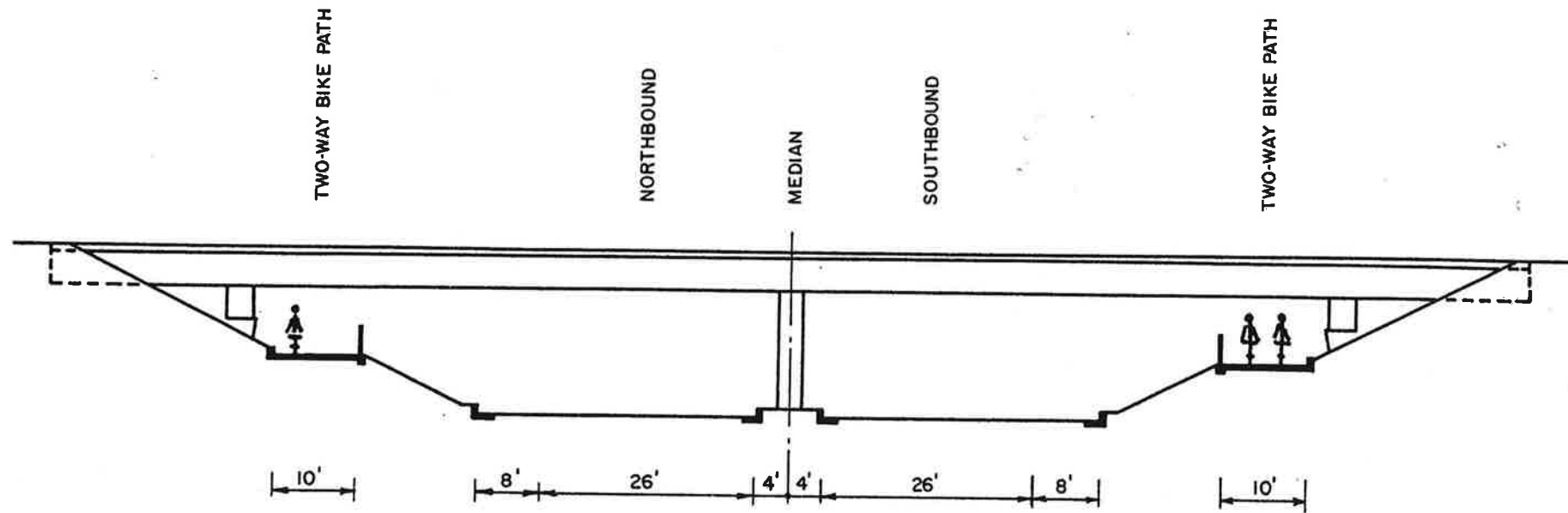


32

**RICHARD BLVD. GRADE SEPARATION
SCHEME B**



33

**RICHARD BLVD. GRADE SEPARATION
SCHEME B : SECTION THROUGH UNDERPASS**

Scheme C, presented on Figure 34, involves construction of a new four-lane overpass with the existing underpass retained solely for bicycles and pedestrians. This plan provides good linkage to both the campus and the downtown and the undercrossing would not be impacted by vehicular traffic noise. However, its grade profile is somewhat less desirable than that in Scheme B.

All three schemes involve signalization of the Richards Boulevard-Olive Drive intersection, easing cycle-pedestrian crossings at that location.

In summation, Scheme B appears to offer optimum cycle-pedestrian service, followed closely by Scheme C with Scheme A a poor third.

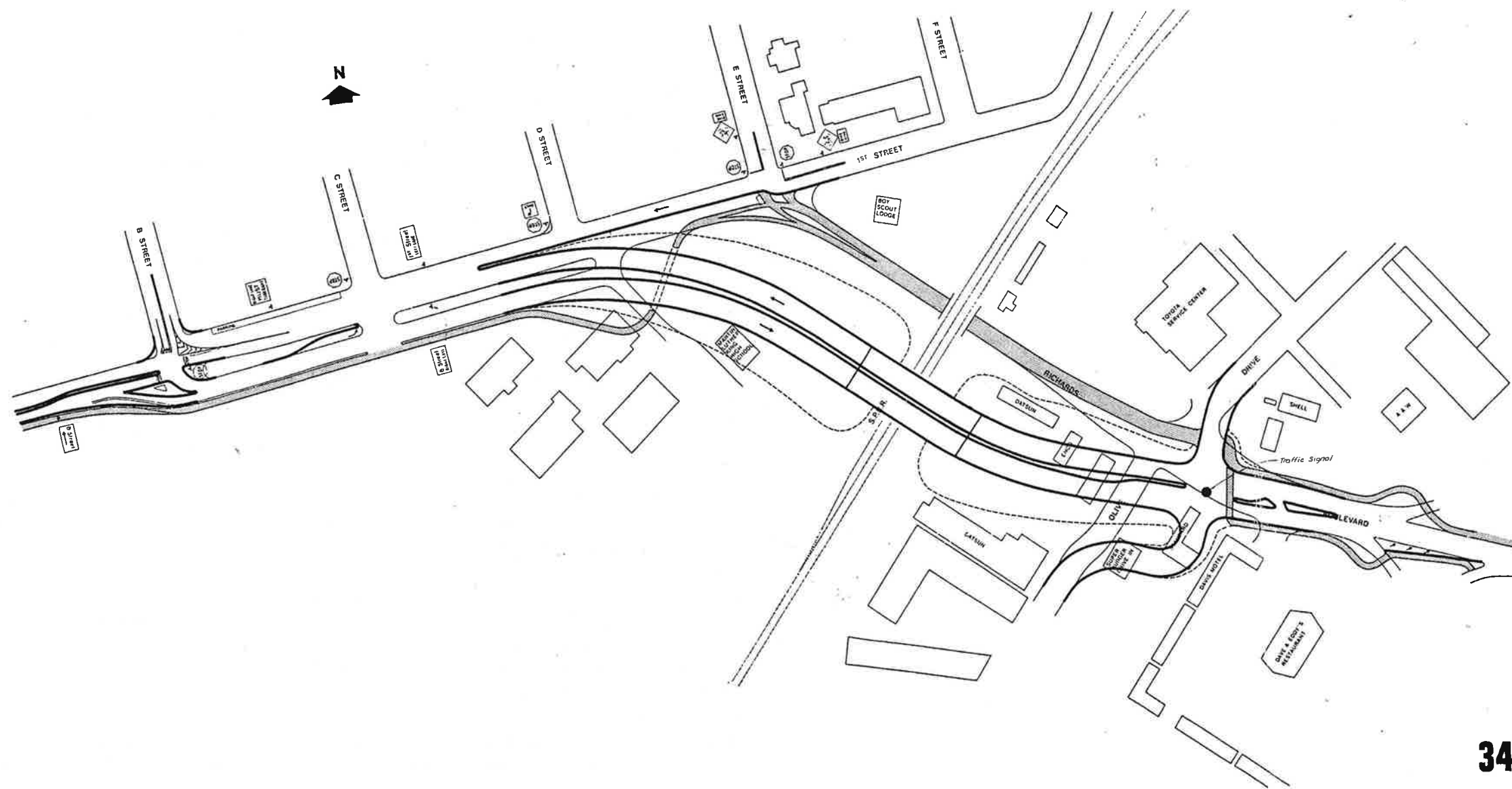
75

DOWNTOWN CITY

The Third Street bus currently serving is prohibited by City in the central business district must travel in mixed effects of cycles in vehicle traffic corridors of special bicycle traffic produce a safe cyclists alike. This to use the auto for served by bicycle and parking problems ing to the downtown the areas where any vehicles and bicycle 11 feet.

Accident records fo cate any particular over this period mo lisions in the city w the area bounded by

A specific objective improving bike and the downtown and th



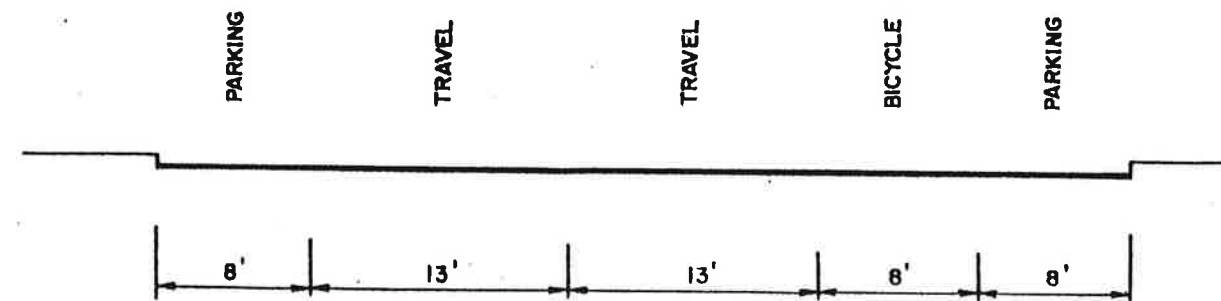
34
**RICHARD BLVD. GRADE SEPARATION
SCHEME C**

necessitating gross removal of parking on intersection approaches. A cross-section for this recommended treatment is presented on Figure 35. Only the angle parking places on F Street between Second and Third Streets would be affected, being replaced by 13 parallel spaces. Since the last spaces primarily service City Hall visitors, and the nearby lot between E and F Streets north of Third Street is underutilized, the impact of this minor parking removal on the downtown would be negligible.

The one-way bike lanes on E and F Streets along with the existing lanes on Third Street would provide a trunk system for bike circulation in the downtown area. To

enable cyclists to reach their actual destinations in the downtown, curb breaks would be provided at downtown intersections. Bikes could travel on the sidewalk half a block or so from the regular lanes to reach a specific building or shop but would be discouraged from using the sidewalk for thru or long distance trip purposes by the lower level of service it provides them.

This would necessitate modification of Section 4-3.1722 of the Davis traffic code to permit cycling on the sidewalks in the central business district. Because the bike lanes proposed for E and F Streets would provide service to only one direction of bike traffic, E southbound, F



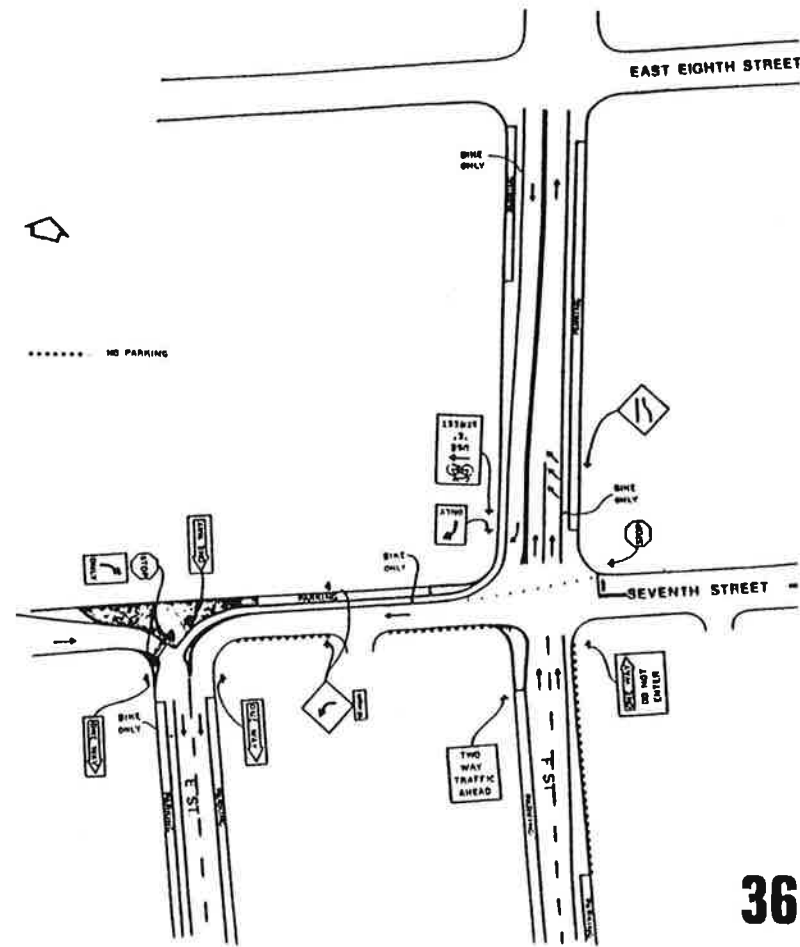
35

**E AND F STREETS
TYPICAL SECTION - ONE WAY OPERATION**

northbound, some question arises as to whether cyclists will use them or if a high level of wrong-way cycle traffic will result. The fact that Davis cyclists in the past have been reluctant to divert even one block to parallel cycle facilities lends some weight to the question.

However, in the case of previous diversions or lack of diversion, the cyclists chose to continue riding legally on the street which provided the most direct routing for them as the travel time advantages of the more direct routing outweighed perceived safety advantages of bike lanes on the parallel street. In the case of the one-way system, the cyclists' choice will be whether to ride illegally against the direction of traffic or to divert one block. The element of legality or illegality will influence many cyclists to make proper use of the E and F one-way lanes although the level of enforcement would be a major determinant. Possibly more telling would be the fact that bike traffic attempting to travel in the wrong direction would be opposed by heavy motor vehicle traffic volumes. This would make the perceived safety advantage of the right-direction lane on the parallel street much greater than in the case of two-way streets.

Terminal design of the one-way couplet at its north end would provide additional incentive for proper use of the E-F one-way bike lane couplet. As indicated on Figure 36, southbound motor vehicle traffic on F Street would have a free right turn at its Seventh Street crossover to



36

E - F STREETS ONE-WAY SYSTEM
NORTH TERMINUS

79

E Street. Cyclists attempting to continue south on F Street illegally would have to wait for a gap in this heavy right turning traffic, eliminating much of the travel time advantage of wrong way travel. Additionally, the lack of a curb break and the choker provided at the end of the parking shoulder on the southwest corner of the Seventh-F intersection would further discourage wrong-way riding southbound.

No advantage is seen in northbound wrong-way riding on E Street since only F Street has continuity to the north.

Within the downtown some wrong-way riding is inevitable but this would be predominantly for short distances and with the curb breaks provided would be largely on the sidewalks and not a significant problem.

F Street Bike Lanes

As indicated on Figure 2, no special bike facilities provide access to the central business district from areas to the north. Only F Street and B Street (including the path-way through the school area) have the potential for providing cycle facility continuity from the central business district north to Covell Boulevard. B Street pavement width is restricted while F Street, north of Seventh Street, has a 64 foot pavement width, ample for serving current and future motor vehicle traffic even with on-street bike lanes provided. In addition, bike lanes on F Street north

of Seventh would have logical continuity with the bike lanes provided on the downtown one-way couplet. For this reason the standard Davis Type A bike lanes are recommended on F Street between Seventh Street and Covell Boulevard.

FIFTH STREET

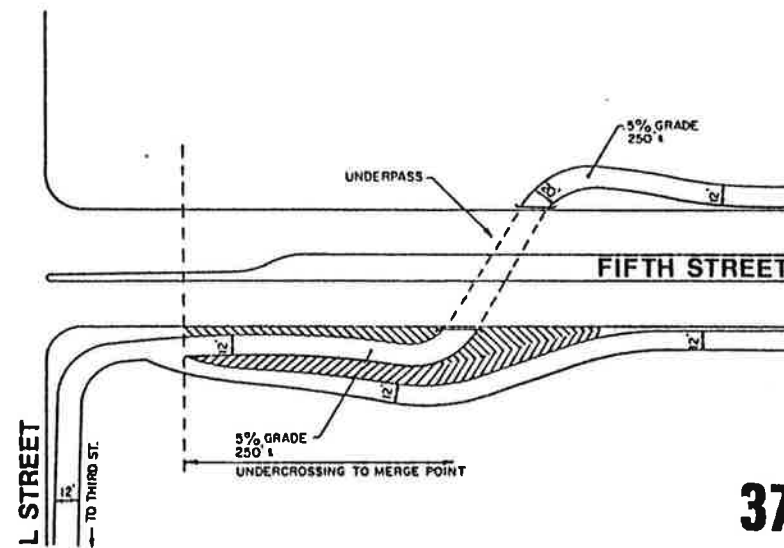
Increasing bike usage is evident on Fifth Street despite the fact that this is a heavily travelled motor vehicle arterial with no provisions for bike facilities. With a four-lane, no parking configuration on the 50 foot cross-section, bicycles are crowded into a travel lane having relatively high automobile usage. Fifth Street had the second-highest rate of bike accidents per mile of all streets in Davis during the two year period accident records were studied, despite very low bike traffic volume on it.

Current and future motor vehicle circulation considerations dictate that Fifth Street remain a major traffic street. Four travel lanes - the full 50 foot pavement existing - are needed for motor vehicle traffic. On street bike lanes could only be provided by widening the street. Ample right-of-way is available but widening would destroy numbers of large trees growing along the existing Fifth Street curb line. Some provisions for bikes on Fifth Street will be critically needed if resi-

dential development of East Davis proceeds. Extension of Third Street bike facilities eastward is blocked by the PG & E property on the west side of L Street. Although Eighth Street should not be extended into East Davis as a motor vehicle traffic facility because of capacity considerations to the west, bike facilities could be extended eastward in this corridor. But Eighth Street would be an extremely roundabout route for cycle trips between the southern portion of East Davis and the UC campus, so increasing bike travel can be anticipated on Fifth Street.

One solution to the problem would be to attempt to divert bike traffic from Fifth Street to Third Street at L Street. As a major arterial street, Fifth Street as extended into East Davis would ultimately be constructed with a four-lane-divided cross-section flanked by wide-sidewalk type bike paths.

Ideally, a bike undercrossing east of L Street as indicated in the sketch plan on Figure 37 could be provided, connecting to a two-way path on the west side of L. This path would in turn link to the Third Street bike lanes. But maintaining desirable grade profiles on the underpass approaches to make this route attractive to cyclists would necessitate either costly retaining wall construction or maintaining an extremely wide right of way. A more realistic plan would be to construct a two-way bike path east of L on the south side of Fifth Street with linkages along L Street to the Third Street bike lanes. However,



37

**FIFTH STREET UNDERPASS
SKETCH PLAN**

there is some concern that cyclists would continue on Fifth Street west of L.

Although there is some potential to divert cyclists traveling between East Davis and the campus from Fifth Street to Third Street west of L, other cyclists find it necessary to ride on the sections of Fifth Street west of L Street to reach their destinations. Since no space is available for

81

on-street lanes and widening Fifth Street to provide such lanes is impractical, the only remaining alternative is sidewalk pathways. In the case of the existing section of Fifth Street this is a less than desirable solution. The cross streets are spaced on short 250 foot blocks and numerous driveways cause considerable discontinuity, discouraging cyclist use of the paths and reducing the safety of the sidewalk path concept. The sidewalk pathways on Fifth Street west of L should be indicated for operation only in the direction of motor vehicle traffic on that side of the road. This would reduce the accident hazard at intersections and driveways, reduce the pathway width requirements and the interference with pedestrians sharing the pathway. Pathway widths of 6 to 8 feet are recommended. It must be emphasized that this treatment is not viewed as a highly desirable plan but rather the most expedient solution under existing constraints. The "free right turn" from Russell Boulevard to B Street is likely to become a troublesome point if bike travel on the Fifth Street pathways becomes heavy.

One further possibility exists. As indicated in the TRAFFIC CIRCULATION AND SAFETY STUDY, future traffic may exceed available capacity in the Fifth Street corridor and necessitate implementation of a Fourth-Fifth, one-way couplet. In that event, one-way on street bike lanes similar to those proposed with the E-F one-way couplet could be provided on Fourth and Fifth Streets and would provide desirable service to bike traffic.

FOURTEENTH STREET BIKE FACILITIES

Striping of on-street bike lanes is recommended on the section of Fourteenth Street between Oak and F Streets. This would complete the bicycle system grid across north-central Davis and provide linkage between this area including the Davis Senior High School and the downtown via the proposed F Street bike lanes.

The sidewalk bike paths recently installed on the west extension of Fourteenth Street, Villanova Drive, warrant special mention. These facilities are of a unique design and have not met with general acceptance by cyclists. Residential properties front on the street and the combination of driveway cuts on the curb side and street-tree cut-outs at the back force cyclists to follow a weaving course along the path and makes it difficult for them to ride abreast. Because of the residential frontage, frequent pedestrians, particularly small children at play, are encountered and interfere with cycle flows. Faced with these inconveniences and with only light motor vehicle traffic, nearly half the cyclists in this area reject the paths in favor of the street.

For the Villanova pathways the only remedial action indicated is paving over the street tree planter cutouts. But the experience here serves to illustrate planning considerations relative to parallel pathway type bicycle facilities. This type facility should not be placed along streets with

residential frontage or any areas where pedestrian activity, frequent driveways and cross streets interfere with bike traffic flows. Parallel pathways should be used in areas where high traffic volumes and speeds make the safety of on-street bike lanes questionable and would encourage cyclist usage of the pathways and in areas where inadequate pavement width makes on-street bike lanes impossible.

EAST DAVIS BIKE FACILITIES

Objectives in layout of a cycle facility system to serve new development should be to provide cycle facilities paralleling the arterial-collector street system in this area; to insure system continuity with existing and planned cycle facilities in the already developed areas of Davis, particularly facilities linking to the UC campus, the downtown and the school and park system; to serve high cycle trip generators in the new development area itself such as future school sites; and to provide a collector-distributor system of cycle paths and lanes on a grid at least as fine as one-third of a mile. Figure 38 presents generalized alignments for future cycle facilities in Davis.

Many of the elements of the system can be detailed only as specific area development proposals are brought forward. However, major corridor and linkage elements can be defined at this point. Corridor-linkage elements,

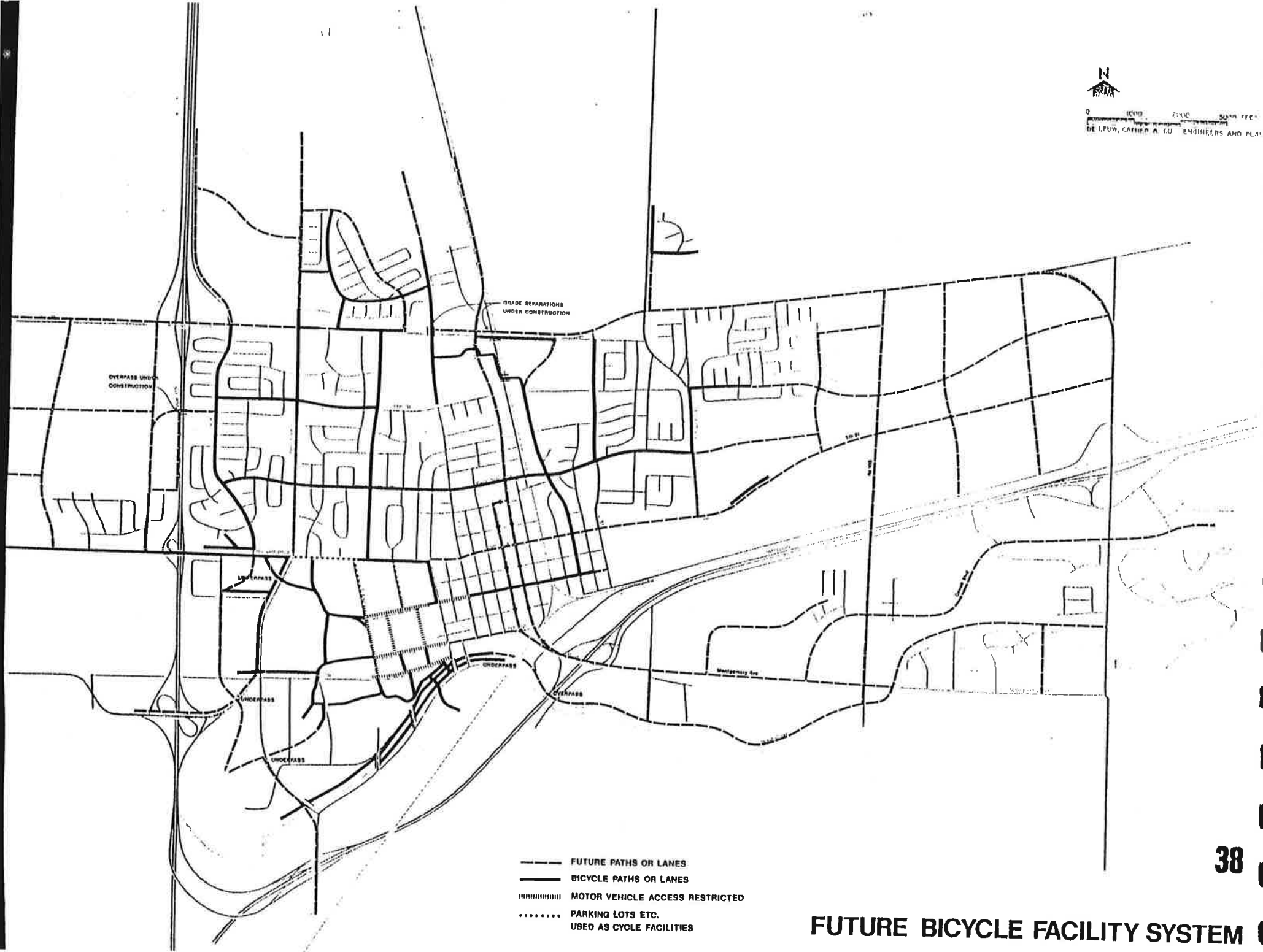
as indicated on Figure 38, would include parallel pathways along Fifth Street and Covell Boulevard and a greenbelt pathway easterly extension from the east terminals of Eighth Street as the major east-west spines. Parallel pathways would be provided along County Road 103 when this facility is upgraded as the major north-south arterial of the area.

SOUTH DAVIS BIKE FACILITIES

The same general criteria as outlined above would apply to the bicycle facility system in South Davis. Parallel pathways along Montgomery Boulevard would comprise the principal east-west spine and linkage to central Davis and the UC Campus. Pathways along County Road 103 including facilities on the proposed I-80 overcrossing would provide north-south linkage to East Davis. Other major elements which can be defined at this time include on-street lanes on Cowell Boulevard, taking advantage of this street's 74 foot pavement width, a greenbelt facility along the general alignment of the current city limits east of County Road 103, a pathway along the west side of Mace Boulevard and a greenbelt pathway along Putah Creek.

South Davis - Central Davis Linkage

The Richards Boulevard-Montgomery Boulevard alignment



- FUTURE PATHS OR LANES
- BICYCLE PATHS OR LANES
- ||||| MOTOR VEHICLE ACCESS RESTRICTED
- PARKING LOTS ETC.
USED AS CYCLE FACILITIES

FUTURE BICYCLE FACILITY SYSTEM

would provide the most direct cycle facility linkage between South Davis and the central Davis - UC Campus area. However, bikeway crossings of the I-80 freeway interchange ramps at the junction of these boulevards pose a safety problem. The alternative to a bikeway crossing through the interchange would be diversion to the Putah Creek greenbelt pathway to the southwest. A grade separated crossing of the freeway is planned as part of the greenbelt path. Linkage from this crossing to the Davis downtown and central area would be via West Olive Drive and the improved Richards Boulevard-Southern Pacific railroad grade separation. The Putah Creek greenbelt path would also link to the existing Putah Creek bicycle path on Campus north of the railroad tracks.

Reliance on such diversion of bicycle traffic to the Putah Creek pathway's crossing of I-80 is likely to prove unsatisfactory. Bicycle traffic demand is centered on the Montgomery-Richards Boulevard corridor and use of the greenbelt pathway's freeway crossing would involve substantial out of direction travel. Long-standing experience in Davis has confirmed utility-oriented cyclists' unwillingness to make such detours. The end result would be cyclists riding through the freeway interchange on-street, with no protection whatsoever. For this reason, cycle pathways should be carried along Richards-Montgomery through the freeway interchange.

Ultimate widening of the freeway overcrossing to four lanes would include provision of full scale bicycle pathways. In the interim, existing walkways on the structure will serve. Figure 39 which shows the proposed interim configuration for the Richards Boulevard-I-80 interchange, indicates the recommended right angle crossings of bike paths and freeway ramps. This configuration promotes best sight relationships between bikes and motor vehicles on the ramps. It must be pointed out that this design is not viewed as an optimum plan but an improvement over a situation in which bikes would pass through the interchange with no protection at all. As an immediate improvement, curb breaks should be provided at the interchange to enable cyclist usage of existing walkways.

This section is in no way intended to question the desirability of the Putah Creek greenbelt and greenbelt bike pathway. The Putah Creek bike path is desirable as a recreational oriented cycle facility, an element that is somewhat lacking in the existing Davis bikeways system and it would also serve a certain amount of utility oriented cyclists with travel desires along its general alignment. In a related item, the Southern Pacific Transportation Company is currently developing plans for replacing the existing railroad bridge crossing Putah Creek beneath which a bike path could pass with fill and culvert. The City should take action to preserve the opportunity for a bike undercrossing of the railroad



39

PROPOSED BIKEWAY CONFIGURATION
RICHARDS · MONTGOMERY · I-80 INTERCHANGE

at this point. This would make possible a continuous creek-side recreational bike facility nearly 3.5 miles in length through the City and campus area.

AREA NORTH OF COVELL BOULEVARD

Previously discussed general criteria for extending the bicycle facility system in new development areas would apply. Major trunk-line bike facilities would include a completed parallel pathway along the north side of Covell Boulevard extending westward from the Southern Pacific Tehama line, overpassing State Highway 113 and continuing west along County Road 31, a parallel pathway extending north along the proposed alignment of Anderson Road and parallel pathways or on-street lanes along the planned East Frontage Road of State Route 113. The frontage road cycle facilities should have direct linkage to the existing Sycamore Lane bike lanes regardless of whether the vehicular roadway is linked to Covell Boulevard at this point or is bowed eastward to Anderson Road. Extension of greenbelt pathways branching outward from the Covell Boulevard bike overpass east of Catalina Drive, including a possible underpass of the Anderson Road north extension, would link the full area north of Covell between the railroad and State Route 113 with the Davis Senior High School-Davis Community Park area by means of bike paths almost totally separated from motor vehicle traffic.

AREA WEST OF STATE ROUTE 113

Development of bike facilities in this area would follow the general guidelines presented above. Linkages to the existing city system include grade separated freeway crossings at Russell Boulevard, County Road 31, and in the vicinity of the West Davis Intermediate School as well as the existing pathway along the south side of Russell Boulevard and bike lanes on Arthur Street and Lake Boulevard. As indicated on Figure 38, major additions would include pathways along County Road 31 and an east-west pathway extending westward from the West Davis Elementary School overcrossing, probably in greenbelt. North-south facilities to complete the grid should be independent of the major penetrator roadway proposed in the TRAFFIC CIRCULATION AND SAFETY STUDY. Because north-south street connections to Russell Boulevard are discouraged, the north-south bikeways linking to the pathway along the south side of Russell will necessarily be isolated crossings, involving inherent hazards as described in Chapter 2. Provision of grade separated linkage should be given full consideration.

LINKING NEW DEVELOPMENT

The preceding sections outline a general plan and philosophy for providing bicycle facility linkages between new development areas and the existing City and University activity centers. However, development does

not normally take place in a regularized step by step pattern outward from existing development. Most often it occurs in random leap-frogging jumps. This raises the twofold question of at what scale of outlying development should bike facility linkages be provided and how should the cost of bikeways traversing lands in agricultural uses to reach new outlying developments be borne. There appear to be no pat answers to these questions.

Survey results show a strong relationship between residential cycle-trip generation and distance from community activity centers, particularly the UC Campus. However, observations of the outlying Covell Park and Westwood developments seem to indicate a substantial impact of physical/psychological barriers (Covell Boulevard in the former case, State Route 113 in the latter) on residential cycle-trip generation. Thus, it is difficult to establish a household cycle-trip generation rate for outlying districts and from this determine the number of dwelling units at which cycle facilities linking the area to activity centers should be provided. But, building on the principle of providing cycle facilities on streets of collector street function or above as described in Chapter 2, it seems appropriate to provide cycle facility linkages when the development reaches a size such that the total household-generated motor vehicle traffic reaches numbers equal to the ADT at which a street would be said to be serving collector function. Thus, cycle facility linkages to outlying development pockets should be pro-

vided when 150 - 250 dwelling units are occupied. Under circumstances where available roadway facilities are particularly hazardous or otherwise undesirable, cycle facility linkages should be considered for lower numbers of dwelling units.

Bicycle facilities serving outlying residential pockets may traverse large areas currently in agricultural use and construction of such facilities would place a significant cost burden on the City. As the cycleways would provide benefits in the form of future service to the areas traversed when these are eventually converted to residential use, a case could be made for assessment district financing of the needed facilities. However, such action might place an unfair burden on individuals wishing to retain their property in agricultural use and accelerate the pace of residential growth. This points up the need for positive planning policies to channelize growth and control leap-frogging development.



V

ACTION PROGRAM

In addition to implementing the specific site improvement recommendations and bikeway extensions as well as adoption of planning and design criteria as outlined in this report, the following elements will have important impact on future bicycle circulation and safety in the Davis community.

EDUCATION AND ENFORCEMENT

As discussed at length in Chapter 2, cyclists are bound by provisions of the motor vehicle code as well as by city traffic ordinances. In the case of motor vehicle drivers, knowledge and understanding of the rules of the road is insured through education and testing incorporated in the licensing procedure. For cyclists, no such formalized education-testing procedure exists and young cyclists may not understand the basic traffic laws or good habits and practices for safe cycling. Older cyclists who are licensed motor vehicle operators or driver trainees

know the vehicle codes but may not be aware of the applications to them as cyclists.

In Davis, general rider knowledge of basic codes and good cycling habits is far better than in the average community due to a number of formalized and informal procedures. These include the excellent "THREE R PROGRAM" conducted by Davis Police in the city's schools. The program with presentations keyed to the individual grade maturity levels from kindergarten through sixth grade features such bike-pedestrian safety oriented topics as safest route to school (walking), good pedestrian practices, safest ride to school (bike routes and riding habits), bicycle laws and safety, and community responsibility. Another regular bike safety program directed toward young cyclists and conducted by Davis Police involves clinics or, in the popular terminology, "Bike Rodeos." These are held on Saturday mornings, one at each elementary school in spring and fall.

The participants are shown a movie illustrating principles of safe bicycle operation, bikes are inspected by police officers and the participants ride through a mock course to demonstrate their knowledge of safe riding techniques. After completing the program, the participants are issued a certificate for safe bike ridership, some safety slogan decals and reflective tape for their bikes, plus some brochures on safe bike riding. Most of these materials are donated by service groups, cycle manufacturers and insurance companies.



Cyclists use downtown sidewalks in violation of City ordinance because of traffic conflicts and the lack of bike lanes.

Another means of informing cyclists of the codes and good riding practice is through the packets of literature, including the traffic code, given at the time of cycle registration. Cycle registration in Davis is mandatory and almost universally complied with, so most cyclists receive the packets. This is the only way in which adolescents and adults receive informational material relative to cycle operation. However, the extent to which the materials are read is questionable and increased adult education relative to cycling codes and good riding practice is needed. Adults were involved in 54 per cent of the cycle accidents reported to Davis Police in the past two years. Persons high school age and above comprised 69 per cent. Each year several thousand persons enter the community as new students, faculty or staff at UC Davis. The level of cycle activity in Davis is a totally new experience and procedures for indoctrinating them in good cycling practice are essential. Additionally, with the increasingly sophisticated special facilities for cycling being provided in Davis, continuing education and re-education of persons not reached by the elementary school programs is necessary.

A possible method of positive presentation of informational material to cyclists is through the bike registration procedure. Using the existing video tape capabilities of the Davis Police Department, short (3-5 minute), graphic illustrations of good riding habits and proper use of special bike facilities could be shown to cyclists at the time

of cycle registration. This would reach each cyclist at least once every two years (the period of cycle registration in Davis) and would be more positive than depending on cyclists to read on their own the provided literature.

Another method of increasing cycle safety consciousness and knowledge of code is through the newspapers. Featured newspaper presentation of ordinances relating to bicycles and general bike safety guidelines at the beginning of each fall school term would be useful. Inclusion of a short safety message in news reports of bike-involved accidents would also help to increase safety consciousness. One safety message that should be particularly emphasized through all available communication channels is that parents should not give their children cycles too large for them to operate properly.

Education alone is ineffective in bringing about good safety practices. Many of the elements of good safety practice and obedience to traffic code involve, at times, inconvenience to both cyclists and motorists. Human nature is such that a high percentage of persons will violate traffic codes if it is convenient unless there is a strong probability of being caught. Readily observable infractions in Davis include wrong way riding, improper left turns, non-use of parallel pathways and stop sign violations by bikes as well as encroachment on bike lanes and failure to yield right of way by motorists. The Davis Police do attempt to enforce the codes but enforcement

by the regular patrol is hampered by two factors. One is the feeling of the patrolmen themselves that they have more significant duties which would be neglected if they were to focus on bike-related violations and, to a certain extent, they are correct. The other is the feeling, again correct to a degree, that strict enforcement in this area would contribute to an undesired public image of the Department. But the need for enforcement is real. A current proposal which appears to have merit is assignment of an officer to bike-related violation patrol duty, possibly mounted on a light motorcycle. Presence of the officer in close physical contact with cyclists would encourage code compliance and would ease communication and counteract image problems.

Regular patrol officers would remain conscious of bike-related enforcement; the special officer would supplement, not replace their activities in this area.

Enforcement should relate closely to cycle-safety education. The current procedure used in the case of children below high-school age is an excellent example of this. Fines are not imposed on young persons receiving bike traffic citations in Davis as these would generally be paid by the parent and the whole process would be a negative experience for all concerned. Instead, the child, accompanied by a parent, is required to come to the police department on Saturday morning where an officer discusses with them the nature of the violation, safety hazards in-

involved and principals of safe cycling. This type of contact is important as it results in a positive learning experience for both child and parent as opposed to the totally negative aspects of a fine. In the case of repeated violators, stricter measures are taken.

This type of program could profitably be extended to older cyclists (high school age and above) and motorists cited for violations of bike-related traffic codes. Instead of paying a fine, violators could be required to attend a class, possibly held at night. The class would review the city bike traffic ordinances and illustrate the way these laws relate to overall traffic safety, demonstrate proper use of the special bike facilities in Davis, point out hazardous situations to be aware of, and outline good cycling and good driving habits and practices. Conduct of such a class could be one of the duties of the special bike officer.

The designation of an officer specifically for bike related enforcement duties would contribute to the educational aspects of enforcement in an additional way. Because he has no other pressing duties to hurry on to, he could spend more time talking to people on the street about the hazard involved in the violation they may have just committed and also would be in the field as new bike facilities are provided to demonstrate their proper use.

Records of the bike-related traffic citations should be

reviewed for two reasons. High violation locations indicate areas where the special officer should concentrate his activities of instruction and enforcement and they also give an indication of locations where physical facilities provided are not meeting the needs.

In a number of communities there has been considerable discussion of mandatory licensing for all cyclists as a positive mechanism to insure cyclist understanding of the rules of the road and mastery of the necessary physical skills.

In view of the excellent youth safety education programs in Davis and with educational mechanisms associated with the mandatory cycle registration and with the enforcement-education program as outlined above, the red tape and costs involved in a cyclist licensing program appear to outweigh the benefits.

CYCLE THEFT AND SECURITY

Cycle theft has become an area of increasing community concern and a problem of major proportions. Property loss due to cycle theft in the State of California in 1971 is estimated at \$90 million. In the City of Davis (not including the UC Campus) a total of 497 bikes were stolen in the first six months of 1972, including 135 ten-speed cycles.

Locking devices and expanded registration procedures are two areas which appear to offer the possibility of increased deterrent to cycle theft.

New theft-proof racks and locking devices are described in Chapter 3. Units with integral locks could be provided at apartments and residence halls which are the prime target areas for thefts of the valuable 10-speed cycles. At apartments and residence halls the units could be rented on a term basis to defray their substantial cost. Limited numbers of the coin-operated, theft-proof units or the independent-lock version, as these become commercially available, could be located at community activity centers, particularly at locations where considerable night activity takes place. Other bike rack facilities provided at the schools, in the downtown area, at recreational areas and other locations in the community should be of types fixed securely in place and which permit locking the bike through the frame to the rack.

Better locking devices will make the act of stealing a bike more difficult. Improved bike-registration procedures on a state-wide basis appear desirable to enable apprehension of thieves as they attempt to dispose of stolen cycles. Not only would state-wide bike registration procedures discourage thieves by increasing the likelihood of their being caught at the resale end, increased difficulty in reregistry of a stolen bike would discourage buyers and reduce the market for stolen bikes.

Further improvements in registration are beyond the scope of local control. In Davis, where bike registration is nearly universal, approximately 90 per cent of all stolen one and three-speed cycles are recovered. This is because the one and three-speed cycles are nearly always taken by casual thieves for immediate transportation needs rather than resale and are abandoned in the Davis area after one trip. The Davis cycle registration makes return of these bikes to their owners a simple matter. In the case of the valuable 10-speed cycles, thefts are most often for purposes of resale, with involvement of professional or semi-professional thieves, and the bikes are usually taken out of town for disposal. The ineffectiveness of purely local registration against this type of activity is illustrated in the fact that only 10 per cent of the ten-speeds stolen in Davis are recovered as opposed to the 90 per cent recovery rate for the other types. Several factors contribute to this ineffectiveness.

- Most stolen cycles are resold in private sales in flea markets or through newspaper ads. There is almost no way of tracing this activity unless the purchaser is required to reregister the cycle, at which time previous registration could be traced.
- Many cities have no local registration, voluntary registration, or nominal mandatory registration which is unenforced. Under these conditions

there is almost no way to apprehend the thief at the resale end, even if the bike were initially registered in an active registration city such as Davis.

- Under current conditions, even if an attempt is made to register a previously registered, stolen bike in a new city, the previous registration is not likely to be traced as there is no systematic code indicating where the bike had been previously registered.
- Even if registration codes include universally understood local designators, a large communications burden is placed on local police. Better communications of "hot lists" are needed.

A number of proposals for statewide bike registration have recently been advanced. Following are key elements which should be included in the registration program:

- Bike registration should be mandatory statewide.
- A registration system administered through the Department of Motor Vehicles would be desirable to draw upon the resources of trained personnel, existing procedures and facilities and most particularly the DMV's computerized record keeping

and communications capabilities.

- Alternatively, registration could be administered locally with registration numbers according to a statewide code designating jurisdiction of registration. This would permit tracing of stolen cycles transported across local jurisdictional limits but places the burden of record keeping on the local police agencies. A number of local police departments are currently prefixing bike registration numbers with their respective California Law Enforcement Agency designation codes, but this is being done on a voluntary basis and does not have statewide compliance.
- Provisions for cycle retailers to file bike registration papers at time of sale similar to procedures followed by auto dealers would facilitate registrations and lead to more universal compliance.
- Individual bike serial numbers are placed on the bikes by most manufacturers. However, most are simply painted on or affixed by decal and are easily removed. Requirements for manufacturers' serial numbers stamped in the frame on all bikes sold in California would ease identification of stolen cycles.

LIGHTING

With many persons relying on the bicycle as a primary mode of transportation in Davis, considerable cycle travel occurs at night. While darkness has been a factor in only a limited number of bike-involved accidents (see Figure 26), improved street lighting is desirable.

City of Davis Traffic Ordinance 4-3.1723 requires that every bicycle operated at night be equipped with a red rear-reflector visible to a distance of 300 feet and a white headlamp visible to a distance of 500 feet. These enable a cyclist to be discerned at a sufficient distance by a motorist or another cyclist when travelling in the same or opposite direction. However, in situations in which the approach is at right angles, as at a street intersection, silhouette lighting is necessary although many night riding cyclists carry an additional light or lights visible to the side.

In addition to lighting which makes the cyclist visible to motorists and other cyclists, lighting is also needed to enable the cyclist himself to see the roadway. Headlamps commonly used on cycles are inadequate for illuminating the roadway for travel at normal cycle speeds. As a result, fixed luminaires are needed to illuminate such hazards as debris, potholes, drainage gratings or route features such as curves, curbing, ramps

and other transitions as well as fixed objects.

Currently, many streets in Davis, including some with bike lanes, have no street lighting. Lighting should be provided on all streets having bike lanes to facilitate night cycle travel as well as for reasons of cycle, motor vehicle and pedestrian safety. Existing street lighting along other on-street bike facilities should be reviewed for adequacy. In areas served primarily by independent cycle paths such as the area north of Covell Boulevard, periodic review of night cycle activity should be made to determine the need for special lighting. Areas where such independent paths cross vehicular roadways are of special import.

For on-street cycle facilities, existing roadway illumination specifications should be used with additional lighting provided as required to illuminate special hazards to cycle travel. For isolated bikeway crossings, the State of California Bikeway Planning Criteria and Guidelines manual indicates special lighting specifications.

RECENT CYCLE FACILITY LEGISLATION

Following is a brief summary of recent legislation that would facilitate the implementation of some of the proposals contained in this report. These acts either estab-

lish the legal basis for programs or mandate financial assistance for bicycle-related projects.

Senate Bill 265 - Bicycle Recreation and Safety Act of 1971

In this bill, the authority of governing bodies to establish and acquire land for bike paths is established. Further, the bill requires local agencies to include bike paths or routes in their general plans and prohibits abandonments of highways or highway rights of way when they have potential use as bike paths.

To help in the funding of bicycle paths, this act gives the local governments the power to require that subdividers be required to dedicate land specifically for bike paths if the subdivision is larger than 200 parcels.

This bill makes the following provisions regarding the operations of bike paths. The Department of Public Works is mandated to adopt uniform signs for use on bike-way facilities, and the Department of Motor Vehicles is required to include questions regarding these signs on their driver examinations. Also, motor vehicles are prohibited to park or operate on a designated bicycle lane. On the other hand, the act specifically states that the prohibition of motor vehicles on certain levees, river banks, and rights of way does not apply to bicycles;

therefore, these types of facilities may be used for the establishment of bicycle routes.

Senate Bill 1100

This legislation requires that the Department of Public Works hold public hearings regarding the incorporation of bicycle and pedestrian facilities on freeways which are part of the state highway system. In addition, it authorizes the Department to expend highway funds for the construction of bike facilities parallel to the freeway and along the freeway right of way under the following circumstances: the paths are requested by the local agencies and are on their master plans, no parallel facilities exist, and the construction of the path will increase traffic safety or the capacity of the highway. The act also declares the legislative intent that the construction and maintenance of bicycle paths in connection with a state highway constitutes a "highway purpose," which possibly relates bicycle paths to Senate Bill 141.

Senate Bill 141

This act doubles the money available for grade separation projects from the State Highway Fund and expands the types of projects for which such funds may be used. The expenditures must be for a "street or road purpose;" bicycle pathways were previously excluded because they

were termed a "park feature;" but, in view of Senate Bill 1100, bike paths may now be eligible. TOPICS funds can be used by the local agency for its matching share.

Senate Bill 36

This legislation, just recently passed and signed, creates a "Bicycle Lane Account" in the State Transportation Fund with provisions for the transference of \$30,000 per month into it from extra revenues received from the sales and use tax imposed on motor vehicle fuel. The funds are to be administered by the State of California Department of Public Works. As of this writing, guidelines for grant approvals have not been established but will be available in the near future through the City-County Projects Coordinator in each of the Division of Highways regional districts.

Senate Bill 147

This recently signed bill provides legislative backing for the bicycle registration program discussed in this report. Specifically, it requires the licensing of specified types of bicycles by cities or counties and prohibits the operation of unregistered bikes on any public street, road, or highway. The Department of Justice is charged with the responsibility of statewide coordination and the mainten-

ance of a lost and stolen bicycle file in the Criminal Justice Information System.

The municipalities, however, are allowed to set the registration fee in their city and accumulate the revenue generated, but the spending of this money must be for the implementation and improvement of bicycle registration and safety programs.

Senate Bill 325

This complicated legislation extends the 5 per cent state sales tax to motor vehicle fuel. The increased revenues from this extended tax are generally earmarked for public transportation projects, but the City of Davis can get funding for bicycle facilities under Article 8, Section C of the Act. SB 325 funds could be used for up to 50 per cent of the total cost for providing new bicycle facilities. However, under terms of the legislation, funds can be used for non-transit purposes only after all transit needs have been met.

It is recommended that the City of Davis make extensive use of the funds made available through these acts to minimize the cost to the residents of Davis for the provision of bicycle facilities.

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