CAPITAL GRANT APPLICATION FORM

<table>
<thead>
<tr>
<th>Project Title:</th>
<th>San Marcos Bicycle Detection Enhancement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicant (Jurisdiction):</td>
<td>City of San Marcos</td>
</tr>
<tr>
<td>Amount Requested:</td>
<td>500,000</td>
</tr>
</tbody>
</table>

APPLICATION CHECKLIST

- Ten hard copies and one CD of the complete Active Transportation application (including all attachments, clearly labeled).
- Resolution authorizing the application, committing to provide matching funds, and authorizing staff to accept grant funds and execute the grant agreement, and documenting community support.
- Format: narrative pages on 8.5x11 paper, all narrative text has at least 1 inch margins on all sides and no less than 10pt. font size (footers and headers exempt from the above requirements).
- Baseline data collection included in Scope of Work, Schedule, and Budget.
- Documentation of matching funds.
- Vicinity maps showing project location and local/regional street, bicycle, transit, and highway facilities within and near the project area (may be printed on up to 11x17 paper).
- Documentation of support for the project from community groups or individuals (recommended but not required).
- Aerial photos and other photographs depicting existing conditions.
- Feasibility study or project study report (include in CD ONLY, do NOT attach as hard copy).

Completed application form:
- Project Summary
- Project Location Map
- Project Costs & Funding Sources
- Project Readiness
- Project Connections and Safety

- Quality of Project
- Supportive Policies and Programs
- Scope of Work, Schedule, and Budget
- Engineer’s Estimate
- Plans showing that minimum design standard has been met

If any of the above are not included with the application by the deadline (with the exception of documentation of community support), the application will be deemed ineligible.
GRANTEE STATEMENTS

☐ The proposed grantee has read the standardized sample grant agreement.

☐ The proposed grantee understands that SANDAG will not reimburse applicants for expenses incurred prior to execution of a grant agreement.

☐ If the SANDAG Board of Directors approves the grant, the proposed grantee agrees to sign and return the standardized grant agreement to SANDAG, without exceptions, within 45 days of receipt.

☐ The proposed grantee agrees to comply with SANDAG's Board Policy No. 035 Competitive Grant Program Procedures, which outlines "use-it-or-lose-it" project milestones and completion deadlines. Board Policy No. 035 is included in the standardized grant agreement as Attachment B, and is also on the SANDAG website at the following link: http://www.sandag.org/organization/about/pubs/policy_35.pdf

☐ The proposed grantee understands that all invoices must be accompanied by a written progress report of the charges for both requested reimbursement of grant and matching funds and submitted to SANDAG no less frequently than quarterly. Invoice and progress report templates are available on the SANDAG website at the following link: http://www.sandag.org/grants/forms

☐ The proposed grantee understands that upon approval of funding by the SANDAG Board of Directors, the applicant will provide a copy of their approved indirect cost rate audit or their proposed indirect cost rate methodology, if charging for overhead, to SANDAG for review and approval, which must occur prior to execution of the grant agreement.

☐ The proposed grantee understands that a resolution including the requirements of Board Policy No. 035, Section 4.1, must be submitted to SANDAG at least two weeks prior to the recommendation by the Transportation Committee of the list of grant projects to be considered eligible. SANDAG will provide applicants with advance notice of the Transportation Committee's anticipated meeting dates.

I certify that I agree with the above statements, have reviewed the Active Transportation Grant Program Guidelines, and that the information submitted in this application is accurate and in accordance with these guidelines.

I have the authorization to submit this grant on behalf of my organization.

Mike Edwards  
City Engineer/Public Works Director

<table>
<thead>
<tr>
<th>Grantee Name (print or type)</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Grantee Signature (signature cannot be electronic)</th>
<th>Date (mm/dd/yyyy)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>07/17/2012</td>
</tr>
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</table>
**PROJECT SUMMARY**

**Applicant (Agency):** City of San Marcos

**Project Title:** San Marcos Bicycle Detection Enhancement Project

**Project Area Limits:** e.g. 4th St. between Laurel St. and Ash St., and 5th St. between Laurel St. and Ash St.
Traffic signal locations throughout the City of San Marcos.

**Project Description: (6 lines max)**
The project will implement an intersection detection system that will discriminatively detect bicyclists at signalized intersections and apply safe passage bicycle timing parameters. This innovative traffic signal control technology will provide safe mobility for bicyclists throughout the City of San Marcos.

**Primary Contact Person (Project Manager):** Omar Dayani

<table>
<thead>
<tr>
<th>Title:</th>
<th>Principal Civil Engineer</th>
</tr>
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<tbody>
<tr>
<td>Street Address:</td>
<td>Civic Center Drive</td>
</tr>
<tr>
<td>City and Zip Code:</td>
<td>San Marcos 92069</td>
</tr>
<tr>
<td>Phone:</td>
<td>760.744.1050</td>
</tr>
<tr>
<td>E-mail Address:</td>
<td><a href="mailto:ODayani@san-marcos.net">ODayani@san-marcos.net</a></td>
</tr>
</tbody>
</table>

Is this project in your agency’s adopted capital improvement program? (Y/N) **Y**

Is the project part of a larger capital improvement project?

If so, describe the larger project in its entirety, as well as the funding sources:

No.

<table>
<thead>
<tr>
<th>Active Transportation Grant Funds Request</th>
<th>$500,000</th>
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</thead>
<tbody>
<tr>
<td>Matching Funds</td>
<td>$100,000</td>
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**Total Project Cost** $600,000

Total Project Cost = Active Transportation Grant Funds + Matching Funds

Can this project be broken into phases? (Y/N) **N** If yes, briefly list phased scope and costs:

(Please use separate page if necessary.)
PROJECT COSTS AND FUNDING

TOTAL ESTIMATED PROJECT COST:

Project Cost Estimates: On a separate sheet, provide an itemized engineer’s cost estimate for all eligible expenses.

Summary of Cost Estimates

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<tr>
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<td>Project Management</td>
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<td>Contract Engineering</td>
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<td>Environmental Clearance</td>
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<td>Right-of-Way Acquisition</td>
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<td>Final Design</td>
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<tr>
<td>Construction</td>
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<td>Construction Management</td>
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<td>Construction Contract</td>
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| Total Cost $ 800,000                   |       |

Funding Sources:

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<tr>
<td>Other (specify source)</td>
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<tr>
<td>Local Traffic Safety Funds</td>
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</table>

| Total Funding $ 600,000      |       |

MINIMUM DESIGN STANDARDS & GUIDELINES

Clearly illustrate that the minimum design standard is being met. Plans provided must be actual cross-section drawings. (Provide photographs, if applicable) See Eligibility Criteria for more information on design standards and guidelines.
**PROJECT READINESS**

**COMPLETION OF MAJOR MILESTONES**

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<tr>
<th>Phase</th>
<th>Start Date</th>
<th>Completion Date</th>
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<td>1. Community Active Transportation Strategy/Neighborhood-level plan/Corridor study</td>
<td>March 2011</td>
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<td>2. Environmental Documentation/Certification</td>
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<td>July 2012</td>
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<td>3. Right-of-Way Acquisition</td>
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<td>N/A</td>
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<tr>
<td>4. Final Design</td>
<td>April 2013</td>
<td>May 2013</td>
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PROJECT CONNECTIONS AND SAFETY

Connection to Regional Bicycle Network, Completes Connection in Local Bicycle Network, Completes Connection in Existing Pedestrian Network, Connection to Transit

Provide a map that clearly illustrates the project's relationship to existing bicycle, pedestrian, and transit facilities.
Safety Improvements and Overcoming Barriers (250 words max plus collision data attachments)

Describe, in bullets, the specific safety issues addressed by the project. Please attach documentation for safety and collision history. If collision data is provided, it must be annotated to highlight collisions applicable to the project and why they are relevant.

If applicable, (1) attach a map and/or photos indicating gaps and barriers, including changes in facility type where appropriate; (2) describe any locations within the project limits where barriers or hazardous conditions exist that prohibit safe access for bicyclists and pedestrians.

-Bicycle Related Collisions:
  * Collision data records show that there have been 55 bicycle related collisions at signalized intersections from 2000 to 2011 citywide.
  * Intersection collisions represent 58% of all bicycle related collisions in the City.
  * The collisions include 4 severe injuries, 22 visible injuries, 18 complaints of pain, and 11 property damage crashes. Subsequently, 80% of signalized intersection crashes between bicycles and motor vehicles resulting in injury.
  - Currently, there is no provision for bicycle detection at signalized intersections within the City. This creates a hazardous condition that prohibits safe access and travel for bicyclists through signalized intersections.
  - Bicyclists are currently forced to wait for a motorist to actuate the detection for the desired movement.
  --- The lack of detection for bicyclists is especially critical for left turn and side street movements. Many times when motor vehicle traffic is light bicyclist are often seen crossing on a red light.
  - The current traffic signal timing does not accommodate the California Manual on Uniform Traffic Control Devices (CAMUTCD) minimum standard startup and clearance times for bicyclists at an intersection.
  - There is no designated area on the left turn lanes or side street lanes for the bicyclist to wait during a red indication.

Vehicle Speed Limit and Average Daily Traffic (ADT)

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<tr>
<th>Street Name</th>
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<td>45 to 50 MPH</td>
<td>45 to 50 MPH</td>
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<tr>
<td>Rancho Santa Fe Road</td>
<td>40 to 45 MPH</td>
<td>10,000 to 30,000</td>
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<tr>
<td>Mission Road</td>
<td>40 to 45 MPH</td>
<td>13,000 to 25,000</td>
</tr>
<tr>
<td>Twin Oaks Valley Road and San Elijo Road</td>
<td>25 to 50 MPH</td>
<td>11,000 to 35,000</td>
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QUALITY OF PROJECT

For this section, please provide answers in bullet format. A short, concise narrative may be provided, if necessary, to describe the project.

Effectiveness and Comprehensiveness of Proposed Bicycle, Pedestrian, and/or Traffic Calming Measures, and Relationship to Program Objectives

Describe the need for traffic calming, pedestrian, and bicycle improvements in the project area, in bullets. (4 lines max)

- There is a need to improve bicycle safety for the many individuals and groups that rely on bicycles to connect to regional transit and neighborhood destination such as work, schools, parks and social services.
- Detection and timing at signalized intersections does not accommodate bikes.
- There is a need to increase the level of service and encourage safe bike travel.
- There is a need to provide a network of bicycle connectivity to the transit station, campus, hospital and retail centers.

List the goals of the project, in bullets. (4 lines)

- Improve safety for bicyclists at signalized intersections.
- Improved level of service for bicyclists at signalized intersections.
- Improved connectivity throughout the City for bicyclists through safe and efficient access and passage.
- Implement an innovative solution to showcase the benefits of bike priority projects & serve as a model for the region.
- Encourage bicycling as a viable transportation choice for all socio-economic groups in the region.

Describe the proposed improvements and why they are particularly suited to address the needs stated above, in bullets. (4 lines max)

- Implementing a bicycle detection system that discriminates between motor vehicles and bicycles will provide increased safety and connectivity.
- The project will provide an improved level of service for bicyclist by installing a loop detection system, which is the most reliable detection technology available.
- The installation of bicycle specific pavement markings and signs at signalized intersections will demonstrate the increased bicycle safety and subsequently encourage community support as a viable non motorized transportation choice.

INNOVATION

Is this or will this project be an FHWA or State experimentation effort? [ ] Yes [ ] No If yes, evidence must be attached.

Does this project propose any solutions that are new to the region? If so, please describe, in bullets. (4 lines)

- The project will install innovative bicycle detection technology that can discriminate between a motor vehicle and a bicycle.
- The detector configuration, roadway location, and pavement marking treatments will provide increased safety for recreational and commuting bicyclist.
- The ability to apply bicycle specific timing at a signalized intersection for a bike when a bike is detected will provide an increased level of service and promote bicycling as a viable choice of transportation.
SUPPORTIVE POLICIES AND PROGRAMS

COMPLEMENTARY PROGRAMS

Describe in **bullets** any programs that complement the proposed capital improvements: awareness, education efforts, increased enforcement, bicycle parking. Describe who will be responsible in implementing the programs and how they relate directly to the capital improvements. In order to receive points, programs must be included in project Scope of Work, Schedule, and Budget.

- The City will raise public awareness by establishing a web page with information about the new bicycle detection technology. The web page will contain city-wide map information of the location of the improved bike facilities. (. The web page map will also show the connectivity of the local bike facility network (Class I and Class II and bike parking) in relation to local transit facilities including the SPRINTER and BREEZE, local Universities including Palomar College and San Marcos State, San Marcos Unified School District facilities, Civic Centers, Employment Centers, places of interest such as Old Restaurant Row, Parks and Recreational Areas, and Shopping Centers. There will be mapping for the regional bike network and links to local and regional bike advocacy and social groups.
- The City will produce updated trail maps to illustrate the improve connectivity and safety achieved by the project.

SUPPORTIVE POLICIES AND PLANS

Cite in **bullets** any policy language in approved plans that support this project, or cite Community Active Transportation Strategy that was completed prior to this application.

- The San Marcos Bikeway Master Plan (2005). The Bikeway Master Plan presents the strategies and programs for bikeway planning in the City and is consistent with the Regional Bike Plan goals and objectives. See Attachment A Minimum Design Standards and Guidelines, Section 2.2 San Diego Regional Bike Plan Consistency.
- City of San Marcos General Plan Update 2012, Mobility Element Policies:
  * Policy M-1.6 * Policy M-3.2 * Policy M-3.3 * Policy M-3.1
Local air quality and energy conservation goals as expressed in the City of San Marcos General Plan include fulfilling state policies to maintain, improve, enhance the quality of air, water and land by encouraging new development which uses public facilities currently available.

Briefly describe any other relevant aspects of the project.

The San Marcos Bicycle Detection Enhancement Project presents an innovative solution using detection technology to provide bicycle detection at signalized intersections. The solution combines proven technology with new advancements to discriminate between a bicycle and a motor vehicle. This enhancement will improve both safety and efficiency for bicyclists at signalized intersections. Bicycle detection will provide bicyclist with access to the intersection and appropriately timed passage through the intersection. The collision data indicates a high percentage of bicycle and motor vehicle collisions occur at signalized intersections and the majority of which result in injury. Unfortunately, these conditions are common throughout the region. The City is a bicycle friendly community with several bike enthusiasts and social groups who bike to commute to work and for recreational purposes. As a result, bicycle safety and the ability to access signalized intersections are of great concern.
SCOPE OF WORK, SCHEDULE, AND BUDGET

In the section below, state the scope of work, schedule, budget, and project deliverables (including specific quantities and locations of improvements). Please note that if this project is funded, this will be added to the grant agreement and the grantee will be held to this scope, budget, and schedule, for the purpose of project oversight. Applicants are required to identify phasing for the project, in the event that the project cannot be fully funded by SANDAG.

Please print completed Excel scope of work, schedule, and budget sheet and attach to application.

The project will implement an intersection detection system that will discriminately detect bicyclists at signalized intersections and apply safe passage bicycle timing parameters. This innovative traffic signal control technology will provide safe mobility for bicyclists throughout the City of San Marcos.

This is not a phased project.

<table>
<thead>
<tr>
<th>Task</th>
<th>Task Description</th>
<th>Deliverable/s</th>
<th>Start Date</th>
<th>Completion Date</th>
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<td>Baseline Data Collection</td>
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<td>Aug-13</td>
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<td></td>
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<td>City Council Report, &amp;</td>
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<td>Construction Contract</td>
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<td>Graphics, Informational</td>
<td>May-13</td>
<td>Jun-13</td>
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<td>Information Page and Video</td>
<td>Videos &amp; Web Page</td>
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<td>Public Outreach- Project</td>
<td>Encouragement &amp;</td>
<td>Nov-13</td>
<td>Dec-13</td>
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<td>Awareness &amp; Education Flyers</td>
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<td>Sep-13</td>
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<td>Completed project</td>
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ATTACHMENTS

Attachment 1: City Council Resolution
Attachment 2: Scope of Work, Schedule & Budget
Attachment 3: Documentation of Matching Funds
Attachment 4: Aerial Photos
Attachment 5: Letters of Support
Attachment 6: Feasibility Study
RESOLUTION NO. 2012-7661

A RESOLUTION AUTHORIZING THE FILING OF FOUR APPLICATIONS FOR ACTIVE TRANSPORTATION GRANT PROGRAM FUNDS THROUGH THE SAN DIEGO ASSOCIATION OF GOVERNMENTS FOR THE SAN MARCOS BICYCLE AND PEDESTRIAN MASTER PLAN, SAN MARCOS BOULEVARD COMPLETE STREET MULTI-WAY BOULEVARD, CSUSM BIKE & PEDESTRIAN URBAN TRAIL AT TWIN OAKS VALLEY ROAD, AND SAN MARCOS BICYCLE DETECTION ENHANCEMENT, AND ACCEPTING THE TERMS OF THE GRANT AGREEMENT.

WHEREAS, $8.8 million of Transportation Development Act/TransNet funding for capital and non-capital active transportation projects is available to local jurisdictions and the County of San Diego from Fiscal Year 2011-2012; and

WHEREAS, CITY OF SAN MARCOS wishes to receive up to $1,309,000 in Active Transportation Grant funds for the following projects: San Marcos Bicycle and Pedestrian Master Plan, San Marcos Boulevard Complete Street Multi-Way Boulevard, CSUSM Bike & Pedestrian Urban Trail at Twin Oaks Valley Road, and San Marcos Bike Detector System; and

WHEREAS, City of San Marcos understands that the Active Transportation Grant Program funding is fixed at the programmed amount, and therefore project cost increases that exceed the grant awarded will be the sole responsibility of the grantee; and

WHEREAS, City of San Marcos agrees to complete the proposed grant project within a timely matter and in compliance with Board Policy No. 035.

NOW, THEREFORE, BE IT RESOLVED by City Council of the City of San Marcos that the City Engineer/ Public Works Director is authorized to submit an application to SANDAG for Active Transportation Grant Program funding in the amount for the following projects:

1) $600,000 for CSUSM Bike & Pedestrian Urban Trail at Twin Oaks Valley Road;

2) $500,000 for San Marcos Bicycle Detection Enhancement;
Resolution No. 2012-7661

3) $80,000 for San Marcos Bicycle and Pedestrian Master Plan;

4) $124,000 for San Marcos Boulevard Complete Street Multi-Way Boulevard; and

BE IT FURTHER RESOLVED that, if a grant award is made by SANDAG to fund the above mentioned projects, City Council of the City of San Marcos commits to providing $301,000 of matching funds and/or in-kind contributions and authorizes the City Engineer/ Public Works Director to accept the grant funds, execute the grant agreement with SANDAG with no exceptions (a sample of which is attached), and complete the Project.

PASSED, APPROVED AND ADOPTED by the City Council of the City of San Marcos this 12th day of June, 2012, by the following roll call votes:

AYES: COUNCILMEMBERS: JABARA, JONES, MARTIN, ORLANDO, DESMOND

NOES: COUNCILMEMBERS: NONE

ABSENT: COUNCILMEMBERS: NONE

[Signature]
James M. Desmond, Mayor
City of San Marcos

ATTEST:

[Signature]
Susie Vasquez, City Clerk
City of San Marcos
### SANDAG ACTIVE TRANSPORTATION GRANT PROGRAM: SCOPE OF WORK, SCHEDULE, AND BUDGET

**Project Title:** San Marcos Bicycle Detection Enhancement Project

**Project Location/Limits:**
Citywide Traffic Signal Locations

**Project Description:**
The project will implement an intersection detection system that will discriminate detect bicyclists at a signalized intersections and apply safe passage bicycle timing parameters. This innovative traffic signal control technology will provide bicycle mobility for bicyclists throughout the City.

<table>
<thead>
<tr>
<th>Task No.</th>
<th>Task Description</th>
<th>Deliverable(s)</th>
<th>Start Date</th>
<th>Completion Date</th>
<th>SANDAG Funds</th>
<th>Matching Funds</th>
<th>TOTAL</th>
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**PROJECT REVENUES**

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ATTACHMENT 3

Item Number: 2013-43
Title: Bicycle Detection Enhancement
Project Code: TBD

Description: The proposed project will install bike detectors at key intersection citywide to enable bicycle timing parameters required in the latest Manual on Uniform Traffic Control Devices (California MUTCD).

Justification: This project will improve bicycle safety crossing signalized intersections and encourage bike travel throughout the City.

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Project Area Barriers to Safe Access for Bicyclists

Safe access for bicyclists is prohibitive at traffic signals due to a lack of bicycle detection. This has continually been an issue for bicyclists at traffic signals and more recently bicycle detection has become a very hot topic in the Traffic Engineering community. In 2008, AB1581 became law and requires all new or modified traffic signals to respond to the presence of bicyclists. In addition, a requirement to develop signal timing guidance was also a part of AB1581. Both are incorporated in Policy Directive 09-06 from Caltrans.

Detection of bicycle traffic at signalized intersections, particularly in left turn pockets, is a major problem in the City of San Marcos and San Diego County as bicyclists often have to wait for a motorist to arrive before receiving a green traffic signal. The current practice of push button actuation at the side of the road is not acceptable, as it is often incompatible with cyclist lane position (such as when a cyclist is in the left turn pocket, or in the through lane to avoid a right turn only lane).

The following figures and caption text indicate the barrier to a bicyclist at signalized intersections.
City of San Marcos
San Marcos Bicycle Detection Enhancement Project

- Large signalized intersection with video detection.
- Bicycles in left turn lanes are not distinguished as bicycles and do not receive adequate time to proceed through the intersection.

Mitigating Measures:
- Implement modified type Q loops exclusively for bicycles in the left turn lanes.
- Implement appropriate bicycle timing for bicyclists to clear the intersection.
- Mark the detection area with the Caltrans bicycle detector symbol.
City of San Marcos
San Marcos Bicycle Detection Enhancement Project

- Signalized intersection with loop detection.
- Bicycles in left turn lanes are not distinguished as bicycles and do not receive adequate time to proceed through the intersection.

Mitigating Measures:
- Implement modified type Q loops exclusively for bicycles in the left turn lanes.
- Implement appropriate bicycle timing for bicyclists to clear the intersection.
- Mark the detection area with the Caltrans bicycle detector symbol.
- Implement striping treatments and redesignate open areas of pavement to establish exclusive detection zones.
June 28, 2012

San Diego Association of Governments
Attn: Christine Eary
401 B Street, Suite 800
San Diego, CA 92101

RE: Active Transportation Grant Program

Dear Ms. Eary:

It is with great pleasure that I submit this letter in support of the City of San Marcos’ application for Active Transportation Grant Program funding consideration for the following project:

- **San Marcos Bicycle Detection Enhancement Project**: The project will implement an intersection detection system that will discriminately detect bicyclists from motorized vehicles at signalized intersections to provide safe mobility for bicyclists on City streets.

As the Executive Director of Facilities Planning and Development, I strongly endorse the City’s efforts in seeking funding to support projects that encourage pedestrian and bicycling commuting that not only benefits the San Marcos Unified School District, but benefits all pedestrians, bicyclists and residents who live, work and play in San Marcos.

Thank you for your time and consideration.

Sincerely,

Katherine Tanner
Executive Director
Facilities Planning & Development

KT/ntd

C: Gary Hamels, Assistant Superintendent
July 5, 2012

San Diego Association of Governments
Attn: Christine Eary
401 B Street, Suite 800
San Diego, California 92101

Dear Ms. Eary,

It is with great pleasure that I submit this letter in support of the City of San Marcos’ application for Active Transportation Grant Program funding consideration for the San Marcos Bicycle Detection Enhancement Project. The project will implement an intersection detection system that will discriminatingly detect bicyclists from motorized vehicles at signalized intersections to provide safe mobility for bicyclists on City streets.

As the Executive Director, I strongly endorse the City’s efforts in seeking funding to support projects that encourage pedestrian and bicycling commuting that not only benefits The San Diego County Bicycle Coalition but benefits all pedestrians, bicyclists and residents that live, work and play in San Marcos.

Thank you for your time and consideration.

Sincerely,

[Signature]

Andy Hanshaw
Executive Director
San Diego County Bicycle Coalition
June 15, 2012

San Diego Association of Governments
Attn: Christine Eary
401 B Street, Suite 800
San Diego, California 92101

Dear Ms. Eary,

It is with great pleasure that I submit this letter in support of the City of San Marcos’ application for Active Transportation Grant Program funding consideration for the following project:

- **San Marcos Bicycle Detection Enhancement Project**: The project will implement an intersection detection system that will discriminated detect bicyclists from motorized vehicles at signalized intersections to provide safe mobility for bicyclists on City streets.

As the City of San Marcos Trails Advisory Committee Chair, I strongly endorse the City’s efforts in seeking funding to support projects that encourage pedestrian and bicycling commuting that not only benefits the City of San Marcos, but benefits all pedestrians, bicyclists and residents that live, work and play in San Marcos.

Thank you for your time and consideration.

Sincerely,

[Signature]

Gary Hill
Trails Advisory Committee Chair
June 7, 2012

San Diego Association of Governments
Attn: Christine Eary
401 B Street, Suite 800
San Diego, California 92101

Dear Ms. Eary,

It is with great pleasure that I submit this letter in support of the City of San Marcos’ application for Active Transportation Grant Program funding consideration for the following projects:

- **CSUSM Bike & Pedestrian Urban Trail at Twin Oaks Valley Road Project**- The project will construct a multi-purpose paved urban trail and enhanced parkway landscaping with pedestrian lighting and site furnishings along Twin Oaks Valley Road.

- **San Marcos Bicycle Detection Enhancement Project**- The project will implement an intersection detection system that will discriminatingly detect bicyclists from motorized vehicles at signalized intersections to provide safe mobility for bicyclists on City streets.

- **San Marcos Bicycle and Pedestrian Master Plan**- The project will identify a plan to provide safe mobility for non motorized users throughout the City. The project will focus on completion of the bicycle and pedestrian network by identifying new routes to provide additional connectivity, identify deficiencies, provide recommendations for improvements to the existing network, and identify education and encouragement programs.

- **The San Marcos Boulevard Complete Street Multi-Way Boulevard Plan**- The project will create a transportation corridor that will embrace pedestrians, bicyclists and public transit, improve traffic flows, reduce traffic conflicts, and maintain SANDAG’s regional arterial classification. The project will include preparation of a set of complete street concepts that will be incorporated in future re-development of San Marcos Boulevard as detailed in the City’s general plan update.

Keeping the Peace Since 1850
As the Captain of the San Marcos Sheriff's Station, I strongly endorse the City’s efforts in seeking funding to support projects that encourage pedestrian and bicycling commuting that not only benefits San Diego Sheriff's Department, but benefits all pedestrians, bicyclists and residents that live, work and play in San Marcos.

Thank you for your time and consideration.

Sincerely,

WILLIAM D. GORE, SHERIFF

Michael R. Barnett, Captain
San Marcos Station

MRB:sg
June 6, 2012

Christine Eary
SANDAG
401 B Street, Suite 800
San Diego, CA 92101

Dear Ms. Eary,

The Traffic Safety Commission strongly supports the efforts of the City of San Marcos in providing additional measures to ensure traffic safety for residents, pedestrians, bicyclists and visitors of San Marcos.

The following projects have been identified as key projects that will greatly benefit and provide a safer environment for our community:

1) Bicycle and Pedestrian Master Plan
2) San Marcos Bicycle Detection Enhancement
3) California State University San Marcos Bike & Pedestrian Urban Trail at Twin Oaks Valley Road
4) San Marcos Boulevard Complete Street

As the chair of the Traffic Safety Commission, it is with great pleasure to submit this letter of support for the City’s Active Transportation Grant Program (FY2011 – FY2012) applications for the aforementioned projects. We hope that the City’s applications will result in a successful award of Active Transportation Grant Program funds.

Thank you for your time and consideration.

Sincerely,

Brad Pederson
Chair, Traffic Safety Commission
June 13, 2012

San Diego Association of Governments
Attn: Christine Eary
401 B Street, Suite 800
San Diego, California 92101

Dear Ms. Eary,

It is with great pleasure that I submit this letter in support of the City of San Marcos' application for Active Transportation Grant Program funding consideration for the following projects:

- **San Marcos Bicycle Detection Enhancement Project**: The project will implement an intersection detection system that will discriminately detect bicyclists from motorized vehicles at signalized intersections to provide safe mobility for bicyclists on City streets.

As the Fire Chief, I strongly endorse the City's efforts in seeking funding to support projects that encourage pedestrian and bicycling commuting that not only benefits San Marcos Fire Department but benefits all pedestrians, bicyclists and residents that live, work and play in San Marcos.

Thank you for your time and consideration.

Sincerely,

[Signature]

Todd Newman
Fire Chief
San Marcos Fire Department
North County Cycle Club  
P.O. Box 1668  
Carlsbad, CA 92018-1668

June 29, 2012

Christine Eary  
SANDAG  
401 B Street, Suite 800  
San Diego, CA 92101

Subject: Support Letter for City of San Marcos' Grant Application

Dear Ms. Eary,

As the president of the North County Bicycle Club, it is with great pleasure that I submit this letter in support of the City of San Marcos’ applications for the Active Transportation Grant Program funding for the following projects:

- San Marcos Bicycle and Pedestrian Master Plan,
- San Marcos Bicycle Detection Enhancement Project, and
- CSUSM Bike and Pedestrian Urban Trail at Twin Oaks Valley Road.

The San Marcos Bicycle and Pedestrian Master Plan project will provide a comprehensive plan to provide safe mobility for non motorized users. The project will provide recommendations for improvements to the existing network and identify programs to educate motorists, bicyclists, and pedestrians on the rules of the road, and encourage even more residents to walk and bicycle throughout the City. The San Marcos Bicycle Detection Enhancement Project will allow safer crossing at signalized intersections for bicyclists. The CSUSM Urban Trail will be constructed on Twin Oaks Valley, a San Diego regional bike corridor. The project will improve bicycle/pedestrian neighborhood connectivity.

We believe that these projects will support and promote bicycling commuting by providing safer and more enjoyable bike paths and trails. The North County Bicycle Club strongly endorse the City’s efforts in seeking funding to support projects that promote multimodal transportation and provide safer facilities for bicyclists and pedestrians. It is our hope that the City’s applications will result in a successful award of Active Transportation Grant Program funds.

Thank you for your time and consideration.

Sincerely,

John G. Wellwood  
President North County Cycle Club
Bicycle Detection Enhancement Project

FEASIBILITY STUDY

City of San Marcos
Engineering
May 2012
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1.0 INTRODUCTION

The City of San Marcos has performed a preliminary engineering and feasibility study for the San Marcos Bicycle Detection Enhancement Project. The purpose of this study is to demonstrate project readiness and evaluate the feasibility of implementing a bicycle detection system at signalized intersections that will discriminatingly detect bicyclists at signalized intersections and apply safe passage bicycle timing parameters. This innovative traffic signal control technology will provide safe mobility for bicyclists throughout the City of San Marcos.

This study details the evaluation effort and is divided into the following sections:

- Agency Staff Field Evaluations
- Concept Drawings
- Horizontal Alignment
- Identification Of Right Of Way
- Identification Of Environmental Requirements
- Cost Estimate
- Preliminary Community Input

The next section (Section 2) contains the results of field evaluations which demonstrate the need for bicycle detection technology at signalized intersections in San Marcos. Section 3 presents conceptual drawings of the technical solution. Sections 4, 5, and 6 contain statements regarding "no project impacts" on horizontal alignment, Right of Way, and environmental requirements, respectively. An itemized cost estimate is contained in Section 7, and preliminary community support is detailed in Section 8.

1.1 Background

The City of San Marcos Citywide Bicycle Detection Project seeks to implement recent proven traffic signal control technology in order to provide safe mobility for bicyclists on City streets. The core project deployment will be an intersection detection system that will discriminatingly detect bicyclists from motorized vehicles at a signalized intersection and apply safe passage bicycle timing parameters.

The City of San Marcos is a leader in the region for the provision of bicycle facilities. The City has approximately 11.8 miles of Class I bike facilities which is second only to the City of San Diego. The City also has approximately 45.3 miles of Class II bike facilities, which is second amongst all cities in the region. As a percentage of population and land area San Marcos ranks first in the region with the greatest percentage of bike facilities.
2.0 AGENCY STAFF FIELD EVALUATIONS

City of San Marcos Engineering Staff conducted field evaluations to inventory existing signalized intersection conditions and observe operating characteristics of bicycles at signalized intersections. The field evaluations provide staff the necessary information to identify specific areas in need of improvement.

2.1 Roadway Characteristics

Class II bike facilities are by far the most widely deployed bike facility in the region. Class II bike facilities are Bike Lanes and are defined by pavement markings and signage used to allocate a portion of a roadway for exclusive or preferential bicycle travel. Examples of Class II bike facilities are shown below including pictures of bicyclists travelling on a bike lane in San Marcos.

![Figure 1: Class II Bikeway Render](image1)

Class II Bikeways increase the confidence for bicyclists traveling on roadways and also increase the certainty for motorists driving adjacent to the bike lane.

2.2 Needs Identification - Signalized Intersection Observations

Currently, there is no provision for bicycle detection at signalized intersections within the City. This creates a hazardous condition that prohibits safe access and travel for bicyclists through signalized intersections. Bicyclists are currently forced to wait for a motorist to actuate the detection for the desired movement. The lack of detection for bicyclists is especially critical for left turn and side street movements. Many times when motor vehicle traffic is light bicyclist are often seen crossing on a red light. The following pictures show field observations of intersection operations.
Figure 3: Bicyclist at Signalized Intersection in San Marcos

Figure 4: Bicyclists at Signalized Intersection in San Marcos
Figures 3 and 4 illustrate the need for detection at signalized intersections in the City of San Marcos. In both figures bicyclists are waiting for motorists to actuate intersection detection.

2.3 Needs Identification - Current Design Standards

The current traffic signal timing does not accommodate the California Manual on Uniform Traffic Control Devices (CAMUTCD) minimum standard startup and clearance times for bicyclists at an intersection.

The traffic signal design and bicycle detection and timing design standards are summarized below.

- All new signals and modified signals having 50% of limit line detection changed
  - Should have Bicycle Detection
  - Should have Bicycle Minimum Green Timing

The current guidance does not allow deviations. Implementation of these standards alone adds greater delay to all modes using the intersection. The ability to detect a bicycle and a motor vehicle discriminately provides the required bicycle timing when a bicycle is detected.

2.4 Needs Identification - San Diego Regional Bike Plan

The San Diego Regional Bike Plan stipulates that within the regional corridor system, bike lanes should be enhanced with treatments that improve safety and connectivity by addressing site-specific issues with treatments including: innovative signage, intersection treatments, and bicycle loop detectors.
3.0 CONCEPT DRAWINGS

The following Figures illustrate drawings of the loop detection installations for bicycle detection. Figure 5 represents the schematic for a parallelogram loop and Figure 6 shows the installation on the street. Figure 7 illustrates the modified Type Q detector and Figure 8 shows a field installation.

Figure 5: Parallelogram Loop Schematic

Figure 6: Parallelogram Loop Installation
Figure 7: Mod Type Q Loop Schematic

Figure 8: Mod Type Q Loop Installation
3.1 Bicycle Detector Results

The following chart illustrates the detection signature of a bicycle with the discriminating bicycle detector card. The first picture (left) is a standard bicycle tire and the second picture (right) is 4 turns of wire in a plastic tube. The pictures are shown adjacent to their detection signature.

Figure 9: Bicycle Detection Results
4.0 HORIZONTAL ALIGNMENT

There are all types of roadways throughout San Marcos - ranging from low-speed residential streets to median divided arterials. There are also all types of signalized intersections throughout the City - ranging from residential and arterial intersections to arterial and arterial intersections. The horizontal alignment control of the roadway and/or intersection is typically controlled by the needs of motor vehicles as the criteria are more restrictive than the criteria for bicyclists (speed, line of sight, cross section, etc).

This project will install detection systems in the existing roadway cross section for bicycles and the horizontal roadway alignment will not change.
5.0 IDENTIFICATION OF RIGHT OF WAY

There is no Right-of-Way acquisition required. The proposed work will take place within the existing roadway and City Right-of-Way.
6.0 IDENTIFICATION OF ENVIRONMENTAL REQUIREMENTS

There are no environmental impacts associated with the proposed project and the City filed a CEQA exemption in July 2012.
7.0 COST ESTIMATE

The project is cost effective amongst bike facility improvement projects. This is a safety enhancement to existing facilities. The project will improve service and safety for Class II bicycle facilities which is the most widely deployed facility in the region. By increasing the level of service to bicyclists and improving safety of bikes on the roadway the project will effectively:

- Increase positive attitudes about biking and about bicycle facilities.
- Increase bicycle facility level of service and especially on arterial streets.
- Increase the safety of bicycle travel on arterial streets and decrease the incidence of bike crashes.

All of these improvements will support the increased usage of bikes for commuting and recreation and as a greater mode share of transportation.

The itemized cost estimate for the San Marcos Bicycle Detection Enhancement Project is shown on the following page.
## Detailed Engineer's Estimate for Bicycle Detection Enhancement Project

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**Total Project Cost**  
$600,000.00
8.0 PRELIMINARY COMMUNITY INPUT

The City of San Marcos has a strong contingent of bicyclists who ride out of necessity and organizations of bicycle enthusiasts. San Marcos is home to the North County Cycle Club which has a large number of members. The purpose of this club is to provide for a group environment for the enjoyment of bicycling, develop skills of bicycling, promote the recreational use of bicycles, and promote and protect the rights of bicyclists. Several members also maintain the group "Bicycle Friendly North County" which provides a platform for members to communicate with regard to improving the safety and enjoyment of cycling in North County San Diego.