pennsylvania
DEPARTMENT OF TRANSPORTATION
PennDOT Local Technical Assistance Program

moving FORWARD

SUMMER 2014

A quarterly review of news and information about Pennsylvania local roads.

Pennsylvania Records Lowest Number of Traffic Deaths Ever

The number of highway deaths on Pennsylvania roads tumbled to a record low last year when 1,208 were recorded, the lowest number since recordkeeping began in 1928. Accidents on local roads also dropped from 32,040 crashes with 201 fatalities in 2012 to 31,567 crashes with 183 fatalities in 2013.

"Though Pennsylvania has made significant progress in reducing highway crashes and deaths, our efforts to ensure that all travelers reach their destinations safely will remain paramount," said Secretary of Transportation Barry J. Schoch. "However, our efforts cannot reach their potential if drivers refuse to do their part by observing traffic laws and always using common sense on our roads."

Although the number of highway deaths dropped in many types of crashes, significant decreases were noted in unbuckled, speeding, and single-vehicle, run-off-the-road related deaths. Unbuckled fatalities dropped from 503 in 2012 to 425 in 2013. Speeding-related fatalities decreased from 262 in 2012 to 193 last year. Likewise, deaths attributed to single-vehicle, run-off-the-road crashes declined to 566 in 2013, down from 648 the previous year.

Another area where significant decreases in fatalities were noted involved crashes with a drinking driver. Deaths caused by drunk drivers decreased from 377 in 2012 to 342 last year, the lowest number since 1997 when this data collection began.

While decreases in highway deaths are to be applauded, unfortunately Pennsylvania also experienced an increase in fatalities caused by certain types of crashes, including those involving distracted drivers and in head-on or opposite-direction sideswipe crashes.

In 2013, 64 fatalities from crashes were attributed to distracted drivers, up from 57 in 2012. In addition, deaths in head-on or opposite-direction sideswipe crashes increased to 178, a 20 percent increase from 148 in 2012. Fatalities in crashes involving drivers ages 75 and older also increased, going from 126 in 2012 to 142 last year.

Over the last five years, PennDOT has invested $50 million for safety improvements at approximately 4,000 locations. These improvements include low-cost safety measures such as the addition of centerline and edge-line rumble strips.

PennDOT also invests about $20 million annually in state and federal funds for safety education and enforcement efforts statewide. Safety tips can be found at PennDOT's highway safety information website, www.JustDrivePA.com.

Safer Local Roads, Too

Crashes on local roads in Pennsylvania dropped last year, going from 32,040 in 2012 to 31,567 in 2013. This included 176 fatal crashes with 183 fatalities in 2013, down from 192 fatal crashes with 201 fatalities the prior year. Major-injury crashes also dropped from 724 with 800 major injuries in 2012 to 600 with 689 major injuries last year.

ALSO IN THIS ISSUE

Safer Trail Crossings

Low-cost improvements to manage traffic, pedestrians, and bicyclists

by Stephen Thompson and Patrick Wright, Pennoni Associates

As outdoor activities for fun and fitness have become more popular, the availability of trails to accommodate walking, running, bicycling, and equestrian uses has also increased. Trails are a feature of many municipal parks, state parks, or private recreation areas and are sometimes contained within a larger recreational facility, such as a municipal park with a walking trail along its perimeter.

Because trails are often located along rights-of-way that connect separate parks, such as a riverfront trail, or that bisect a municipality, such as the Appalachian Trail, rails-to-trails, or municipal greenways, trails are likely to intersect public roadways and present conflicts of movement between trail users and vehicular traffic.

Remember that trail crossings should also be ADA compliant so that the trails are accessible to all trail users.

The development of trails can contribute to traffic safety since trails move pedestrian, bicycle, and equestrian traffic from public roadways to locations dedicated to these activities. However, a significant component of traffic safety is driver expectation, and the unexpected locations of some trail-roadway intersections, along with inconsistent traffic on the trail crossings, can result in risks to safety at points of conflict between vehicles and these other activities.

Trail crossings may occur at different places along a roadway: at a roadway intersection or between intersections, for example. Crossings between intersections are known as midblock crossings. A trail that runs parallel with a roadway, sometimes called an adjacent path, presents a more complex crossing because the intersection of a roadway with an adjacent trail crossing combines the movements of pedestrian traffic with the turning movements of vehicular traffic.

Traffic control at trail crossings is more than controlling vehicular traffic movements. An important aspect of trail crossing safety is managing pedestrian, bicycle, and equestrian movements. Pedestrians may not understand or recognize the safest way to negotiate a crossing, and some bicyclists may be more interested in maintaining momentum than stopping at a crossing. Indeed, crash data from existing trail crossings sometimes shows that the pedestrian or bicyclist involved in a crash at a trail crossing is often cited for improper entrance to a highway.

The tools for managing safety at trail crossings are similar to those used at roadway intersections: pavement markings, signs, assignment of right-of-way, and sight distance. Altering trail geometry can also be helpful, especially at locations where a trail crosses a roadway at a skew. Realigning the trail to cross the roadway at a right angle can improve safety. However, trail geometry issues are design issues and can be more expensive to alter.

The techniques discussed below are typical low-cost safety improvements appropriate for township and borough roadways, where traffic is of a lower volume and lower speed. Each location should be studied to determine the appropriate combination of signs, markings, and other treatments. Higher volume, higher speed, and/or multi-lane roads will have more complicated crossings that will require additional study and treatments.

Finally, as you consider the best approach to marking and signing a trail crossing, remember that trail crossing should also be ADA compliant so that the trails are accessible to all trail users.

Pavement Markings

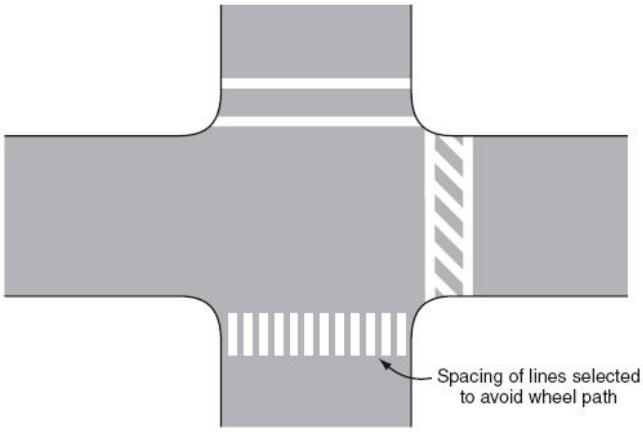
The appropriate roadway surface marking to use at trail crossings is a crosswalk marking. Three types of crosswalk markings are compliant with the MUTCD and PennDOT standards:

- Type A is a crosswalk marked by two parallel lines.
- Type B is a Type A marking with diagonal crossbars added between the parallel lines.
- Type C is a Type A marking with perpendicular crossbars added between the parallel lines.

The parallel lines are optional in a Type C crosswalk, so the pattern may be just the perpendicular blocks. Consider using or upgrading to Type C, with perpendicular crossbars, particularly at locations that are midblock and/or at uncontrolled approaches. A midblock crossing is a nonintersection crossing where pedestrians need only negotiate traffic movement in two directions. An uncontrolled approach is a crossing in which there are no signs or signals to control traffic. Because this marking style has more painted surface area, it is the most visible to approaching traffic.

Type A crosswalk.

Type C crosswalk.



Examples of Type A (top), B (right), and C (bottom) crosswalks.

Crosswalk markings should be applied as close to perpendicular to the roadway as possible. A perpendicular crossing is shorter than a diagonal crossing and will reduce the distance to cross the street and the time that trail users are exposed to traffic. Perpendicular crossings also aid in trail user visibility of approaching traffic.

Also, consider adding yield lines in advance of midblock crosswalks. Yield lines are typically placed 20 to 50 feet in advance of the midblock crosswalk to help motorists know where to stop. Standards for the yield line markings are shown in PennDOT Publication 111, TC-8600, page 5 of 13, and MUTCD Chapter 3, Section 3B.16.

Signs

The signing recommendations are based on the current version of the MUTCD and PennDOT Publication 236. Warning signs for trail crossings are not required by the MUTCD or PennDOT guidelines but are optional for use in advance of, and at, the crossing.

Research studies show that simply marking crosswalks by themselves does not necessarily improve pedestrian safety. Crosswalk safety may be improved by adding other devices and features, such as signs, lighting, and other treatments. Warning signs can help to alert motorists to the trail crossing and the possibility that pedestrians, cyclists, and other users may be crossing the road. Warning signs are effective at locations where motorists typically do not expect people to cross the street, such as midblock locations.

Warning signs are also more effective if applied consistently and not overused. The style, color, and application of the signs should be consistent throughout your municipality. For example, the fluorescent yellow-green sign color is required at all trail crossings. Remember, the value of using advanced warning signs and possibly preventing a crash is great compared to the cost of the signs themselves.

To increase motorists' awareness of trail crossings, consider the following signing concepts:

- Provide fluorescent yellow/green combined bicycle/pedestrian warning signs (W11-15) at each uncontrolled crossing, on the right side of the road. Supplement the signs at the crossing with the downward diagonal pointing arrow (W16-7p) plaque.

This fluorescent yellow/green combined bicycle/pedestrian warning sign alerts motorists of a trail crossing Wilson Avenue in Penn Township, York County.

- Provide combined bicycle/pedestrian warning signs (W11-15) in advance of all uncontrolled and controlled crossings. Supplement the signs with the "Ahead" (W16-9p) plaque.
- Place the advance warning signs in accordance with Table 2C-4, Guidelines for Placement of Advance Warning Signs, in the 2009 MUTCD. On roads with a posted speed limit of 25 mph, this is about 100 feet in advance of the crossing.
- For roadways with posted speeds of 25 mph, place and position signs to be visible to approaching motorists for at least 180 feet (MUTCD Table 2C-4).
- Place the pedestrian signs not to conflict with other existing signs.
- Provide an in-street pedestrian sign (R1-6, "Yield to Pedestrian" channelizing device) at the uncontrolled crossing locations. Although it may create issues with maintenance, studies show that motorists' compliance with the law (i.e., yielding to pedestrians in the crosswalk) is increased with use of these signs. This sign is appropriate for crossings that are not controlled by stop signs or signals. Note: PennDOT has a program to provide limited numbers of these signs for free—contact your municipal services representative or PennDOT district ped/bike coordinator for details.

Motorists are more likely to yield to pedestrians in the crosswalk when an in-street pedestrian sign is used, such as this one at Third Street in the borough of Lemoyne, Cumberland County.

- To further supplement the advance warning signs on the right side of the road, consider installing an additional sign (W11-15) on the left side of the road at and/or in advance of the crossing locations. For enhancing safety, the FHWA recommends doubling up signs on both sides of an approach as a low-cost safety measure.
- Consider adding a fluorescent yellow-green retroreflective strip in the warning signs to increase the sign visibility.
- Consider adding rectangular rapid flashing beacons to signs to increase motorists' awareness.

Continued on page 4

Safer Trail Crossings *continued from page 3*

Adding rectangular rapid flashing beacons to signs can help to increase motorists' awareness.

Remember that signs placed on state routes will require PennDOT approval, and flasher units also require department approval before use.

Sight Distance

Maintaining the sight lines at trail crossing locations is important. The sight lines include:

- Visibility for motorists approaching the crossing,
- Visibility for trail users to see approaching traffic, and
- Visibility of the traffic signs.

Cut, trim, and remove any vegetation and other obstructions that may be limiting sight distance for any of the required sight lines. Trimming vegetation is a relatively low-cost but highly effective tool for improving safety at any intersection and/or trail crossing. See PennDOT Publication 212, Table B, Minimum Stopping Sight Distance, to determine minimum sight distances. For example, a level street with a speed of 25 mph should have clear sight lines of at least 150 feet. For a level street with speeds of 30 mph, clear sight lines should extend to at least 200 feet. This means that a pedestrian or cyclist at the trail crossing should be able to see approaching traffic for at least 200 feet in either direction, without obstruction. Likewise, approaching traffic should be able to see the pedestrian at the trail crossing from 200 feet and closer without an obstructed view.

Trimming vegetation is a relatively low-cost but highly effective tool for improving safety at any intersection and/or trail crossing.

On the Trail

Alerting trail users to a road crossing is as important as alerting motorists who are traveling on the intersecting roadway. Several geometric features that trail designers might use to alert trail users are:

- A curve, reverse curve, or chicane in the trail alignment to encourage cyclists to slow down.
- A median barrier in the trail at its approach to the roadway to narrow the trail width. Care must be taken to leave enough width for emergency vehicles to enter the trail. Some trails use a vegetated median, separating trail traffic by direction of movement and thus giving clear indication to trail users approaching the crossing.
- Bollards on a trail at a crossing with a vehicular roadway to prevent unauthorized vehicular entry to the trail and to delineate the crossing for trail users. Care must be taken in the design to allow emergency vehicles access to the trail. Also, bollards must be conspicuous to cyclists and should not be placed within the traveled way of the trail.

Appropriate signing on the trail may include STOP or YIELD signs, as well as street name signs and wayfinding signs. Signs with street names help to reinforce the presence of the street for trail users and also aids with navigation. If unauthorized vehicular access is possible, signing may be necessary to alert drivers that entry is not permitted.

When combined with clear sight lines, these tools can help trail users negotiate the trail crossing with the appropriate care and share the responsibility for trail crossing safety with motorists.

Additional signage was added at the street crossing of the Lancaster Junction Rail Trail.

References

- 2009 Edition of the Manual on Uniform Traffic Control Devices http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/pdf_index.htm
- PennDOT Publications 46, 111, 212, and 236
- The Pedestrian and Bicycling Information Center www.pedbikeinfo.org/planning/facilities_ped_paths.cfm
- Rails to Trails Conservancy www.railstotrails.org/ourwork/trailbuilding/toolbox/informationsummaries/crossings.html
- Safe Routes to School http://guide.saferoutesinfo.org/engineering/marked_crosswalks.cfm
- ADA Information and Technical Assistance www.ada.gov/2010ADAstandards_index.htm

Transportation News Briefs

Municipalities Must Comply With Sign Assessment Program by June 13

Municipalities have until June 13 to have a program in place that assesses and maintains retroreflectivity for regulatory and warning signs. This deadline, which was moved from January 2012, was part of a compromise agreed to by the Federal Highway Administration in response to complaints about standards the agency issued in 2009 for compliance with sign retroreflectivity.

Under the compromise, the Federal Highway Administration eliminated compliance dates for 48 items related to sign retroreflectivity and agreed to push back the deadline for municipalities to have a sign assessment or management program in place. If your municipality hasn't yet determined if its regulatory and warning signs meet visibility standards, here are some options for conducting this assessment:

- **Conduct a visual nighttime inspection of signs.** According to the Federal Highway Administration, this inspection should be done by a trained sign inspector who is at least 60 years old, and the inspection should be done from a sport utility vehicle or pick-up truck, model year 2000 or later.
- **Measure sign retroreflectivity using a retroreflectometer.** Municipalities that prefer to go this route might want to check with neighboring municipalities about possibly sharing this expensive device.
- **Replace signs at the end of their expected life.** With this method, municipalities should label the sign or otherwise record its date of installation and then replace the sign at the end of its expected life, which is based on the manufacturer's warranty or other data that factor in environmental and other conditions.
- **Provide a blanket replacement of all signs in a particular area.** This method also relies on expected sign life to know when to replace signs, but instead of targeting individual signs municipalities replace all signs in a given area, such as a road or neighborhood. The downside of this method is that some signs might be replaced sooner than needed.
- **Replace signs based on the performance of several "control" signs.** This method involves monitoring the performance of actual signs around the municipality or at the maintenance facility as samples and based on the outcome determining when to replace similar signs around the municipality.

Municipalities should choose the option that works best for them, based on such factors as number of signs, manpower, and budget. The best approach might be to replace signs at the end of their expected life and also conduct nighttime visual inspections to identify other signs that may no longer meet the retroreflectivity requirements.

LTAP has a Sign Inventory Management worksheet available on its website, www.ltap.state.pa.us, under "News."

Natural Resource Extraction Sites Must Meet Posting & Bonding Requirements

Traffic to and from sites where minerals, natural gas, and natural resources are developed, harvested, or extracted are not exempted from posting and bonding regulations, under Act 89, the recently enacted transportation funding bill, unless the local traffic is to and from permanent forest product mills or permanent coal reprocessing or preparation plants.

PennDOT is currently revising its posting and bonding regulations and policies to comply with Act 89. The recent changes to the Vehicle Code clarify which hauling activities are exempted or are required to enter into an excess maintenance agreement and provide security to obtain a permit to exceed a posted weight limit. The changes that affect municipalities involve the local traffic definition and minimum use permits.

Local traffic (i.e., emergency vehicles, school buses, road construction and maintenance vehicles, farm/residence/commercial delivery) – Under Act 89, local traffic does not apply to traffic to and from sites where minerals, natural gas, and natural resources are developed, harvested, or extracted. These terms will be defined in PennDOT regulations and policy when it is released. However, local traffic to the following sites continues to be exempted from having to obtain a permit and bond:

- ***Permanent forest product mill*** – Traffic traveling to and from a permanent forest product mill located on or reachable only through posted highways.
- ***Permanent coal reprocessing or preparation plant*** – Traffic going to or from a permanent coal reprocessing or preparation plant located on or reachable only through posted highways but not on the same posted highway as the extraction site.

According to interpretation by PennDOT and the State Police, the local traffic exemption for timber and coal haulers only applies to posted routes traveled by the most direct route possible from the nearest non-posted highway. It does not apply to posted highways that can be avoided by travel on non-posted highways. If available, the exempted hauler must take an alternate non-posted highway.

Minimum use permits – Under Act 89, PennDOT has been given the authority to establish a new minimum use permit for hauling activity of less than 700 loads per year. Unconventional oil and gas development, including Marcellus shale haulers, are excluded from use of this permit. PennDOT will develop the minimum use permit regulation this summer. Although Act 89 does not require this permit type to be applicable to local roads, PennDOT is currently seeking input from local governments and the industry as to whether to make minimum use permits applicable to locally owned roads.

For more on the state's posting and bonding program, go to www.dot.state.pa.us/Internet/PostBond.nsf/PostingAndbonding?OpenFrameSet.

STIC Spotlight

Warm-Mix Asphalt

This new technology allows hot-mix asphalt producers to mix pavement materials 30 to 120 degrees Fahrenheit lower than traditional heating practices. The benefits?

Cost savings – Less energy is needed to heat the asphalt, which results in a 20 percent decrease in fuel consumption during paving projects.

Longer lifespan – More durable asphalt lessens premature damages and aging and leads to a longer pavement lifespan.

Better paving projects – A road paved with warm-mix asphalt is ready for traffic quicker than one paved with hot mix. In addition, the paving season can be extended into cooler weather. Finally, workers are exposed to less fuel emissions, fumes, and odors during warm-mix paving projects.

Since PennDOT incorporated warm-mix asphalt in Pub 408, Construction Specifications, it has become a viable choice of asphalt production. More than 30 percent of all asphalt placed by PennDOT in 2012 and 2013 was warm mix. PennDOT encourages municipalities to take advantage of the many benefits and consider this new technology when paving local roads. Liquid fuels funds can be used to purchase the product. Stay tuned!

Warm-mix asphalt stays "spreadable" at lower temperatures than hot mix, and this could help municipalities extend their paving season. Photo courtesy of Glenn O. Hawbaker Inc.

State Transportation Innovation Council (STIC)
(717) 772-4664 mbonini@pa.gov www.moderndot.pa.gov

Meet LTAP's Newest Committee Member

David A. Williams
Ross Township
Luzerne County

LTAP recently welcomed three new members to its Advisory Committee. In the Spring issue, we introduced you to Jeffrey Kinsey and Larry Bowers. In this issue, you will meet the third newest member, David A. Williams.

David is a township supervisor, roadmaster, and equipment operator at Ross Township. He has been a supervisor for more than 20 years and has worked as an equipment operator for 22 years. During that period, he served as assistant roadmaster for 13 years and has been the roadmaster for the last seven.

What is your or your township's experience with LTAP?

Our township's experience with LTAP has been limited. We receive the LTAP newsletter and have found much of the information in it to be very useful. My work schedule, along with sometimes inconvenient locations, had limited my ability to take advantage of training classes until last year. I have now taken several training classes, and I am presently working toward becoming a Roads Scholar. This has taught me much more about LTAP and its services to municipalities. I wish I had taken advantage of these things much sooner.

What are you looking forward to or hoping to accomplish in your role on the Advisory Committee?

Being a new Advisory Committee member, I'm not real sure yet what my role and responsibilities will be. After learning more about LTAP, I am looking forward to the opportunity to get more involved. LTAP seems to be on top of the challenges faced by municipalities today as well as the latest techniques that can help municipalities do their jobs more efficiently. In today's economy, it is very important to do things properly and in a cost-efficient way, and I think LTAP helps with exploring new possibilities for municipalities. I hope to provide some insight to some of these challenges through my experiences and to help to continue assisting municipalities as LTAP is already doing.

What advice related to LTAP do you have for other municipalities?

I would suggest that if they have not already looked at the services that LTAP offers, they should. I wish I would have done so sooner. LTAP offers many classes relevant to the things that municipalities are trying to accomplish. Municipalities should also consider LTAP's offer for technical assistance, either through a phone call or by having someone come to them to actually look the situation over. I feel it can be very helpful.

Any parting words?

As an Advisory Committee member, I urge other municipal officials to please contact me to let me know of ways LTAP may be able to help them. This may include ideas for new course subjects, information about new techniques being used, or questions about a project they are working on. Municipal officials face many challenges, and with LTAP's help, I am looking forward to helping them in any capacity I can.

Upcoming 2014 Classes

To Register:
PHONE: 1-800-FOR-LTAP (367-5827)
WEBSITE: www.ltap.state.pa.us
This represents some of our scheduled courses. Look for updates on the website.

Risk Management Strategies
June 19, Warren County

Bridge Maintenance & Inspection
July 1, Lycoming County

Roadside Safety Features
July 1, Venango County
July 23, Lehigh County

Traffic Signs
July 8, Lehigh County
August 14, Lycoming County

Work Zone (Temporary) Traffic Control
July 9, Lycoming County

Engineering & Traffic Studies
July 15, York County

Asphalt Roads CMP
August 19, York County

Full-Depth Reclamation
August 8, Jefferson County

Winter Maintenance
August 28, Clearfield County

Pavement Markings: Applications and Maintenance
September 4, York County

Intersections
September 9, York County

Congratulations to the following Roads Scholar recipients:

- Mike Condo, Antrim Township, Franklin County
- Edward Culp, West Whiteland Township, Chester County
- Andrew Moletzsky, Upper Merion Township, Montgomery County
- Dave Parthemore, North Newton Township, Cumberland County
- Benjamin Popelik, Upper Merion Township, Montgomery County
- Jeffery Schuchart, Penn Township, York County

Before & After

BEFORE

AFTER

During a tech assist to Dormont Borough in Allegheny County, LTAP engineers suggested the borough install a new crosswalk and striping to make Belrose Avenue safer for pedestrians to cross.

Want to make your streets safer?
Schedule a FREE Tech Assist with LTAP today!
Call 1-800-FOR-LTAP (367-5827) or email ltap@pa.gov.

Build a Better Mousetrap 2014 Winners

Through this contest, PennDOT recognizes municipal employees who built an innovative gadget or developed an improved way to do a transportation job. The winning entry is submitted in the national competition, which awards winners this summer at the annual LTAP/TTAP national conference.

First Place

Upper Nazareth Township
Northampton County

For $40 and about two hours of labor, Upper Nazareth Township built a road saw hitch receiver and carrier. Instead of having to hook up a trailer for transport and then block the road while cutting, the township designed and built a lightweight carrier that hooks easily to a truck, allows for quick and easy transport to a site and eliminates the need to store and maintain another trailer.

Runners-Up

Lafayette Township
McKean County

Lafayette Township constructed a roller that attaches to its boom tractor used for sweeping. Built for approximately $75 in about two days, the attachment eliminates another piece of equipment at a site where the township is cutting and compacting road shoulders. Now, the road crew can simultaneously sweep and compact with one piece of equipment, and the use of the side deck attachment keeps the tractor on level, stable ground.

Bushkill Township
Northampton County

To make it easier and safer to sweep roads, Bushkill Township built a sweeper that mounts to a plow truck. It allows one man to attach the device and sweep roads while cleaning up job sites and after storms. Built for less than $660 over a period of three days, the sweeper attachment saves the township time and money and eliminates the need to hire outside contractors to sweep.

Did you find the information in this newsletter useful? Do you know others who will, too?

Please share this newsletter with others, including:

- Road supervisors
- Public Works Department
- Road crew
- Elected officials
- Managers and secretaries
- Engineers

You can also direct them to the electronic version available at www.ltap.state.pa.us.

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