will connect both the residential and commercial districts to one another and provide increased safety for all interacting members.
3.2 Pedestrians, Cyclists, and Automobiles

Regarding pedestrians, this space is highly walkable on both sides of the road but not when connecting both sides of the road. There are sidewalks which provide safety and allow members to navigate throughout the city. The main crosswalks are located on Foothill Boulevard and Highland Drive being the entrance to Cal Poly. It is understandable why so many community members illegally cross in the sections shown in the photograph because of the lack of convenience to get to the main crosswalks. Most pedestrians do not want to walk around because you must walk a far distance down the road then come back in the direction you came from. It makes most sense to cross straight through this section because you get to your destinations faster whether it is a commercial store, residential space, or just navigating through the built environment. The community members that are cyclists have bike lanes which are shown in the above photographs. These bike lanes are large and give enough space to be protected from traffic. The outline is well designed allowing residents entering and exiting Mustang Village to see cyclists on the road. Both sides of the proposed overpass have functional bicycle lanes that are safe and provide enough room between them and cars. The bike lanes lead to commercial areas, residential areas, and can take you anywhere in the city safely and efficiently. The automobiles in this section of the city often travel around 40 miles per hour or more. When traffic is extremely high there can be bumper to bumper, traffic causing slower speeds to be seen. For community members it is known that there is an increased sense of awareness required for this area. This is because there are pedestrians frequently unsafely crossing this section of the road. It is an increasing safety hazard and disrupts the flow of traffic when someone is walking slowly across this busy road. Most automobile drivers also need to look out for cyclists,
3.2 Pedestrians, Cyclists, and Automobiles

especially when turning into residential and commercial areas. This is a busy section of the city with its high student population and proximity to businesses. With the addition of the overpass traffic functionality can be benefited and safety provided for all members choosing to go through this section of the city.
3.3 Community Background

From this map we understand that the average age within our specific project site is community members below the age of 29 years old. This section is primarily housing for college students who are often walking to campus and the convenient commercial stores surrounding them. The project site location is specified by the black box located toward the north end of the red city limit boundary. Sections within the map that have no value are undeveloped spaces that do not have community members occupying them.
3.3 Community Background

In this map, the average income of people in these areas is below $29,000, which is evident for students and people living in these apartments. As most college students are focusing on school, they take out loans or have parents support them financially to make it through the schooling period.
3.3 Community Background

Since most people inhabiting these spaces are students, there is a majority that do not have cars and often choose to walk everywhere they go. Of course, this section includes members who have cars, but the majority does not. This adds to the need for a pedestrian overpass to help connect the community with its surrounding commercial stores in a safe and accessible manner.
3.4 Surrounding Attractions

The immediate attractions to our project site’s location include some very popular destinations among community members. The most popular and well known is Cal Poly which is about 2 miles from where the site is located. The Downtown of San Luis Obispo with its lively night life is only around 3 miles from our site’s proposal. An often-visited outdoor activity and hiking destination is Bishop’s peak which offers beautiful views of the city and is only 1 mile away from the future overpass. The most immediate location is University Square which has many commercial and convenient stores located next to our project proposal.
3.5 Project Site Map

This map depicts the project site and the immediate area around it. Other buildings and their uses around the planned area for The Mustang Bridge includes University Square, The Slo Apartments, Mustang Village, and California Polytechnic State University.
3.6 Site Inventory

Illustrative Map That Depicts The Area’s Existing Buildings and Their Use’s

- **1. 195 N Santa Rosa St.**
  - Zone: C-1-6
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 15 ft.

- **2. 225 N Santa Rosa St.**
  - Zone: C-1-6
  - Current Use: Business Office
  - Current Condition: Pristine
  - Building Height: 15 ft.

- **3. 856 Boysen Ave.**
  - Zone: C-2-5
  - Current Use: Multi-Use Office
  - Current Condition: Pristine
  - Building Height: 15 ft.

- **4. 830 Boysen Ave.**
  - Zone: C-2-5
  - Current Use: High Density Residential
  - Current Condition: Pristine
  - Building Height: 24 ft.

- **5. 829 Boysen Ave.**
  - Zone: C-2-5
  - Current Use: High Density Residential
  - Current Condition: Pristine
  - Building Height: 24 ft.

- **6. 10 Chorro St.**
  - Zone: C-2-5
  - Current Use: General Commercial
  - Current Condition: Pristine
  - Building Height: 24 ft.

- **7. 135 Chorro St.**
  - Zone: C-2-5
  - Current Use: Mixed-Use
  - Current Condition: Pristine
  - Building Height: 24 ft.

- **8. 151 N Santa Rosa St.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 24 ft.

- **9. 157 N Santa Rosa St.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 24 ft.

- **10. 9560 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 24 ft.

- **11. 973 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 24 ft.

- **12. 986 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 24 ft.

- **13. 956 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 24 ft.

- **14. 200 N Santa Rosa St.**
  - Zone: C-2-5
  - Current Use: High Density Residential
  - Current Condition: Pristine
  - Building Height: 25 ft.

- **15. 880 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 14 ft.

- **16. 973 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 14 ft.

- **17. 973 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 14 ft.

- **18. 973 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 14 ft.

- **19. 973 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 14 ft.

- **20. 973 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 14 ft.

- **21. 973 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 14 ft.

- **22. 973 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 14 ft.

- **23. 973 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 14 ft.

- **24. 973 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 14 ft.

- **25. 973 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 14 ft.

- **26. 973 Foothill Blvd.**
  - Zone: C-2-5
  - Current Use: Commercial Retail
  - Current Condition: Pristine
  - Building Height: 14 ft.
3.7 Circulation & Accessibility

The proposal of the pedestrian overpass is located by Boysen Avenue and Santa Rosa Street within San Luis Obispo. The project location is surrounded by residential and commercial buildings that are frequently trafficked by community members. There is an abundance of parking in this location at Mustang village for residents and guests, in addition to parking for consumers in the University Square district. The flow of traffic is functional and allows for automobiles to have enough parking and space to navigate through the commercial and residential areas. There are also bus stops located on Santa Rosa Street and Foothill Boulevard within walking distance of the overpass proposal. Due to the high volume of traffic and automobile intensity on Santa Rosa Street an overpass would be beneficial for pedestrians attempting to cross the street. The main crosswalks are located at the traffic light at Foothill Boulevard and the next one is next to Cal Poly State University entrance. This leaves a lot of distance between crosswalks, and the development of the overpass would allow for better safety for pedestrians and prevent disturbances in traffic. The site will be highly walkable and connect busy centers to one another without causing a disturbance to the already heavy automobile traffic.
3.7 Circulation & Accessibility
3.8 Zoning and Land Use

The land uses in the section of the proposal are considered general retail, office space, and high density residential. This is the most important space where an overpass would be beneficial and bring about many benefits to the community. Mustang Village is a high-density residential zone which is primarily temporary housing to college students attending Cal Poly or Cuesta. Across the street is a busy retail center with stores such as coffee shops, convenient stores, grocery stores, and restaurants. These two highly trafficked and populated spaces are split by a busy street located by Boysen Avenue and Santa Rosa Street. Due to the cross walk being at the streetlight most community members illegally cross this section of the road posing a threat to pedestrian, cyclist, and automobile safety. It should be noted that this space is in a special focus area which is closely observed to maximize proper development with specific zoning codes and laws in place. With the addition of an overpass, built to proper zoning codes, the community will be able to freely cross this busy road without causing disturbances and avoiding collisions.
3.8 Zonig and Land Use
Chapter 4: Development Proposal
4.1 Vision Statement:

The accommodation of a pedestrian overpass will be beneficial to the community members of San Luis Obispo adding to the safety and overall flow of traffic. Members from the commercial stores and residents of Mustang Village will be able to cross the busy intersection safely and conveniently at ease. Traffic will not be disrupted, and people can reach their destinations faster. The addition of the overpass will provide safety and be an attraction for the entry of San Luis Obispo from the 101. It will be a benefit to the community and can express the character of San Luis Obispo with key features.
4.2 Goals, Objectives & Design Concepts

Goal 1: Create a pedestrian crossing to connect the community from residential to commercial locations.
   - Objective 1.1: Provide accessible pedestrian crossings for community members at Boysen Avenue and Santa Rosa Street.
     - Design Concept 1.1.1: Overpass at a height of sixteen feet, with stairs on both sides of the road.

Goal 2: Enhance safety and flexible navigation of community members with an overpass.
   - Objective 2.2: Provide an overpass that is frequently used and convenient for community members while protecting them from dangerous collisions.
     - Design Concept 2.1.1: An overpass with clear indications for use by pedestrians and cyclists, easily understood by automobiles.

Goal 3: Create a vibrant character of the entrance of San Luis Obispo with an overpass bridge.
   - Objective 3.3: Create a special sense of place that gives a distinct feel and character to San Luis Obispo.
     - Design Concept 3.1.1: Iconic structure with unique design specific to the location.
4.3 Concept Diagram

The concept map displays a general idea of what types of land is used and amenities that surround the project site. In addition, this gives context as to what the uses will be in each area. The overpass will be situated on Santa Rosa St, and Boy- sen Avenue, which connects Mustang Village to the commercial dis- trict and has significant foot traffic crossing the intersection. There are parking spaces located on both sides of the overpass in the High-Density Residential area and within the Com- mercial Retail area for people who park their cars to access the area’s uses. Near to the proposed Mustang Bridge, there are existing high densi- ty residential apartments and town- homes, general retail stores, and restaurants that surround the proj- ect area. The overall flow of cyclists, pedestrians, and automobiles should improve significantly with the addition of the bridge, promote public health, and make the area more accessible to those who travel through the area.
4.4 Project Description

What is being proposed on this project located at the intersection of Santa Rosa St, Boysen Ave., and the entrance to the Mustang #2 Apartment Complex is the construction of a pedestrian overpass to allow pedestrians and bicyclist to cross Santa Rosa St, safely. To successfully do this, the City of San Luis Obispo will need to work with Caltrans, and other related agencies to make accommodations to the project site’s right of ways to ensure that the development of the overpass can be constructed. Many pedestrians and bicyclists illegally cross at the project location either going towards the Mustang #2 apartments to travel to their homes or the nearby California Polytechnic State University Campus, and in the opposite direction towards the University Square commercial area or homes, impeding vehicular traffic, and creating traffic hazards for all modes of transportation. The proposed project would make the intersection safer for vehicles, pedestrians, and bicyclists by creating easy access to these areas on either side of Santa Rosa St. Without interfering with oncoming traffic in the main right of way.

The proposed overpass is measured to be 14ft. X 116ft. in width and length, and the proposed height of the overpass would be 17ft. + (4ft safety railing). With staircases and elevators on either side of the overpass to allow the structure to be as accessible to all individuals. Elevators would be located on the East or West side of the overpass while the staircases would be located on the South side of the overpass. The materials of the overpass would consist of reinforced concrete, steel, glass, wood, and make use of recycled plastics where applicable. With approval from City of San Luis Obispo’s Planning Director and related structural engineers both ends of the overpass on either side of Santa Rosa St. will have open end rigid frame abutments that include a “T” bent column located within the median of Santa Rosa St. The project will also be designed and built with the appropriate setbacks that are regulated through Caltrans and The City of San Luis Obispo’s Zoning and Planning Regulations.
4.5 Illustrative Site Plan
4.6 Street Elevations

Street Elevation #1 (Looking East From Boysen Ave.)
4.6 Street Elevations

Street Elevation #2 (Looking North From Santa Rosa St.)
References


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