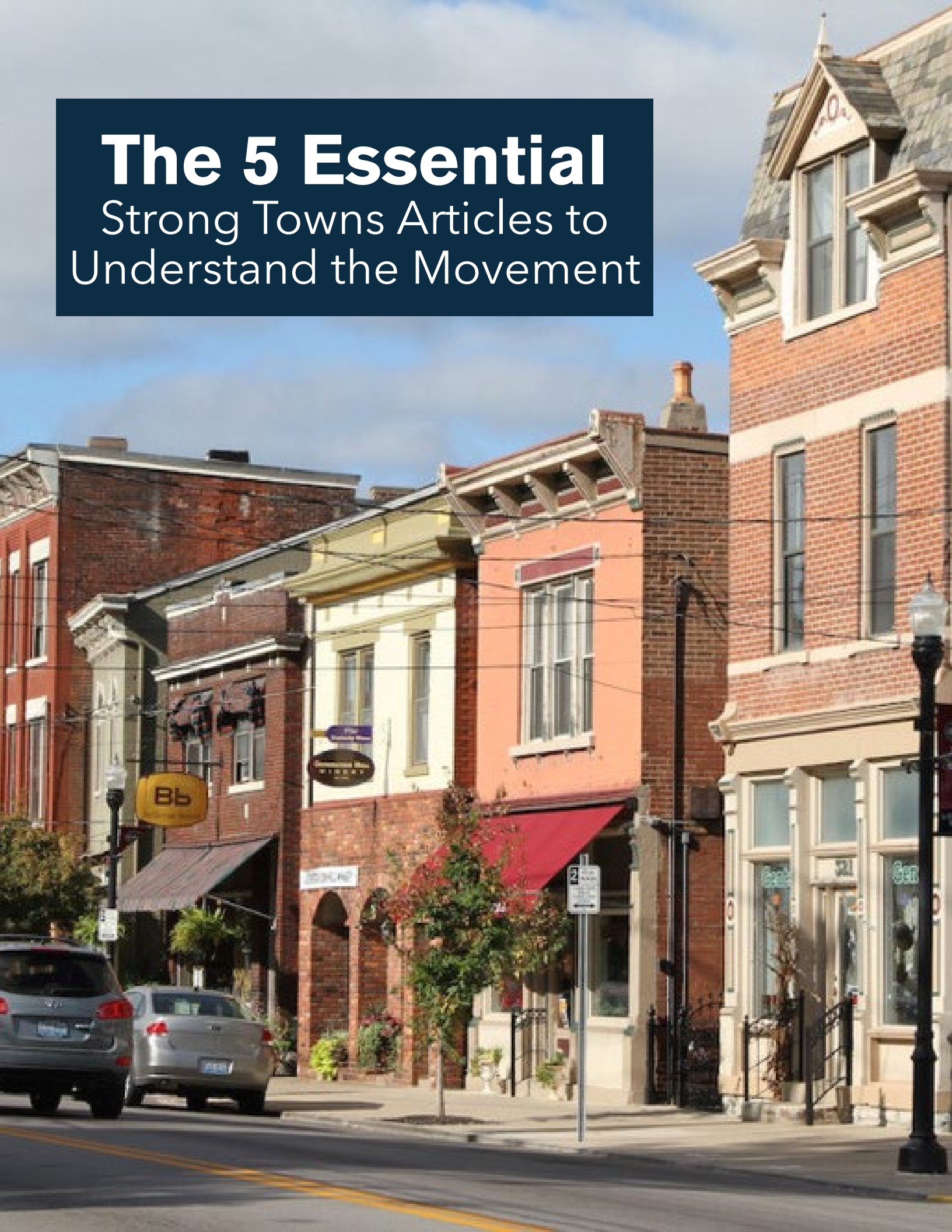
The 5 Essential

Strong Towns Articles to Understand the Movement



The 5 Essential Strong Towns Articles to Understand the Movement

If you're just joining Strong Towns (or even if you've been following us for a while), there are some important articles you may have missed that we really think you should read. They include some of the foundational thinking that led to the Strong Towns movement, and they continue to speak to our goals today.

Take 10 minutes (or 30) to dive into some of these important stories. We guarantee you'll come away with new ideas for how to make your town stronger.

STRONG TOWNS

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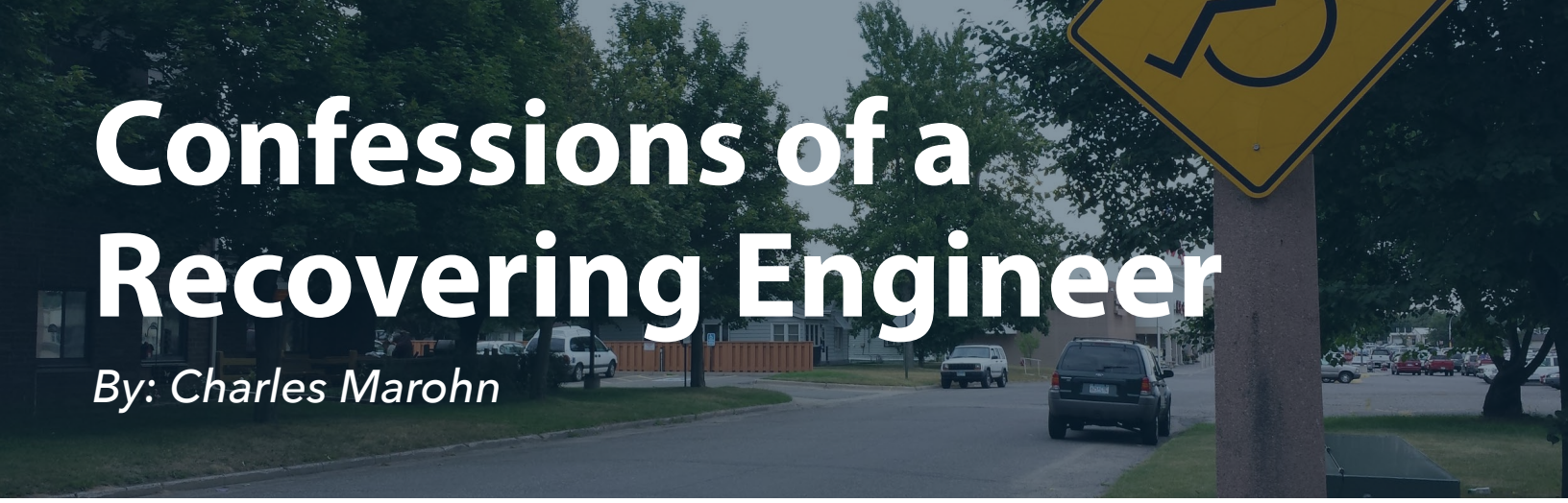


Confessions of a Recovering Engineer

By: Charles Marohn

After graduating from college with a civil engineering degree, I found myself working in my home town for a local engineering firm doing mostly municipal engineering (roads, sewer pipe, water pipe, stormwater). A fair percentage of my time was spent convincing people that, when it came to their road, I knew more than they did.

And of course I should know more. First, I had a technical degree from a top university. Second, I was in a path towards getting a state license (at the time I was an Engineer in Training, the four-year "apprenticeship" required to become a fully licensed Professional Engineer), which required me to pass a pretty tough test just to get started and another, more difficult, exam to conclude. Third, I was in a profession that is one of the oldest and most respected in human history, responsible for some of the greatest achievements of mankind. Fourth - and most important - I had books and books of standards to follow.

A book of standards to an engineer is better than a bible to a priest. All you have to do is to rely on the standards. Back in college I was told a story about how, in WW II, some Jewish engineers in hiding had run thousands of tedious tests on asphalt, just to produce these graphs that we still use today. Some of our craft descends from Roman engineers who did all of this a couple of millennia ago. How could I be wrong with literally thousands of years of professional practice on my side?

> *" How could I be wrong with literally thousands of years of professional practice on my side?"*

And, more to the point, what business would I -- let alone a property owner on a project I was working on -- have in questioning the way things were done? Of course the people who wrote the standards knew better than we did. That is why they wrote the standard.

When people would tell me that they did not want a wider street, I would tell them that they had to have it for safety reasons.

When they answered that a wider street would make people drive faster and that would be seem to be less safe, especially in front of their house where their kids were playing, I would confidently tell them that the wider road was more safe, especially when combined with the other safety enhancements the standards called for.

When people objected to those other

"enhancements," like removing all of the trees near the road, I told them that for safety reasons we needed to improve the sight distances and ensure that the recovery zone was free of obstacles.

When they pointed out that the "recovery zone" was also their "yard" and that their kids played kickball and hopscotch there, I recommended that they put up a fence, so long as the fence was outside of the right-of-way.

When they objected to the cost of the wider, faster, treeless road that would turn their peaceful, front yard into the viewing area for a drag strip unless they built a concrete barricade along their front property line, I informed them that progress was sometimes expensive, but these standards have been shown to work across the state, the country and the world and I could not compromise with their safety.

"Wider, faster, treeless roads not only ruin our public places, they kill people. Taking highway standards and applying them to urban and suburban streets, and even county roads, costs us thousands of lives every year."

In retrospect I understand that this was utter insanity. Wider, faster, treeless roads not only ruin our public places, they kill people. Taking highway standards and applying them to urban and suburban streets, and even county roads, costs us thousands of lives every year. There is no earthly reason why an engineer would ever design a fourteen foot lane for a city block, yet we do it continuously. Why?

The answer is utterly shameful: Because that is the standard.

In the engineering profession's version of defensive medicine, we can't recommend standards that are not in the manual. We can't use logic to vary from a standard that gives us 60 mph design speeds on roads with intersections every 200 feet. We can't question why two cars would need to travel at high speed in opposite directions on a city block, let alone why we would want them to. We can yield to public pressure and post a speed limit -- itself a hazard -- but we can't recommend a road section that is not in the highway manual.

When the public and politicians tell engineers that their top priorities are safety and then cost, the engineer's brain hears something completely different. The engineer hears, "Once you set a design speed and handle the projected volume of traffic, safety is the

top priority. Do what it takes to make the road safe, but do it as cheaply as you can." This is why engineers return projects with asinine "safety" features, like pedestrian bridges and tunnels that nobody will ever use, and costs that are astronomical.

An engineer designing a street or road prioritizes the world in this way, no matter how they are instructed

1. Traffic speed
2. Traffic volume
3. Safety
4. Cost

The rest of the world generally would prioritize things differently, as follows:

1. Safety
2. Cost
3. Traffic volume
4. Speed

In other words, the engineer first assumes that all traffic must travel at speed. Given that speed, all roads and streets are then designed to handle a projected volume. Once those parameters are set, only then does an engineer look at mitigating for safety and, finally, how to reduce the overall cost (which at that point is nearly always ridiculously expensive).

In America, it is this thinking that has designed most of our built environment, and it is nonsensical. In many ways, it is professional malpractice. If we delivered what society asked us for, we would build our local roads and streets to be safe above all else. Only then would we consider what could be done, given our budget, to handle a higher volume of cars at greater speeds.

We go to enormous expense to save ourselves small increments of driving time. This would be delusional in and of itself if it were not also making our roads and streets much less safe Narrower, slower streets dramatically reduce crashes, especially fatal ones.

And it is that simple observation that all of those supposedly "ignorant" property owners were trying to explain to me, the engineer with all the standards, so many years ago. When you can't let your kids play in the yard, let alone ride their bike to the store, because you know the street is dangerous, then the engineering profession is not providing society any real value. It's time to stand up and demand a change.

It's time we demand that engineers build us Strong Towns.

The Growth Ponzi Scheme

By: Charles Marohn

We often forget that the American pattern of suburban development is an experiment, one that has never been tried anywhere before. We assume it is the natural order because it is what we see all around us. But our own history — let alone a tour of other parts of the world — reveals a different reality. Across cultures, over thousands of years, people have traditionally built places scaled to the individual. It is only in the last two generations that we have scaled places to the automobile.

At Strong Towns, the nonprofit, nonpartisan organization I cofounded in 2009, we are most interested in understanding the intersection between local finance and land use. How does the design of our places impact their financial success or failure?

What we have found is that the underlying financing mechanisms of the suburban era — our post-World War II pattern of development — operates like a classic Ponzi scheme, with ever-increasing rates of growth necessary to sustain long-term liabilities.

Since the end of World War II, our cities and towns have experienced growth using three primary mechanisms:

1. Transfer payments between governments: where the federal or state government makes a direct investment in growth at the local level, such as funding a water or sewer system expansion.

2. Transportation spending: where transportation infrastructure is used to improve access to a site that can then be developed.

3. Public and private-sector debt: where cities, developers, companies, and individuals take on debt as part of the development process, whether during construction or through the assumption of a mortgage.

In each of these mechanisms, the local unit of government benefits from the enhanced revenues associated with new growth. But it also typically assumes the long-term liability for maintaining the new infrastructure. This exchange — a near-term cash advantage for a long-term financial obligation — is one element of a Ponzi scheme.

The other is the realization that the revenue collected does not come near to covering the costs of maintaining the infrastructure. In America, we have a ticking time bomb of unfunded liability for infrastructure maintenance. The American Society of Civil Engineers (ASCE) estimates the cost at $5 trillion — but that's just for major infrastructure, not the minor streets, curbs, walks, and pipes that serve our homes.

The reason we have this gap is because the public yield from the suburban development pattern — the amount of tax revenue obtained per increment of liability assumed — is ridiculously low. Over a life cycle, a city frequently receives just a dime or two of revenue for each dollar of liability. The engineering profession will argue, as ASCE does, that we're simply not making the investments necessary to maintain this infrastructure. This is nonsense. We've simply built in a way that is not financially productive.

We've done this because, as with any Ponzi scheme, new growth provides the illusion of prosperity. In the near term, revenue grows, while the corresponding maintenance obligations — which are not counted on the public balance sheet — are a generation away.

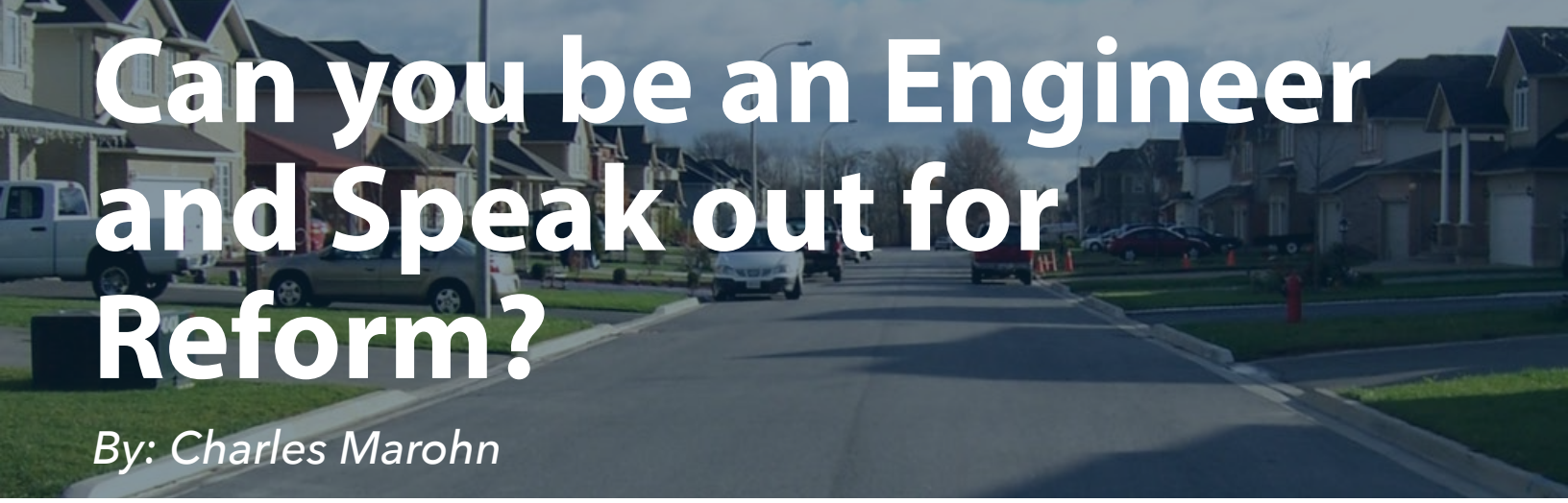
It took us a while to work through what to do, but we ultimately decided to go "all in" using leverage. In the second life cycle of the suburban experiment, we financed new growth by borrowing staggering sums of money, both in the public and private sectors. By the time we crossed into the third life cycle and flamed out in the foreclosure crisis, our financing mechanisms had, out of necessity, become exotic, even predatory.

One of humanity's greatest strengths — our ability to innovate solutions to complex problems — can be a detriment when we misdiagnose the problem.

Our problem was not, and is not, a lack of growth. Our problem is 60 years of unproductive growth — growth that has buried us in financial liabilities. The American pattern of development does not create real wealth. It creates the illusion of wealth. Today we are in the process of seeing that illusion destroyed, and with it the prosperity we have come to take for granted. That is now our greatest immediate challenge. We've actually embedded this experiment of suburbanization into our collective psyche as the "American dream," a non-negotiable way of life that must be maintained at all costs. What will we throw away trying to sustain the unsustainable? How much of our dwindling wealth will be poured into propping up this experiment gone awry?

We need to end our investments in the suburban pattern of development, along with the multitude of direct and indirect subsidies that make it all possible. Further, we need to intentionally return to our traditional pattern of development, one based on creating neighborhoods of value, scaled to actual people. When we do this, we will inevitably rediscover our traditional values of prudence and thrift as well as the value of community and place.

The way we achieve real, enduring prosperity is by building an America full of what we call Strong Towns.



Can you be an Engineer and Speak out for Reform?

By: Charles Marohn

Last week I received a notice from the board of licensing that a complaint has been filed against my professional engineering license. The complaint indicated that I had engaged in "misconduct on the website/blog Strong Towns" for things I have written critical of the engineering profession. While this development is disappointing, it is far from surprising.

The complaint was filed by a former American Society of Civil Engineers fellow who is currently an outspoken member of the Move MN coalition, the organization advocating for more transportation funding here in my home state. The complaint was filed on the day I wrote *No New Roads*, a blog post that called out both organizations for their self-serving support of endless transportation spending. Again, an effort to take away my professional license for speaking out is appalling, but it isn't surprising.

I've long opposed the American Society of Civil Engineers. They don't represent me and they should not be allowed to speak for this profession unchallenged. Their stands on how our country should be developed are frequently cited, despite how stunningly radical they are. American prosperity is not simply a function of how many roads, pipes and hunks of metal we can construct. Our infrastructure investments must work to support the American people, not the other way around.

I've also been an outspoken critic of the Move MN coalition and their version of success. I've had professional colleagues suggest to me that I'm on the wrong side here, that a more lucrative path for me and this organization would be to get on board and advocate for more taxpayer money for expanding the current system. I've been told privately that I'm not a "real engineer" if I don't support more funding. That's just wrong.

Most importantly, I've been critical of how the engineering profession approaches safety within our cities. I coined the word "stroad" to describe the industry's standard approach of over-engineering America's urban and suburban streets as if they were high speed, high-capacity roads. The current variant of the engineering profession gained prominence in the era of highway building, but that knowledge set does not apply to complex places where people exist outside of automobiles. It is malpractice to suggest otherwise, a term I will not back down from using.

Our urban streets need to be safe for everyone, whether in a car, on a bike, in a wheelchair or simply walking. **Today they are not and that is unacceptable**.

If you need a sign to tell people to slow down, you designed the street wrong.

Should I be allowed to be an engineer? Can a licensed engineer oppose new road construction and still retain his license? Can a licensed engineer question the appalling safety record resulting from standard industry practices and be allowed to remain in the industry?

State Statutes raise some doubt. Here's what Minnesota Rules 1805.0200 require for the personal conduct of licensed engineers: *A licensee shall avoid any act which may diminish public confidence in the profession and shall, at all times, conduct himself or herself, in all relations with clients and the public, so as to maintain its reputation for professional integrity.*

Now who is such language designed to protect? Does it protect society at large or does it protect the engineering firms who have thrown their weight behind efforts to secure more funding at the State Capitol? Does it protect the vulnerable or does it protect the engineer who simply signs the plans confident that the standards will shield them from liability, regardless of the outcome?

I'm not going to let this intimidation change what I do. It has strengthened my resolve to stand up, be heard and lead this movement in building a nation of strong towns.

The engineering profession is full of great people working to do good things, but it also has a pervasive dark element within it. There are many who are way too comfortable with the power that comes from having a large budget, access to influential people and the protection of industry standards. Contracts written as a percent of construction costs, feasibility studies that ignore the second life cycle and fraudulent benefit/cost analyses are accepted byproducts of this destructive mindset. I've spoken out against all of them and will continue to do so.

All truth goes through three stages. First, it is ridiculed. Second, it is violently opposed. Third, it is accepted as being self-evident. I've been telling our team here for the past year to be prepared for we are entering the second stage. The good news is that I can see the third stage on the horizon and it is approaching fast.

I've spoken with college classes at engineering schools around the country. These students are not encumbered by the profession's dogma. They live the problems we talk about at Strong Towns and want to do things differently when they get their licenses.

I regularly have engineers email me to say they support what we're doing but are afraid to speak up for fear of how it might impact their career.

This time the licensing board found "no violation" and so, fortunately, no further action is pending. This time. I've been warned that my file could be reopened "should additional evidence warrant" doing so. Let's hope that we don't have to face that, that further threats like this aren't an ongoing part of the opposition playbook.

Thank you for your support and for doing what you can to make yours a strong town.

Gross Negligence (a series)

By: Charles Marohn

These three posts and the accompanying podcast are some of the most important work we've done. At least, it's the work I'm proudest of. Our #slowthecars campaign combines everything we are most passionate about: improved design of our places, embracing complexity, giving our cities back to people and a realization that a good financial strategy is also humane.

Yesterday it snowed here in Brainerd, Minnesota. From the comforts of my vehicle as I dropped my kids off at school and then went to the office, I saw way too many people – the forgotten and overlooked in our community – struggling to navigate the nasty streets we have built. They were not able to walk through the ditches and alleys like usual so there they were, on the edge of the stroads, including those with walkers and wheelchairs, just feet away from drivers navigating at fatal speeds on slippery surfaces.

What are we doing? Is this the world we want to live in?

The sad reality of it for me is that I didn't start off with concern for the people on the side of the road. I subconsciously dismissed them like most everyone else, an easy thing to do at 45 mph. For me it was the realization that this approach was bankrupting us – literally forcing cities into steep decline – that got me looking for answers.

And I found them on the side of the road. There they are, showing us what needs to be done to make our places better, stronger and more successful. And also more humane.

I wrote in *Just another pedestrian killed* about how the cruel design of a street in Springfield, Massachusetts – a design that facilitated auto traffic at convenient speeds but attempted to force, through the use of fences and other obstacles, people to walk a thousand+ feet out of their way just to cross the street – resulted in the death of a beautiful little girl. I'm heartened to say that the people of Springfield still care; they are not letting this one go. They are still out there demanding change.

Let's do that in every city. Let's not let this continue any longer.

Dodging Bullets

At basic training for the U.S. Army, we did an exercise late one night where I and my fellow trainees were prompted to crawl about 100 yards through a course containing barbed wire, trenches and other obstacles while machine gun fire blasted over our heads. I remember looking up and seeing the tracer rounds fly from a tower to a target back behind the course. The bullets were well over our heads -- I am sure I could have stood up and they still would have been well above me -- but it was disconcerting nonetheless. While it was very unlikely that I was going to be killed by a stray bullet, it was far more likely that I would be killed by one than my friends back home who weren't crawling beneath M-60 fire.

Imagine my drill sergeant set up an M-60 nest in the middle of the street and a nice big target a couple blocks away, also in the middle of the street, then began firing from one to the other. He'd hit the target every time -- he's a pro -- and so there would really be little to no risk of getting hit. Would you walk along the street?

Probably not. I wouldn't. In fact. I wouldn't let my kids go within six blocks if I knew this were going on. Is that irrational? Statistically speaking it perhaps is, but when a small mistake means the difference between life and death, why risk it? What is the upside that justifies the downside risk?

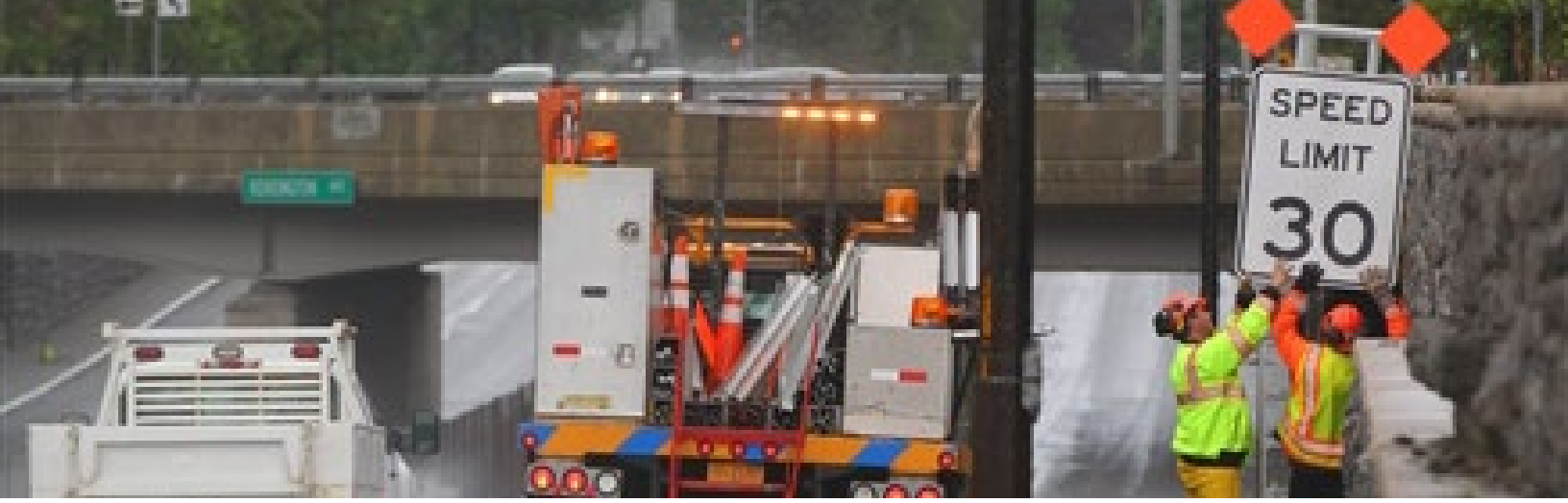
At the end of last month there was a terrible incident in Buffalo where a car left the roadway, killed a child and injured another, while they were walking through a park. Here's the news report:

A child is dead and another is in critical condition after a car struck them in Delaware Park.

The vehicle left the road while traveling westbound on Route 198 - the Scajaquada Expressway - just past Parkside Avenue around 11:30 a.m. It struck a three year old boy who was taken to Sisters Hospital, where he was pronounced dead at 12:15 p.m. His five year old sister is in critical condition at Women & Children's Hospital.

The two were out walking with their mother in the park, and one or both may have been seated in a stroller.

Sadly, the unique thing about this incident is not the death of a child -- children getting run down and killed by vehicles happens ALL THE TIME -- the unique thing is the reaction to this specific tragedy. New York Governor Andrew Cuomo ordered the speed on Highway 198, which runs right through Delaware Park bisecting a number of community amenities



His directive included the following:

While law enforcement agencies are still investigating the circumstances surrounding this terrible crash, it is clear that immediate action needs to be taken to improve safety for motorists and pedestrians on the portion of the Scajaquada Expressway that passes through Delaware Park.

For this reason, I direct you to immediately lower the speed limit on this section of the roadway to 30 mph, install speed messaging boards, and construct park-appropriate guard rails to protect pedestrians.

These actions are to be taken as the Department of Transportation continues to investigate long-term solutions to prevent further tragedies on this part of the Expressway.

This administration will continue to take every available action we can through engineering, education and enforcement to avoid crashes like this in the future.

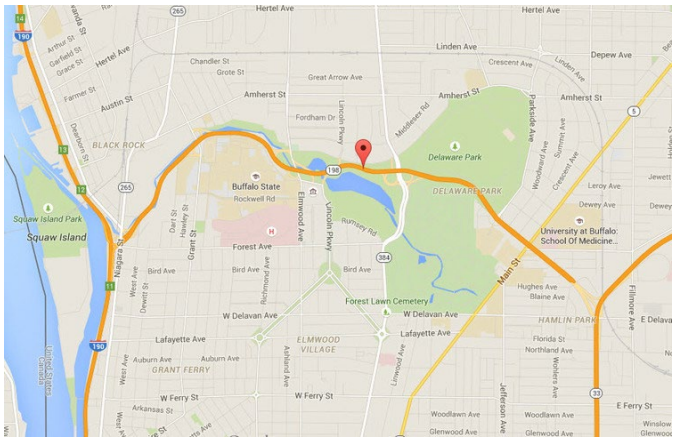
This might seem logical to many of you, but I want to direct your attention to a nuance that demonstrates our confusion over the tradeoffs we make each day when designing our transportation systems.

The governor has directed the DOT to (1) lower the speed limit and install the signs that indicate that, and (2) build guard rails. In the language we use here at Strong Towns, Cuomo is saying (1) make Highway 198 more like a street and (2) make Highway 198 more like a road. Stop firing bullets but also put up protective barriers.

The question we should be asking here is this: **Is Highway 198 a road or a street?** Is it a connection between two productive places OR is it a platform for creating wealth? If it's a road, which it seems like to me, then lowering the speed limit is the wrong thing to do. With the way this highway is engineered for high speeds, an artificially low speed limit will create a dangerous situation. If this is going to be a 30 mph stretch (still too fast to be compatible with people outside of their cars), then the roadway needs to be redesigned so that the typical driver only feels comfortable when driving at safe, neighborhood speeds. Lowering the speed limit might be good politics -- it is an action that can be taken immediately to give the veneer of doing something -- but it's not good policy, even as an interim step.

How about the guard rails? Again, if we're building a road and so the goal is moving cars quickly, then the guardrails are a good interim step, but long term we will need something more robust to keep people and traffic safely separated. I note that the governor called for "park-appropriate" guard rails, which I take to

mean guard rails that won't harm the view of the park as seen from the driver's seat. If that's the case, then we're confusing the purpose of a park here just as badly as we're confusing the purpose of a highway. Urban parks are not aesthetic amenities for passing motorists. There's no return on that investment. Urban parks are meant to provide value -- improve the quality of life -- to people living within walking, biking or transit distance of the park. If we're doing it right, that value should be reflected in the value of the tax base, the real creation of wealth.



Highway 198 in Buffalo. Click to explore in Google Maps.

All of this confusion goes back, of course, to the original bad decision to run a highway through the middle of a neighborhood. You have a park, a college, the river and lots of housing. These should not have been so casually disregarded, but they were. If Buffalo today were to eliminate Highway 198 -- turn it into a true parkway with 20 mph neighborhood design speeds -- I would applaud. I'm guessing that many in the neighborhood would as well. After a transition, there would be many opportunities for growing their tax base and improving the community's wealth. For a whole bunch of reasons, I doubt this will happen.

If it doesn't, that leaves Buffalo with only two other viable options: Build your barriers high and thick to protect your people from stray cars OR accept a certain level of tragic, random death and injury as a byproduct of the stroad you have built. Both of these are expensive, unproductive and just plain sad uses of public resources.

If bullets were being expertly fired by a marksman at a target along Highway 198, New Yorkers would go berserk, even though the chance of accidental death would be minimal. I would not blame them for this reaction, but I'm completely baffled as to why we routinely accept much greater risk from drivers and their automobiles. I also don't know why we continue to accept incoherent, half-measures as a response.

Put in a real barrier to make it a road or slow the cars to make it a street. The continued street/road hybrid approach of this and countless other stroads is only going to lead to more needless tragedy, with the side effect of our cities going bankrupt in the process.

The Bollard Defense

I wrote about the tragedy in Buffalo where a three year old was killed, and his five year old sister injured, when they were struck by a vehicle that had jumped the from the stroad. My objective was to point out how the governor's response -- an action I'm quite sure is a popular one -- doubles down on the stroad mentality: lower speeds (as a street) and erect guard rails (as a road). We're stuck in a destructive mindset and our cities won't get systematically better until we grow out of it.

The Buffalo case isn't the most bizarre response I've seen, however. I've been sitting on the one I'm going to share today for a while -- there are just so many -- but now is a good time to put it out there. I apologize in advance because this one is even more sickening than yesterday's.

Out of Orlando; here's the lead from the article:

Florida Highway Patrol troopers said Lily Quintus, 4, of Orlando died following a car crash at a day care in Orange County Wednesday afternoon. A small memorial for Quintus was set up at the KinderCare center by Wednesday night.

Robert Corchado, 28, was named a suspect in connection with the crash that injured 15 at the day care on Goldenrod Road near University Boulevard. He may be trying to leave Orlando, authorities said.

Florida Highway Patrol troopers said they believe Corchado, the driver of a silver Dodge Durango, rear-ended a Toyota Solara, which crashed into the building.

The car wound up inside the front room and was removed around 6:45 p.m. The driver of the Toyota wasn't injured.

Eight children were taken to Arnold Palmer Hospital.

Please note that I'm not sharing this one because it involves children -- if my goal was to shock you with tragic child death stories, I could do that multiple times a week because that's how many kids are killed on our stroads -- I'm sharing it because of the policy response.

A classic Florida stroad; part street, part road, it combines fast moving cars with turning traffic and adjacent pedestrians in the most dangerous, costly and financially unproductive investment a city can make. Click on the image to explore the area around the daycare in Google Maps.

Car leaves the stroad, smashes into another car which smashed into a daycare killing one and injuring many others. What do the adults here do to keep their kids safe?

Do they slow the cars? Do they address the incompatibility of having highway speed vehicles on a nasty, complex stroad just feet from the doorway to the facility? Do they look at the sidewalks adjacent to vehicles traveling at highway speeds and think it strange, even barbaric, that we would place anyone -- let alone young children -- in such a dangerous environment?

No. A year later, the answer here is -- as it always is -- more armor and more padding. From the Orlando Sentinel:

Where once there was only a hedge, now five heavy planters and six concrete spheres stand guard in front of the building, presenting a barrier designed to protect those inside should another vehicle come careening toward it.

And plans are underway that could make such barriers standard at day-care centers around Orange County.

That's right. We now have our children ensconced behind a barrier of protective concrete as if they were in the US Green Zone in Iraq. Is this really how we intend to raise the next generation?

> *"Our responses never question the stroad environment but instead take fast-moving cars in a complex environment as the absolute, unquestioned way things must be."*

And to my broader point -- which is that our responses never question the stroad environment but instead take fast-moving cars in a complex environment as the absolute, unquestioned way things must be -- the decision to armor the daycare was not made without deliberation or an understanding of the extent of the problem. Again from the Orlando Sentinel article:

In the days after that incident, Mayor Teresa Jacobs directed county staff from various departments to look at how much of a public-safety threat vehicle crashes pose to "vulnerable" populations such as children and seniors.

The KinderCare crash was the result of a mix of factors — an initial crash involving two vehicles, followed by one driver failing to brake and hitting the day care center.

The numbers are pretty stark," he said. "What we found is nationally there's 60 a day, causing almost 4,000 injuries and 500 deaths a year."

Locally, the team found 73 incidents in which vehicles hit buildings in unincorporated Orange County over a 24-month span, resulting in 37 people requiring a trip to the hospital.

They found an additional 1,800 "road departures" — instances of vehicles losing control and leaving the roadway, but not striking buildings — over a 15-month span.

Understand what you're reading: 500 deaths per year from cars leaving the road and striking a building and our response is more concrete barriers?

The main methods to safeguard structures against vehicle impacts would be walls, planters, purpose-designed outdoor furniture or bollards, which are posts or spheres designed as traffic impediments.

Most bollards are roughly waist-high, and can be made of concrete, steel, cast iron or even recycled plastic. The spherical bollards are a common sight outside of stores such as Target.

Drozd said bollards generally cost about $450 apiece. He estimates it would cost about half a million dollars to protect all the vulnerable day-care facilities in unincorporated Orange County.

Future day care centers would be expected to incorporate the safety features before opening. But funding for existing facilities to make the upgrades could come largely from government grants, Drozd said.

So let's raise everyone's taxes to build more stroads, so that we can then raise everyone's taxes more to provide grants to build concrete barriers to keep us safe from cars careening off our stroads. All so we can have crappy fast food, low wage jobs and national chain stores.

Aren't you sick of this? #SlowtheCars

Just an Accident

I've written a couple of posts so far about terrible incidents that have occurred when automobiles traveling along stroads ended up killing kids (Dodging Bullets / The Bollard Defense). I've got one more that will hopefully move us from what needs to be done (#slowthecars on our streets, de-stroad our roads) to who is responsible for leading the effort.

And let me preview for you my answer to the latter question: The engineering profession has a moral obligation to lead the effort to address this problem. They are the only ones who effectively can and without them it won't happen.

An all-too-familiar story out of Springfield, Oregon, from this past February:

Police said 68-year-old Larry La Thorpe of Springfield was behind the wheel of a pickup truck when it went through the intersection of 54th and Main streets.

The truck hit and killed 8-year-old John Alexander Day; 5-year-old Mckenzie Mae Hudson; and 4-year-old Tyler James Hudson.

Medics took their mother, Cortney Jean Hudson, 26, of Springfield, to the hospital with serious injuries.

She was listed in fair condition Tuesday at a local hospital.

This tragedy occurred at the intersection of 54th Street and Main Street, one of this country's ubiquitous stroad environments. Here's what the intersection looks like. I'm sure your community has lots of these.

A typical stroad, this one in Springfield, Oregon. Click on the photo to look at the site in Google Maps.

This being the third time through a tragic story like this in two days, the response should now be anticipated by the reader. People are horrified at the tragic loss of life. Temporary memorials are erected. Community dialog begins. Consensus emerges around a set of responses.

City officials and residents are proposing safety improvements after a driver struck and killed three children in a busy Springfield, Oregon, intersection last month.

The City Council is discussing safety proposals at a meeting Monday night.

Public safety announcements, as if three dead kids -- among scores of others killed around the country each year -- isn't announcement enough. Understand that fourteen people have died on this Main Street alone in the past decade. **FOURTEEN!** You'd think that would wake people up.

Now to be fair, there were other proposals beyond enforcement and education that were put on the table. Although it was labeled "complicated" there was some mention of traffic calming.

They include reducing speeds on the corridor either by lowering speed limits or narrowing the travel lanes to give motorists a visual cue they need to slow down. Both would require ODOT approval.

The speed limit is 40 mph along most of the corridor, but it increases to 45 at the eastern end.

These are complicated, of course, because it would "require ODOT approval." Read: Not gonna happen.

Among the hundreds of similar tragedies I could highlight -- the list is endless -- I've picked this one because of an editorial column that came with it. The editorial board of the Oregonian weighed into this debate with *When a tragic accident is just a tragic accident*, a piece that acknowledged the tragedy while also acknowledging the fact that it is really, really difficult to condemn a person -- lock them up -- for something that was not related to how they were operating but merely a matter of chance; bad timing in a situation that any of us who drive could find ourselves in.

There are few words as inadequate as "accident" in describing a tragedy of this magnitude. It's hard not to feel outrage that LaThorpe isn't being held criminally accountable for a clear failure with such devastating consequences. How can there be no one to pay for the violent deaths these three kids suffered?

But as wholly unsatisfying as it may be, "accident" is the only way to accurately describe what unfolded at that intersection on Feb. 22. Investigators found no evidence that LaThorpe was impaired, using a phone or speeding. And while the community may be searching for a way to ease its grief, prosecutors cannot look to heartbreak and anger as the building blocks of a case.

Even though I know that is going to anger some of you, I agree with the Oregonian. *But Chuck....if you're driving a big truck, you suffer the consequences of your actions.*

Those kids get no second chance. Throw him in jail and hide the key. While I understand this reaction, I don't find it helpful because it ignores the reality that someone can operate a vehicle as it's designed, following the rules of the environment it is designed for, doing so with all prudence and seriousness and they can STILL wind up killing someone. Many times a driver is at fault and, if that's the case, convict them. But many times it is random chance, the statistically predictable outcome of millions of chance interactions between fast moving cars and complex environments that we have designed into our system.

I have an answer to this: eliminate stroads. We need to convert our **stroads** into slow moving **streets** that are safe for everyone (#slowthecars) or high speeds **roads** that connect productive places in safe corridors that are free from turning traffic, pedestrians and other complex movements. It's either a street or a road, and the design must reflect that.

So who is responsible for this? The Oregonian editorial points us in the right direction.

Lane County District Attorney Alex Gardner sought to provide some of that legal background in his press release announcing the decision not to charge LaThorpe. He quoted from a 2014 Oregon Court of Appeals decision in a case where a 17-year-old Curry County girl crashed into and killed a motorcyclist when she fell asleep at the wheel. In overturning her conviction, the judges said criminally negligent homicide requires proof "that the defendant should have been aware of a problem with the defendant's driving, such as swerving, inattention, or near collisions," before the crash.

Another case, decided in 1978, established "that mere inadvertence, brief inattention, or error in judgment as to proper speed does not constitute gross negligence" unless there's a component of recklessness – such as drinking – or a "conscious indifference to the safety of others."

Focus on that last part of that last sentence; a conscious indifference to the safety of others. In order to be found guilty of gross negligence, you must display a **conscious indifference to the safety of others**. Keep that in mind as we review the stroads where the five child deaths I highlighted this week and the one I pointed out last December took place.

Springfield, OR. Three children dead.

Orlando, FL. One child dead, seven taken to the hospital.

Buffalo, NY. One child dead and another hospitalized.

Springfield, MA. One child dead and another hospitalized.

Who is showing a conscious indifference to the safety of others? In other words, who is grossly negligent? Is it the driver who is following the speed limit, operating a vehicle well below the much higher design speed? Or is it whoever decided that 45+ mph traffic should be feet away from kids biking on the sidewalk, moms with strollers and children waiting to be picked up from daycare?

Is it the driver -- a mere mortal suffering a predictable, perhaps even understandable, moment of inattention or confusion while performing the monotony that we call driving -- or is it the person who took 70 mph highway standards and applied them to urban streets?

Is it the driver, whose path has been cleared of every foreseeable obstacle in a desperate effort to gain them seconds' worth of performance, or is it the person who apparently believes it is optimal to have no less than a quarter mile distance between each seven lane pedestrian crossing?

Who is the one showing conscious indifference? Who is grossly negligent?

It's not a person; it's a profession. The engineering profession -- with a growing number of notable exceptions -- employs a systematic approach to design, prioritizing the fast and efficient (but not safe) movement of automobiles over everything else. As a general rule, engineers show a conscious indifference to pedestrians and cyclists, misunderstanding their needs where they are not disregarded completely. This is the very definition of gross negligence.

This system can't be changed by engineers alone, but they are the only ones that can credibly lead the charge. A new mindset among my fellow engineers would be game-changing.

The Five Ways Engineers Deflect Criticism

By: Charles Marohn

Transportation engineers can be intimidating. They are hard to oppose. When a member of the general public shows up at local meeting to express concern over a project – for example, their quiet local street being widened as if it were a highway – they more often than not find themselves verbally outgunned by the project engineer.

There are a handful of ways engineers deflect criticism. Chief among them is to resort to quoting industry standards. Having a huge budget and all the clout that comes with it doesn't hurt either. There are, however, a number of reliable threads that I've heard engineers use time and again.

This last summer I wrote a series that looked at child pedestrians being killed in automobile collisions, the finale of which included this line:

The engineering profession -- with a growing number of notable exceptions -- employs a systematic approach to design prioritizing the fast and efficient (but not safe) movement of automobiles over everything else. As a general rule, engineers show a conscious indifference to pedestrians and cyclists, misunderstanding their needs where they are not disregarded completely. This is the very definition of gross negligence.

Some engineers on Reddit took exception to this assertion. I've gone back over their critiques and identified the five most common lines I've heard engineers use to deflect criticism.

1. You don't have a valid opinion if you're not a licensed engineer.

Getting an engineering license is not easy. You have to get a rather challenging undergraduate degree, work as in an apprentice role for a number of years and then pass a difficult test. Engineering societies have helped establish and enhance licensing requirements in all fifty states.

There is some logic to this. We certainly want the people who design and build critical infrastructure to know what they are doing. But too often licensing is a way to protect a profession from criticism, stifle dissent and deflect uncomfortable realities. From the Reddit thread:

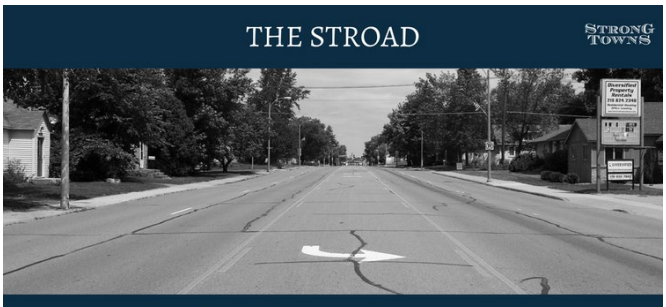
twinnedcalcite: Not always, a civil engineer could be a urban planner but an urban planner may not be an engineer or architect.

1wiseguy: It's easy to second-guess somebody else's work when you don't actually have to take any responsibility.

Transportation engineering is, as they say, not rocket science. One does not need an engineering license to be taken seriously on any topic that would come before a local elected body.

2. There isn't enough money to do what should be done.

Project engineers work in a world where there are financial constraints. News flash: most non-engineers do as well. What makes the local municipal engineer different is that their revenue largely comes from the taxpayer. This not only frees them from some of the market constraints others must deal with, it provides a certain level of propaganda value as well.



A street/road hybrid, it is the futon of transportation investments.

Engineers commonly play off budget and safety against each other, as if they are two dependent variables on a sliding scale. *You can spend more and get more safety or you can spend less and get less safety….the choice is yours. From the Reddit thread:*

1wiseguy: Given enough resources, we could greatly improve safety of our streets. We could provide barriers between streets, bike lanes, and sidewalks, and provide pedestrian and bike bridges to avoid crosswalks. We could also slow traffic down arbitrarily to meet whatever safety goal we have in mind. But we don't have enough resources to build those structures, and the citizens don't want to drive slowly. What we have is deemed to be the best solution, barring occasional problems that can be addressed.

Amadeus3698: The money is something over which the engineer has no control; the state/county/city government does. Blaming engineering for fiscal problems caused by elected officials shows a poor understanding of how roads are built. Petition your representatives to fund roads and tragedies like this will go away!

The notion that we are not able to design streets that are safe unless we have bloated budgets is false. That it is widely believed within the engineering profession anyway reveals a lack of innovation and a certain level of myopic comfort engineers wrongly enjoy.

3. We can't eliminate all risks.

The straw dog argument is standard for anyone proceeding without intellectual rigor. With the odd exception, the public does not have an expectation that all risks can be

eliminated. There is an odd incoherence, however, with a profession that designs breakaway poles (they give way when struck by a vehicle) and then place said poles in a sidewalk designed to be used by people outside of a vehicle. Are vehicles leaving the roadway a threat or not?

From the Reddit thread:

bobroberts7441: Any engineer could design a system that is perfectly safe; Nobody would build it. Safety is one of many constraints in any design which must first satisfy feasibility, cost, and functionality. Safety, aesthetics, environmental impact, etc. are all addressed after those are achieved and if a successful accommodation is not reached nothing gets built.

Borgiedude: Cities collect a finite amount of tax that pays for a limited number of roadworks, upgrades and improvements. A council engineer will try and ensure those funds are spent in the way that minimizes the potential loss of life (save the most lives for the least money), but eliminating loss of life is financially impossible.

Transportation engineers go to enormous lengths to improve safety for those operating a vehicle. Asking them to equally consider those not in a vehicle is not asking for all risks to be eliminated. Considering the mismatch of auto versus pedestrian, it's not even leveling the playing field.

4. It is the politicians that are to blame. Engineers just follow orders.

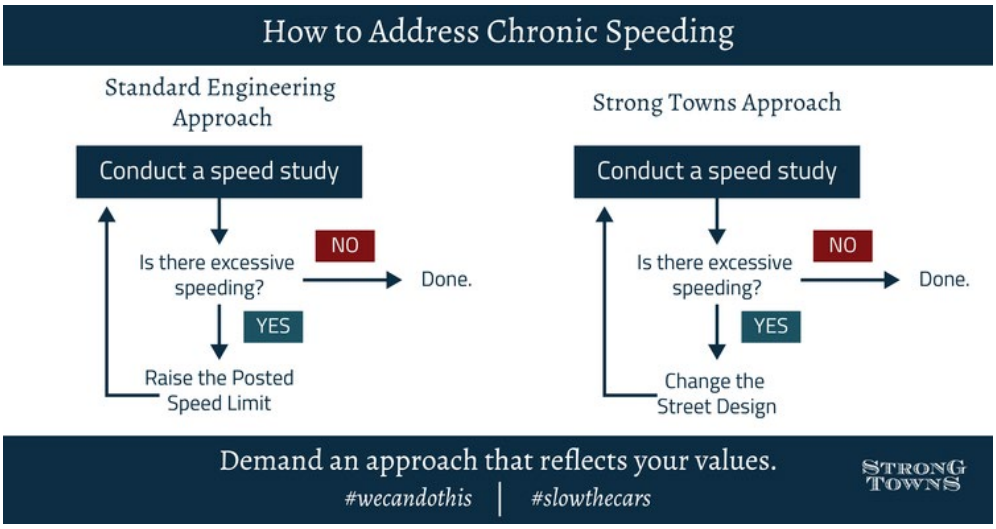
Oh yes, the Nuremberg defense. I know that characterization offends some of you but, seriously, why do we bother licensing engineers if they are just going to compromise their principles based on what politicians want them to do?

From the Reddit thread:

roger_ranter: Engineering takes the political policies that are handed down, and the public budget that is alotted. Then the engineer has to make do with what he has, designing according to the priorities that are given. This guy is advocating an enormous change in public policy, which is fine. But politicians set policy, and taxpayers pay for it.

Homeworld: He's angry at the consultants, instead of the people that set the public policy and distribute the funding. He should focus on MPOs (Metropolitan Planning Organizations), etc.

Engineers do work in a world that often intersects with politics and public policy, but there are very few instances (although there are a few) where engineers advocate

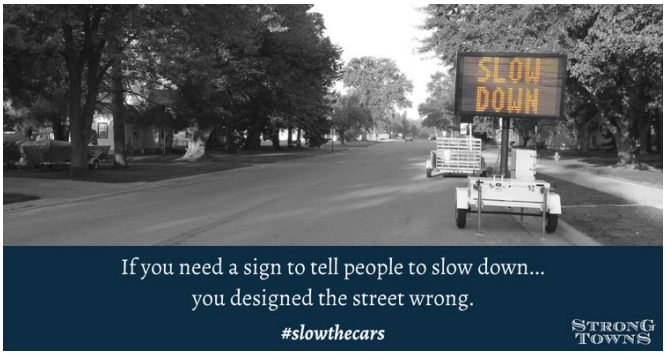


for designs that compromise automobile performance in order to improve overall safety. There are even fewer instances where politicians overrule engineers on safety in favor of faster speeds.

5. This really is a matter for law enforcement, not engineering.

Engineers are brilliant people capable of solving really complicated problems, even when this involves compensating for human error. The entire concept of forgiving design – where engineers design highways (and too often local streets) to "forgive" the common mistakes drivers make – is just one example.

When most people who drive along a local street exceed the speed limit, how can we call those people deviants? A deviant, by nature, is someone who deviates from the norm. If a high percentage of people are driving faster than what is really safe, it is the street that is giving drivers the wrong signals. It's safe here….go ahead and drive fast. That's a design flaw, not a law enforcement problem.



From the Reddit thread:

billywob: Forgive me, but wouldn't increasing the law enforcement help in a lot of these situations? A lot of the discussion seems to be about ensuring that motorists abide by posted speeds, and pedestrians don't make stupid decisions (jaywalking, or running across traffic). I'm all about building better roads and such, however, isn't also effective to post a patrol car or a speed trap to ensure motorists and pedestrians obey the rules of the road?

billywob: It's not bad engineering that is encouraging fast or bad driving, its irresponsible drivers who continually take needless risks to shave half a minute off of their commute. If you establish a constant police presence, drivers will drive more responsibly, and THEN you can see if your road is as efficient as it was designed to be. What is more expensive, paying for a few extra shifts from cops, or building new a road that drivers are going to abuse anyways?

Why should police department budgets be stretched (or city coffers be enhanced by fines) because the engineer has designed the street incorrectly?

Don't get pushed around. #Slowthecars and work to build a Strong Town.