Minutes of the August 1st, 2016 DBC Board of Directors Meeting

Present:

President: Phil Coleman
Vice President: Barbara Anderson
Treasurer: Wil Uecker
Secretary: Jack Berger
Philanthropy Director: Jackie Phillips
Tour and Ride Director: Dave Joshel
Director-at-Large, Double Century: Robin Neuman
Director-at-Large, Foxy's Fall Century: Richard Waters
Newsletter/Outreach director: Martha Gegan

Members Absent:

Race Team Director: Fred Schnaars
Membership Director: Jason Fearing
Director-at-Large, Ultra Cycling Events: Dan Shadoan

Also Present:

- **Martin Michael**
- **Dick Mansfield, DBC Quartermaster**

Meeting Convened at 716 Kestrel Place at 7: 21pm

Introductions:

- Phil called the meeting to order, and introduced DBC member Martin Michael, who will be addressing the general membership meeting this fall about his cross country bike trip.

Reports of Officers, Directors, and Appointees:

Philanthropy Director: Jackie Phillips

- Jackie brought up the notion of DBC buying bikes from the Yolo County Central Landfill for the purpose of donating them to the Bike Campaign and Bike Garage.

- Dave reported that the vast majority of these bikes are kids' bikes, in which the Bike Campaign is not interested.

- Phil added that Maria Tebbut is well aware of the Landfill bikes, and nothing more needs to be done in this regard for now.

Vice President: Barbara Anderson

- Barbara confirms that there is no membership meeting in the month of August.

- She is beginning planning for the Holiday Party: the room is now reserved. Decisions will need to be made regarding catering. Barb invites input on this issue.

- The Holiday Party will be on the second Monday of December, which will be the 12th.

Treasurer: Wil Uecker

- Wil brought up his prior report which indicated that the by-laws may have to be amended to limit the liability of volunteers conducting the annual independent review of the Club's financial records required by the by-laws. The changes were requested by a practicing CPA contacted, who was concerned about possible legal liability unless the review was conducted in accordance with the standards of the American Institute of Public Accountants (AICPA). For such a review, he would have to charge the Club several thousand dollars, which as a DBC member himself, he felt the Club did not need. The Club's by-laws do not require that the independent review be conducted by a practicing CPA.

- We now have two volunteers, Linda Bernheim and Mark Tebbut, who have agreed to perform the required independent review of the DBC financial records. Both are experienced bookkeepers--Mark Tebbut recently served as treasurer of Cool Davis and Linda Bernheim has served as treasurer of the DBC.

- As a result, we will defer any change to the current by-law requirement for an independent review of the Club's financial records.

President: Phil Coleman

September BOD meeting date:

- The September BOD meeting falls on Labor Day this year. He discussed options for re-scheduling the meeting.
- The date of Tuesday the 6th of September was chosen.

Rumble Strip Advocacy:

- DBC member John Swann has previously made a presentation to this board on the issue of rumble strips. At this time, he would like the Board's official endorsement of his position paper, soon to be presented to Cal Trans.

- He has provided a copy of the position paper to each board member, as well as anecdotes from numerous cyclists on this issue.

- In summary, he would like to see Cal Trans take the needs of cyclists seriously when promulgating policy for the deployment of rumble strips, given that they often present a significant hazard to cyclists, especially when descending a grade.

- A copy of his paper is attached to this document as appendix 1.

- After discussion, Barbara offered a motion: The Davis Bike Club Board of Directors endorses the report to Cal Trans regarding the deployment of rumble strips. The motion was seconded by Robin.

- Motion passed unanimously.

Meeting with Robb Davis, Mayor of Davis:

- Phil met with Robb Davis last week for a discussion of cycling related issues.

- Phil found that Robb was most receptive to input from DBC on all matters involving cycling that reach the political arena.

- Phil made the offer of DBC consultation/input if and when issues arise affecting the cycling community, and will stay in contact with Robb as needed.

- Barbara offered a historical perspective: She described how the club came to adopt a policy of avoiding partisan and contentious political issues that could create divisiveness within the membership. It resulted from a public discussion of the Richards Blvd underpass issue many years ago, for which the club had both supporters and detractors.

- The club has always avoided political issues that were not bike related, and also refrained from taking positions on bike-related matters where the club was about equally divided.

Board Succession:

- Phil noted his comments given a few months ago, urging Board members to "find your own successor" if you wish to leave the board.

- He notes that if we do not have persons actively seeking board positions, it is incumbent on us to go out and recruit them.

- Phil asks that all current Board members let him know as soon as possible if they wish to continue on the Board or not.

- The By-laws require the President to convene a Nominating Committee when Board vacancies occur at the end of the year.

Davis Sports Park and the Possibility of a Velodrome:

- Phil noted that the City of Davis has created a Sports Complex Task Force, intended to increase the sports and recreational opportunities for its citizens. Somehow, the DBC was not considered in the invitation list of numerous sports and recreation groups.

- Were the Club given the opportunity to identify unmet needs in the popular Davis recreational activity of cycling, a velodrome would have been a prime candidate.

- Twenty-eight velodromes exist in the United States, four in California, with San Jose being the closest to Davis. The surface of the San Jose velodrome has been less than ideal for competitive racing.
- Over the years, several attempts have been made to introduce track cycling to Northern California, all to no avail.

- Unlike other sports under consideration with this Task Force, a velodrome has the ability to generate an immediate revenue stream. Velodromes are enclosed areas and viewers purchase tickets to participate. Cycling-related vendors and corporations are a common sight at pro-level velodromes.

- A pro-quality velodrome would create a new area economic market by attracting track cyclist teams and their sponsors from all over the nation. Trexlertown, a tiny town of 2,000 in Eastern PA with no airport, has a first-class velodrome, it's only real industry. For years, "T-Town" has been able to host Olympic time-trial events, and Regional and National Championship races for track racing teams of all categories and ages, from all over the US and beyond.

- Perhaps the greatest asset to aid in the acceptance and construction of an area velodrome is the Club itself. The DBC is composed of hundreds of active, highly motivated volunteers who could rally around such an enterprise, and we have discretionary sums of money to tangibly dedicate to this effort. Finally, the Club has an outstanding reputation in the community from its decades of public service.

- Such a bold sweeping notion presents many questions regarding cost investment, funding sources, and support from area cycling interests. Phil said he is going to seek answers to these unanswered questions and more as they arise. The Board will be routinely apprised

of developments. Any member that would be interested in helping with the research is urged to contact the President immediately.

- Robin commented from a historical perspective that previous efforts of this nature by the Club failed. Nobody could recall the strength of these efforts or why they failed. Barbara suggested that competing for shared interest with Little League, AYSO, and similar groups could be a daunting task. Instead, a more desirable path may be to pursue this independent of the Sports Park Task Force effort.

- Phil reiterated that his interest is strictly exploratory, and invited any interested members to join him in this effort.

Adjournment: meeting adjourned at 8:26 pm.

Respectfully submitted,

Jack Berger
Secretary, DBC Board of Directors.

Next membership meeting: Monday, September 12th, 7pm, Club Room, Veterans Memorial Building, Davis Ca.

Next Board meeting: Tuesday, September 6th, 7pm, Tandem Properties, 3500 Anderson Road, Davis, Ca.

APPENDIX 1:

Top photo: Milled-in rumble strip on Highway 16, Sacramento County. Photo by John Swann

Bottom photo: Audio Tactile Profile Road Marking. Photo from *The Usability and Safety of Audio Tactile Profiled Road Markings*. NZ Transport Agency Research Report No 365. 68 pp. http://www.nzta.govt.nz/assets/resources/research/reports/365/docs/365.pdf.

Overview

The purpose of this paper is to advocate for more bicycle friendly conditions on the state highway system. Specifically this paper addresses rumble strips and the recommendations of the 2001 Caltrans study, "*Evaluation of Milled-In Rumble Strips, Rolled-In Rumble Strips and Audible Edge Stripe*", and suggests alternatives that better address the safety of cyclists. The 2001 Caltrans study is the basis of *Caltrans Policy Directive 11-04*, which is currently being used to direct the installation of rumble strips in California. Its recommendations do not adequately consider the safety of cyclists, particularly with respect to the type of rumble strip to be installed. In addition, other factors such as placement, width, and continuity need to be considered. These elements have been studied by the League of American Bicyclists and the Alliance for Biking and Walking, which established a set of best practices with regard to rumble strips in its 2013 report "*Bicycling and Rumble Strips*". These practices along with personal experience provide the basis for the recommendations laid out in this paper.

The issue

Rumble strips are raised or grooved patterns on the road's shoulder or centerline designed to alert inattentive, drowsy or impaired drivers that their vehicles are drifting out of their travel lane. [i] They can be an effective safety measure for motorists, but can pose a significant hazard to bicyclists and have ruined popular bike routes. The inappropriate use of rumble strips runs counter to Caltrans' safety and health objective to increase

and improve opportunities for safe and accessible active transportation. It also runs counter to Caltrans' sustainability, livability and economy goal of tripling the use of bicycles by 2020.[ii]

Hazards of rumble strips to bicyclists

According to the 2013 report by the League of American Bicyclists:

> Rumble strips are virtually impossible to ride a bicycle on or over – they are at best uncomfortable, even for a very short distance, and at worst can cause a cyclist to lose control of their bike and fall. They can damage a bicycle wheel, can cause a flat tire, and/or shake loose parts off a bicycle. Consequently, cyclists will avoid riding over them – and when rumble strips leave no room on a shoulder, the cyclist will have no other option than to ride in the travel lane. While rumble strips do not deter car, truck or bus travel, they have a severe impact on bicycling travel, and have ruined popular cycling routes[iii]

The addendum to this paper contains reports by cyclists concerning issues they have had with rumble strips. The reports are responses from members of the Davis Bike Club email list and the San Francisco Randonneurs Google group. There were 13 responses, 4 of which involved a crash. There are fewer than 1,500 members in both groups. Extrapolating to all cyclists in California would result in a potentially large number of cycling injuries due to rumble strips. Here is an example of one such report:

> "[I] saw a guy who wrecked on the 2013 [Davis] double century on the rumble strips on the fast descent after Resurrection. He looked horrible. Very dangerous. The scary thing there is you try to ride to the right of the rumble strips to stay out of traffic, but then all of a sudden there's a pile of dirt, or a car parked, or some really slow riders, or whatever, and you have to jump back across at 35 or 40 mph." (Russel Hildreth)

Rumble strip elements that make a road hazardous

The rumble strip factors that make a road hazardous as identified by the League of American Bicyclists are:

1) Width. Rumble strips that are too wide remove limited space from the shoulder;
2) Depth. Rumble strips that are ground in to depths that are excessive are dramatically more dangerous for cyclists;
3) Continuity. Rumble strips without gaps in the strip do not allow a safe way for cyclists to cross, merge, or turn;
4) Placement. The lateral placement in a shoulder can make a shoulder that was once very comfortable to bicyclists, unusable. [iv]

I can personally attest to a "ruined" cycling route. In the 1970's when I raced for the Victoria Wheelers, the road from Vancouver, BC to Whistler was a classic ride. Gorgeous! A 2010 Winter Olympics construction project ruined the road for cyclists. In 2011 I rode from Whistler to Vancouver. It was the second worst 80 miles I have ever ridden. It's a billion dollar super highway with horrible rumble strips hostile to cyclists. It's unlikely I will ever ride it again.

In addition to the four factors identified by the League of American Bicyclists, the type of rumble strip is important.

Caltrans recommended a rumble strip that is dangerous to cyclists.

Despite the title of the 2001 Caltrans study containing the words "…and Audible Edge Stripe", audible edge stripes were never seriously considered in the study. For descriptions and photos of the various types of rumble strips please see the 2001 Caltrans study.[v]

The study recommends that "milled-in" (otherwise known as "ground-in") rumble strips be installed where bicycles are allowed. This recommendation was based on a faulty assumption found in a memo from the Department of Transportation (Appendix G). The memo reads:

> "This suspension does not affect installations which use our current standard rolled in rumble strip. Our bicycle coordinator has informed the task force that this type of rumble strip has not created a concern with the bicycle groups."

The notion that "rolled in" rumble strips are not of "concern" to cyclists is not credible. Rolled in rumble strips were precisely what I had so much difficulty with riding from Whistler to Vancouver in 2011. As stated earlier, rolled in rumble strips have ruined that road as a cycling route

The memo in appendix G was written in 1999 – 17 years ago. It is extremely doubtful that "bicycle groups" quoted had enough experience with "rolled in" rumble strips to form a legitimate position that they had "not created a concern". In 1999 rumble strips where bicycles were allowed were rare. I first encountered them in 2002. They were the rolled in variety and they were extremely unpleasant.

This incorrect assumption regarding "rolled in" rumble strips has skewed the evaluation away from considering the needs and safety of cyclists. The Series "B" rumble strips, which included those least objectionable to cyclists, were excluded from the assessments of test results for motor vehicles. Those assessments appear in section 4.11 of the report beginning on page 38. Note that only Series A rumble strips (types 1 through 5) are included in these assessments.

This is a glaring omission in light of the fact the some of the Series "B" rumble strips (specifically types 6, 10 and 11) were found to be significantly less hostile to bicycles in terms of both comfort and control than any of the Series "A" rumble strips. That data from the "bicycle field test" is summarized in figures 6.3 and 6.4 on page 53 of the study.

Though the data from the "bicycle field test" of the study is useful in determining the relative impact of the various types of rumble strips on cyclist, that field test is seriously flawed.

The testing of motor vehicles in the study was very structured. The passenger vehicles were all tested at 80 kph and 100 kph. The commercial vehicles were all tested at 80 kph. Instruments collecting data were calibrated.

The standards for bicycle field test, by comparison, were insufficient to assess the actual risk posed to cyclists.

Throughout the document the standard used to determine if rumble strips are OK for cyclists is are they "traversable" by a bicycle. This is an incredibly low bar. To be clear, any rumble strip is traversable by a bicycle ridden at 10 mph (16 kph) or less. And any rumble strip is easily traversable if the bike has fat tires and suspension. Testing rumble strips with mountain bikes or BMX bikes is irrelevant. On page 37 of the study is a photo of a child riding over rumble strips on his BMX bike.

The only types of bikes relevant for testing rumble strips are road bikes with 23c or 25c tires inflated to ~100 psi or touring bikes with 28c to 32c tires inflated to ~80 psi. Because, with very rare exception, those are the only types of bikes that are likely to encounter rumble strips.

For the most part rumble strips exist on rural roads and highways outside of urban or suburban areas. So, because of the distances involved, roads with rumble strips will generally be encountered only by "advanced" cyclists as described on page 46 of the study.

And for the purposes of determining bicycle safety it is only really necessary to test the worst case scenario. That would be a road bike travelling at, at least, 18 mph (29 kph) – a moderate pace for an "advanced" cyclist. Please note that, unlike the vehicle tests, there was no specified speed in the bicycle field test. Testing with road bikes travelling at a reasonable speed is the only way to determine if a rumble strip is actually safe – a much higher bar than "traversable".

An alternate conclusion that better addresses the safety of cyclists

If the Caltrans study focused on "passenger vehicles" and "the needs of bicyclists" as it purported to do, the rumble strip of choice in the conclusion would be entirely different. Having established that "rolled-in" and "milled-in" rumble strips are hazardous to cyclists, consideration would have been given to the types that fared better in the bicycle field tests, i.e., types 6, 10 and 11.

The passenger vehicle test data for Series "B" rumble strips are buried in Appendix C, figures C9 through C14. It is reasonable to eliminate type 11 because its average score in every test is worse than that of type 10 and 6. Comparing the average light vehicle test results for rumble strips type 6 (Chip Seal Application) and 10 (Raised and Inverted Thermoplastic Stripe) we see that 6 is superior for vibration (figures C9, 10 & 11) and that type 10 is superior for noise (figures 12, 13 & 14).

This study was done 15 years ago and there have likely been advances in rumble strip technology since then. John Lieswyn, former Transportation Planner with Alta Planning + Design, recommended audio tactile profiled line markings (ATPLMs or PLMs) as these sit above the pavement surface as do all the Series B rumble strips in the Caltrans study. Raised rumble strips can be used anywhere that snow plows are not needed. In New Zealand all rumble strips are raised. For an example (and photo) of a type of rumble strip acceptable to cyclists see page 20 of the report, *Usability and Safety of Audio Tactile Profiled Road Markings*.[vi]

Caltrans guidelines omit' installation factors important to bicyclists.

The Caltrans guidelines for the installation of rumble strips make no mention of the width of the strips, the continuity, or the placement as they pertain to the safety of bicyclists. [vii]

The League of American Bicyclists(LAB) cites best practices for these elements in its paper. With regard to width, LAB finds that rumble strips should provide a bare minimum shoulder width of four feet, five feet with a guardrail. Colorado and Alaska require a minimum of a 6 foot shoulder. Strips are 5 inches wide, narrower strips can still be effective. Adventure Cycling Association also recommends a width of 5 inches.[viii]

With regard to placement, LAB found the best practice is to not install rumble strips on designated bicycle routes and other roads where bicycling is expected. For non-freeway roads, strips should be installed only after proper study confirms a documented need. The recommendation to not install rumble strips on roads where bicycling is expected is particularly important on descents.

With regard to placement LAB found the best practice is to place strips close to edge line to increase shoulder area or on low speed roads to place the stripe away from the edge line to allow cyclists to ride on the left side of the strip. Placing strips on the edge line (a rumble stripe) both increases visibility of the white line and maximizes available shoulder area.

Under-reporting and the need for addressing bicyclists' safety

At the February 2016 Caltrans Bicycle Advisory Committee meeting a Caltrans representative said that, according to SWITRS data, there has never been a cyclist crash in California caused by rumble strips. Law enforcement data, however, is not a reliable source of bicycle crash data. The Federal Highway Administration points out that reports to law enforcement are limited almost entirely to motor vehicle-related events. They specifically exclude bicycle falls that do not involve a motor vehicle. In the United States, a traffic accident is officially defined as "an accident that involved a motor vehicle that occurred on a public highway or road in the U.S. and that resulted in property damage or personal injury." Studies have shown that a large percentage of bicyclist injuries treated in hospital emergency department do not involve a motor vehicle. In one of the most comprehensive studies of injuries to bicyclists using the 1991 National Electronic Injury Surveillance System (NEISS) data supplemented by follow-up telephone interviews with injured bicyclists only 10 percent of the bicycle injury cases involved a collision or near collision with a moving motor vehicle.[ix] Hospital and emergency room data provide a better—although still inadequate—source of bicycle injury data.

Consider the following example of a non-reported crash, involving significant injury:

In October 2014 a Davis resident, cycling home from his workplace in Sacramento, had his front wheel get caught between two plates that had separated at an at-grade railroad crossing east of Davis. He landed on his face breaking his helmet and two front teeth. He was able to complete his ride home without notifying the CHP or anyone else. It was only afterward when he sought medical attention for his broken teeth that a CT scan revealed he had broken one of his neck vertebrae in two pieces, which required 3 days in ICU, five hours of surgery, and months in a neck brace to repair.

Bicycle safety needs to be given a higher priority than is shown in the Caltrans study of rumble strips and its guidelines for installing rumble strips, given the fact that many injuries go unreported to law enforcement, even serious ones.

Conclusion

The following are five recommendations, consistent with the best practices recommended by the League of American Bicyclists, which would make rumble strips even safer for cyclists:

1) The installation of rolled-in and milled-in rumble strips where bicycles are allowed should not continue. Some type of Audible Edge Stripe or Audio Tactile Profiled Line Marking should be used instead on roads where snow removal is not required.

2) Run-off-the-road (ROR) data should be analyzed before any rumble strips are installed. Strips should be installed only if the data suggests a significant safety improvement in ROR incidents.

3) Where bicycles are allowed rumble strips should be located on, or at least touching the edge line. Preferably, if touching the line they would extend to the left. Studies have shown that narrower lanes slow vehicle speed. If an ROR study has shown that rumble strips would help improve vehicle safety for a particular stretch of road, then one would assume that slower vehicle speed would also improve safety. It is not fair that cyclists should be made to pay the entire price for inattentive, drowsy or impaired drivers, i.e. drivers that should not be operating a motor vehicle.

4) Where bicycles are allowed rumble strips should have gaps to allow cyclists to enter and exit the roadway unfettered. Gaps are necessary when cyclists are riding with others and to avoid debris on the shoulder.

5) Where bicycles are allowed, rumble strips should not be installed on a descent where the coasting speed of a bicycle exceeds 25 mph.

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[i] Traffic Operations Policy Directive 11-04, Guidelines for Installation of Rumble Strips. State of California, Department of Transportation, TR-011 (Rev 9/2006) http://www.dot.ca.gov/trafficops/policy/11-04.pdf. Accessed July 31, 2016.

[ii] Caltrans Strategic Management Plan, 2015-2020. http://www.dot.ca.gov/perf/library/pdf/Caltrans_Strategic_Mgmt_Plan_033015.pdf. Accessed July 30, 2016.

[iii] Bicycling and Rumble Strips. League of American Bicyclists and Alliance for Biking & Walking. 2013. http://www.bikeleague.org/content/rumble-strips-problems-and-policies. Accessed July 30, 2016.

[iv] Bicycling and Rumble Strips. League of American Bicyclists and Alliance for Biking & Walking. 2013. http://www.bikeleague.org/content/rumble-strips-problems-and-policies. Accessed July 30, 2016.

[v] *Evaluation of Milled-In Rumble Strips, Rolled-In Rumble Strips and Audible Edge Stripe*, California Department of Transportation. May 2001. http://www.dot.ca.gov/newtech/researchreports/reports/2001/milled-in.pdf. Accessed July 31, 2016.

[vi] Edgar, J.P., Mackie, H.W., Baas, P.H. 2008. The Usability and Safety of Audio Tactile Profiled Road Markings. NZ Transport Agency Research Report No 365. 68 pp. http://www.nzta.govt.nz/assets/resources/research/reports/365/docs/365.pdf. Accessed July 31, 2016.

[vii] Traffic Operations Policy Directive 11-04, State of California, Department of Transportation, TR-011 (Rev 9/2006)

[viii] Rumble Strips. Adventure Cycling Association. https://www.adventurecycling.org/bicycle-tourism/national-advocacy-projects/rumble-strips/. Accessed July 30, 2016.

[ix] Injuries to Pedestrians and Bicyclists: An Analysis Based on Hospital Emergency Department Data. Federal Highway Administration. 1999 http://www.fhwa.dot.gov/publications/research/safety/pedbike/99078/chapter1.cfm. Accessed July 30, 2016.