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Complete Streets

Creating Walkable and Bicyclist Friendly Communities

Greg Brinkmeyer, P.E., TEEX Adjunct Instructor

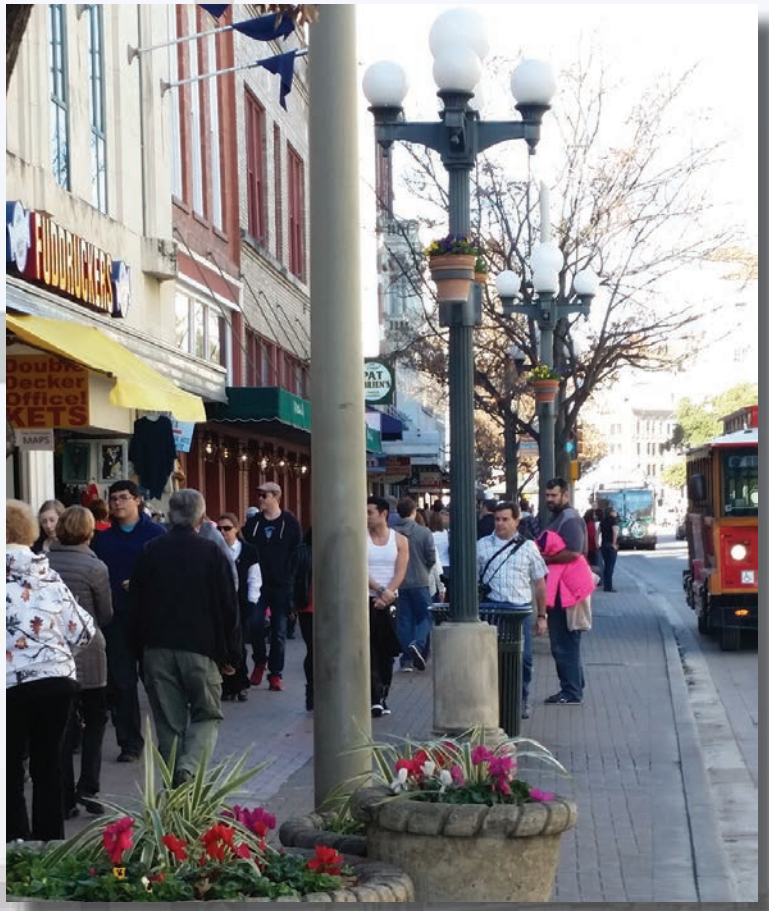
Economic revitalization of downtown business districts is widespread throughout Texas. Large cities and small towns alike are working to promote downtown living and shopping with the construction of high rise condominiums and loft apartments in historic, typically abandoned commercial structures that time seemed to forget.

Roadway administrators and transportation professionals are focusing attention on the downtown street system to improve traffic flow, create additional parking, and most importantly, allocating resources to provide continuous pavement and drainage maintenance.

However, for the downtown resurrection to be a success, street departments must plan safer communities for pedestrians and bicyclists. "Walkable" towns are capturing a great share of tourist dollars from visitors interested in experiencing the individual uniqueness and charm that every Texas town and city embraces. Places where both visitors and residents feel community pride are more likely to be strong economically. According to the Texas Main Street Program, there are many reasons why downtown revitalization is a crucial tool for enhancing the economic and social health of a community. The historic buildings in a downtown are prime locations for the establishment of unique entrepreneurial businesses and can also be tourism attractors, all which add to the community's sales tax collection and property values. Today, there are 87 official Texas Main Street communities all across Texas that range in populations from 2,000 to more than 200,000.

Commercial property developers have recognized opportunities in walkable shopping centers that try to replicate small town Texas. These new centers try to recreate the downtown sense of place with small store fronts, multi-story buildings, and an open-air environment. They are built to be pedestrian friendly, convenient, and safe.

The concept of a "Complete Street" is not about getting rid of cars and roads. It is about better utilizing the available public right-of way to encourage and enable people to add more movement to their lives allowing various types of access to destination points.



What is a "Complete Street"?

Complete Streets are for everyone. They are designed and operated to enable safe access for all users, including pedestrians, bicyclist, motorist and where available, transit riders of all ages and abilities. Many towns and cities have developed comprehension planning and zoning ordinance to ensure Complete Streets are included in any new developments and street reconstruction. However for this level of introduction, a Complete Street must have these basic qualities:

- Continuity throughout the identified business area. Connectivity from the pedestrian's/ bicyclist's starting point to locations throughout the town or city is a plus. The starting point could be from either a nearby neighborhood or an adjacent parking location
- Continuous sidewalks. Improved pedestrian paths should not end because of the intersection with a roadway.

- Sidewalk surfaces which are free of potholes and un-level concrete joints or drop-offs.
- Clearly marked pedestrian crosswalks
- Curb ramps to provide access between the sidewalk and roadway for people using wheelchairs, strollers, walkers and for pedestrians who have trouble stepping up and down high curbs. Don't forget the ADA requirements
- Placement of good quality lighting that enhances the environment as well as increases comfort and safety
- Provide systematically spaced benches and landscaping along the sidewalk path. These amenities create a pleasant pedestrian environment.

Where to Start?

The first step is to learn as much as possible about the community before recommending any changes. In other words- get to know your neighbors. Identify existing origins and destinations for pedestrians and bicyclists. In community forums, identify the major destinations where potential users would be attracted. These may include community centers, shopping areas, tourist attractions, medical clinics or places of worship.

Once these locations are identified, do a visual, on foot, inspection of the pedestrian facilities that are currently in place. If improvements are needed, make a prioritized list based on funds that are available.

Improvements for bicyclist and pedestrians are often described as the four Es:

1. **Engineering**-
   Physical changes to the streets, sidewalks, traffic signals, or signs that affect the operation and movement of traffic, bicyclists, and pedestrians. These changes are also related to local plans and policies, which may guide how engineering changes are made.

2. **Education**-
   Includes strategies that aim to educate system users to motivate a change in behavior. For example, customers of downtown businesses must be aware of off street parking areas that have sidewalks that connect to their business of interest.

3. **Enforcement**-
   Community based laws and regulations related to pedestrian and bicycle safety.

4. **Encouragement**-
   Efforts to promote walking and biking in a community.

For more information on how to start the "Complete Streets" idea, the Federal Highway Administration has just released "A Residents Guide for Creating Safer Communities for Walking and Biking". This publication can be found at the following:

http://safety.fhwa.dot.gov/ped_bike/ped_cmnity/ped_walkguide/residents_guide2014_final.pdf

Keep in mind that pedestrian and bicycle safety improvements often happen in stages. Even minor changes take time. However, steps taken today will help with the long term success of "Downtown" Texas. ★

Load-Limit Posting of Local Jurisdiction Bridges

Ralph K. Banks, P.E., TEEX Adjunct Instructor

All bridges (defined as bridge classified roadway structures) located on the public highways, roads and streets of the State are required by the Federal Government under National Bridge Inspection Standards (NBIS) to be inspected by pre-qualified bridge inspectors every two years. And, the State agency responsible for carrying out this Federal requirement in Texas, is the Texas Department of Transportation (TxDOT) of the State, through its Bridge Division and District offices. Included in the inspection program are not only all bridges located on designated highway routes of the State Highway System, but all other such structures of the State located on public streets and roads under the jurisdiction of Cities, Counties and Special Districts, as well, which are referred to here as "local jurisdiction bridges".

An integral part of these inspections is an engineering determination of the safe load capacity of each bridge. And, for local jurisdiction bridges found to be incapable of safely carrying maximum legal loads of the State, TxDOT recommends to the appropriate local jurisdiction that restriction load postings be made. Appropriate load posting signs with support posts, are then provided free of charge to the local jurisdiction with the signs expected to be promptly erected by the local jurisdiction at their expense.

Periodically, about once a year, the Federal Government through

the Federal Highway Administration (FHWA) reviews the Texas bridge inspection program and notes deficiencies found. Frequently the FHWA reviewers are noting some of the local jurisdiction bridges of the State that should be load posted but are not, and records each of these instances as "non-compliance" items for Texas.

For each bridge, including local jurisdiction bridges, TxDOT maintains a computerized inventory data file that contains an item of data for each bridge indicating whether or not the bridge is recommended for load posting. And, any bridge found by FHWA which has been recommended for load posting for as much as, or longer than 180 days and a load posting

has not been made, the Department is assessed a "non-compliance" item for which the Department is expected to "take action" toward resolving the item of non-compliance.

In our State, except for certain exempt vehicles, the statutory maximum loadings that may be carried on the public highways, roads and streets are 20,000 pounds for single axles; 34,000 pounds for tandem axles, and 80,000 pounds gross for individual vehicles. The Statute further provides that the 80,000 pounds gross legal load may be distributed over a length according to a formula specified in the Statute. Therefore, under this system of axle and gross load limitations, the entire populations of our bridges with the great number of structure types and span lengths (short and long), are addressed in terms of these three loadings, with appropriate load limits assigned. Single or tandem axle load limitations usually apply only to "short" spans that are just long enough for

the loaded single or tandem axle of a legal vehicle to fit on it. And, gross vehicle load limitations usually apply to span lengths or continuous units, that are long enough for the entire longer legal vehicle to fit on it at one time.

So, any part of a given bridge structure on the public highways, roads and streets of the State that is found to be incapable of safely carrying any one or more of these maximum legal loadings, results in that bridge being

recommended for one or more load-limit postings for single axle, tandem axle and/or gross load.

In the absence of an appropriately posted sign to the contrary at a bridge, a User has a right to expect the vehicle he/she is operating across the bridge that does not exceed any of the usual State maximum legal loadings, can safely pass. And, if in the absence of such sign, the bridge does collape under the vehicle, the appropriate responsible Jurisdiction is surely answerable.

Accordingly, responsible local jurisdictions are asked to promptly load-post any bridges identified by TxDOT as needing such posting, and to keep those postings maintained; all this is needed for public safety benefit. ★

Tuscola High School Students Take on "Dead Man's Curve"

Greg Brinkmeyer, P.E., TEEX Adjunct Instructor

Students at Jim Ned High School in Tuscola, Texas have always heard the stories about the dangers of driving US 277 South of Abilene, Texas. In fact, since the 1930's drivers have encountered the challenges of driving the 10 mile section of curving, rolling roadway through the "Big Country". One curve in particular has been fittingly named "Dead Man's Curve".

Four students, Jordy King, Tanner Underwood, Jared Pentecost, and Skyeler Washburn are taking the

challenge to make "Dead Man's Curve" safer. In fact, these students have experienced the dangers first hand. Moms and dads, aunts and uncles are first responders providing fire and medical attention to drivers involved in the too frequent crashes. Due to its cross section, the roadway is usually closed so medical attention can be rapidly provided and the crash safely cleared. Unfortunately, due to the increased traffic on the roadway that connects Abilene and San Angelo, secondary crashes when the roadway is closed have become a major concern. As would be expected in a rural community, volunteer first responders are stretched thin. This lack in volunteer resources makes incident management traffic control difficult.

As a part of the "Family, Career and Community Leaders of America" competition, these students proposed to the Texas Department of Transportation, local law enforcement agency, volunteer fire departments and other first responders, potential solutions to the following:

- Low Cost Safety Improvements to provide better advance guidance of the curving,uphill/downhill roadway alignment to reduce the frequency of crashes.
- A Safer "Incident Management" Temporary Traffic Control detour plan to move traffic around the crash location with the goal of reducing secondary crashes.

The competition recognizes teams who demonstrate their knowledge, skills, and abilities to actively identify a local, state, national or global concern, research the topic, identify a target audience and potential partnership, form an action plan, and advocate for the issue in an effort to positively affect a policy or law.

To develop their proposal, the students evaluated crash records, assessed various research reports for potential safety improvements, and ensured plan compliance with the "Texas Manual on Uniform Traffic Control Devices".

At regional competition the students advanced to State and will present again in April.

The Texas LTAP program is providing technical support for this effort. ★

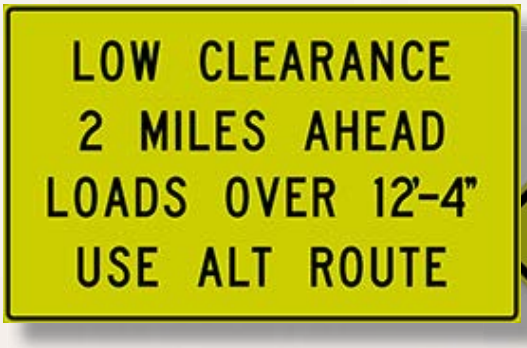
Safety Center Researchers Look at Improving Low-Bridge Warning Signs

Safety Net: The Center for Transportation Safety

After driving on the highway for hours, stuck in traffic, the last thing truck drivers need to deal with is finding that they are approaching a bridge that is too low for them to fit under after it is too late to get off the road.

On a number of occasions, truck drivers have found themselves trapped in a scenario where there are two bridges, one right after another, and the truck can fit under the first but not the second bridge, without an exit in between. This led to drivers striking bridges. District and maintenance engineers at the Texas Department of Transportation (TxDOT) expressed concerns that new construction, such as reverse-diamond interchanges, would lead to more safety problems if the issue was not addressed. Texas A&M Transportation Institute researchers were asked to research ways to better communicate low-bridge warnings to truck drivers now and in the future

The first step was to brainstorm different types of warning signs that would draw truckers' attention to the fact that they would need to exit before the first bridge in order to avoid being trapped on the freeway after approaching the second, lower bridge. Signs would need to be added to the freeway to encourage truckers to exit, as well as on the frontage road to discourage truckers from approaching a bridge they could not fit under.



Six freeway signs and two frontage road signs were chosen for a survey of commercial truck drivers.

After viewing each sign, drivers were asked if they interpreted the following information from the sign:

- there is no exit between bridges,
- there is no exit before the second bridge,
- you need to exit now if your truck is taller than the sign dimensions, and
- the information on the sign shown is not for the first bridge.

A greater percentage of participants responded positively to a warning sign similar to current low-bridge warning signs that included subsidiary information saying "2nd bridge, exit now," as well as a green sign that stated "last exit before" and displayed an image of the typical low-bridge warning sign.

> "Coming from a human perspective, it is giving us some more answers about how people process information as they drive and how their expectations play into how they react in situations,"
>
> ***Laura Higgins, TTI co-principal investigator***

After the surveys, researchers prepared a simulator to further test six of the signs. Before going into the simulator, some signs were removed due to their differences from the Manual on Uniform Traffic Control Devices standards. Laura Higgins, co-principal investigator, said the researchers were concerned that nonstandard signs would confuse the drivers, which would distract them from actually reading the sign. Researchers also received feedback from TxDOT district engineers.

The simulator placed the drivers in the far left lane of a freeway. They were briefed beforehand about the characteristics and measurements of their vehicle. Each test included a distraction sign, such as a sign for an upcoming rest area, followed by the clearance test sign. Researchers were able to measure how much time passed before a driver began to move lanes in order to exit after viewing the test sign. Other truckers in the simulation were placed on the frontage road and were tested with a sign warning them not to enter the freeway.

Sign 3, which indicated the maximum height of the second bridge and had a subsidiary sign stating the distance to the second bridge, resulted in the greatest number of correct maneuvers among simulator drivers, 93.3 percent after extraneous errors were removed. However, less than half of the participants were certain that the next exit was their last opportunity.

Other signs that did indicate "last exit" performed well in the simulator as well because drivers were more aware that there was no going back if they missed the exit. Higgins said this went along with the idea of positive guidance and giving information that acted as a direct order to drivers on the road.

Placing the distance on the sign did not necessarily influence behavior because stating that the low bridge was 5 miles away, for example, gave no indication to drivers that there would be no exit between their current location and that low bridge. One suggestion is to combine the mileage distance to the low bridge with a second subsidiary sign that states "last exit" so drivers are aware that they must exit the freeway.

Higgins said the simulator gave researchers a better idea of what goes through drivers' minds while they're on the road.

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"Coming from a human perspective, it is giving us some more answers about how people process information as they drive and how their expectations play into how they react in situations," Higgins said.

Higgins said understanding these expectations gives researchers the tools they need to use expectations and move past them to get drivers to do what they need to do to remain safe on roadways.

Other suggestions from the study were to include two warning signs to give drivers more time to prepare for and exit the freeway. Changeable message signs are also an option because they act as attention-getters and have more room for information to be included. ★

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The Lone Star LTAP was pleased to host the LTAP South Central Region Meeting in February. Here is a group shot of those who attended. Not pictured, our LTAP friends from Oklahoma who hit the road early due to weather.