BICYCLES IN CITIES

THE EUGENE EXPERIENCE

Vol. V

INNOVATIVE BIKEWAY DESIGNS

How can bicycle commuting be encouraged? Eugene found innovative bikeway design to be one important answer.

Usually, bicyclists simply use the same street system as cars. With some attention to riding skills and traffic laws, bikes and cars co-exist reasonably well on most city streets. Eugene's experience, however, indicates that before bicycle use will flourish, especially commuter use, some bikeways are needed.

Eugene identified corridors where the high bike/car conflict discouraged cycling; well-designed bikeways reduced this conflict. In other places, bicycle barriers actually prevented commuting; innovative engineering overcame many of these barriers.

Other volumes in this series describe major segments of Eugene's bikeway system; this volume deals with more specific design details. Eugene borrowed many of its bikeway designs from other cities though some designs were pioneered here. Several of these are now used elsewhere while others are still unique to Eugene.

SEMI-DIVERTERS. Most bikeways are classified as separate paths, striped lanes or signed routes. Several of Eugene's signed routes have separate path characteristics created by the use of semi-diverters on narrow streets. When the City first proposed striped bike lanes and parking removal for one of these streets, the City's official neighborhood group countered with a proposal of its own: leave parking, but install diverters to channel car traffic to a parallel arterial street. A trial period won the case for permanent diverters. The neighborhood street became, essentially, a "bicycle street" and now has more bicycle traffic than the intersecting streets have car traffic. Relocated stop signs now give priority to the higher-volume "bicycle street".

Semi-diverters on 24-foot-wide city street create feeling of separate bicycle path.
Parking, permitted on one side, serves local residents. Diverters limit, but do not prevent, car traffic.

RAILROAD UNDERCROSSINGS. The Southern Pacific Railroad parallels the Willamette River in metropolitan Eugene. Both bisect the City and could be barriers to bicycle travel. However, new bicycle bridges cross the river, and two new railroad underpasses permit bicyclists to reach the bridges and the river bank trail system. Local and state bikeway monies funded both undercossings. The railroad company designed the first undercrossing completed in 1972. The second, designed and built by the City in 1980, shows adaptation for bikeway use of an existing but long-abandoned millrace culvert.

Railroad underpass, completed just in time for Olympic Trial Marathon in 1972, provided access to river bank trails.

Innovative design turns abandoned culverts into efficient **bike tunnels beneath the railroad**.

FERRY STREET BRIDGE ADAPTATION. Eugene's oldest and most heavily-used bridge (average daily traffic 50,000) attracts bicycles because of its strategic location. Bicycle adaptations completed in 1976 have reduced the hazards to bicyclists and increased bike use. These adaptations include: widened sidewalks, concrete barriers and railings protecting sidewalk users from cars, and a ramp linking the bridge sidewalk directly to the river bank trail.

Heavy railing now protects bicycles from cars on City's busiest bridge. Widened sidewalk connects with new ramp.

Ramp carries cyclist from bridge to riverbank trail.

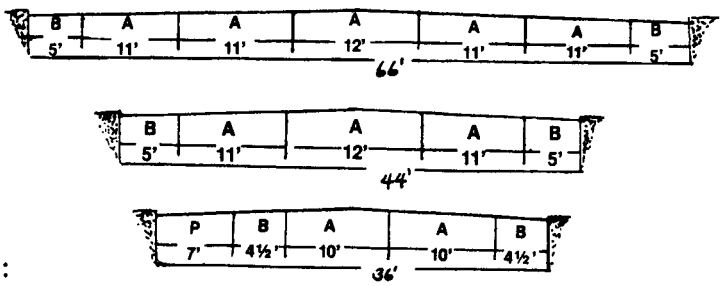
STREET AND INTERSECTION WIDENING. Designing bike lanes for narrow streets is a challenge; intersections can seem hopeless. Junior high students who asked the Eugene City Council in 1971 for bike lanes to their school were college graduates before the lanes were completed in 1980. The bike lanes on this collector street serve not only the junior high school but also one block of small businesses, a major city park, many homes, and a grade school. Average daily traffic (ADT) is 7300. Providing continuous bike lanes on both sides of the street meant removing parking on one side for the entire length of the street as well as narrowing car travel lanes. The project also required three blocks of

expensive street widening to provide on-street parking for small businesses. The result is a well-designed, well-used facility which satisfies neighborhood concerns.

Parking bays at corner grocery replace parking space taken for bike lanes.

Expensive street widening makes room for car parking as well as bike lanes at a critical school and business corner **(left)**.

LANE WIDTHS. To provide space for bike lanes on some busy arterials, Eugene has narrowed car travel lanes to 11 feet and turn lanes to 12 feet. On some collector streets car travel lanes have been narrowed to 10 feet. Parking lanes and bike lanes may also be narrowed if parking turnover is low and traffic volumes are under 7000. Typical street cross-sections are:

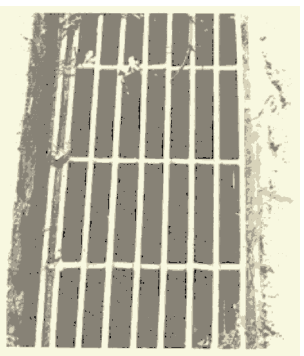


4 1/2-FOOT-WIDE GUTTERS. Instead of the usual 1 foot concrete gutter, Eugene now builds them 4 1/2 feet wide. The wide gutter provides smoother, more useable space for bicyclists since the longitudinal joint between roadway and gutter is moved from the cyclist's normal area of use. Other advantages are a natural bike/car separation provided by contrasting light concrete with dark asphalt, and no increase in cost if the street width is the same. By 1981, 13 miles of city street had 4 1/2-foot wide gutters.

CURB INLETS AND DRAINAGE GRATES. Curb inlets, required in Eugene for all new street construction, gather the water under the curb line without disturbing the surface of the gutter. Bike-proof drainage grates now replace the old "rim benders" yet have almost the same water acceptance capacity. These are used in curb-side bike lanes, other streets with high bicycle use, and in all new or reconstructed streets which cannot use curb inlets.

Wide, concrete gutters make a smooth, unbroken riding surface **(above and center)**.

Curb inlets drain away surface water and replace bike-eating metal grates.



Cross pieces welded to old-style drainage grates prevent bicycle wheels from slipping through.

EASEMENTS. Several critical links in Eugene's bikeway system are less than a block long. In several cases these segments were constructed on special easements. One such easement through the yard of the municipal power plant ties the river bank trail to the city street system. The easement is guaranteed, but the location of the path may be altered by the utility. Another important easement links two sections of discontinuous city street in downtown Eugene and completes one of the City's most heavily-used bikeways. The route passes between a church and a furniture store and restaurant. Negotiations to obtain an easement lasted seven years.

The easement for one short section of river bank trail resulted from a swap: a small triangle of state highway property in exchange for the needed private parcel. Another river bank section required condemnation. Most bikeway easements are granted after patient negotiation. Often a compromise includes special fencing or slight route alterations.

Easement through power-plant yard ties river bank trail to city street system.

ZERO-LIP DRIVEWAYS. Some driveways have a one-inch or even two-inch lip or joint between the street and driveway surfaces. Lips this size can bend a bicycle wheel or cause a spill. Since 1976, Eugene has required driveway lips of less than 1/2 inch. However, construction habits prove hard to change; sometimes the contractor is required to redo or grind down a newly-poured driveway lip to satisfy city specifications.

Easement links discontinuous streets in downtown Eugene.

Note zero-lip driveways in all three photos.

Entrance treatments discourage illegal car use: posts **(above and center)**, and dual ramps **(below)**.

ENTRANCE TREATMENTS. Off-street paths tempt car drivers. To discourage this illegal use, posts can be placed at path entrances and made removable to accomodate maintenance vehicles. However, posts can be a hazard to cyclists, particularily where night lighting is minimal. An alternative is a dual entrance-exit ramp. The two ramps are placed far enough apart that a car cannot straddle them. White edge striping defines the split in the path.

Originality in bikeway design can overcome barriers to bicycle travel and help cars and bicycles share busy streets with less conflict.