

NJFIT: Future in Transportation

Back to our Roots?

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For five decades at least, we in transportation agencies in the U.S. have viewed our jobs as simply accommodating the traffic demand, whether it existed on local streets, or on the state and national highways. We believed that the safety and mobility of the motoring public was paramount; community values and the needs of other road users were secondary issues, addressed as an afterthought, if at all.

Pressures brought on by regulatory change, community resistance, flat funding resources, rapidly decaying infrastructure, and pressure from reform advocates, led to increasing awareness that there must be a better way. At the New Jersey Department of Transportation (NJDOT), the search for a better way led us to adopt Context Sensitive Design (CSD) as an agency policy in 2001. At first, CSD transformed thinking at the project level; as it evolved to Context Sensitive Solutions, it led to changes in Corridor, Planning and even Program processes. When it became clear that we needed to partner with communities to tackle land use planning, NJFIT: Future in Transportation emerged.

NJFIT: Future in Transportation builds upon lessons from other sectors and other state DOTs. It seeks to form partnerships with NJ state agencies and local governments. NJFIT is rightsizing build alternatives, increasing transportation choices, lowering design speeds where appropriate and providing more pedestrian friendly streetscapes. Through NJFIT, planning assistance and consultant resources is being provided to local jurisdictions to allow them to develop livable communities, which shift trips to non automobile modes and make better use of the existing roads and infrastructure. NJFIT is seeking to spread Context Sensitive Solutions, not only to all levels of government, but to all forms of planning and design.

1. The Unlinking of Transportation Planning and Design from Community and Land Use: Where did it begin?

While it has become fashionable these days to cite the 1956 Surface Transportation Act as being the beginning of the end for livable communities and walkable streets, research suggests that the unraveling of the integrated transportation and community planning decision making tapestry began at the turn of the 20th Century.

1.1 Transportation and Community Planning before the Automobile

Prior to the advent of the automobile, the American concept of what constituted a good road had a vastly different meaning from today. “Good roads” had financial, social, educational, sanitary,

and communication functions, and were, in general, designed to serve the communities. In rural areas, quality roads allowed for goods movement and social intercourse, and facilitated access to schools, mail delivery and improving the social and intellectual conditions for rural populations.

In urban areas, quality street design also helped with drainage, sanitation, commercial success, and quality of life. Paved streets helped reduce filth, dust and mud. How the road network was connected was of huge importance because it afforded good communication between various parts of the city. With most trips made on foot, or if goods, via wagon, community planners could ill afford to make nearby destinations distant. Since drainage was also a key function of streets (for themselves and for the sewers under them), design of roads and networks was forced to respect the context and contours of the land.

Commercially, street frontage and particularly the ratio of street frontage to buildable area were important. Too much street was wasteful, while too little street resulted in inefficient use of land. Therefore, block size and the layout of the street network were critical. Street trees were important for beauty and shade, and to shield pedestrians from traffic, stopped horses, etc. While not everything was planned perfectly, serving the community and respecting the context were core values at the center of planning and designing for mobility and access.

1.2 The Automobile Brings New Planning Approaches, and a New Mandate

The widespread popularity of automobiles (introduced in 1908), created pressure for the federal government to become more directly involved in road development. With rural interests adding to the battle cry of "Get the farmers out of the mud!" Congress passed the Federal-Aid Road Act of 1916. It created the Federal-Aid Highway Program under which funds were made available on a continuous basis to state highway agencies to assist in road improvements.

The road building juggernaut moved forward sporadically in the five decades between 1908 and 1956. Nonetheless, the American love affair with the automobile consistently applied pressure for institutionalization of the public road building machinery. Visits by American dignitaries in the 1930s to the emerging German Autobahn network increased the sense of urgency in America to create a national system of highways. While Dwight D. Eisenhower is frequently identified as the initiator of the Interstate system (and in fact, it was he who signed the Federal-Aid Highway Act of 1956 which provided the initial funding), it was actually Franklin D. Roosevelt who signed legislation authorizing the "National System of Interstate Highways in 1944."

Today, it is fashionable to vilify the transportation establishment for the effects that modern road building has had on our communities. However, research shows that the two men at the top of the transportation establishment during the two decades before the Interstate era -- Thomas H. MacDonald, chief of the Bureau of Public Roads (BPR), and his top aide, Herbert S. Fairbank -- recognized the connection between transportation and land use. Concerned that the already evident shift of population to the suburbs had begun taking its toll on cities, they warned of the effects of thoughtless planning and design of these new roads.

MacDonald and Fairbank felt that good and integrated planning was the key if the American system of express highways were to help reverse, or at least slow, the "...dynamic forces that

have made decentralization of the original city inevitable." A Master Plan for Free Highway Development submitted to Congress in 1939, and Toll Roads and Free Roads and Interregional Highways, submitted in 1941, both urged careful consideration of the location of the expressways, and how access was provided to them, to eliminate the danger of "expanded suburban ribbon" development.

Unfortunately, probably due to the huge public mandate after WWII to suburbanize and build highways, Presidents, starting with Roosevelt and Truman, and later Congress, ignored MacDonald and Fairbank's recommendations for connections of the transportation plan to a regional vision. What was noticeably absent in the Federal-Aid Highway Act of 1944 was any commitment to the planning and coordination of highway development with other public and private facilities in metropolitan areas, as called for in Toll Roads and Free Roads and Interregional Highways.

As late as 1947, at the annual meeting of the American Association of State Highway Officials (now AASHTO), MacDonald told his colleagues that: "In a large and unfortunately increasing measure, the great tidal movements are inefficiently accomplished in private motor cars. In large but undesirably decreasing part, they are served by mass transit facilities." MacDonald urged the state highway officials to do whatever they could to reverse the public sector's refusal to subsidize mass transportation. Repeatedly, however, the various Federal Aid Acts, which our nation passed, ignored the recommendations for integrated and balanced transportation visions.

1.3 The Transportation Establishment Delivers on its Mandate

We have to marvel at how thoroughly transportation establishment delivered on this mandate. The industry created a common "enabling framework for progress" consisting of language/terminology, funding mechanisms, curriculum at universities, values, and policies. Common professional organizations such as AASHTO, TRB and ITE were created to reinforce and standardize this framework. This was done at a scale that has rarely, if ever, been matched by any other profession. It is any wonder then that the defacto planning in the USA was dominated by transportation engineers and why planners, citizens and advocacy groups have been relatively less influential in the shaping of communities and land use. The profession managed to educate two generations of planners, politicians, developers, construction industries, special interest groups, and the public about how things should be done.

If the profession did fail, it was in not reacting to the mounting evidence of the unintended land use consequences that MacDonald and Fairbank had foreshadowed. The profession's inertia was too great and its values too imbedded in society to evolve in order to keep up with lessons learned. Even today, due to the depth of the "thoroughness" over the decades, there are still plenty of groups who still support the conventional transportation engineering direction. So what may appear as conventional transportation establishment being out of touch to some people, may be perfectly fine to other people. *There still is a huge segment of our public who believes in the build, mitigate, and build more mindset.* As Fred Kent of the Project for Public Spaces often says: "we have become a nation of traffic engineers!"

2. The Paradigm Begins to Shift

This was the transportation establishment that I joined as an entry level engineer for the New Jersey Department of Transportation (NJDOT) in 1973. The recognition that the “system” is out of balance had only just begun to creep in. During my first twenty years at NJDOT, we had several new policy and project initiatives emerge on different fronts, in differing parts of the organization, directly relating to a desire if not need to make our designs more compatible with both the environment and our host communities. NJDOT ever so slowly inched towards the concept of designing for all road users, but all too often, it was one step forward, then two steps back. The conventional wisdom that “the safety and mobility of the motoring public are paramount” was literally our mantra; the concept of wider, straighter and faster is better, was rarely questioned from within.

2.1 Community Opposition to Conventional Transportation Approaches

By 1990, the uneasiness within the transportation establishment about the current merit of the state of the practice began to grow. Twenty years of beating our heads into the wall created by the National Environmental Policy Act (NEPA) began to take its toll. Public hearings mandated by NEPA brought DOT staffs into frequent contact with communities who in no uncertain terms told us that they were unhappy with our projects. In previous decades, when we thought that we had a national mandate, it was possible to tune out criticism and force big projects through the objections of our citizens. After all, the “greater good” needed to prevail, and some sacrifices had to be made – as long as it was the host communities making the sacrifices.

Most of the Interstates had been completed, but the transportation establishment failed to notice that our programs gradually shifted towards pursuit of smaller, more local projects. Typical 1990s projects increasingly involved “fixing” congestion or safety problems on roadways that the previous transportation officials had been thought would last a lifetime. Without the mandate to complete the National System of Highways to stifle them, the influence that the local political process had in overruling agency engineers and planners grew.

Knowing no other way, the transportation establishment continued to apply the training that they received during the Interstate era. This led to more road designs focused on the needs of motorists. Design goals developed for the Interstates, such as designing for free flow of traffic at the thirtieth highest peak hour of the year (called the design hourly volume, or DHV) were applied to small intersections. Desirable lane widths were kept at twelve feet; shoulders at eight feet; etc. Any notion of breaking free from this inertia was quickly stifled by the Federal Highway Administration (FHWA). FHWA engineers often threatened to refuse federal participation for designs which did not meet AASHTO standards, or achieve target levels of service for growth projected to occur as much as 25 years into the future.

When the inevitable community resistance followed, state DOTs found that the political will to override communities was no longer present. Many of our projects came to a standstill, and we often wasted years and precious resources trying to pound the “Interstate peg” into the community context. The irresistible force met the immovable object, and we learned what John Adams knew two centuries earlier: *“People are an unwieldy machine and cannot be forced”*.

Transportation reform advocates, like the Surface Transportation Policy Project (STPP), point to the 1991 passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) as the key leverage that set the stage for a new era in transportation reform (From the Margins to the Mainstream, A Guide to Transportation Opportunities in Your Community, Surface Transportation Policy Project, Workshop Edition, January 2006). ISTEA subtly, but surely helped reinforce internal doubts within NJDOT about how we conducted our core business. More importantly, for those who wanted change, it offered new tools and ideas and planted the seeds for new ways of doing business. Internal reform continued but lacked cohesion and an overarching vision.

2.2 Conventional Transportation Approaches No Longer Meet the Mandate

As the painful reality began to sink in that the public would not accept Interstate era designs on Main Street USA, NJDOT had to come to terms with another reality. The wider, straighter, and faster approach was not even solving the problem, since sprawling land uses was creating congestion faster than we could widen or bypass failing highways. This was even more troubling to accept, because it challenged the validity of our core values, if not our careers. Historically, NJDOT had done what it thought it was asked to do: focus on the roads, and let the communities do their own planning. However, passing year, it became clearer that costs were escalating, more would have to be invested in existing infrastructure, and financial resources were flat. At the same time congestion in New Jersey mirrored national trends and was spiraling out of control. The 2005 Urban Mobility Report presented by the Texas Transportation Institute (TTI) revealed that in spite of one of the biggest road building campaigns in the history of the world, things got worse during the last two decades of the twentieth century:

- Annual hours lost per traveler quadrupled from 16 to 62.
- The percentage of the major system, which is congested almost, doubled, from 34 to 59.
- The hours of congestion, which we faced, increased 50 per cent, from 4.5 to 7.1.
- The percentage of peak hour travel, which is congested, jumped from 32 to 59.

This congestion cost US travelers 63 billion dollars and 3.7 billion wasted hours in 2003.

In dealing with congestion, we shared the fate of the proverbial Greek character, Sisyphus. Every time we thought we had rolled the boulder to the top of the hill, we found ourselves back down at the bottom. Over the last 2 decades, less than half of the new roadway capacity needed nationally has been supplied (TTI), and indications are that the trend is accelerating.

3. Reasons Why Conventional 20th Century Solutions No Longer Work

At NJDOT, we now share the belief that runaway congestion is the inevitable result of allowing transportation and community planning to evolve separately. While extremely complex, a few fundamental factors appear to be responsible for the increasing failure of major capacity projects to keep up with congestion.

3.1 Induced demand

Induced demand began when road construction first started early in the 20th century, and made land further out from the urban core more accessible. Cheap farmland in rural areas was more attractive to development, and people moved further out to take advantage of the newfound affordability and quiet rural lifestyle. This initiated suburban sprawl. This phenomena started slowly in the first half of the 20th Century, and was already noticed by transportation establishment leaders such as MacDonald and Fairbank before World War II. As more and more people moved out, the rural atmosphere changed to suburban, and ease of travel gave way to return of congestion. More roads were built, more cheap land was made accessible, more people move; soon jobs and commercial uses followed. This led to more congestion, more loss of quiet atmosphere, more development, and more roads.

3.2 Separated and spreading land use patterns

After World War II the trend to separate and spread land uses accelerated. This compounded the sprawl factor. Prior to the automobile, land uses were mixed and compact out of necessity. Reacting to the single minded desire to escape unattractive land uses, community planning shifted to separating land uses into specific and separate categories. This was a radical change from the traditional development scenario typical of communities created prior to World War II, where convenience stores, compatible commercial uses, and neighborhood schools were often located in the midst of residential areas. Not only could trips be made without using the highway, some could actually be made on foot or bike. The major roads were left to carry longer trips, which could not be accomplished locally in other ways.

Modern planning, with limited exceptions, intentionally separates and spreads different uses. Subdivisions are devoid of convenience uses and community schools and these critical every day uses are *intentionally* distanced from residential areas. Generally, these conveniences are placed on state and county roads, forcing these roads to bear not only through traffic but local destinations as well.

3.3 The disappearance of the connected network

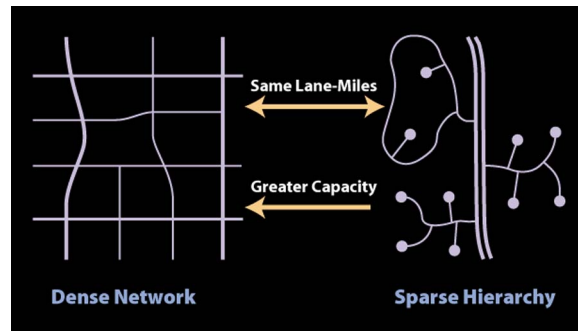
Modern road networks are intentionally disconnected and curvilinear. The desired result of lightly traveled residential areas is accomplished with the unintended consequence of runaway congestion on county and state highways.

Modern planning and circulation plans have another and perhaps more pervasive role in congestion. Traffic from isolated residential pods in modern development can only get onto big highways at a few points. As residential communities grow, traffic engineers are forced to add traffic signals to more and more intersections. Furthermore, increasing wait times on side streets require that more and more green time be devoted to them. Upon reflection, it should be obvious that more green on the side street **MUST** mean more red time on the multi lane highways. Unfortunately, the erosion of capacity on the big highway is worse than simple math. Once stopped, cars do not instantly return to highway operating speeds when the light turns green. As a result, adding new signals to intersections, and later more green time to the side streets,

cripples the capacity of the major highways.

A dense and connected network, mile for mile, has more thru through carrying capacity than a sparse one. The latter forces all traffic out to the big highway as soon as possible, and concentrates left turns at a few spots. Also the main roads are almost always the taxpayers responsibility, while the lesser, unconnected streets are generally built by private developers.

In an era where government doesn't have nearly enough funding to meet our needs, can we afford to continue to fail to recapture private sector investment in infrastructure to serve our mobility needs?



Dense and connected networks also influence the density of adjacency of land uses, which in turn influence modal choices. Sprawling land uses built upon sparse networks create distances, which make walking or biking out of the questions, and generate origin and destination densities that cripple the viability of mass transit.

Connectivity is best described in a 1990 paper entitled Hierarchical and Connected Road Systems. The paper indicates that a well connected road or path network has many short links, numerous intersections, and cul-de-sacs. As connectivity increases, travel distances decrease and route options increase, allowing more direct travel between destinations, creating a more accessible and resilient system (Kulash, Anglin and Marks; Hierarchical and Connected Road Systems, 1990).

When the freeways were introduced into the landscape, the automobile freed people from the need to locate near water or rail. We then begin to see the connected grid pattern slowly start to break down over time. We also see that homes, which used to be located in close proximity to schools, jobs and stores are now placed many miles away. Is there any wonder why vehicle miles traveled is skyrocketing, and walking has all but disappeared as a viable travel choice?



3.4 Context-insensitive street designs

Over the course of the 20th Century, street design became insensitive to the context. Modern street design standards are based on streets classified according to functionality for the automobile. The value of the adjacent community and the idea that someone may actually want to use the street for other uses is completely ignored, with predictable results. Wider, straighter and faster facilitates mobility for cars, at least before sprawl and induced demand clog the roads, but it does so at the cost of all but eliminating pedestrian and bicycle travel.

The system of separated and spread land uses, unconnected and context insensitive streets, and shift of traffic to a few big highways, was *one* early way of providing our customers with the American dream. It worked – at first – but as more and more our customers realized this version

of the American Dream, it began to compromise it for all. The unintended consequences relating to health, congestion and social interaction are now apparent.

4. Context Sensitive Design: The First New Vision For Transportation Planning And Design

The landmark 1998 National Thinking Beyond the Pavement workshops hosted by the Maryland State Highway Authority appears to have been the spark that began to spread new ways of thinking amongst the transportation establishment. Clearly, it influenced NJDOT, which in 1999 started its own Context Sensitive Design Implementation Team (CSD-I Team). The CSD-I Team still exists today (although called the CSS-I Team), and has been responsible for the development of a training program for Context Sensitive Design, which trained almost 1000 professional staff and community members. The CSD-I Team also drafted and successfully secured approval of Context Sensitive Design as official policy within NJDOT, which policy specifically mandates that all future NJDOT projects: "...consider the needs of all road users...full collaboration and partnering with communities [and]...more flexible designs..."

Perhaps the most significant accomplishment of the CSD-I team has been the adoption of a Proactive Roadway Design Policy. This policy states that future NJDOT roadway designs should lead the driver to adopt a driving behavior appropriate to local conditions, with target operating speeds based upon land use conditions and the needs of all users of the facility, and not solely based on a functional classification made in advance. Design Speeds should be set, not based only on the safety and mobility of the motoring public, but also set in relation to the local context. In fact, this policy goes on to specify that NJDOT designers may need to introduce elements into project designs that reinforce and encourage the operating speeds, which address the needs of all road users.

5. The Move To NJFIT: Future In Transportation: An Integrated Approach To Transportation And Community Planning

Context Sensitive Design helped NJDOT create individual projects, which were more community friendly, but did little to ease the growing congestion.

In 2003, New Jersey Department had about a dozen major congestion related projects under study. At the same time, our pavement was crumbling, and bridges were deteriorating to the point of being near closure. It became clear that we would never be able afford the five billion dollar price tag needed to construct these projects as widenings and bypasses. Infrastructure demands and regulatory requirements had forced us to restrict capacity increase projects to less than one hundred million dollars per year, so these dozen projects would alone take us 50 years to fund. Considering that these projects represented less than a quarter of the major capacity needs statement wide, we were sobered by the realization that it would take us two centuries to solve congestion using major new capacity building approaches. That is of course, assuming that we could obtain community support and environmental clearances which would cost us tens of million of dollars more. The staggering costs and the futility of winning support made it is clear that we need a new path.

As Albert Einstein once said, "We can't solve problems by using the same kind of thinking we used when we created them."

5.1 Learning from Other Sectors

As we struggled with our suitable choices, we learned from other sectors. For instance, several decades ago, we all scratched our heads when our insurance carriers started offering to pay us to work out at our local clubs, to play racquetball, to walk more, and to eat better. What were companies like Aetna and BlueCross BlueShield thinking?

The answer can be found in a BlueCross BlueShield press release:

“Blue Cross and Blue Shield Plans to Encourage Congress and Nearly 89 Million Cardholders to Walk to Better Health”

“Research indicates that the U.S. could save approximately \$77 billion in direct healthcare spending-and more than double that amount when lost workplace productivity is considered-if Americans with inactive lifestyles met the government's daily recommendations for physical activity.”

The health industry became proactive, and decided to:

- Alter the behavior of their customers
- To prevent the onset of health problems
- To reduce the cost of their services to a manageable level

They recognized that if they continued to raise premiums, less and less customers could afford to pay for their service, and ultimately they would go out of business.

NJDOT decided that we needed to become proactive and adopt the same approach.

New Jersey's communities are our customers and their behavior is how they plan and coordinate their land use, how they design their streets, and how and whether they mix their land uses. The diabetes, obesity and heart conditions that we needed to avert were congestion, air pollution, and excessive energy consumption. Our costs involved not only building new roads, but operating and managing them afterwards. Communities found our solutions to clogged arteries no less invasive.

With private individuals and health, the intervention involves diet and exercise; for transportation, the intervention involves community and land use planning.

5.2 Learning from Other States

Other states provided clues on how to move forward proactively.

Several years earlier, PennDOT had collaborated with the Delaware Valley Regional Planning Commission to undertake cutting edge Integrated Transportation and Land Use Strategies Studies for State Routes 202 and 322 which sought to address the land use and street connectivity problems that underlie congestion. PennDOT and DVRPC planned new street connections off of their system; sought Context Sensitive solutions to reinforce historical Main Streets; and provided land use planning expertise to communities. Their work sought to change densities, to mix uses, and to foster development, which inspired non automotive modes of transportation.

Later, PennDOT's boldness and decisiveness buoyed us as we moved out in the early stages of our new program. Headlines in the Bucks County Courier Press read:

“PennDOT halts bypass design to eye new plan”

We also learned that PennDOT had decided to reevaluate 26 major capacity increase projects totaling five billion dollars. Secretary Allen Biehler of PennDOT concluded that it would be waste of resources to continue to devote staff time and study dollars to continue planning, design and environmental studies for projects that they could never build. Furthermore, by continuing advancement of them in the public eye, PennDOT was creating the mistaken perception that they would cure all of the ills created by unsound land use planning in their communities. This would perhaps be a more damaging outcome.

Around the same time, New Hampshire DOT also stepped out of traditional roles and helped prepare a manual on Smart Growth in New Hampshire. NHDOT also began to make the transportation and land use connections on projects such as Interstate 93 and State Route 16. For the former, NHDOT provided communities with two million dollars for integrated transportation and land use planning.

The Portland (Maine) Area Comprehensive Transportation Study (PACTS) enacted bold policy and priorities regarding transportation investments. PACTS now requires that: “Any arterial corridor roadway project, that will reduce commuter travel times between an urbanized and a non-urbanized area, must be accompanied by a land use plan that preserves the arterial's capacity, protects its mobility function and the public investment, and that minimizes sprawl.”

We learned from the less fortunate experiences of the Vermont Agency of Transportation. The Chittenden County Circumferential Highway was remanded back to them after decades of study due to “failure of the proponents to adequate assess the induced and cumulative growth impacts of the highway” and “cursory treatment of induced growth impacts”. This is the first instance that a state agency's NEPA document was overturned primarily on land use and secondary impact assessment considerations.

5.3 Principles of NJFIT: Future in Transportation: Putting it All Together

NJFIT: Future in Transportation, is built upon these lessons from other sectors and other state DOTs. NJFIT: Future in Transportation seeks to form partnerships with other NJ agencies and local governments. NJFIT will downsize build alternatives, increase transportation choices, lower design speeds and provide more pedestrian friendly streetscapes. It will foster improvements to existing county and municipal roads to provide mobility via better connectivity of local roads. Better connectivity between adjacent emerging private developments will allow them to contribute to local network connectivity. Finally, planning assistance and consultant resources will be provided to help local jurisdictions develop better and sustainable land use plans. This approach desires to achieve coordination of all levels of planning activities to leverage the full value out of all infrastructure investments made in NJ corridors.

The NJFIT: Future in Transportation Program is based on four key principles:

- Downsize new investment in new capacity for state highways to be affordable
- Work with communities to connect local streets, to create a network of choices
- Help communities with land use design
- Implement Context Sensitive Street Design on our highways, and help communities with CSD on their streets.

Downsizing, or “right sizing”, as Secretary Allen Biehler of Pennsylvania DOT calls it, is necessary because the huge costs of eliminating congestion at dozens of locations in New Jersey will allow only a few congestion hot spots to be fixed each decade. Causing most communities to wait decades if not a century for a solution is unacceptable, if not absurd. So, in each Smart Corridor where a study is underway, NJDOT engineers are working to identify key locations where choke points are responsible for disproportionate amounts of congestion. Sometimes segments of new state highway may have to be added to support or complete the travel network, but these segments will be smaller in size and less ambitious in design approach.

NJFIT supports improved connectivity as a way to increase land use accessibility. For a particular development or neighborhood, connectivity applies both internally for streets within that area and externally for connections with arterials and other neighborhoods. Increased street connectivity can reduce vehicle travel by reducing travel distances between destinations and by supporting alternative modes. Increased connectivity tends to improve walking and cycling conditions; particularly where paths provide shortcuts, so walking and cycling are relatively faster than driving. This also supports transit use.

Traffic modeling by Kulash, Anglin and Marks (Hierarchical and Connected Road Systems (Kulash, Anglin and Marks, 1990) predicts that a connected road network reduces VMT within a neighborhood by 57 percent compared with conventional designs. A U.S. Environmental Protection Agency study found that increased street connectivity; a more pedestrian-friendly environment and shorter route options have a positive impact on per-capita vehicle travel, congestion delays, traffic accidents and pollution emissions (EPA, 2004).

Providing a well connected street network, and a backbone of strategic investment in the state highway system can go a long way to addressing congestion in a study area. However, to fully reap the benefits of that work, the land use must be arrayed in an intelligent manner to minimize unnecessary trips, or trips that are unnecessarily lengthy. As part of the NJFIT program, the NJDOT, in collaboration with the New Jersey Office of Smart Growth, will provide planning assistance and consultant resources to local jurisdictions. The assistance is to help them develop land use planning alternatives which shift trips to non-automobile modes and make better use of the local road infrastructure. Assistance will be provided in the form of in-house expertise and consultant services provided at state expense.

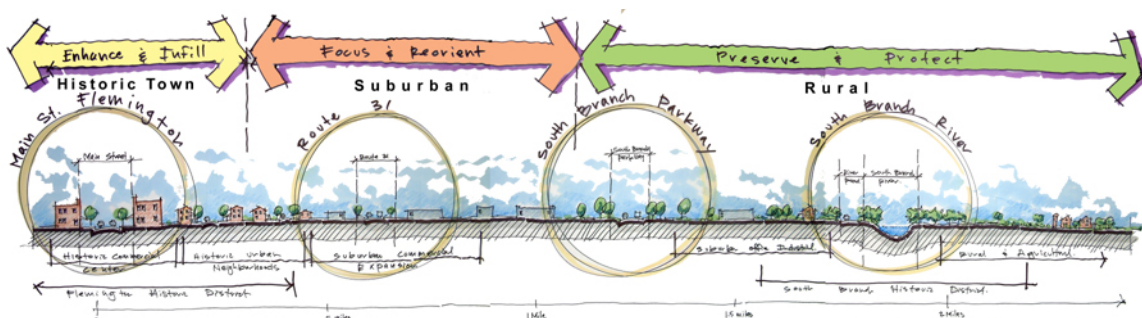
CSD is an important part of the NJFIT program, due to the increased reliance, which the program places on local and county roads. On these roads, street design should lead drivers to adopt driving behavior appropriate to local conditions. Since vehicular speeds affect local context as surely as the physical dimensions of the street, roadway designers should carefully consider the appropriate target speed for a roadway section. This consideration needs to be based upon land use conditions, building densities, the environment and the disparate needs of the residents and the users of the facility. Streets not only serve transportation related functions, but are also places of commercial and social encounter. Therefore, designers should also consider the non-vehicular uses of a roadway and seek consistency between all aspects of the roadway, its environment, and the chosen design speed.

There is a wide range of options available to the designer to do so, including some that fall under the umbrella “traffic calming.” These include neckdowns, rotaries, and speed humps; however, these could also include narrow lanes and shoulders, and curvilinear alignments.

The tendency to develop streets that are wide, flat and straight in search of safety will sometimes lead to inappropriate vehicle operating speeds, particularly in downtown or “Main Street” environments. In these locations, where the true intent may have been for a slower pace of traffic, street design needs to support pedestrian safety and acknowledge the importance of pedestrian quality of life, and related socioeconomic factors. Additionally, there is evidence emerging that wider roadways and faster speeds during traffic yielding is not always safer, even when viewed strictly from a motorists perspective.

Therefore, when working with local road networks, designers need to consider the adjacent land use and desired function of the road. The streets need to be designed sensitive to these contexts, and encourage the intended operating speeds. Modern roadway design, particularly as it relates to secondary and tertiary streets, need to carefully weigh whether the use of these elements creates a desirable balance between the competing interests of adjacent land use, non-motorized transportation, and motor vehicles.

The land use transect concept, modified and applied to NJDOT’s Route 31 Flemington NJFIT



project, is a good way to view how Context Sensitive Design relates design of streets to adjacent land uses. The transect concept is based on the fact that the design of the street should inform the motorist, and relate to the characteristics of the community that he/she is passing through. The intent is to lead the driver to adopt a driving behavior appropriate to local conditions.

5.4 NJFIT: Future in Transportation: Early Project Examples

Some examples of local program growing out of the NJFIT statewide initiative include the following success stories.

For Route 31 in Flemington and Raritan, an extensive and connected local road network has been planned, and two lane 35 miles per hour design rural parkway has replaced the original 60 miles per hour freeway bypass. This solution is not only less costly; it also allows NJDOT to spread its investment in congestion relief over 10 to 15 years. Furthermore, the bypass solution would have squandered the opportunity to recapture the developer infrastructure for public use.

Similarly, in Trenton, a new network has been proposed for the Trenton Waterfront Redevelopment area. The existing land uses include huge parking lots and state offices which, combined with the Route 29 Freeway, sever Trenton from its waterfront. Conversion of Route 29 into a boulevard, and addition of a local street network will diffuse traffic, but more importantly, will help the city redevelop the parking lots into a mixed-use development. Without a “rightsizing” of Route 29, the redevelopment plan, which is critical to revitalizing the city, cannot be successful.

For the twelve communities in the Route 9, Ocean County corridor, some jurisdictions were skeptical at first and held back on cooperation and participation. In other places, NJDOT and OSG support were immediately welcomed. One local planner told the NJDOT: “...it’s about time someone from the state came here to help us...” Ultimately, all of the corridor communities bought into the concept, and in 2005, all signed an intergovernmental partnering agreement. Today, the NJDOT lead engineer is getting so many invitations to attend local planning board meetings that his other projects had to be reassigned.

On Route 31 in Hopewell, local officials were initially incensed at the suggestion that the solution to their traffic problems might lie in their land use planning. Six months later, local officials are working side by side with NJDOT engineers and OSG planners to resketch the future of their community.

In the Route 33 Smart Corridor project, local officials in Hamilton agreed to work with the NJDOT from the beginning and the lead engineer for NJDOT has been known to get calls from the Hamilton mayor asking for help with land use developments elsewhere in the town. Skeptics told NJDOT that there was little that could be done with land use in Hamilton, since it is already a mature suburb. Yet, as the graphic below demonstrates, there are opportunities in Hamilton as well as most other “maturing” suburban communities for retrofit to make things work better.



Hamilton Township, part of the Route 33 Smart Corridor study, demonstrates how in fill development can in fact be added into what was previously thought to be a fully developed community. The new infill provides missing street connections, mixes in new uses, and allows for park once and then walk opportunities. It also opens up walkable pathways to existing neighborhoods. An added

In Manalapan, the NJDOT and OSG have helped local officials and developers reshape new development adjacent to the Monmouth Battlefield. The original plan for the area called for almost 2,000 new homes to be built in four unconnected pods. All travel to and from each pod would have had to been made on the adjacent county roads and highways. No street connections would have been made to a new “Lifestyle Shopping Center” planned to be located adjacent to the new residential areas. Although the two land uses would literally be within shouting distance of each other, the street plan would force everyone into their cars. The new plan for the Monmouth Battlefield area provides for multiple, and walkable connections between all residential areas and the new commercial development. Furthermore, the commercial area has been replanned to create a town center for Manalapan, a feature which is currently missing from and desired by the community.

5.5 Customer reaction to NJFIT: Future in Transportation

The NJDOT expected a poor reception to its new direction for congestion relief and VMT reduction. It assumed that the public would balk at the de-emphasis of roadway expansion as the prime solution to congestion. It also expected local jurisdictions to oppose the efforts of any state agency attempting to influence their local land use planning.

Instead, the NJFIT received an unexpected welcome with officials in most cities have embraced the effort. It appears that local communities are being overwhelmed with development applications, and are working under tight budgets that in most cases do not allow them to plan effectively.

In one of the faster growing communities in New Jersey, NJDOT was greeted with: “Where have you been and what took you so long!” Doug Palmer, the Mayor of New Jersey’s capital city of Trenton was quoted in the press: “The passion and the need has always been there...but without the passion of the DOT, we’d still just be talking. Now we’re talking and moving toward implementation. This will transform the City.” Similar responses were received in community after community. Snowed under by impending development, and unable to effectively define long term visions for themselves, development in their towns is left to occur in

accordance with outmoded zoning ordinances and master plans patterned after prototypes drawn up in the 1950s and 1960s.

Our new worst fear has now become how to avoid being overwhelmed by the increasing demand for NJDOT to supply staff and resources to help communities with land use planning.

Results of focus groups undertaken by Action Media in 2003 for Smart Growth America reveals that this kind of reaction may not be unique to New Jersey. The focus groups reveal that perceived erosion of community values due to poor planning is shared elsewhere:

- A sense of community and neighborhood is a strong value. Chain stores, big box retailers (especially Wal-Mart), poor planning, lack of community infrastructure including schools and safety, are all cited as contributing to the decline in “community.
- Voters are beginning to blame local officials for problems that result from poor planning, and they don’t think officials are being held accountable. Participants are not satisfied. They believe elected officials have their own agendas, set largely by developers, and that they discourage meaningful public participation. Local officials are not trusted to consider long-term consequences of their development decisions.
- Convenience and access trump all other considerations in mobility.

6. Conclusion: Back to Our Roots?

New Jersey Department of Transportation has for many years followed the traditional approach of trying to widen existing roads or build new roads in response to congestion. It has recently faced the reality that this solution has not been working. Congestion continues to increase on the state highway system, and has spread to secondary and tertiary roads. This is not unique to New Jersey, but is manifesting itself all around the country. At the Executive Seminar for Transportation and Land Use held in Irvine, California in September 2005, the seven states in attendance (California, Utah, Idaho, Tennessee, Pennsylvania, Michigan and New Jersey) reported similar, troubling problems. Furthermore, the 2005 Urban Mobility Report verifies that nationally, congestion indicators have deteriorated dismally over the last two decades.

One might ask the obvious question: why not build more roads faster? With most transportation agencies facing the need to focus on aging infrastructure programs, this scenario is not only unlikely, it is impossible. This is borne out by the 2005 Urban Mobility Report, which indicates that from 1982 to 2001, states have been able to provide only 41 per cent of the new capacity needed to abate congestion. The Transportation Establishment is at the crisis point.

Faced with mounting evidence that we cannot build our way out of congestion, NJDOT turned to a new approach for dealing with congestion and reducing vehicle miles traveled: dealing with land use. Initially, we believed that many of our customers would be resistant if not fully reject attempts to influence how and where they lived. Like many, we believed that Americans were in love with the automobile and would demand that we continue to provide them more big roads, separated land uses, and unconnected networks.

While this response has occurred in some cases, resistance quickly eroded, and was replaced with support and clamor for even more assistance. Many more not only welcomed the new approach, but asked: “where have we been?” NJDOT has been very pleasantly surprised to find that attempts to influence the demand for automobile usage are not meeting with the overwhelming resistance that many predicted.

Public willingness to accept the new paradigm is not the only cause for optimism. Evidence is beginning to mount to support the conclusion that sound planning and integration of transportation and land use can in fact reduce VMT. Reid Ewing’s work at the National Center for Smart Growth reveals that there is in fact a strong correlation between sprawl and higher automobile usage. Scenario planning performed for regional plans in Idaho, Sacramento, Tennessee and Charlottesville, Virginia all reveal that sound and coordinated planning will achieve remarkable reductions in VMT, even at significantly lower capital investment. Also encouraging is that each of these states report swift and strong public acceptance of the new paradigm.

The ramifications of Integrated Transportation and Community Planning will reach well beyond congestion. Evidence is mounting in the Health Industry that the nature of the built form do in fact influence walking, exercise, obesity and other health indicators. Integrated and sustainable planning will lead to lower school, sewer and other community infrastructure construction and operation costs. Robert B. Noland, formerly of the USEPA, estimated that a 28% reduction in VMT over the 12 year period between 2000 and 2012 could achieve nearly half of the carbon emissions reduction targeted by the U.S. Climate Change Action Plan (Noland, Relationships between Highway Capacity and Induced Vehicle Travel, 1999).

Americans may always love their automobiles, but that does not mean that they want to spend all day in them. Communities and transportation systems which afford Americans with choices to get to places *without using their* cars actually offer more freedom, than those solely dependent on the auto to get around. Governments, developers and other private sectors must partner with our customers to create a new sustainable land use development paradigm for the future. Our health, as individuals, and as a nation, may very well depend on it.

Is this really a new way of making decisions? Designing and planning communities as a whole, and viewing transportation as just one of the elements of livable communities, is an early American concept. While pre 20th Community Planners and Leaders were by no means perfect, and many examples of poor planning can be pointed in early America, the processes of that era were more wholistic and integrated. Roads and bridges were not built because data bases and management systems spewed out congestion indicators and pavement distress indices; they were built to foster economic development and quality of life. If we are to really embrace the concept of healthy, livable communities that serve a diverse population and make travel choices a priority, then we must integrate our planning, and we must design for all road users. In short, we must go back to our roots.

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