Overview of Edge Lane Roads

Current Status and Path Forward

ELRs Place in our Transportation Network

The ELR format is appropriate only for two lane, low-volume roads. At this time, American guidance recommends that speeds be limited to 35 MPH or less. Motor vehicle volumes are limited to 6,000 ADT with no recommendation for lower volumes as speeds increase. This contrasts with Dutch guidance which recommends lower volumes as speeds increase.

ELRs are a potential treatment on streets that are candidates for mixed traffic, a bicycle boulevard, or standard bike lanes. ELRs can be placed on streets that are too narrow for standard bicycle lanes. ELRs are an excellent pavement marking treatment for bicycle boulevards. In some situations, ELRs are superior to standard bike lanes – this is an important alternative where on-street parking remains.

ELRs have also been explicitly used to create pedestrian facilities on roads without sidewalks. This is less common than their use for bicycles.

Current Use

Other countries use ELRs with the Netherlands a leader in experience and number of installations. The FHWA considers ELRs to be an experimental treatment. As of November, 2020, approximately 40 ELRs have been installed in the US and Canada with the first being installed in 2011. More are known to be in the planning and design stages. Both interest and adoption rate appear to be increasing in both countries.

Potential Substrate

The US has almost 3 million miles of paved roads. Approximately 75% of this network is rural. Rural roads tend to have lower volumes than urban roads which makes them both more appropriate ELR sites and less likely to receive funding for vulnerable road user improvements.

ELR installation consists only of a change in striping in the majority of cases. This is either very cheap or free when conducted as part of a resurfacing project. Increasing pressure to create bicycle and pedestrian facilities along with tight funding continues to make ELRs attractive to many agencies.

These factors could soon make ELRs one of the fastest growing facility types in North America.

Context: Legal, Regulations, Guidance

Due to their unique layout and operation, some confusion can exist around the legal status of ELRs.

Legal obstacles exist. Motor vehicle codes often prohibit cars from entering a bike lane except for crossing or turning movements – this can be problematic if the edge lanes are defined as bike lanes. State motor vehicle codes differ and other obstacles may exist.

The use of ELRs to provide pedestrian facilities involves unanswered ADA compliance questions.

ELRs have been used when removal of parking lanes or lane narrowing is considered infeasible – this has resulted in poorly designed facilities. In some circumstances (e.g. narrow bike lanes next to parking lanes on streets with higher volumes), ELRs may be more dangerous than shared lane markings.

Only one national design guide exists. This is the FHWA Small Town and Rural Multimodal Networks Guide (ELRs are called Advisory Shoulders there). Other existing sources, e.g. AASHTO Guidelines for Geometric Design of Very Low-Volume Local Roads (ADT ≤ 400), bear on aspects of ELRs.

Assuming Dutch guidance is accurate and applicable to the North American context, the Small Town Guide provides guidance that will create ELRs that are more dangerous than necessary. No data exists to support some of the key recommendations in the Small Town Guide. Continued improvement of design guidance is necessary.

The FHWA classifies ELRs as experimental and requests their use be approved via the Request-To-Experiment (RTE) process. For various reasons, approximately half of the jurisdictions in the US have chosen not to use the RTE process. The FHWA's RTE process requires an evaluation at the end of the study period as a condition of approval but the protocols, required data, and study quality are left up to the jurisdiction. Five such studies exist at this point but the comparability and aggregation of results is questionable.

Public & Industry Awareness

Awareness of ELRs is still low in the bikeped industry and is almost nonexistent in the general public, general engineering, and public works fields.

Other than the Small Town Guide, no official design guide exists for this facility. This inhibits awareness and uptake. The current draft of the next AASHTO Bicycle Guide includes guidance on ELRs.

Due to low public awareness, public outreach and education is still important for each project.

No educational material is included in standard driver training manuals. The same absence of training is true for police, fire, and other public safety workers.

Research

The Dutch have published a number of studies on their ELRs. They have assessed crash rates, changes in motor vehicle speeds, and B-MV horizontal clearance changes as the result of ELR installation. All generally show positive trends toward lower speeds and fewer crashes. Horizontal clearance during BMV passing events shows little change or even a slight decrease on some installations.

There are a few studies of centerline removal and ELR use from Great Britain. These also show generally positive trends, primarily lower speeds and crash rates.

Recently completed work evaluated the safety of 11 American ELRs that had been installed for at least 3 years. In aggregate, the resulting CMF for the ELR treatment was calculated to be 0.78. This finding was for motor vehicles only – insufficient data existed to draw conclusions about vulnerable road users.

Research Needs Statements have been submitted to TRB committees and AASHTO bodies. No research has been funded by those bodies yet.

Research Needs (in approximate order of priority IMO):

- proper sizing of center travel lane (what center lane widths help motorists to behave safely during passes of approaching traffic?),
- appropriate speed/volume and other characteristics for facility siting,
- appropriate sight distance criterion,
- intersection treatments
- use of color in bike lanes
- proper sizing/marking of edge lane (what edge lane width and markings prevents motorists from assuming the edge lane is a vehicle travel lane?),
- unfamiliar motorist's understanding of an ELR-equipped roadway - what is needed to communicate proper operation,
- use of channelizing islands - when, where, use of one versus two (paired or unpaired),
- savings in maintenance $ by moving vehicles away from road edge and varying course

Resources

All of the resources below, and more, can be found at www.advisorybikelanes.com.

Path Forward

Steps which can move ELRs forward are:

- Move the ELR from Experimental to Interim Approval status
- Initiate research on high priority questions
- Improve current guidance to create safer ELRs
- Create model language for a law which creates a well-defined environment for ELRs
- Identify strategies to increase public awareness of ELRs
- Obtain appropriate guidance for ADA compliance when ELRs used as pedestrian facilities
- Standardize evaluation studies required by FHWA's experimental process
- Collect and distribute lessons learned as we accrue experience
- Identify legal and regulatory obstacles to safe, widespread use of ELRs