Working with Street Designers & Engineers

Building Active Communities Institute
March 23, 2016

Bachelor’s Engineering Stevens Institute of Technology 1973
34 years at the New Jersey Department of Transportation
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Invested Career working at the community/agency interface

Making it Happen
Working With Engineers and Understanding Streets

• Engineers are not bad people
• How has transportation evolved
• Partnering with Engineers
• Understanding Where the Flexibility Is
Engineers are not bad people!

It is the time of French Revolution and the guillotine was hard at work everyday. Today they’re leading a priest, a drunkard and an engineer to the guillotine.

They ask the priest if he wants to face up or down when he meets his fate. The priest says that he would like to face up so he will be looking toward heaven when he dies. They raise the blade of the guillotine, release it, it comes speeding down and suddenly stops just inches from his neck. The authorities take this as divine intervention and release the priest.
Next the drunkard comes to the guillotine. He also decides to die face up hoping that he will be just as fortunate as the priest. They raise the blade of the guillotine, release it, it comes speeding down and suddenly stops just inches from his neck. So they release the drunkard as well.

The engineer is next. He too decides to die facing up. They slowly raise the blade of the guillotine, when suddenly the engineer says: “Hey, I see what your problem is.”
Pre-Automobile Era
We Had a Different Problem to Solve

- Street design HAD to accommodate all users
- Relationship of land use to streets was critical for survival

Streets used to have many purposes

Engineers had partners in problem solving

Pieces of Community related to each other
The Automobile Age

- The mobility provided by the automobile removed the need for those exchanges to be made in compact, mixed use cities and towns.
- Once we could drive to access goods, employment, education and recreation, we were free to locate those uses in distant and specialized locations...and we did.

We started planning the pieces not the whole
The Problem Engineers Were Asked to Solve Changed
And we all stopped viewing Streets as Places

The Interstate Era Begins

Transportation as a separate discipline flourished
Building communities is no longer our business

CAPACITY OF STREETS

Focus on high speed mobility

Proximity

Speed

Accessibility
A successful street?

Is This a Successful Street?
Is this Sustainable?

So what do we do and How do we do it?
Pre-Automobile Era
*We Had a Different Problem to Solve*
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How to Partner to Get What You Want

General Principles
“You can catch more flies with honey than vinegar”
Rose Toth, circa 1960
Getting hit in the head with a rock is a bad way to start an open minded conversation.

General Principles

Don’t be afraid to escalate
If Respectful Communication Doesn’t Get You What You Want

“Do not be afraid to escalate. If not, arrange to have them beaten!”

George Carlin
How to Partner

*Define the problem, not the solution*

Observe/gather information at different times of day. Do not seek solutions—stick to building a case for the government jurisdiction to solve the problem!

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How to Partner

*Define the problem, not the solution*

The PPS Street Audit Tool

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How to Partner

*Do Your Homework*

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Asking the Right Questions regarding Roadway Design Flexibility

"The principle that the environmental impacts can and should be mitigated, coupled with aesthetic consistency with the surrounding terrain or urban setting, is intended to produce highways that are safe and efficient for users and acceptable to nonusers and the environment."

"Additional emphasis has been placed on the joint use of transportation corridors by pedestrians, cyclists, and public transit vehicles. Designers must recognize the implications of this sharing... A more comprehensive transportation program is thereby emphasized."

"The intent of this policy is to provide guidance to the designer by referencing a recommended range of values for critical dimensions. Sufficient flexibility is permitted to encourage independent designs tailored to particular situations."
Where is the flexibility?

- Ranges in tables
- Functional Classification
- Design Speed
- Design Vehicle
- Level of Service is NOT a mandate

Design Manuals do provide flexibility

Ranges in Tables

Minimum versus Desirable

Design Manuals do provide flexibility

Functional Classification

ROAD HIERARCHY

Well-planned highway systems enhance safety and traffic flow, Wisconsin Dept. of Transportation
Functional Classification Affects Cross Section and Alignment Elements

Functional Classification Can Affect Cross Section and Alignment Elements

Functional Classification is not an Exact Science!
Design speed is a dirty little secret relating to flexibility

Minimum Versus Desirable

Table 10-44. Design curves for great vertical curves based on stopping sight distance.

Lower Design speeds mean smaller clear zones

Lower Design speeds mean more forgiving geometry
The Right Choice of Functional Classification and Design Speed Facilitates Context Sensitive Roads

Design Vehicle

Design Vehicle Affects Corner Radii
Design Vehicle Affects Corner Radii

Corner Radii

Corner Radii

Corner Radii
Design Exceptions

For those instances when Green Book Flexibility isn’t enough

• “Designers should understand that design exceptions are an acceptable and indeed • “...acceptance of design • “...designers should accept design outside the norm as • “The highway or traffic • with insights...the appropriate design criteria and the needs • “A properly documented...is essential for agencies operating in...”

...design exceptions are an admission of failure.” “...designers should accept design outside the norm as unsafe...” “The highway or traffic engineer should provide...the advisory team] with insights...the appropriate design criteria and the needs • “A properly documented...is essential for agencies operating in...”

Will we be “liable” if we don’t Design to max or desirable targets?

Yes !!

If our decisions are not reasonable, and we arbitrarily cast aside sound engineering principles without good reason

Maybe

If we don’t document reasonable decisions in a permanent file

Not likely

If reasonable decisions were made by reasonable people who gave consideration to social, economic and environmental impacts together with safe and efficient traffic operations, and........

*** We document and file the rationale. ***

An unreasonable design decision ?
Legal Reality

- Not a tort for the government to govern; i.e. engineers are allowed to, and in fact are expected to exercise discretion and balance competing interests
- Following the "book" without thinking can also get you into trouble
- Seattle – the jurisdiction with the most experience with traffic calming – reports more litigation threats for not acting than for acting;
- In Seattle, claims paid for traffic calming very low compared to for instance, potholes;

Tolerate some congestion
Level of Service is not a Mandate

Reconsider Congestion Metrics
Level of Service

Do We Need to Redefine Success and Failure?
Why is this so significant?

The difference between LOS C and E

The High Price of Level of Service C/D 24/7/365?

Land Use Patterns are Dictated by Transportation Facility Design
Land Use Patterns are Dictated by Transportation Facility Design

“...it neither constitutes nor attempts to establish legal standards for highway construction.”

(The Highway Capacity Manual Development and Application)


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