Alaska State Legislature

While in Session
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Representative Bob Buch

Representative_Bob_Buch@legis.state.ak.us

Sponsor Statement

HB 372
An Act relating to highway design

During the past decade, highway design has undergone significant change. Today, engineers and planners are employing greater flexibility in the way they design road projects through context sensitive solutions and design. Through the use of guidelines adopted by the Federal Highway Administration (FHWA) and the American Association of State Highway and Transportation Officials (AASHTO), engineers and planners are able to consider more than just safety or efficiency when building new roads or constructing old roads. They are able to consider additional design factors such as the environment, scenic and historic preservation, community impacts and aesthetics.

The cornerstone to context sensitive solutions—or "CSS" as it is commonly referred to—is community involvement. CSS enables all the stakeholders in a particular road—from the people who live on it, to the emergency responders and the people who run the snow plows—to be involved so that the final road design takes into account the full range of needs and uses.

As the Federal Highway Administration states, "Context sensitive solutions (CSS) is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist."

It was a strategic goal of the Federal Highway Administration that all states adopt and implement CSS prior to January 2008. Alaska has not yet done that. However, 41 states and the District of Columbia have. HB 372 would require the state Dept. of Transportation and Public Facilities to adopt flexible highway design guidelines that are consistent with standards used by the FHWA and AASHTO for all state-funded road projects in Alaska.

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Sectional Analysis of
HB 372

Section 1

Amends AS 19.10.160(a) by adding a new paragraph (2) that will require the state Dept. of Transportation and Public Facilities to include flexible highway design guidelines that are consistent with the Federal Highway Administration's (FHWA) Context Sensitive Solutions (CSS) program, and lists the factors that must be considered when designing highways in the state, which include: safety, durability and economy of maintenance; the constructed and natural environment of the area; community development plans and relevant municipal ordinances; sites on the National Register of Historic Places, or identified by the Alaska Historical Commission; the environmental, scenic, aesthetic, historic, community and preservation effects of the activity; access for other modes of transportation, including bicycles and pedestrians, access to culturally significant sites, acceptable engineering practices and safety research.

Section 2

Amends AS 19.10.160 by adding a new subsection (c) that will require the Commissioner of DOTPF to solicit and consider the views of people who have expertise in environmental protection, historic preservation, scenic conservation, bicycle and pedestrian transportation, urban design architecture or landscape architecture, public safety and traffic control and human factors. The Commissioner must also consult with community planning organizations, DNR's Historic Preservation division and the FHWA.

Section 3

Amends the uncodified law of the State of Alaska by adding a new section that will require the DOTPF to submit a report to the legislature no later than January 1, 2010 that will include a review of the design standards required by this act, and the impact of CSS on the state of Alaska. This report will also include information on the number of state employees who have taken advantage of the FHWA's CSS training opportunities, an evaluation of interdepartmental relations as they relate to these guidelines, and a review of the design standards in the state with a recommendation for eliminating or modifying elements that conflict with the implementation of CSS.

Section 4

This act takes effect January 1, 2009.

FISCAL NOTE

STATE OF ALASKA
2008 LEGISLATIVE SESSION

Fiscal Note Number:
Bill Version:
() Publish Date:

Identifier (file name): HB372-DOT-DC-DES-03-02-08
Title: Highway Design Flexibility/Municipalities
Sponsor: Rep. Buch
Requester: H TRA

Dept. Affected:
RDU: Design and Construction
Component: Statewide Design & Engineering Services
Component Number: 2357

Expenditures/Revenues (Thousands of Dollars)
Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2009**	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**FY 2014**
Personal Services							
Travel	20.0						
Contractual	130.0						
Supplies							
Equipment							
Land & Structures							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	150.0	0.0	0.0	0.0	0.0	0.0	0.0
CAPITAL EXPENDITURES							
CHANGE IN REVENUES ( )							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF	150.0						
1005 GF/Program Receipts							
1037 GF/Mental Health							
Other Interagency Receipts							
TOTAL	150.0	0.0	0.0	0.0	0.0	0.0	0.0

Estimate of any current year (FY2008) cost:

POSITIONS

Full-time							
Part-time							
Temporary							

ANALYSIS: *(Attach a separate page if necessary)*

The bill requires DOT&PF determine whether flexible guidelines should be adopted by identifying and evaluating flexible highway design guidelines addressing the considering the 9 criteria in section 1. The guidelines must also provide for documentation of the facts, circumstance and considerations involved in flexible design decision making including an explanation of the process and the reasoning. Guidelines shall consider the views of the following stakeholders: elected officials , persons with expertise in environmental protection, historic preservation, scenic conservation, bicycle and pedestrian transportation, urban design architecture, community planning, DNR and FHWA. DOT&PF will hire a contractor to assist the department develop this information as well as coordinating working group meetings with the various stakeholders identified. Funds are needed for 1 year as the guidelines are to be produced by June 30, 2009.

Prepared by: Mary Siroky, Legislative Liaison — Phone 465-4772
Division: Commissioner's office, DOT&PF — Date/Time 3/2/08 3:30 PM

Approved by: Nancy Slagle — Date 3/2/2008
Admin Services Director, DOT&PF

(Revised 10/05/2006 OMB)

ALASKA STATE LEGISLATURE

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REPRESENTATIVE BOB BUCH

Representative_Bob_Buch@legis.state.ak.us

Date: February 20, 2008

To: Representative Kyle Johansen, Chair
House Transportation Committee

From: Representative Bob Buch

Re: HB 372 "An Act relating to highway design"

Dear Rep. Johansen:

I respectfully request that House Bill 372, which would require the state Dept. of Transportation and Public Facilities to adopt the flexible highway design guidelines (otherwise known as CSS, Context Sensitive Solutions) used by the Federal Highway Administration.

Attached you will find a copy of a CS of the bill, sponsor statement, sectional, and some back up information on CSS. Letters of support will be forthcoming.

Please feel free to contact me, or my staff Deborah Brevoort (x3467), with any questions you might have.

Thank you for your consideration.

Thank you,

Representative Bob Buch
Alaska State Legislature
House District 27

Alaska State Legislature

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Representative Bob Buch

Representative_Bob_Buch@legis.state.ak.us

(Revised) Sectional Analysis of
CS HB 372
(25-LS0525\L)

Section 1

Amends AS 19.10.160 by adding two new subsections (c) and (d) that will require the state Dept. of Transportation and Public Facilities to establish a design process for use during the design of highway projects that ensures the projects are consistent with the standards used by the Federal Highway Administration's (FHWA) Context Sensitive Solutions (CSS) program, and includes the early and ongoing collaboration with affected citizens and lists the factors that must be considered when designing highways in the state, which include: safety, durability and economy of maintenance; the constructed and natural environment of the area; community development plans and relevant municipal ordinances; sites on the National Register of Historic Places, or identified by the Alaska Historical Commission; the environmental, scenic, aesthetic, historic, community and preservation effects of the activity; access for other modes of transportation, including bicycles and pedestrians, access to culturally significant sites, acceptable engineering practices and safety research. In subsection (d) the bill states that the Commissioner may, in carrying out (c) consult with citizens, elected officials, interest groups and other stakeholders for the project and may scale the process to the scope, complexity and effect of the project.

Section 2

Amends the uncodified law of the State of Alaska by adding a new section that will require the DOTPF to submit a report to the legislature no later than January 1, 2011 that will include a review of the design standards required by this act, and the impact of CSS on the state of Alaska. This report will also include information on the number of state employees who have taken advantage of the FHWA's CSS training opportunities, an evaluation of interdepartmental relations as they relate to these guidelines, and a review of the design standards in the state with a recommendation for eliminating or modifying elements that conflict with the implementation of CSS.

Section 3

This act takes effect January 1, 2009 and will only apply to projects that begin on or after the effective date of the Act.

25-LS0525\L
Kane
3/13/08

CS FOR HOUSE BILL NO. 372( )

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-FIFTH LEGISLATURE - SECOND SESSION

BY

Offered:
Referred:

Sponsor(s): REPRESENTATIVE BUCH

A BILL

FOR AN ACT ENTITLED

"An Act relating to highway design; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* **Section 1.** AS 19.10.160 is amended by adding new subsections to read:

(c) In applying the standards described in (a) of this section, the department shall establish a design process for use during the design of highway projects that ensures projects are consistent with the principles used by the Federal Highway Administration under its Context Sensitive Solutions program. In establishing a design process described in this subsection, the department shall take steps to ensure early and ongoing collaboration with affected citizens, elected officials, interest groups, and other stakeholders in a project, and shall consider the following factors:

(1) safety, durability, and economy of maintenance;

(2) the constructed and natural environment of the area;

(3) community development plans and relevant municipal ordinances;

(4) sites listed on the National Register of Historic Places or identified by the Alaska Historical Commission established under AS 41.35.300;

(5) the environmental, scenic, aesthetic, historic, community, and preservation effects of the activity;

(6) access for other modes of transportation, including bicycle and pedestrian transportation;

(7) access to and integration of sites considered culturally and historically significant to the communities affected;

(8) acceptable engineering practices and standards; and

(9) safety studies and other pertinent research.

(d) In carrying out the design process described in (c) of this section, the commissioner may

(1) consult with affected citizens, elected officials, interest groups, and other stakeholders appropriate for a particular project; and

(2) scale the process commensurate with the scope, complexity, and effect of the project.

*** Sec. 2.** The uncodified law of the State of Alaska is amended by adding a new section to read:

REPORT AND RECOMMENDATIONS. The Department of Transportation and Public Facilities shall review the design process set out in AS 19.10.160(c), as enacted by sec. 1 of this Act, and the effect of the Context Sensitive Solutions program on the state, and submit a report to the legislature not later than January 1, 2011. The report must include

(1) a summary of the training opportunities offered by the Federal Highway Administration of which the department's employees have taken advantage;

(2) an evaluation of interdepartmental relations as they relate to the amended guidelines, as well as public safety, traffic control, and environmental concerns; and

(3) a review of the design process in the state with a recommendation for eliminating or modifying elements that will conflict with or obstruct the implementation of the Context Sensitive Solutions best practices model.

*** Sec. 3.** The uncodified law of the State of Alaska is amended by adding a new section to read:

APPLICABILITY. The provisions of this Act apply only to projects that begin on or after the effective date of this Act.

L

* **Sec. 4.** This Act takes effect January 1, 2009.

25-LS0525\M
Kane
2/18/08

CS FOR HOUSE BILL NO. 372( )

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-FIFTH LEGISLATURE - SECOND SESSION

BY

Offered:
Referred:

Sponsor(s): REPRESENTATIVE BUCH

A BILL

FOR AN ACT ENTITLED

"An Act relating to highway design; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

*** Section 1.** AS 19.10.160(a) is amended to read:

(a) The department shall prepare and adopt uniform standard plans and specifications for the establishment, construction, and maintenance of highways in the state. The department may amend the plans and specifications as it considers advisable. The standards

(1) must conform as closely as practicable to those adopted by the American Association of State Highway and Transportation Officials**; and**

(2) must include flexible highway design guidelines that are consistent with standards used by the Federal Highway Administration under its Context Sensitive Solutions program; in adopting standards under this paragraph, the department shall consider the following factors:

(A) safety, durability, and economy of maintenance;

(B) the constructed and natural environment of the area;

(C) community development plans and relevant municipal ordinances;

(D) sites listed on the National Register of Historic Places or identified by the Alaska Historical Commission established under AS 41.35.310;

(E) the environmental, scenic, aesthetic, historic, community, and preservation effects of the activity;

(F) access for other modes of transportation, including bicycle and pedestrian transportation;

(G) access to and integration of sites considered culturally and historically significant to the communities affected;

(H) acceptable engineering practices and standards; and

(I) safety studies and other pertinent research.

*** Sec. 2.** AS 19.10.160 is amended by adding a new subsection to read:

(c) In establishing guidelines described in (a)(2) of this section, the commissioner shall solicit and consider the views of organizations and elected officials, including

(1) persons with expertise in

(A) environmental protection;

(B) historic preservation;

(C) scenic conservation;

(D) bicycle and pedestrian transportation;

(E) urban design architecture or landscape architecture;

(F) public safety and traffic control; and

(G) human factors;

(2) community planning organizations;

(3) the subunit of the Department of Natural Resources that concerns itself with state historic preservation; and

(4) the Federal Highway Administration.

*** Sec. 3.** The uncodified law of the State of Alaska is amended by adding a new section to read:

REPORT AND RECOMMENDATIONS. The Department of Transportation and Public Facilities shall review the design standards set out in AS 19.10.160(a)(2), as enacted by sec. 1 of this Act and the effect of the Context Sensitive Solutions program on the state, and submit a report to the legislature not later than January 1, 2010. The report must include

(1) a summary of the training opportunities offered by the Federal Highway Administration of which the department's employees have taken advantage;

(2) an evaluation of interdepartmental relations as they relate to the amended guidelines, as well as public safety, traffic control, and environmental concerns; and

(3) a review of design standards in the state with a recommendation for eliminating or modifying elements that will conflict with or obstruct the implementation of the Context Sensitive Solutions best practices model.

* **Sec. 4.** This Act takes effect January 1, 2009.

From: Federal Highway Administration

What is CSS

CSS is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist. CSS principles include the employment of early, continuous and meaningful involvement of the public and all stakeholders throughout the project development process.

SAFETEA-LU Section 6008.Section 109(c) (2) of title 23, USC includes consideration of identified documents and materials that define the core principles of context sensitive solutions (CSS) by eight "Characteristics of the process that yield excellence" and seven "Qualities that characterize excellence in transportation design". The SAFETEA-LU provisions requiring opportunities for involvement of the public and participating agencies in the development of project purpose and need and the range of alternatives support the intent of these CSS principles. The implementation of a CSS approach to navigating the project development process will ensure the best possible outcome to the environmental review process.

Principles of Context Sensitive Design

The following principles were presented at the 1998 workshop, Thinking Beyond the Pavement: A National Workshop on Integrating Highway Development With Communities and the Environment, held in Maryland.

Qualities of Excellence in Transportation Design

- The project satisfies the purpose and needs as agreed to by a full range of stakeholders. This agreement is forged in the earliest phase of the project and amended as warranted as the project develops.
- The project is a safe facility for both the user and the community.
- The project is in harmony with the community, and it preserves environmental, scenic, aesthetic, historic, and natural resource values of the area, i.e., exhibits context sensitive design.
- The project exceeds the expectations of both designers and stakeholders and achieves a level of excellence in people's minds.
- The project involves efficient and effective use of the resources (time, budget, community) of all involved parties.
- The project is designed and built with minimal disruption to the community.
- The project is seen as having added lasting value to the community.

Characteristics of the Process Contributing to Excellence

- Communication with all stakeholders is open, honest, early, and continuous.
- A multidisciplinary team is established early, with disciplines based on the needs of the specific project, and with the inclusion of the public.
- A full range of stakeholders is involved with transportation officials in the scoping phase. The purposes of the project are clearly defined, and consensus on the scope is forged before proceeding.
- The highway development process is tailored to meet the circumstances. This process should examine multiple alternatives that will result in a consensus of approach methods.
- A commitment to the process from top agency officials and local leaders is secured.
- The public involvement process, which includes informal meetings, is tailored to the project.
- The landscape, the community, and valued resources are understood before engineering design is started.
- A full range of tools for communication about project alternatives is used (e.g. visualization).

History

During the 1990s highway design changed rapidly throughout the United States. Highway designers and builders have learned that they must be more sensitive to the impact of highways on the environment and communities. New and better ways of designing highways are evolving following the completion of the Interstate system, based on growing interest in the improvement of highways and their integration into the communities they serve.

Following the substantial completion of the U.S. Interstate system, the transportation focus for many States has shifted to congestion management and system preservation projects that involve existing facilities. Most of these existing facilities are substantially developed, and transportation improvement projects will affect this development. Working with community stakeholders to preserve and enhance the human and natural environment thus becomes a significant component of these projects. To best address the challenges of these projects, many State transportation agencies and professional organizations are interested in implementing a context sensitive solutions approach for planning and project development.

Milestones in the history of CSS show how the field has evolved beginning in 1969 with the passing of The National Environmental Policy Act requiring transportation agencies to consider adverse impacts of road projects on the environment. Momentum was gained in the late 1990s when the Maryland Department of Transportation, State Highway Administration conducted Thinking Beyond the Pavement: National Workshop on Integrating Highway Development with Communities and the Environment While Maintaining Safety and Performance in May 1998. This workshop was co-sponsored by AASHTO and FHWA with the advice and support of the National Workshop Advisory Committee. Find out more about Maryland's Workshop at http://www.sha.state.md.us/events/oce/thinkingbeyondpavement/tbtp.pdf (PDF, 1.7 mb)

Momentum in the effort to advance CSS implementation nationwide continues with FHWA's 2003 Performance Plan identification of "Environmental Stewardship & Streamlining" as one of its three "Vital Few Goals". Within this goal, is an objective to incorporate context sensitive solutions into planning and project development in all 50 states by 2007.

Most recently is FHWA and partners launching of the http://www.contextsensitivesolutions.org/ website in 2004 and the inclusion of language in SAFETEA-LU in 2005 promoting consideration of CSS core principles in planning and project development processes.

Anchorage Road Coalition

7810 Ascot Street
Anchorage Ak 99502

House Transportation Committee

Re: HB 372

Mr. Chairman, Members of the Committee:

The Anchorage Road Coalition would like to go on record in support of HB 372. This legislation will lead to the implementation of policies and practices which have been shown in many other states to lead to better results, less controversy and more project completions.

The fact that the Federal Highway Administration has published "Flexibility in Highway Design" and has made 50 state implementation of CSS a strategic goal should suggest that the profession has already recognized the value of these policy and practice changes. In addition AASHTO, ITE and TRB are all actively promoting these practices and there is a growing body of curricula, training materials and case studies to support its success.

CSS does not take ultimate control away from DOT's final decision responsibility, it simply assures that all stakeholder interests are considered. While many interpret CSS as simply a dressed up public process it is far more. The requirement for multi-disciplinary teams to be involved in policy and project development where there are major impacts on economic, social, and safety factors is intended to assure that optimal results are achieved that fully consider the context of the project or policy.

We would find it alarming if our DOT were to resist enrolling in a program designed by its own professional institutions to improve the process of conceiving, designing, building and maintaining public infrastructure.

Cordially,

Frank McQueary, President

Anchorage Road Coalition

Safe Streets, Livable Streets

Eric Dumbaugh

Transportation safety is a highly contentious issue in the design of cities and communities. While urban designers, architects, and planners often encourage the use of aesthetic streetscape treatments to enhance the livability of urban streets, conventional transportation safety practice regards roadside features such as street trees as fixed-object hazards and strongly discourages their use. In this study, I examine the subject of livable streetscape treatments and find compelling evidence that suggests they may actually enhance the safety of urban roadways. Concerns about their safety effects do not appear to be founded on empirical observations of crash performance, but instead on a design philosophy that discounts the important relationship between driver behavior and safety. This study traces the origin and evolution of this philosophy, and proposes an alternative that may better account for the dynamic relationships between road design, driver behavior, and transportation safety.

Eric Dumbaugh is a doctoral candidate in the School of Civil and Environmental Engineering at the Georgia Institute of Technology. His research focuses on context-sensitive solutions, nonmotorized travel, and transportation system safety.

[illegible]
[illegible]
[illegible]

> The danger in supplanting the real measure of safety (i.e., crash frequency and severity) by surrogates arises when the link between the two is conjectural, when the link remains unproven for long, and when the use of unproven surrogates becomes so habitual that the need to eventually speak in terms of crashes is forgotten.
> (Hauer, 1999a, p. 17)

Beyond simply acting as thoroughfares for motor vehicles, urban streets often double as public spaces. Urban streets are places where people walk, shop, meet, and generally engage in the diverse array of social and recreational activities that, for many, are what makes urban living enjoyable. And beyond even these quality-of-life benefits, pedestrian-friendly urban streets have been increasingly linked to a host of highly desirable social outcomes, including economic growth and innovation (Florida, 2002), improvements in air quality (Frank et al., 2000), and increased physical fitness and health (Frank et al., 2003), to name only a few. For these reasons, many groups and individuals encourage the design of "livable" streets, or streets that seek to better integrate the needs of pedestrians and local developmental objectives into a roadway's design.

There has been a great deal of work describing the characteristics of livable streets (see Duany et al., 2000; Ewing, 1996; Jacobs, 1961), and there is general consensus on their characteristics: livable streets, at a minimum, seek to enhance the pedestrian character of the street by providing a continuous sidewalk network and incorporating design features that minimize the negative impacts of motor vehicle use on pedestrians. Of particular importance is the role played by roadside features such as street trees and on-street parking, which serve to buffer the pedestrian realm from potentially hazardous oncoming traffic, and to provide spatial definition to the public right-of-way. Indeed, many livability advocates assert that trees, as much as any other single feature, can play a central role in enhancing a roadway's livability (Duany et al., 2000; Jacobs, 1993).

While most would agree that the inclusion of trees and other streetscape features enhances the aesthetic quality of a roadway, there is substantive disagreement about their safety effects (see Figure 1). Conventional engineering practice encourages the design of roadsides that will allow a vehicle leaving the travelway to safely recover before encountering a potentially hazardous fixed object. When one considers the aggregate statistics on run-off-roadway crashes, there is indeed cause for concern. In 2003 alone, there were over 8,500 fatalities involving roadside objects such as trees and utility poles on U.S. roadways, accounting for more than 20% of the total fatalities for that year (National Highway Traffic Safety Administration [NHTSA], n. d.). Correspondingly, designing livable streets is often more difficult than simply counterbalancing the needs of motorists with those of pedestrians. How is the transportation designer to conscientiously incorporate design elements that may result in the loss of life?

This study details existing design guidance and literature, as well as the historical evolution of contemporary safety practice, and reports the results of an empirical test of the professional assumptions that guide the current approach to addressing safety through design. It concludes by outlining an approach to urban roadway design that may better address the twin goals of safety and livability.

Considering the Literature on Roadside Safety

The initial motivation behind this research effort was an attempt to understand the safety impacts of livable streetscape treatments on urban roadways. On this issue, the design guidance is clear: "for all types of highway projects,[1] clear zones should be determined or identified and forgiving roadsides established" (American Association of State Highway and Transportation Officials [AASHTO], 1997, p. 14). In practice, this entails providing a clear roadside adjacent to the vehicle travelway, with a preferred width of 30 feet.[2] In terms of how to best accomplish this goal, AASHTO's (2002) *Roadside Design Guide*, the central authority on the design of safe roadsides, is also clear:

> Through decades of experience and research, the application of the forgiving roadside concept has been refined to the point where roadside design is an integral part of transportation design criteria. Design options for reducing roadside obstacles, in order of preference, are as follows:
>
> 1. Remove the obstacle.
> 2. Redesign the obstacle so it can be safely traversed.
> 3. Relocate the obstacle to a point where it is less likely to be struck.
> 4. Reduce impact severity by using an appropriate breakaway device.
> 5. Shield the obstacle with a longitudinal traffic barrier designed for redirection or use a crash cushion.
> 6. Delineate the obstacle if the above alternatives are not appropriate. (pp. 1–2)

Figure 1. Livable streetscape treatments: urban amenities or roadside hazards?

While the *Roadside Design Guide* cites "decades of experience and research," there is very little information on the use of aesthetic streetscape features, and much of the existing literature on the application of clear zone policies in urban environments is problematic, at best. The definitive work on the subject is a study that describes the physical characteristics of trees involved in crashes within the City Limits of Huntsville, Alabama (Turner & Mansfield, 1990). The study found that most crashes involving trees occur within 20 feet of the roadway, that 75% of the reported crashes involved trees with a caliper width 12 inches or more, and that almost 60% occurred on a horizontal curve.[1] While such information is useful for understanding the characteristics of tree-related crashes, it does not lead to the conclusion that eliminating trees with any or even all of these characteristics will have any effect on a roadway's safety. Such conclusions can only be made by examining the actual crash performance of eliminating trees in urban areas, as measured by changes in crash frequency and severity.

Indeed, there is a growing body of evidence suggesting that the inclusion of trees and other streetscape features in the roadside environment may actually reduce crashes and injuries on urban roadways. Naderi (2003) examined the safety impacts of aesthetic streetscape enhancements placed along the roadside and medians of five arterial roadways in downtown Toronto. Using a quasi-experimental design, the author found that the inclusion of features such as trees and concrete planters along the roadside resulted in statistically significant reductions in the number of mid-block crashes along all five roadways, with the number of crashes decreasing from between 5 and 20% as a result of the streetscape improvements. While the cause for these reductions is not clear, the author suggests that the presence of a well defined roadside edge may be leading drivers to exercise greater caution.

Ossenbruggen, Pendharkar, and Ivan (2001) examined sites with urban, suburban, and residential characteristics in New Hampshire and hypothesized that the urban "village" areas, with greater traffic volumes and more pedestrian activity, would be associated with higher numbers of crashes and injuries. Instead, they found the opposite: the village areas, which had on-street parking and pedestrian-friendly roadside treatments, were two times less likely to experience a crash event than the comparison sites. The authors associate these crash reductions with the characteristics of the roadside environment, which included sidewalks, mixed land uses, and other "pedestrian-friendly" roadside features. The authors also attributed the safety performance to reduced speeds, noting that "since no speed limit signs are erected at village sites, it suggests [speeds] are self regulating" (p. 496).

A study of two-lane roadways by Ivan, Pasupathy, and Ossenbruggen (1999) found that while shoulder widths were associated with reductions in single-vehicle, fixed-object crashes, they were also associated with a statistically significant *increase* in total crashes, with multiple-vehicle crashes offsetting safety gains achieved through reductions in fixed-object crashes. The authors comment that "the positive coefficient on right shoulder width is troubling; one normally expects a wider shoulder to be a safety feature" (p. 702).

Finally, Lee and Mannering (1999) examined run-off-roadway crashes along a 100-km section of an arterial roadway in Washington State that traveled through both urban and rural environments. Using a negative binomial model, the authors sought to associate crash frequencies with the characteristics of the roadside environment. While their model for rural areas performed as expected, with trees and other features being associated with a statistically significant increase in the number of roadside crashes, their model for urban areas produced radically different results (see Table 1). Not only were trees not associated with crash increases, but the model coefficients entered negatively at a statistically significant level, indicating that the presence of trees in urban areas was associated with a decrease in the probability that a run-off-roadway crash would occur.

The authors attribute these unexpected crash reductions to the fact that there are fewer trees in urban areas than in rural ones, but this begs the question: even if there are fewer trees in urban areas, which suggests that their presence would violate driver expectancy, why are they associated with statistically significant crash reductions?

Other roadside features proved to be statistically related to crash reductions as well. The number of sign supports was associated with crash reductions, as was the presence of miscellaneous fixed objects, a variable that included such roadside features as mailboxes. Further, wider lanes and shoulders were associated with statistically significant *increases* in crash frequencies.

Interestingly, clear zones are not the only design feature for which such safety anomalies appear. Hauer (1999a) reexamined the literature on lane widths and found that there was little evidence to support the assertion that widening lanes beyond 11 feet enhances safety. Instead, the literature has almost uniformly reported that the safety benefit of widening lanes stops once lanes reach a width of roughly 11 feet, with crash frequencies increasing as lanes approach and exceed the more common 12-foot standard.[2] Further, in a series of broad-sweeping and profoundly important studies, Noland (2001, 2003) and Noland and Oh (2004) consistently found that when one controls for intervening factors such as time-series effects, seat belt use,

Variable	Estimated coefficients	t-statistic
Constant	−1.983	
Roadway characteristics		
Broad lane indicator (1 if lane is greater than 3.69 meters, 0 otherwise)	1.684	3.984
Median width (meters)	−0.017	−3.781
Roadside characteristics		
Bridge length (meters)	4.610	2.145
Distance from outside shoulder edge to guardrail (meters)	0.113	3.655
Fence length (meters)	5.781	2.870
Number of isolated trees in a section	−0.093	−1.857
Number of miscellaneous fixed objects in a section	−0.094	−2.140
Number of sign supports in a section	−0.080	−3.515
Shoulder length (meters)	−1.042	−1.461
Dispersion parameter	0.661	2.680
Restricted log likelihood	−686.57	
Log likelihood at convergence	−681.53	
Number of observations	1,584	

Table 1. Negative binomial estimation results for crash frequencies in urban areas (Lee & Mannering, 1999; reprinted by permission).

and the demographic characteristics of the population, conventional design "improvements" result in increases in crashes and fatalities.

Indeed, there are a host of safety anomalies in the existing design literature, but as Noland and Oh (2004) stated, the problem is that

> Studies that find unexpected or unconventional results tend to dismiss these results as aberrations and have not examined them in further detail. . . . The results of many of these studies lead us to conclude that the impact of various infrastructure and geometric design elements on safety are inconclusive. Most studies using sophisticated statistical techniques either find no association, or an unexpected association from infrastructure changes assumed to be beneficial. (p. 527)[5]

Thus, a key question emerges: why does contemporary design guidance recommend practices that the best available evidence suggests may have an ambiguous or even negative impact on safety, and paradoxically, to do so under the auspices that they constitute a safety enhancement?

The Passive Safety Paradigm

While safety has been a concern for the transportation design profession throughout its history, the current approach to addressing transportation safety received its philosophical basis as part of the transportation safety movement of the 1960s, a movement that resulted in the National Highway Safety Act, the creation of the National Highway Traffic Safety Administration (NHTSA), the adoption of the *Roadside Design Guide*, crash testing, and the development of air bags, among other features of the contemporary transportation safety landscape. This movement, led by William Haddon and promoted by figures such as Daniel Patrick Moynihan and Ralph Nader, sought to apply the principles of epidemiology to transportation safety issues (Gladwell, 2001; Kratzke, 1995; McLean, 2002; Viano, 2002; Weingroff, 2003).[6]

As a profession, epidemiology is based on the work of John Snow, an English physician who sought to address an outbreak of cholera that plagued London in the 1850s. While current medical theory asserted that the spread of cholera was associated with "vapors," Snow hypothesized that cholera was not airborne, but was instead transmitted through polluted water supplies. Using what was at the time a highly elaborate, data-driven analysis, Snow mapped out the locations of affected households, and determined that these households were indeed sharing a common water source. In an episode that has since become legendary, Snow sought to resolve this problem in one particularly hard-hit neighborhood by implementing a strategy that was both simple and radical: rather than encouraging residents to adopt behavioral modifications, such as boiling infected water or using an alternative water supply, Snow simply removed the handle from the pump of the affected well, thereby neutralizing the environmental cause of the hazard (Rosenberg, 1962).

William Haddon, an epidemiologist trained at the Harvard School of Public Health during the 1950s, likewise believed that it was difficult, if not impossible, to prevent people from engaging in behaviors that lead to traffic injuries and fatalities. Instead, Haddon proposed a *passive* approach: rather than relying on behavioral modifications to prevent crashes from occurring, Haddon believed the design objective should be to enable a "crash without an injury" by physically engineering safety features into vehicles and their environments (Gladwell, 2001). The idea was compelling: what if transportation professionals could design vehicles and roadways to eliminate the injuries associated with a crash event?

Clear Zones, Highways, and Passive Safety

The life safety implications of the passive approach were not lost on Ralph Nader. In 1965, Nader published *Unsafe At Any Speed*, a critique of the auto industry based on Haddon's passive safety philosophy. Nader's book generated a public outcry to address the "designed-in" dangers of the nation's automobiles and transportation system, leading both congress and AASHO (later AASHTO) to hold special hearings on the subject in 1966. Figures such as Nader and Haddon reported to these committees, but testimony by Kenneth Stonex played perhaps the central role in formulating the contemporary perspective on safe roadway design.

One of the key problems identified by the AASHO committee was the large number of fatalities associated with single-vehicle, run-off-roadway crashes. To address this issue, they heard testimony from Stonex, a General Motors employee responsible for designing the "Proving Ground," an experimental "crashproof" highway that had 100-foot clearances on either side of the travelway (McLean, 2002; Weingroff, 2003). Based on the test performance of the Proving Ground, Stonex was of the opinion that "What we must do is to operate the 90% or more of our surface streets just as we do our freeways . . . [converting] the surface highway and street network to freeway and Proving Ground road and roadside conditions" (Weingroff, 2003, p. 147).

With respect to fixed-object crashes specifically, Stonex reported that most vehicles on the Proving Ground came to a stop within 30 feet after leaving the roadway. Thus, the committee concluded that eliminating fixed objects within 30 feet of the travelway would eliminate most fixed-object crashes and, in a conjectural leap, that the roadway would therefore be safer as a result. The 30-foot clear zone standard (with adjustments for sideslope) was thus incorporated into AASHO's 1967 publication *Highway Design and Operational Practices Related to Highway Safety*, as well as the revised 1974 edition, and remains in the subsequent editions of the *Roadside Design Guide* (AASHTO, 1974, 2002; McLean, 2002; Weingroff, 2003).

Side Effects of the Passive Treatment

Prior to the 1960s, transportation safety had been addressed primarily through strategies aimed at encouraging drivers to engage in safe behavior, an approach that led to the development and codification of the nation's signing practices and motor vehicle laws. Yet, as Nader testified, focusing on behavior was not an adequate solution to the problem:

> Even if people have accidents, even if they make mistakes, even if they are looking out the window, or they are drunk,[7] we should have a second line of defense for these people . . . the sequence of events that leads to an accident injury can be broken by engineering measures even before there is a complete understanding of the causal chain. (quoted in Weingroff, 2003, p. 154)

Following the 1966 hearings, contemporary safety practice thus became principally concerned with how to engineer this second line of defense, shifting the profession's focus away from driver behavior and towards the design of vehicles and roadside hardware.[8] Passive safety begins from the perspective that drivers will err, combined with the observation that there are fewer crashes on Interstates than on other roadways. Collectively, this resulted in the conclusion that "Highways built with high design standards put the traveler in an environment which is fundamentally safer because it is more likely to compensate for the driving errors he *will* eventually make" [emphasis added] (AASHTO, 1974, p. 15).

This perspective is still evident in the most recent edition (2001) of AASHTO's *A Policy on the Geometric Design of Highways and Streets* (the "Green Book"), which states:

> The objective in design of any engineered facility used by the public is to satisfy the public's demand for service in a safe and economical manner. The [highway] facility should, therefore, accommodate nearly all demands with reasonable adequacy and also should not fail under severe or extreme traffic demands . . . every effort should be made to use as high a design speed[9] as practical to attain a desired degree of safety. (pp. 66–67)

Thus, the passive approach attempts to enhance a roadway's safety by designing it to accommodate the safety needs of high-speed, "extreme" driving behavior. This approach hinges on a critical assumption, however: it assumes that drivers who already drive safely will continue to do so when forgiving design values are used, thereby enhancing the overall safety of a roadway by making it safe for not only "average" drivers, but also extreme drivers as well.

While the logic behind the passive approach has a high degree of face validity, it overlooks several important questions: how do average drivers adjust their behavior to forgiving design values? What about specific at-risk subpopulations?[10] Is it possible that by widening lanes and shoulders and eliminating roadside objects, designers are encouraging "non-design drivers" to adopt behaviors that result in crashes and injuries?

A Simple Empirical Test

With respect to determining the appropriate clear zone for a roadway, the most recent guidance states that "the wider the clear zone, the safer it will be" (Transportation Research Board [TRB], 2003, p. V-43). If this is true, then one would expect livable streetscape treatments to be less safe, in terms of crash frequency and severity, than roadways adopting more forgiving values for lane widths and clear zones. To test this assertion, as well as to build an understanding of the safety effects of livable streets more generally, I examined 5 years (1999–2003) of crash data for Colonial Drive (State Road 50), a state-owned arterial that connects the north end of downtown Orlando, Florida, to its eastern and western suburbs.

While none of Colonial Drive would be regarded as a particularly representative example of a livable street, the 0.9-mile segment that constitutes the northern edge of downtown Orlando (between Orange Avenue and Mills Avenue) includes many of the design features desired by livable streets advocates. Roadside development abuts the sidewalk, which is often uncomfortably narrow at points, but continuous throughout the section. Lane widths are narrower here (11 feet) than on much of the remainder of the roadway, and the segment includes on-street parking and roadside objects that buffer the pedestrian environment. The cross section, curb-to-curb, is roughly 68 feet, including four 11-foot travel lanes, a 10-foot painted median, and two 6.5-foot parking lanes. Roadside objects are offset by 1.5 to 2 feet from the curb (see Figure 2).

To evaluate the safety performance of this segment, it was matched with the nearest 0.9-mile section of Colonial Drive that was similar in terms of cross-sectional characteristics (four lanes and a painted median), posted speed limit, and average daily traffic (ADT) but which used more forgiving values for lane widths and clear zones.

The nearest comparison length was located slightly less than 3 miles east of the livable section described above. As shown in Table 2, the roadways are almost identical in all relevant characteristics of interest—section length, ADT, number of lanes, and median width—while differing principally in terms of lane widths and roadside object offsets. It should be observed that the posted speed limit is slightly higher for the comparison section (45 mph vs. 40 mph), but not substantially so. There is little difference in the average number of crashes per intersection or the mean age of at-fault drivers. Further, the use of a nearby comparison section on the same roadway helps control for the unique characteristics of the driver population, which in this case will include many of the exact same drivers. Holding all of these features constant, if the passive safety assumption holds, there should be fewer mid-block injuries and fatalities on this comparison section.

Comparing Crash Performance

As shown in Table 3, the livable section is safer in all respects. By any meaningful safety benchmark—total mid-block crashes, injuries, or fatalities—there can be little doubt that the livable section is the safer roadway.

A second area of interest for this study is the specific distribution of crash types across the roadways. What are the types of crashes that result in mid-block fatalities and injuries? There were no fatal mid-block crashes on the livable section during the 5-year evaluation period, while 6 occurred along the comparison length of the roadway, 3 of which involved pedestrians. Harmful event data were not provided on the other 3 fatalities.

Pedestrian and bicyclist injuries were likewise higher on the comparison section (see Table 4), which may be partly attributable to the fact that the livable section provides parked cars and fixed objects to buffer pedestrians from oncoming traffic. But do the benefits in pedestrian safety outweigh the hazards these features may pose to errant motorists?

For the livable section, there were 2 injurious crashes involving roadside objects, one involving a tree, and a second involving a parked car. Comparatively, there were 5 injurious crashes involving pedestrians and bicyclists on the comparison section, 3 of which were fatal.

What about the relative roadside hazards these designs might pose? From a passive safety perspective, the comparison section, with a 20-foot clear zone, should be the safer of the two in terms of total injurious collisions with fixed objects. Yet this is also not the case. Not counting pedestrians and bicyclists, there were 3 roadside object-related injuries on the comparison section, versus 2 in the livable section.

Finally, what about motor vehicle collisions? The average number of crashes per intersection were similar between the two study sections. Might the comparison section be at least as safe in terms of two-vehicle mid-block crashes? Again, the answer is no. For rear-end crashes, the crash type most likely to be associated with on-street parking, there were fewer injuries for the livable section. Likewise with injuries associated with head-on crashes, turn-related crashes, and sideswipe crashes. Only angle crashes were comparable, with both sections reporting 6 such injurious crashes during the 5-year evaluation period. In

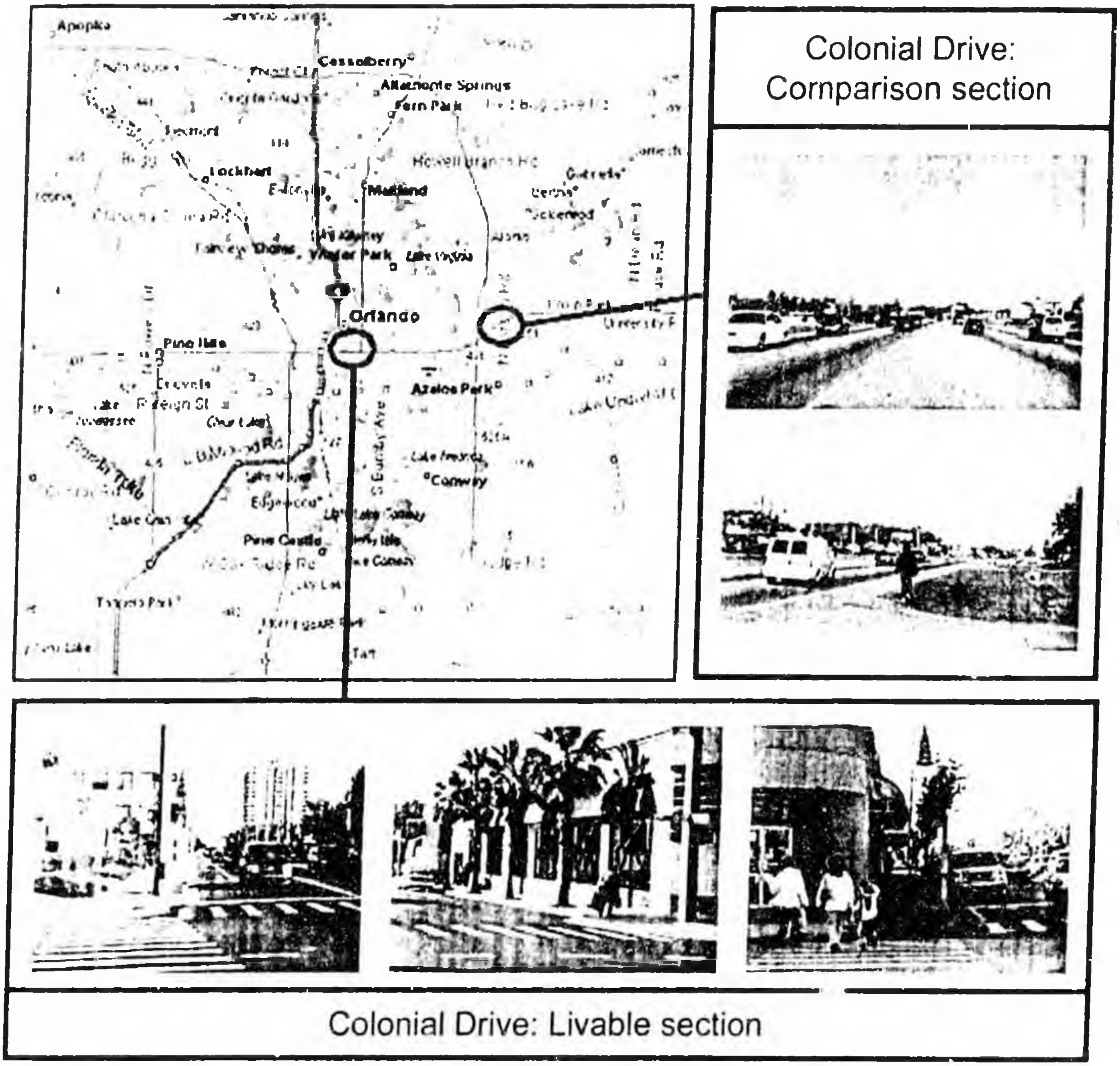

Figure 2. Colonial Drive: livable and comparison sections

total, 9 more multiple-vehicle mid-block injurious crashes occurred on the comparison section than the livable one.

Comparing the Livable Section to Baseline Roadway Safety Performance

To understand how the livable section of Colonial Drive performed against urban operating conditions along State Route 50, I further compared its crash performance to 5-mile sections of Colonial Drive located on either side of the livable section, thereby capturing the majority of urban and suburban travel along this roadway. While this approach does not control for specific design variations along individual roadway segments, it is useful for determining whether the livable section is more or less safe than one would expect, on average, from the urbanized portion of the roadway as a whole.

Characteristic	Livable section	Comparison section
Length (miles)	0.9	0.9
Average daily traffic (vehicles)	47,000	46,000
Posted speed limit (mph)	40	45
Lanes	4 x 11 ft.	4 x 12.5 ft.
Median	10 ft. painted	10 ft. painted
Shoulder	6.5 ft. parking lane	5 ft. paved shoulder ± 15 ft. runout zone
Avg. crashes per intersection	21	19
Mean age of at-fault driver	28	27

Table 2. Design characteristics of livable and comparison sections of Colonial Drive.

Mid-block crashes	Livable section	Comparison section	Difference (%)
Total	73	82	−11%
Injurious	42	61	−31%
Fatal	0	6	−100%

Table 3. Mid-block crashes on Colonial Drive, 1999–2003.

Crash type	Livable section	Comparison section	Difference
Rear-end	29	35	−6
Head-on	0	1	−1
Angle	6	6	0
Left-turn	1	2	−1
Sideswipe	1	2	−1
Parked car	1	0	1
Pedestrian	0	4	−4
Bicyclist	0	1	−1
Tree/shrubbery	1	0	1
Other fixed object	0	1	−1
Ditch/culvert	0	2	−2
Other/unreported	1	[illegible]	−4
Total	42	61	−19

Table 4. Injurious mid-block crashes on Colonial Drive, 1999–2003.

Crashes were normalized by determining the number of crashes per 100 million vehicle miles traveled (VMT),[11] thereby developing a measure of exposure that could be used to directly compare safety performance. Nevertheless, a problem with VMT-based measures is that the relationship between VMT and crashes is not linear (Ivan et al., 1999). This finding may be attributable to the fact that high levels of congestion occurring during peak periods can have the dual effect of increasing the denominator of the measure while simultaneously reducing free-flow travel speeds, the combination of which may result in underestimates of a roadway's actual hazard during low-volume, free-flow operating conditions, such as late-night travel. To address this concern, I also evaluated safety performance based on the number of mid-block crashes per mile, a measure that makes no assumption about the relationship between traffic volumes and crash performance.

As shown in Table 5, the livable section of Colonial Drive is safer, by either measure, than one would expect when examining the 10-mile urban and suburban comparison section as a whole, reporting fewer total mid-block crashes than the comparison length of Colonial Drive, and substantially fewer injurious and fatal crashes.

Trend Identification

To determine whether the safety performance of Colonial Drive might perhaps be part of a broader safety trend, I further examined the crash performance of state arterial roadways traveling through the National Register–designated historic districts of DeLand and Ocala, Florida. Each city has two 0.5-mile sections of state roadways entering its historic district, with all four roadways having dense development adjacent to the travelway, minimum (1.5–2 feet) fixed-object offsets, and, for the two DeLand roadways, on-street parking as well.

These roadways also included posted speed limit reductions of 10 mph or more, thus preventing one-to-one comparisons with adjacent sections. Nevertheless, understanding their safety performance with respect to the urban sections of these roadways as a whole does allow one to evaluate whether such treatments are safer than one would expect from baseline roadway averages, and is extremely useful for determining whether the safety performance of the livable section of Colonial Drive is anomalous, or whether it might perhaps be part of a broader safety trend.

In the absence of detailed field observations, the historic district boundaries were used to determine the boundaries of the livable sections of these roadways, and these sections were then compared against the crash performance of 5-mile sections of the same roadway located on either side of the historic district,[12] thereby permitting a consistent comparison of these roadways both against each other and against Colonial Drive. The individual performance of these roadways, as well as their averages, are reported in Table 6.

Like Colonial Drive, the livable sections were generally safer than their comparison roadways. On average, the historic roadway sections reported somewhat fewer total crashes and substantially fewer injurious crashes. Perhaps most notably, not a single fatal crash was reported for any of these historic roadway sections during the 5-year analysis period.

Individually, two specific results warrant noting. First, while the historic section of Woodland Avenue shows reductions in total and injurious crashes on a per-mile basis, it reports substantially higher crashes and injuries when using a VMT-based metric. In this case, the relatively low level of VMT observed for the historic section when compared to its comparison roadway (17,000 vs. 31,000 ADT) may overestimate its relative hazard. In absolute terms, the number of mid-block injurious crashes on the historic section of Woodland Avenue is identical to that for the other three roadways, with all of the historic sections reporting *exactly* 4 injury crashes over the 5-year analysis period, or 8 injurious crashes per mile.

Pine Avenue, while safer than the comparison roadway overall in terms of injuries and fatalities, nevertheless reports a higher number of total mid-block crashes than the roadway as a whole, although this may in part be attributable to cross-sectional differences. While the majority of State Route 25, of which Pine Avenue is a part, is a four-lane roadway, the 0.5-mile section that travels through Ocala's historic district briefly switches to a six-lane cross section, a factor that has been shown to result in higher numbers of crashes and injuries (Noland & Oh, 2004). The fact that higher total crash rates were not accompanied by higher rates of injurious or fatal crashes is an interesting and potentially important finding.

Reconsidering the Relationship Between Safety and Design

> To reject one paradigm without simultaneously substituting another is to reject science itself. (Kuhn, 1962, p. 79)

While these results seem to contradict conventional design practice, they confirm a trend that many researchers and practicing engineers have observed for some time, but which has received little substantive elaboration: specifically, that clear zones and other forgiving design practices often have an ambiguous relationship to safety in urban environments, and may be associated with declines in safety performance. The best possible explanation for the enhanced safety performance of the livable sections considered in this study is that drivers are "reading" the potential hazards of the road environment and adjusting their behavior in response.

	Mid-block crashes per 100 million VMT			Mid-block crashes per mile		
	Livable section	10-mile comparison	Difference %	Livable section	10-mile comparison	Difference %
Mid-block crashes						
Total	95	[illegible]	−6.9%	[illegible]	88.0	[illegible]
Injurious	[illegible]	[illegible]	[illegible]	18	[illegible]	[illegible]
Fatal	0	[illegible]	[illegible]	0	1.8	[illegible]

Table 5. Mid-block crash performance of Colonial Drive, livable section vs. 10-mile urban comparison section, 1999–2003

The reason why this subject has not received greater attention in design literature and guidance appears to be that it contradicts the prevailing paradigm of what constitutes safe roadway design. Nevertheless, a behavior-based understanding of safety performance is supported by research and literature in the field of psychology, which has focused on the subject of traffic safety as a means for understanding how individuals adapt their behavior to perceived risks and hazards.

Risk homeostasis theory, as developed by Wilde (1982, 1988, 1994), asserts that individuals make decisions on whether to engage in specific behaviors or activities by weighing the relative utility of an action against its perceived risk. While all actions involve some risk, risk homeostasis theory asserts that individuals will adjust their behavior to maintain a static level of minimum exposure to perceived hazard or harm. With respect to driving behavior, risk homeostasis theory posits that drivers intuitively balance the relative benefits of traveling at higher speeds or engaging in other higher-risk driving behavior against their individual perceptions of how hazardous engaging in such behavior might be. Where hazards are present and visible, such as in the case of livable streetscape treatments, risk homeostasis theory would expect drivers to compensate for this perceived environmental hazard by adjusting their behavior to minimize their exposure to risk.

Nevertheless, risk homeostasis theory would also assert that, *ceteris paribus*, the relative crash performance of a roadway should remain constant along its length, regardless of specific design variations, since any change in perceived hazard will be offset by corresponding adjustments in behavior. Thus, according to risk homeostasis theory, the livable street sections should be no more or less safe than their comparison roadways overall.

Yet as Hauer (1999b) describes, there is an important distinction between *safety*, which is (or should be) an em-

	Mid-block crashes per 100 million VMT			**Mid-block crashes per mile**		
Roadway	**Historic district**	**10-mile comparison**	**Difference (%)**	**Historic district**	**10-mile comparison**	**Difference (%)**
Pine Ave., Ocala (SR 25)						
Total	36.0	33.6	7.1%	24.0	18.4	30.4%
Injurious	12.0	23.2	−48.3%	8.0	12.7	−37.0%
Fatal	0.0	0.9	−100.0%	0.0	0.5	−100.0%
Silver Springs Blvd., Ocala (SR 40)						
Total	28.7	42.1	−31.8%	16.0	20.0	−20.0%
Injurious	14.4	24.2	−40.5%	8.0	11.5	−30.4%
Fatal	0.0	0.4	−100.0%	0.0	0.2	−100.0%
New York Ave., DeLand (SR 44)						
Total	44.7	68.9	−35.1%	10.0	14.9	−32.9%
Injurious	35.8	52.7	−32.1%	8.0	11.4	−29.8%
Fatal	0.0	4.2	−100.0%	0.0	0.9	−100.0%
Woodland Ave., DeLand (SR 15)						
Total	[illegible]	[illegible]	[illegible]	12.0	14.3	−16.1%
Injurious	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Fatal	[illegible]	[illegible]	−100.0%	[illegible]	[illegible]	−100.0%
Average						
Total	38.2	42.8	−10.7%	15.5	16.9	−8.3%
Injurious	22.7	29.7	−23.6%	8.0	11.4	−29.8%
Fatal	0.0	1.6	−100.0%	0.0	0.5	−100.0%

[illegible] Mid-block crash performance of roadways at historic districts and 10-mile comparison sections, 1999–2001 pirical measure of crash performance, and *security*, which is an individual's subjective perception of safety (or conversely, perceived exposure to harm). The presence of features such as wider lanes and clear zones would appear to reduce the driver's perception of risk, giving them an increased but false sense of security, and thereby encouraging them to engage in behaviors that increase their likelihood of being involved in a crash event. If so, this explains why the livable streetscape treatments examined in this study resulted in not only fewer fixed-object crashes, but fewer multiple vehicle and pedestrian crashes as well. Such treatments appear to help balance drivers' sense of security with the real levels of risk in their environment, providing them with more accurate information on the appropriate level of caution, and resulting in behavioral adjustments that better prepare them for the potentially hazardous vehicle and pedestrian conflicts that one encounters in urban environments. From the perspective of risk homeostasis theory, the use of high design values is not "forgiving," but is instead "permissive."

Researchers attempting to understand safety anomalies emerging in their work have implicitly suggested a driver's risk perception accounts for their findings. Ossenbruggen et al. (2001) speculated that the better safety performance of urban villages may be attributable to the fact that the roadside environment "warn[s] drivers that they must maintain a low speed and use caution" (p. 496). In explaining why new roadway improvements were shown to result in an increase in crashes and injuries, Noland (2001) suggested that "higher design standards [allow] drivers to increase their speeds on roads and reduce their levels of caution" (p. 24).

Towards a Theory of Positive Design

> . . . competent drivers can be given appropriate information about hazards and inefficiencies to avoid errors. (Federal Highway Administration, 1990, p. 1-1)

The idea that safety can be addressed by focusing on a driver's perception of risk, rather than relying solely on passive engineering principles, is not without precedent in the engineering community. Two important byproducts of the passive safety approach are the related concepts of positive guidance and driver expectancy, which first emerged in the Appendix to the second edition of AASHTO's *Highway Design and Operational Practices Related to Highway Safety* (1974) as a means to address crashes associated with narrow bridges. While emphasizing that the consistent[13] application of freeway standards is the preferred solution for addressing safety at narrow bridges, the guide remarks that "it would take years and billions of dollars to effect such a program" (p. 83).

In an attempt to satisfice a lower-cost, more implementable solution, the guidance proposes that "highway safety can be considerably improved by restructuring the driver's expectancies so that he is prepared for the narrow bridge situation [and] the narrowing of the shoulder and/or roadside . . ." (p. 83). The guidance then proceeds to detail how to adequately sign and mark the approach to the "restricted" condition of a narrow bridge.

To date, positive guidance has focused largely on the use of pavement markings and signs to convey safety information, and there has been relatively little advancement in this area since 1990, when the most recent edition of the Federal Highway Administration's (FHWA's) *A Users Guide to Positive Guidance* was published.[14] Nevertheless, it may be time to resurrect this concept, particularly as it may relate to the physical design of highways and streets.

A positive approach to transportation design would seem to explain the emerging safety anomalies the passive approach simply cannot account for, such as Naderi's (2003) findings on aesthetic streetscape treatments or the livable street examples included in this study. It also explains why narrowings and chicanes, two traffic calming applications that modify the roadside in a manner that passive safety suggests should increase crashes and injuries, have been shown to result in substantial (74%–82%) crash reductions (Zein et al., 1997). Indeed, all traffic calming measures appear to reduce accidents by slowing traffic and/or increasing driver caution (Ewing, 1999), leading European designers to view them not as "livability" features but as safety countermeasures (Skene, 1999).

A Positive Approach to the Design of Urban Streets

The passive approach promotes designs intended to support high-speed operating behavior, and then attempts to mitigate a roadway's hazards through the use of signs and pavement markings. The problem that emerges, however, is that signs and roadways are often communicating contradictory information. The result is that the majority of drivers in urban areas disregard posted speed limits, and seem to learn to disregard road signs altogether, even when they display information that is essential to their safety (Chowdhury et al., 1998; Fitzpatrick, Carlson, et al., 2003; Fitzpatrick, Shamburger, et al., 1996; Kubilins, 2000; Tarris et al., 2000). Further, even when drivers are deliberately attempting to obey speed restrictions, they instinctively increase their operating speed to their perception of a roadway's safe speed when their concentration is focused on something other than actively monitoring their vehicle's speedometer (Recarte & Nunes, 2002). This latter finding suggests that even conscientious drivers may be unable to comply with posted speed limits when roadways are designed for higher-speed operation.

A key point of departure for positive design is that it openly recognizes that drivers use the total information provided by their environment—not just posted speed limits—and strives to take advantage of these opportunities to provide drivers with the information they need to operate their vehicles safely and appropriately. On this subject, our European counterparts, with markedly safer roadways than the United States,[11] have developed a potentially valuable alternative.

European designers use an "environmental reference speed" when designing a roadway, beginning the design process by tightly specifying the desired operating speed of a roadway, and then using this intended operating speed as the roadway's design speed, providing posted speed limits that match (FHWA, 2001; Lamm et al., 1999). Roadways are thus designed to be self-explaining and self-enforcing, conveying a single and consistent message to the driver on safe operating behavior.

Further, European designers view high-speed driving as incompatible with the safe operation of urban roadways. For all streets with any concentration of roadside development or anticipated pedestrian activity, design speeds are severely restricted, rarely exceeding 50 km/h (31 mph). As a 2001 FHWA scan of European design practice concluded:

> [European] countries have very high safety goals (ranging from zero fatalities to reduction of more than 40 percent for all crashes) that guide the design approach and philosophy. To achieve these goals, planners are willing to provide roadways that self-enforce speed reductions, potentially increase levels of congestion and promote alternative forms of transportation. This approach contrasts with the U.S. design philosophy, in which wider roads are deemed safer, there is a heavier reliance on signs to communicate the intended message, and there is a lower tolerance for congestion and speed reduction. (FHWA, 2001, p. viii)

The European approach is achievable because designers explicitly recognize that a roadway's environmental context plays a key role in determining its safe design and operation, and they have developed design practices aimed at linking specific design values to their corresponding physical and operational contexts. German designers, for example, use a 30-celled functional classification system that accounts for not only mobility and access, but also variations in a roadway's design environment and the needs of a diverse set of user groups (Lamm et al., 1999). Thus, practicing designers are provided with clear guidance on the safe and appropriate design of roadways that address design needs for a range of physical and environmental contexts.

Conversely, U.S. practice applies an extremely coarse, three-tiered functional classification system that categorizes roadways exclusively according to their vehicle access or mobility functions (AASHTO, 2001), resulting in the problem that many of the urban roadways classified as minor arterials serve a variety of purposes other than higher-speed mobility functions. Roadways designated as minor arterials cover a wide range of physical environments, and there is little guidance detailing which design values are most appropriate in each context (see Figure 3). Indeed, the lowest recommended design speed for an urban minor arterial in the United States (30 mph) is simultaneously the *highest* design speed that would be applied on a similar roadway in a European city (AAHSTO, 2001; Lamm et al., 1999).

Despite a host of problems associated with applying the U.S. functional classification system in an urban environment (de Cerreno & Pierson, 2004; Forbes, 2000; Kubilins, 2000; Meyer & Dumbaugh, 2004), many design engineers have made notable strides in this area through the use of context-sensitive solutions, an approach that incorporates stakeholders in the project design and development process (FHWA, 1997; TRB, 2002). One problem that emerges, however, is that determining whether a specific design approach is appropriately safe is ultimately a matter of professional engineering judgment, not an outcome of public involvement activities. On this subject, designers are forced to navigate the uncharted waters of urban road safety alone.

And increasingly, many practicing designers are doing so. There are a growing number of examples of design engineers who have chosen to thoughtfully strike out on their own, moving beyond the conventional definition of "safe" design practice to develop new strategies for addressing the twin goals of safety and livability. Five such examples are included in this study alone. Yet any success in this area has occurred in spite of passive safety practices, not because of them. It is the obligation of future researchers to begin to more fully develop our understanding of how to safely design urban roadways, and to ensure that this information is better disseminated throughout the profession. A positive approach to transportation design would appear to be a key means of doing so.

Finally, this study does not suggest that certain urban roadways can not or should not be designed to address mobility needs. But it does suggest that we must move beyond the assumption that the use of "forgiving" design values necessarily equates to enhanced safety, and to begin reconsidering the role that driver behavior may have on a roadway's safety performance, particularly in urban environments. Substantial opportunities for enhancing both safety and livability remain to be explored.

relationship between driver behavior and transportation safety, as well as to enhance our overall approach to the design of urban roadways. This study thus concludes with the hope that by better understanding the relationship between design, driver behavior, and safety, we can design roadways that are not only safe, but also livable.

Safe Streets, Livable Streets

At the most fundamental level, the major tension in the design of urban roadways does not appear to be a matter of balancing safety and livability objectives. There is little evidence to support the claim that "livable" streetscape treatments are less safe than their more conventional counterparts, and the weight of the evidence suggests that they can possibly enhance a roadway's safety performance. Instead, the more basic problem appears to be that safety and livability objectives are often in direct conflict with the overarching objective of mobility, and its proxy—speed.

The passive approach to transportation safety began with the observation that the Interstate Highway System produced fewer crashes and injuries than other roadway classes, and attributed this safety performance to the use of higher-speed, more "forgiving" design values. Yet it must be recognized that the safety performance of the Interstate system is probably better explained by the fact that these roadways physically restrict access, channel vehicle movements, and limit their use to a single user type—motorists—than because they permit higher operating speeds.

Conventional safety practice attempts to superimpose these high-speed, limited-access design characteristics on other roadway types, but it is not at all clear that these designs are either safe or appropriate in an urban context. At the most basic level, the primary function of cities, and thus the streets that serve them, is to concentrate compatible developments and activities together and to encourage a high degree of access between them, traditionally through nonmotorized modes. High-speed, limited-access roadways are inherently antithetical to these purposes.

I have argued that many of the safety concerns that emerge on urban streets result from design practices that fail to link a roadway's design to its environmental context, thereby providing motorists in urban environments with a false sense of security and increasing their potential exposure to crashes and injuries. I have further provided a theoretical framework that better accounts for the safety anomalies one observes when examining the literature and data on the crash performance of urban roadways. Yet theory is only the first step. There is a clear and demonstrated need to better develop our professional understanding of the

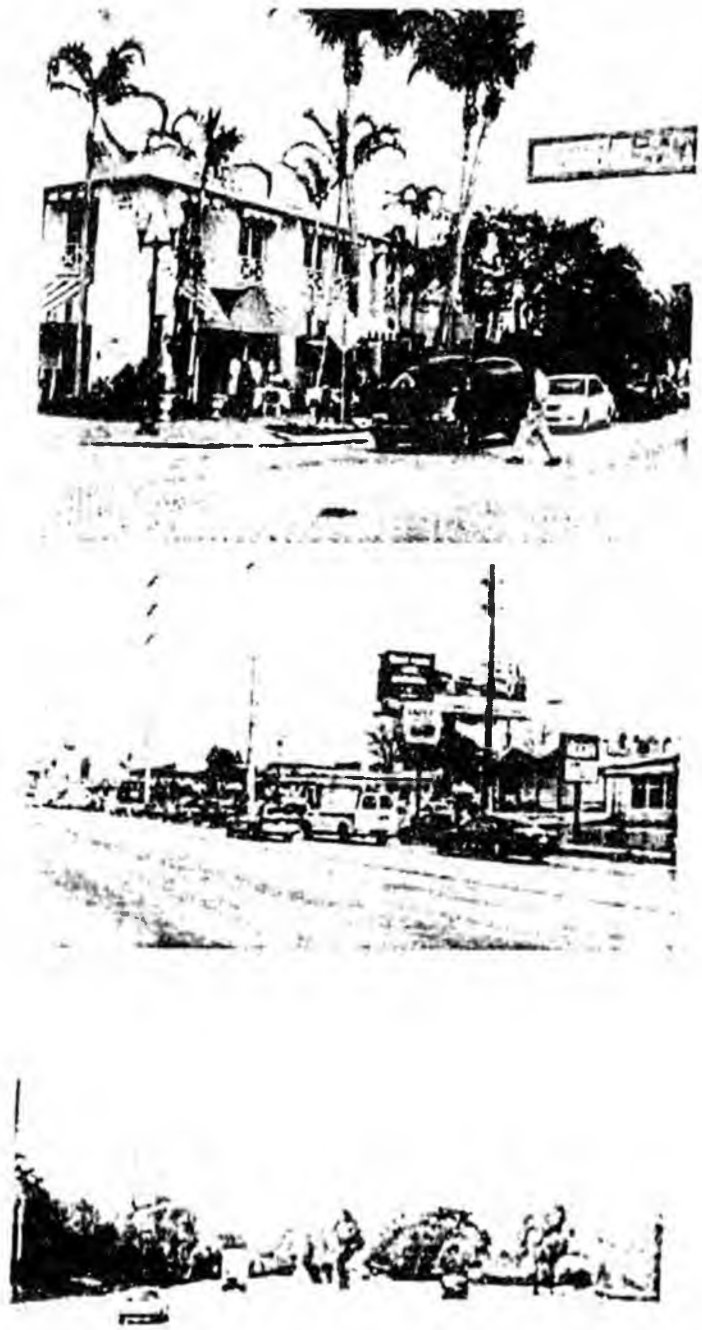

Figure 3. Three urban minor arterials.

Acknowledgments

This article benefited from the comments and recommendations of many colleagues. Particularly, I would like to thank Michael Meyer and Michael Dobbins from the Georgia Institute of Technology; Susan Herbel with the TSS Group; Jane Lim-Yap, Ian Lockwood, and Walter Kulash at Glatting-Jackson; Jonathan Lewis at Jordan, Jones and Goulding; Stephanie Macari with the Montgomery County Planning Commission; and Quentin Kruel with Long and Foster. I would also like to especially thank *JAPA*'s editors and anonymous reviewers, who provided invaluable comments on an earlier draft of this article.

Notes

1. In conventional engineering parlance, all roadways are referred to as *highways*. Conventional, high-speed highways are referred to as *freeways*.

2. While the AASHTO (2001) Green Book permits the use of a 1.5-foot "operational offset" on urban arterials, it is important to recognize that this is intended only to prevent motor vehicles from hitting their mirrors on roadside objects during normal operating conditions, and is not intended or perceived as having a meaningful relationship to safety. As stated in the Green Book: "Clear roadside design is recommended for urban arterials wherever practical" (p. 485).

3. The finding with the potentially most profound influence on roadside safety is also the one that receives the least attention. The authors noted that "curves were highly over-represented in tree accidents. Almost 59% of tree accidents were related to a curve. This is startlingly high considering that probably no more than 5% of all street mileage in the city of Huntsville is curved" (Turner & Mansfield, 1990, p. 97). In response to this finding, the authors recommended prioritizing tree eliminations at curves. While such an approach may go a long way towards reducing injuries in run-off-road events, it fails to ask the potentially more important question: why are run-off-roadway events more likely to occur at curves in the first place? It would seem unlikely that this remedial action—eliminating the tree—will have any effect on eliminating the run-off-roadway event, which may nevertheless result in an injurious crash, such as a rollover, regardless of whether a tree is present. As evidenced in Milton and Mannering (1998), the problem is not the curve itself, but a curve that it is preceded by a straight (high-speed) approach.

4. Hauer (2000) does note that "I am not convinced that if research was done on current data, that 12-foot lanes would be found to be less safe than 11-foot lanes. Much has changed since then; trucks grew to be larger and research methods improved. However, at the time the Policy was written, the aforementioned findings by respected researchers should have sounded alarm" (p. 12).

5. While Noland and Oh's (2004) study focused primarily on rural observations, two specific findings bear mentioning. Shoulders had an ambiguous relationship to safety, with wider shoulders being associated with a decrease in total crashes but increases in fatal ones. While these findings do not directly address safety in urban environments, they do suggest that increasing shoulder widths may increase vehicle speeds, thereby increasing crash severity, if not frequency.

6. My treatment of this topic skirts over a rich and interesting history that deserves a more thorough treatment than can be given here. Interested readers should are encouraged to see Weingroff (2003) and Goodwell (2001), both of which are not only highly informative, but surprisingly compelling.

7. Practicing engineers will undoubtedly recognize the similarity between Stonex's hypothetical "drunk looking out the window" and the definition of the "design driver" used in contemporary design practice.

8. This is evidenced in the fact that while our methods for the crash testing of vehicles and roadside hardware have become increasingly elaborate in the past 40 years (see Transportation Research Board, 1993, for current test standards), there has been little advancement in our understanding of the behavioral factors that cause crashes to occur (Kanellaidis, 1996; Noland, 2001).

9. While a full treatment of the subject of design speed is beyond the scope of this study, the important fact is that a roadway's design speed is the controlling element in its design. Once a design speed is selected, all other geometric features, such as lane widths and clear zones, are designed to conform to the adopted design speed. Thus, higher design speeds encourage the use of higher minimum values for all other geometric features as well.

10. Examining Fatality Analysis Reporting System (FARS) data for minor arterials, collectors, and local roadways is revealing. In 2002, for example, half of all individuals killed in a fixed-object crash on these road classes were between the ages of 16 and 25, and fully 40% of the total crashes involved males in this age group. Females account for less than a third of the fatalities in all age brackets except the 71 and older group, where male and female fatalities equalize, undoubtedly the result of the fact that at these ages, personal motor functions and reaction times begin to decline. When one considers this information holistically, it suggests that fixed-object fatalities may not be a design problem as much as they are a reflection of broader demographic and sociocultural factors, such as a propensity of young males to engage in higher-risk behavior.

11. To calculate a roadway's VMT for the 5-year study period, I determined average ADT for each roadway milepost, and then used the median ADT to derive an overall estimate of VMT for the road segment. The median was selected as a better measure of central tendency than the average because several small roadway segments had unusually high ADTs, thus skewing the overall averages. Once median ADT was determined, VMT was calculated as: VMT = Median ADT × 365 × 5 × Section Length.

12. The exception is Pine Avenue (State Road 25) in Ocala. Only 2.1 miles of roadway were available for the northern comparison section because a substantial (14-mile) segment is currently off the state system. To acquire 10 miles of comparison roadway data, I used averages for a 2.1-mile section to the north and a 7.9-mile section to the south.

13. *Design consistency*, a phrase often used by designers to discuss how they address safety through design, also emerged in the 1974 guide, which states "consistency in design standards is desirable on any section of road, because problem locations are generally at the point where minimum design treatment is used" (p. 15). Restated another way, design consistency, as it was originally conceived, encourages the consistent adoption of high design values.

14. In the 1994 and 2001 editions of AASHTO's Green Book, the sections dealing with these subjects contain no data, nor has a word been changed.

15. A few statistics bear mentioning. In 1966, the year that passive safety principles first became embedded in contemporary practice, the U.S. had fewer transportation-related fatalities per capita (26 per 100,000 population) than all other countries except Great Britain (15 per 100,000). By 2000, the U.S. (15 fatalities per 100,000) remained behind Great Britain (6 per 100,000), but had also fallen behind the entirety of the European Union (11 per 100,000), Australia (10 per 100,000), Japan (8 per 100,000), and, indeed, the rest of the developed world (NHTSA, n.d.; World Health Organization, 2004). While these statistics are alarming, they also suggest that promising new opportunities for enhancing transportation safety remain to be explored.

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FISCAL NOTE

STATE OF ALASKA
2008 LEGISLATIVE SESSION

Fiscal Note Number:
Bill Version:
() Publish Date:

Identifier (file name): HB372-DOT-DC-DES-03-02-08
Title: Highway Design Flexibility/Municipalities
Sponsor: Rep. Buch
Requester: H TRA

Dept. Affected:
RDU: Design and Construction
Component: Statewide Design & Engineering Services
Component Number: 2357

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2009**	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**FY 2014**
Personal Services							
Travel	20.0						
Contractual	130.0						
Supplies							
Equipment							
Land & Structures							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	**150.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES ( )							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF	150.0						
1005 GF/Program Receipts							
1037 GF/Mental Health							
Other Interagency Receipts							
TOTAL	**150.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2008) cost:

POSITIONS

Full-time							
Part-time							
Temporary							

ANALYSIS: *(Attach a separate page if necessary)*

The bill requires DOT&PF determine whether flexible guidelines should be adopted by identifying and evaluating flexible highway design guidelines addressing the considering the 9 criteria in section 1. The guidelines must also provide for documentation of the facts, circumstance and considerations involved in flexible design decision making including an explanation of the process and the reasoning. Guidelines shall consider the views of the following stakeholders: elected officials, persons with expertise in environmental protection, historic preservation, scenic conservation, bicycle and pedestrian transportation, urban design architecture, community planning, DNR and FHWA. DOT&PF will hire a contractor to assist the department develop this information as well as coordinating working group meetings with the various stakeholders identified. Funds are needed for 1 year as the guidelines are to be produced by June 30, 2009.

Prepared by: Mary Siroky, Legislative Liaison — Phone 465-4772
Division: Commissioner's office, DOT&PF — Date/Time 3/2/08 3:30 PM
Approved by: Nancy Slagle, Admin Services Director, DOT&PF — Date 3/2/2008

(Revised 10/05/2006 OMB)

FISCAL NOTE

STATE OF ALASKA
2008 LEGISLATIVE SESSION

Fiscal Note Number: **HB415-LAW-CIV-03-17-08**
Bill Version: **HB415**
() Publish Date:

Identifier (file name):
Title: An Act relating to disclosures on used motor vehicles.
Sponsor: TRANSPORTATION
Requester: HOUSE TRANSPORTATION

Dept. Affected: LAW
RDU: Civil
Component: Commercial & Fair Business
Component Number

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2009**	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**FY 2014**
Personal Services	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Travel							
Contractual							
Supplies							
Equipment							
Land & Structures							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES ( )							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1005 GF/Program Receipts							
1037 GF/Mental Health							
Other Interagency Receipts							
TOTAL	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2008) cost: 0.0

POSITIONS

Full-time							
Part-time							
Temporary							

ANALYSIS: *(Attach a separate page if necessary)*

HB 415 will repeal AS 45.25.465(c). This statute requires motor vehicle dealers to make certain disclosures when selling used cars. The language in AS 45.25.465(c) was originally intended to apply only to "current model" used vehicles. In 2006, AS 08.66.015 was amended to delete reference to "current model vehicles" so all motor vehicles are considered either new or used for purposes of application of Alaska's "Lemon Law" and manufacturer warranties. Given other disclosure requirements already required in Alaska and federal law, the requirements of AS 45.25.465(c) are no longer necessary. There should be no fiscal impact to the Department of Law from this bill.

Prepared by: Robert Meiners, Administrative Services Manager — Phone 907-465-5427
Division: Administrative Services Division — Date/Time 3/17/08 8:25 AM
Approved by: Talis Colberg, Attorney General, Department of Law — Date 3/17/2008

(Revised 11/19/2007 OMB)

Click on a state below to learn more about that state's CSS program

This information is continuously updated. If you represent a state DOT and would like to add or modify information, please contact us at [illegible]

CSS Programs by State:

The information provided on this and subsequent pages is intended to share information rather than rank states' commitment to CSS. Category placement within each group (programs, policy, training, web sites) reflect what state DOTs are reporting to us. Because states have self-identified, there may be some discrepancy between quality of states' features within each category.

Click below to see states that are active in the following areas

States with CSS Activities

The following states have reported that they have implemented some aspects of CSS, many have an "official" CSS program, while others are developing such a program

- Alabama
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- District of Columbia
- Florida
- Georgia
- Hawaii
- Illinois
- Indiana
- Iowa
- Kansas
- Kentucky
- Louisiana
- Maine
- Maryland
- Massachusetts
- Michigan
- Missouri
- Montana
- Minnesota
- Mississippi
- Nevada
- New Hampshire
- New Jersey
- New Mexico
- New York
- North Carolina
- Ohio
- Oregon
- Pennsylvania
- [illegible]
- [illegible]

- Tennessee
- Texas
- Utah
- Virginia
- Vermont
- Washington
- West Virginia
- Wisconsin

ALASKA STATE LEGISLATURE

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REPRESENTATIVE BOB BUCH

Representative_Bob_Buch@legis.state.ak.us

Date: March 14, 2008

To: Members of the House Transportation Committee

From: Representative Bob Buch

Re: CS for HB 372

Dear Committee Members:

Last week, after the House Transportation hearing on HB 372 (Context Sensitive Solutions), I held a meeting with officials from the Department of Transportation and Public Facilities, the Attorney General's office, and the head of the Anchorage Road Coalition to come up with language for HB 372 that would address three concerns that DOTPF expressed about the bill, and one concern that was raised by Rep. Neuman.

DOTPF's concerns were:

1. that the bill should contain language that would allow them to scale the CSS process to the complexity and scope of the particular project;

2. that we change the word "shall" to "may" in subsection (d) so that the commissioner would have discretion about which stakeholders to include; and so that the department would not be open to liability;

3. that language be added to the bill so that CSS would only apply to projects that begin after the effective date of this act.

Rep. Neuman's concern was:

1. that we not include a list of stakeholders in subsection (d), but instead, use more general language so that the Commissioner would have some discretion, and also, to avoid future potential legal issues.

The attached CS (25-LS0525\L) addresses all of these concerns.

If you have any questions about the specifics of the attached bill, please call Deborah Brevoort of my staff at x 3467.

Thank you,

R. R. Buch

Representative Bob Buch
Alaska State Legislature
House District 27

ALASKA STATE LEGISLATURE

While in Session
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REPRESENTATIVE BOB BUCH

Representative_Bob_Buch@legis.state.ak.us

Date: March 4, 2008

To: Representative Johansen
Representative Neuman
Representative Johnson
Representative Fairclough
Representative Salmon
Representative Doogan
Representative Keller

From: Representative Bob Buch
Alaska State Legislature

Re: (CS) HB 372

Dear House Transportation Committee Members:

In preparation for tomorrow's hearing on HB 372 in the House Transportation Committee, I am attaching the following documents for your review:

1. A CS for HB 372, which would require the state Dept. of Transportation and Public Facilities to adopt the Federal Highway Administrations guidelines for Context Sensitive Solutions.

2. A copy of the CSS principles that will be adopted by reference. Please refer to the "principles of Context Sensitive Design" on the attached handout from the Federal Highway Administration.

3. A letter of support from the Anchorage Road Coalition.

Thank you,

R. R. Buch

Representative Bob Buch
Alaska State Legislature
House District 27

Alaska State Legislature

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Representative Bob Buch

Representative_Bob_Buch@legis.state.ak.us

(Revised) Sectional Analysis of
CS HB 372
(25-LS0525\K)

Section 1

Amends AS 19.10.160 by adding two new subsections (c) and (d) that will require the state Dept. of Transportation and Public Facilities to establish a design process for use during the design of highway projects that ensures the projects are consistent with the standards used by the Federal Highway Administration's (FHWA) Context Sensitive Solutions (CSS) program, and lists the factors that must be considered when designing highways in the state, which include: safety, durability and economy of maintenance; the constructed and natural environment of the area; community development plans and relevant municipal ordinances; sites on the National Register of Historic Places, or identified by the Alaska Historical Commission; the environmental, scenic, aesthetic, historic, community and preservation effects of the activity; access for other modes of transportation, including bicycles and pedestrians, access to culturally significant sites, acceptable engineering practices and safety research. In subsection (d) the bill requires the Commissioner of DOTPF to solicit and consider the views of public officials, and organizations and who have expertise in environmental protection, historic preservation, scenic conservation, bicycle and pedestrian transportation, urban design architecture or landscape architecture, public safety and traffic control and human factors. The Commissioner must also consult with community planning organizations, DNR's Historic Preservation division and the FHWA.

Section 2

Amends the uncodified law of the State of Alaska by adding a new section that will require the DOTPF to submit a report to the legislature no later than January 1, 2011 that will include a review of the design standards required by this act, and the impact of CSS on the state of Alaska. This report will also include information on the number of state employees who have taken advantage of the FHWA's CSS training opportunities, an evaluation of interdepartmental relations as they relate to these guidelines, and a review of the design standards in the state with a recommendation for eliminating or modifying elements that conflict with the implementation of CSS.

Section 3

This act takes effect January 1, 2009.

25-LS0525\K
Kane
3/6/08

CS FOR HOUSE BILL NO. 372( )

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-FIFTH LEGISLATURE - SECOND SESSION

BY

Offered:
Referred:

Sponsor(s): REPRESENTATIVE BUCH

A BILL

FOR AN ACT ENTITLED

"An Act relating to highway design; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

*** Section 1.** AS 19.10.160 is amended by adding new subsections to read:

(c) In applying the standards described in (a) of this section, the department shall establish a design process for use during the design of highway projects that ensures projects are consistent with the standards used by the Federal Highway Administration under its Context Sensitive Solutions program. In establishing a design process described in this subsection, the department shall consider the following factors:

(1) safety, durability, and economy of maintenance;

(2) the constructed and natural environment of the area;

(3) community development plans and relevant municipal ordinances;

(4) sites listed on the National Register of Historic Places or identified by the Alaska Historical Commission established under AS 41.35.300;

(5) the environmental, scenic, aesthetic, historic, community, and

preservation effects of the activity;

(6) access for other modes of transportation, including bicycle and pedestrian transportation;

(7) access to and integration of sites considered culturally and historically significant to the communities affected;

(8) acceptable engineering practices and standards; and

(9) safety studies and other pertinent research.

(d) In carrying out the design process described in (c) of this section, the commissioner shall consider the views of organizations and elected officials affected by each project. When appropriate for a particular project, the commissioner shall consult with

(1) environmental protection organizations;

(2) scenic conservation groups;

(3) bicycle and pedestrian user groups;

(4) transit organizations;

(5) professional design organizations representing landscape architects or urban design architects;

(6) public safety and traffic enforcement agencies with jurisdiction in the project area;

(7) trucking and freight organizations;

(8) traffic safety organizations with expertise in the applicability of human factors;

(9) local land use and planning authorities;

(10) elected officials of the affected borough or city; or

(11) the state historic preservation office in the Department of Natural Resources.

* **Sec. 2.** The uncodified law of the State of Alaska is amended by adding a new section to read:

REPORT AND RECOMMENDATIONS. The Department of Transportation and Public Facilities shall review the design standards set out in AS 19.10.160(c), as enacted by sec. 1 of this Act, and the effect of the Context Sensitive Solutions program on the state, and submit a report to the legislature not later than January 1, 2011. The report must include

(1) a summary of the training opportunities offered by the Federal Highway Administration of which the department's employees have taken advantage;

(2) an evaluation of interdepartmental relations as they relate to the amended guidelines, as well as public safety, traffic control, and environmental concerns; and

(3) a review of design standards in the state with a recommendation for eliminating or modifying elements that will conflict with or obstruct the implementation of the Context Sensitive Solutions best practices model.

* **Sec. 3.** This Act takes effect January 1, 2009.

Context Sensitive Design and Anchorage Streets

Building Better Roads

Anchorage Road Coalition

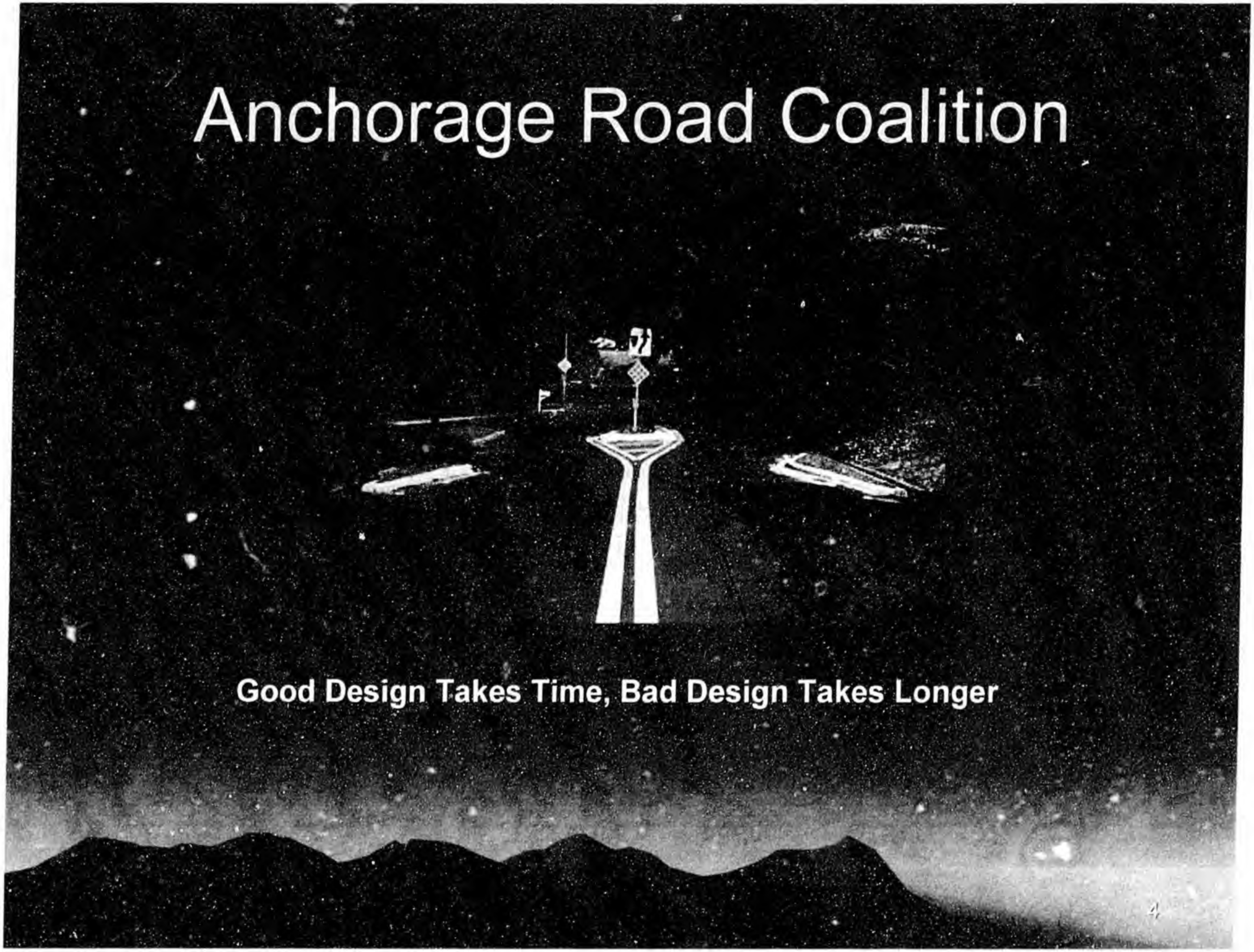
Anchorage Road Coalition

- **As a result of the ARC community council campaign AMATS has adopted CSD/CSS**
- **What does this mean?**
- **When can we expect results?**

Anchorage Road Coalition

In 2000 at the "Thinking Beyond the Pavement Conference" Tom Warne, formerly both Executive Director of the Utah Department of Transportation and President of AASHTO, said:

- "It's important to put together a transportation system that considers quality of life...The bottom line is, we have the tools to do it -- we just need to implement them."
- TBTP was where CSD/CSS was born


Anchorage Road Coalition
Good Design Takes Time, Bad Design Takes Longer

Why CSD?

- **What is it?**

- **"...a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting, and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility."**

Context Sensitive Design for Alaska

- Usually CSD/CSS is an initiative of the engineering, planning and urban design professionals

- It was developed jointly by FHWA, ITE and AASHTO

- Five states served as pilot states in implementing CSD/CSS. Many more have adopted it since, 3 in 2003 alone.

- We, the Anchorage Road Coalition, are asking for adoption of CSD by both the State and Municipality because the profession has not yet done so

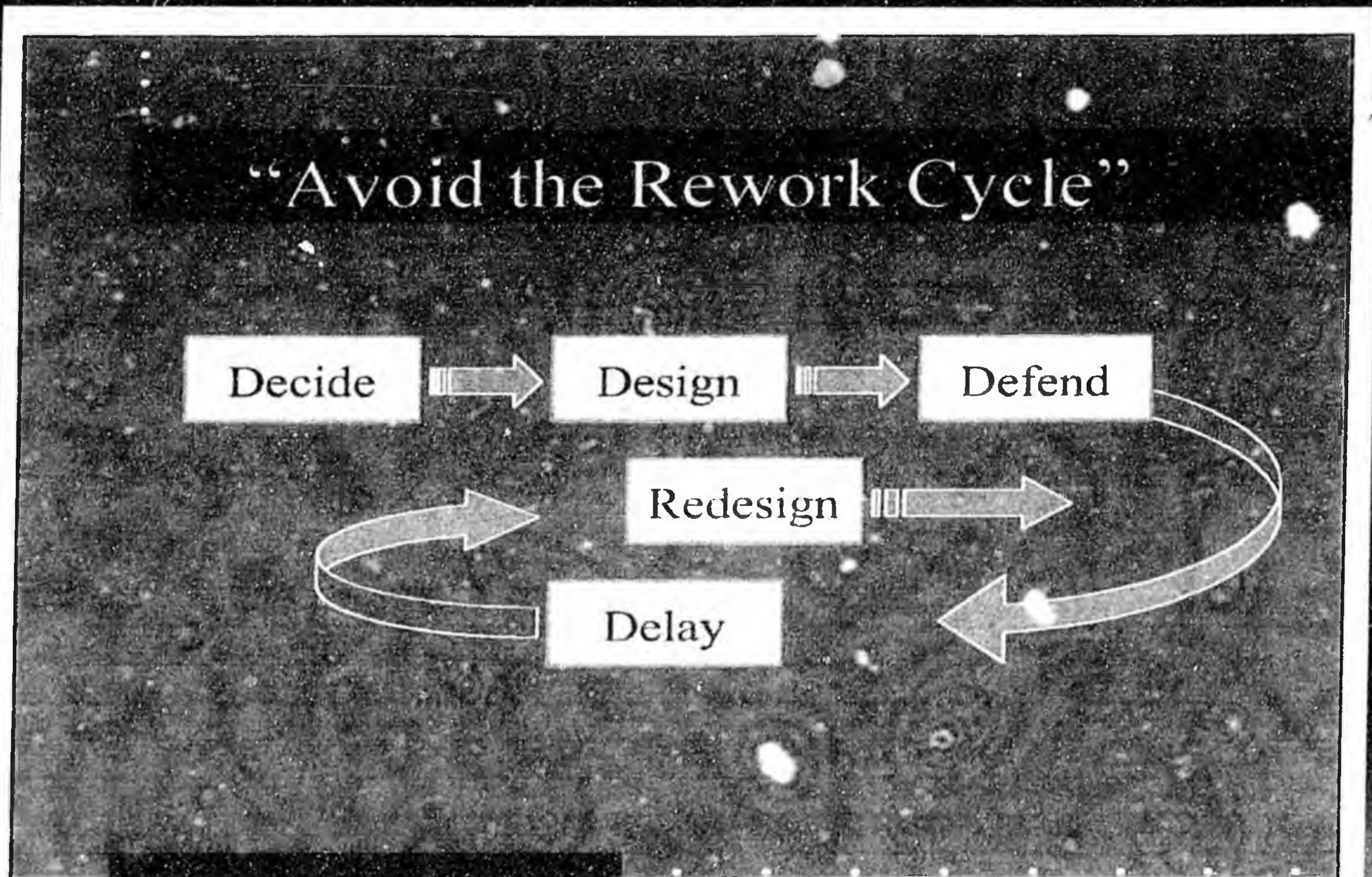
Why CSD?

- "CSD is a fancy word for common sense" TRB
- "If you are a customer focused organization CSD concepts are logical and inevitable" Connecticut DOT
- "Good Design takes time, bad design takes longer"
- "At GDOT there is a brotherhood, an old guard, and we do have to be more flexible," Linnenkohl says. "We've got to realize that in today's world we do not have the right to go in and destroy everything in the name of transportation." Harold Linnenkohl, Head of Georgia DOT

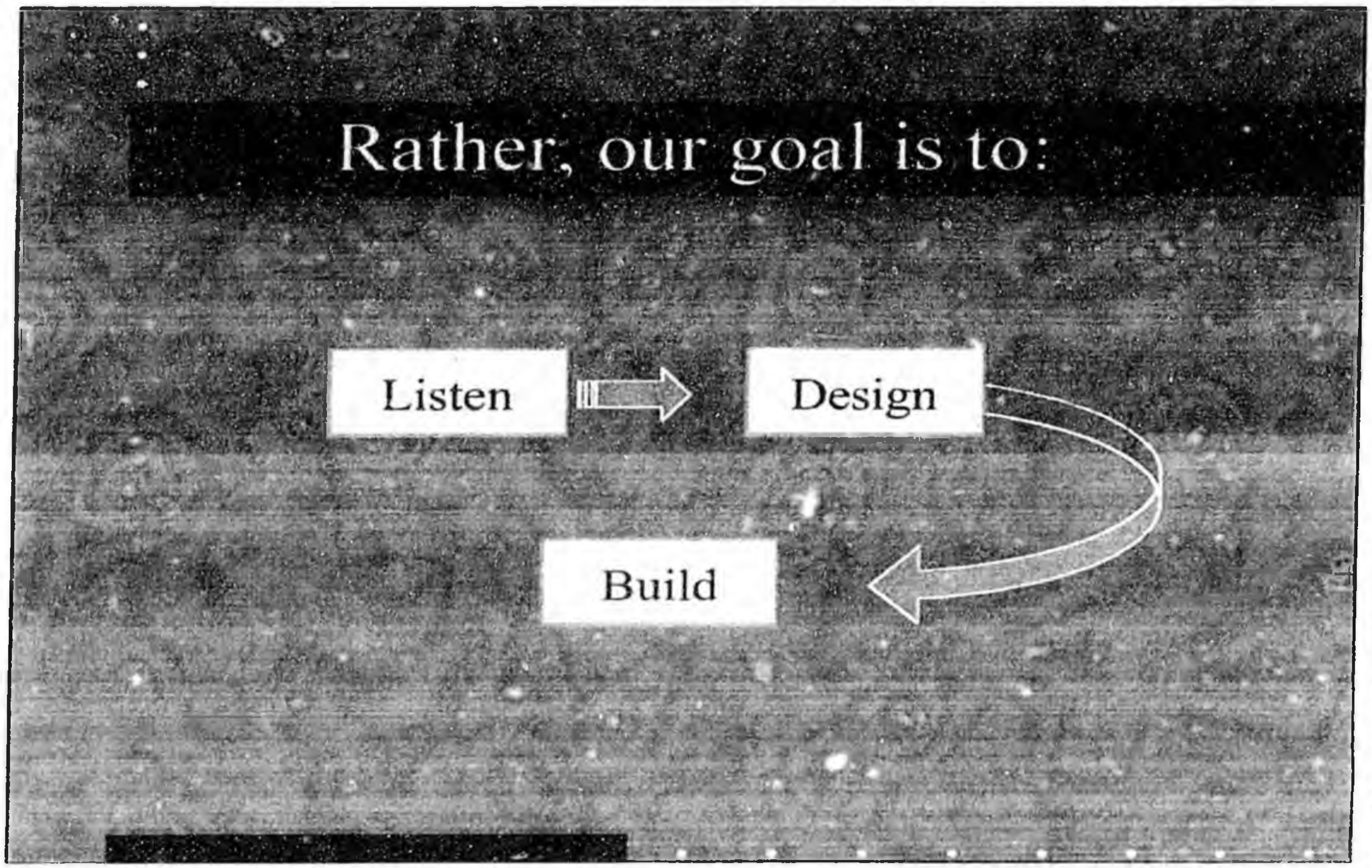
Why CSD?

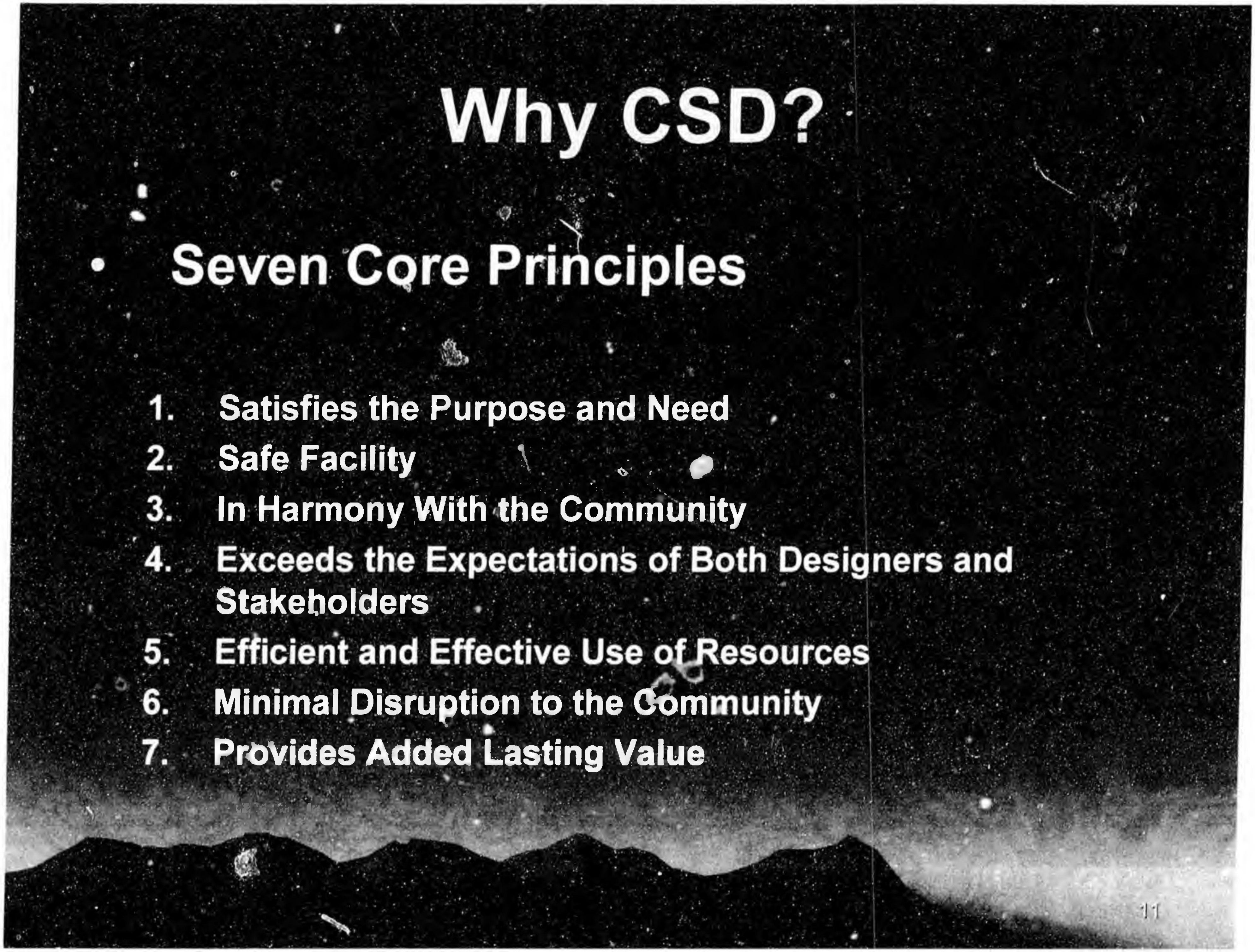
- Many engineers in Alaska would like to see CSD adopted by the State and MOA
- It is a proven technique for efficient, timely, and cost effective completion of public projects
- Because all stakeholders are involved early and continuously there is less controversy

Why CSD?


"Avoid the Rework Cycle"
Decide
Design
Defend
Redesign
Delay

Why CSD?




Why CSD?
• Seven Core Principles
1. Satisfies the Purpose and Need
2. Safe Facility
3. In Harmony With the Community
4. Exceeds the Expectations of Both Designers and Stakeholders
5. Efficient and Effective Use of Resources
6. Minimal Disruption to the Community
7. Provides Added Lasting Value
11

Why CSD?

- Eight Characteristic of the Process Contributing to Excellence

1. Communication – Early and Continuous
2. Multidisciplinary Team
3. Full Range of Stakeholders
4. Process is Tailored to Meet the Circumstances
5. Top-Down Commitment to the Process
6. Tailored Public Involvement Process
7. All Elements of Project Understood Fully
8. Full Range of Tools for Communication

Why CSD?

- If processes aren't working well-change them. If you can find a process which someone else has tested and found to be successful- use it.

- CSD is a process developed and field tested by the engineering profession to help solve the kinds of problems which we confront in Anchorage and Alaska.

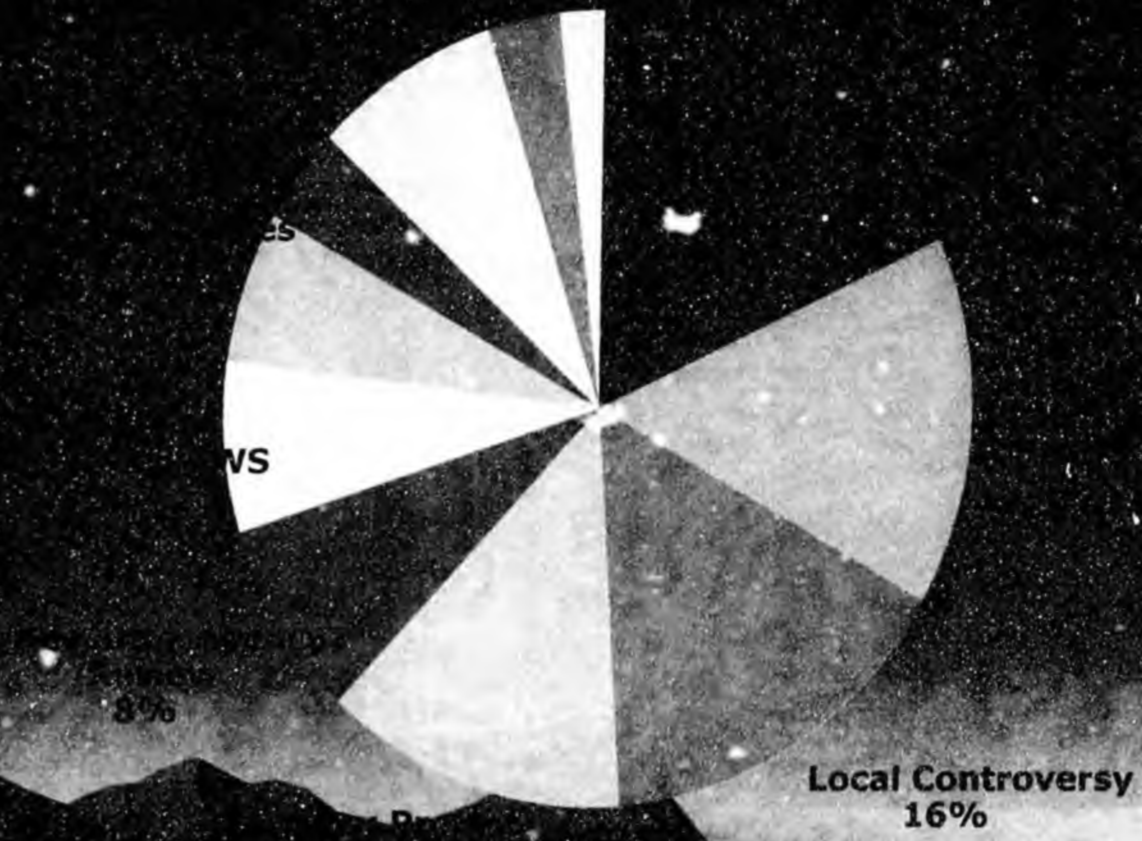
- No matter how much some would like the public and its concerns about economics, quality of life and safety to go away… it won't. CSD is a way to make sure the public involvement in transportation is positive and productive.

Environmental Review Not a Top Source of Project Delay

Top sources of Project Delay

1. Lack of funding
2. Controversy
3. Low priority

Source: FHWA, Reasons for EIS Project Delays, September 2000



Anchorage Road Coalition

What does CSD do?

- It improves the public process
- It can save money
- It usually saves time
- It always delivers projects which add value to the community

Anchorage Road Coalition

- **What will it do for Alaska?**

  - **Define problems and set goals before design begins. It is irresponsible to let designs be determined without community or financial oversight**
  - **Reduce overdesign on Collectors and redirect our bond funds to other projects which will reduce congestion and improve capacity and safety.**

Anchorage Road Coalition

The Resolution Signed by 27 Anchorage Community Councils is on the following slide:

Resolved that: Whereas the citizens of the Municipality/State have found their ability to participate in and influence the planning functions of the Municipality and the State to be inadequate we request that the Mayor/Governor adopt the following policy and require that MOA/State planning organizations adhere to it:

- **New Executive Order for Context Sensitive Solutions**
- This new Executive Order directs MOA /SOA employees to implement Context Sensitive Solutions tools on all department projects.
- **Context Sensitive Solutions**

Context Sensitive Solutions is a model for transportation project development that has recently received much discussion and broad acceptance. Its essence is that a proposed transportation project must be planned not only for its physical aspects as a facility serving specific transportation objectives, but also for its effects on the aesthetic, social, economic and environmental values, needs, constraints and opportunities in a larger community setting. MOA/SOA endorses the Context Sensitive Solutions approach for all projects, large and small, from early planning through construction and eventual operation.

This means that MOA/SOA employees working on projects and facilities should:

- Engage from the project's inception with representatives of affected communities, including elected and appointed officials and a widely representative array of interested citizens.
- Assure that transportation objectives of projects are clearly described and discussed with local communities in a process that encourages reciprocal communication about local views and needs in the overall project setting.
- Pay attention to and address community and citizen concerns.
- Ensure the project is a safe facility for both the user and the community.
- Context Sensitive Solutions is a process that places a high value on seeking and, if possible, achieving consensus. MOA's/SOA's belief is that consensus is highly advantageous to all parties and may help avoid delay and other costly obstacles to project implementation.

Adopted: **Community Council:**

S/____________________

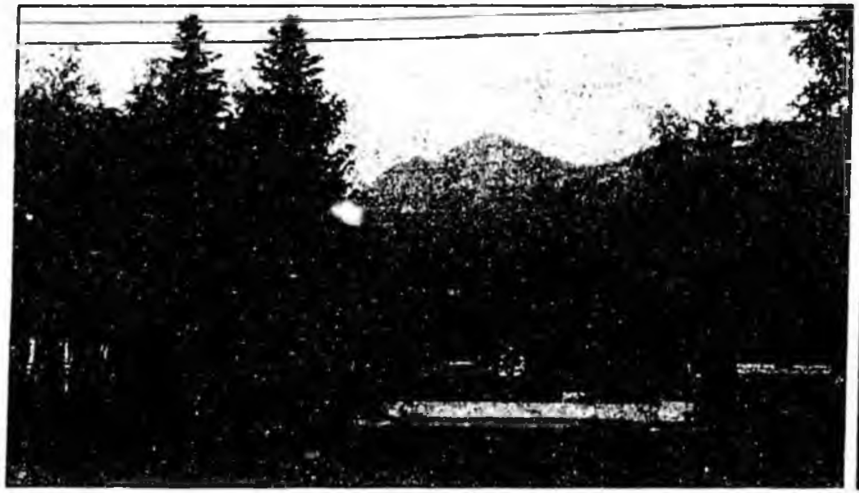
What Is CSS?

"Context sensitive solutions (CSS) is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist."

-- Federal Highway Administration

Traffic Calming techniques appropriate for neighborhoods

Diverters



Bulb-outs

Entry signs

Raised intersections, speed bumps

Chicanes

Integrating Context Sensitive Solutions in Transportation Planning

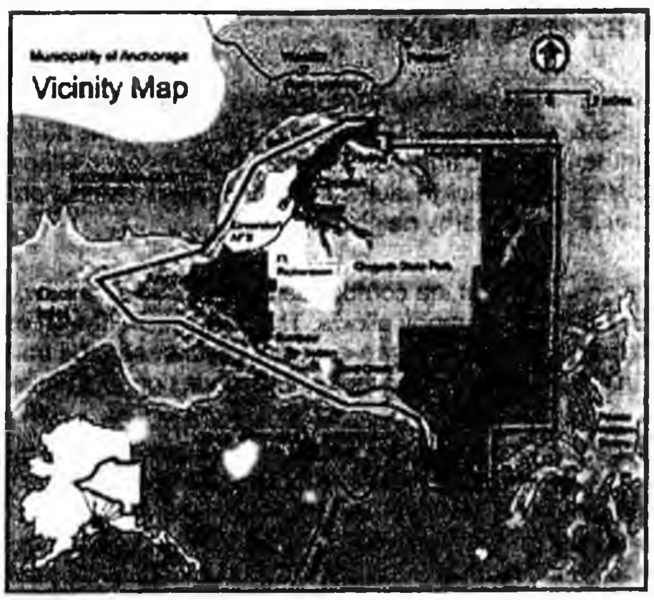
Anchorage Bowl 2025 Long-Range Transportation Plan

Anchorage Metropolitan Area Transportation Solutions, Alaska

Introduction

This long-range transportation plan (LRTP) addresses the current and future transportation needs for the City of Anchorage. The plan was developed by the Anchorage Metropolitan Area Transportation Solutions (AMATS), the metropolitan planning organization (MPO) serving Anchorage, and was adopted in December 2005. AMATS is somewhat unique in that it contains a small part of a single jurisdiction, the Anchorage Bowl area of the Municipality of Anchorage (MOA). Still, the LRTP must address some complex planning issues, and one of the central recommendations of the plan is that a corridor be constructed to connect the existing major highways that carry traffic into and out of central Anchorage. Currently, the Glenn and Seward Highways are connected by the city's arterial system, where traffic signals and turning traffic, combined with heavy traffic volumes result in considerable peak-period congestion. Yet, constructing a major connector through existing neighborhoods while minimizing negative impacts to the city's trademark scenic vistas presents a major challenge.

The "Anchorage Bowl 2025 LRTP" proposes a highway-to-highway connection project to address congestion and lack of mode choice that is in keeping with many of the expressed desires of the community. Rather than simply recommending that the connector be built, the plan takes a proactive stance and addresses stakeholder concerns about project design and alignment from the outset.



One of the goals of CSS is to include stakeholders at all stages of the transportation decision-making process. Using a CSS approach at the early stages of the long-range transportation planning process initiates collaborative processes and relationships that can carry forward into the project development process. By addressing stakeholder concerns about how project design can affect communities at the long-range planning stage, AMATS showed a commitment to public involvement throughout the transportation decisionmaking process. The "Anchorage Bowl 2025 LRTP" offers the opportunity to investigate several key areas and highlights a number of ways that CSS can be integrated into long-range transportation planning:

- Can a plan strengthen the bridge between community vision and the early stages of project development?
- How can the plan document itself effectively convey community preferences in project design?
- How can a transportation plan help promote and support the use of CSS in project development?
- Can CSS play a role in streamlining processes?

The Planning Context

Some 40 percent of the population of the state of Alaska lives in Anchorage. The MOA is home to over 288,000 people, double the 1972 population. In recent years, development has shifted toward the Chugiak-Eagle River area and the Matanuska-Susitna (Mat-Su) Borough. The Mat-Su Borough is outside the AMATS jurisdiction, and little formal planning coordination exists between the Borough and AMATS. These two areas are expected to double the current number of households by 2025 and continue to strengthen their economic ties with the Anchorage Bowl area. Currently, all commuters from these areas must use the Glenn Highway to reach the Anchorage Bowl.

Most of the development in the Anchorage region has been at relatively low densities with only a few areas with housing densities of greater than 10 dwelling units per acre. Employment density is similarly spatially dispersed. The increase in and distribution of the rising population has led to stresses on the transportation network, including substantial peak-hour congestion and challenges for effective public transit service.

> *"Develop a balanced multi-modal transportation system based on Anchorage 2020 guidance (goals, policies, strategies, and maps) that serves as a catalyst to enhance the quality of life enjoyed by the current and future residents of Anchorage."*
> **LRTP Citizen Roundtable Committee Goal**

Anchorage's comprehensive plan, "Anchorage 2020," was adopted in 2001. As part of the groundwork for "Anchorage 2020," a survey of 1,500 residents was conducted, asking about the most important attributes of their city. Three of the highest ranked attributes related to the natural setting of the city: trails/parks/greenbelts/open space, outdoor and recreational opportunities, and accessibility to the wilderness. Clearly, Anchorage residents highly value the scenic assets of the region. Reflecting these values, the "Anchorage 2020 Community Vision" states that Anchorage is a "northern community built in harmony with our natural resources and majestic setting." The plan directs a shift toward more concentrated land-use patterns with clusters of higher density employment centers.
Although "Anchorage 2020" focuses on land-use planning and development patterns, it includes some guidance for transportation improvements in recognition of the close linkage between land use and transportation. More importantly, the vision and goals articulated in "Anchorage 2020" became the foundation of the LRTP process, and basing the LRTP on "Anchorage 2020" was the overarching goal of the 2025 LRTP citizen roundtable committee. Goals more specific to the transportation system were developed through Transvision, the visioning process that kicked off the LRTP process. Each of the seven transportation planning goals is presented in the plan with a discussion of how it is linked to and in harmony with "Anchorage 2020." Aside from the transportation plan goals, the projects included in the LRTP also drew from the "Anchorage 2020" plan. The high value the community placed on the city's natural setting, which came out during the Anchorage 2020 process, was incorporated into the LRTP by carefully considering the viewshed impacts of any proposed projects as well as including consideration of improvements to the region's extensive recreational trail/bikeway system.

CSS Principles Applied

Planning Products Feed Directly into Project Planning: A key component of the LRTP is the completion of the Glenn-Seward Highway Connection. This project will address the major route into and through the city for commuters, freight, and visitors alike. The proposed Glenn-Seward Highway Connection recognizes the importance of addressing capacity issues, but emphasizes that the project should be designed in keeping with the priorities of the city and the nearby neighborhoods.

The plan states that the corridor be constructed as a new, high-capacity expressway, depressed and buried wherever the topography allows. The conceptual design of the corridor seeks to minimize residential and business displacement, maintain or re-establish local street and trail system connectivity, and provide airspace for parks. The plan also emphasizes that the connector design must minimize negative effects on highly valued scenic vistas.

The plan includes considerable detail on how project design should be approached, including examples of alignments, cross-sections, and bridge/culvert design. Locations where the natural topography would allow the corridor to be constructed below the most important viewpoints to minimize visual impacts are identified. The LRTP recognizes one neighborhood's desire for revitalization and expansion of its commercial district through careful routing of the connector to support economic development plans and the associated land use/development. Specific surface street connections needed to maintain or re-establish neighborhood connectivity are identified. Including this level of detail in the LRTP gave assurance to the neighborhoods that their needs were recognized and that their concerns would shape the project from the start.

Initially, Alaska Department of Transportation and Public Facilities (DOT & PF) staff expressed some trepidation about including a relatively high level of project detail at such an early point. The concern was that making early decisions about alignment and design would place constraints on the project that would complicate engineering and design later on. This concern has been largely set aside as DOT & PF staff have recognized that addressing community concerns from the outset is an advantage. Carrying the project concepts that were developed during the LRTP process forward into project design and engineering will help ensure that their work will be supported rather than challenged. In fact, as the connector project concept has gained momentum, at least one senior DOT & PF engineer has decided to postpone his retirement for the opportunity to work on the project, recognizing that it will present an interesting and exciting challenge.

> *"CSS starts with the plan."*
> **Jon Spring, AMATS Transportation Planner**

Including project details that will directly inform the project planning and development process, thereby reassuring nearby neighborhoods that their concerns were heard, was a critical factor in securing support for this important project outside the DOT & PF as well. The neighborhood support for the concept of the project that developed during the LRTP process led to the mayor's office lending support for the connector. The political support for the project brought financial support as well. In fact, it was one of the affected neighborhoods that lobbied the State legislature for funding, and secured $7 million for preliminary engineering.

The initial part of the connector project scheduled to be built is the Bragaw Street/Glenn Highway Interchange. The concepts from the LRTP were carried forward into the project development process for the interchange. Some of those concepts are repeated in the vision for the interchange project: reconnecting communities that the corridor currently bisects, protecting neighborhoods by eliminating cut-through traffic, providing safe alternatives for pedestrian and non-motorized traffic, and involving the community in the design process. The request for proposal (RFP) that the DOT & PF developed for the interchange (i.e., the document that describes the final design and construction parameters that contractors will be required to meet) includes the concepts and ideas that were developed during the LRTP process and refined during a public outreach effort focused on the interchange project. The design-build contract is scheduled to be awarded in the spring of 2007, and the completion of substantial construction is anticipated for the fall of 2009.

> *"The input from our community has resulted in not only viable technical solutions, but livable, credible, responsive solutions for all of Anchorage."*
> **"Anchorage Bowl 2025 LRTP"**

Using a CSS approach to transportation planning meant close attention to community needs and goals in the LRTP, which led to including design concepts in the LRTP, which in turn have been fed into the project development process. In this way, the "Anchorage Bowl 2025 LRTP" provided a bridge between the community vision articulated in both the LRTP and "Anchorage 2020," and the design of the Bragaw Street/Glenn Highway Interchange.

Based on Comprehensive Public Involvement/Participation Plan: The planning process began with a high-profile public forum that included transportation professionals, the mayor, and other speakers. A citizen roundtable committee was convened with members recommended by the mayor's office and the DOT & PF. Committee members represented business, academic, youth, institutional, environmental, and other interest groups. This committee was charged with representing and communicating with their constituencies. Additional input was gathered through formal and informal stakeholder interviews representing all modes, economic sectors, system users, and neighborhoods. A series of open house meetings was held, including one outside the AMATS jurisdiction in recognition that commuters from outside the boundary were also stakeholders. Local and State government officials were also kept updated and participated in work sessions.

Media campaigns used print and broadcast media to advertise events and relay information. A newspaper insert was distributed across the region that discussed transportation issues and advertised open house events. The citizen roundtable committee members were also involved in the publicity campaign, giving interviews and offering press statements.

Range of User-Friendly Tools for Communicating Options: The "2025 LRTP" graphically presents the complex Glenn-Seward Highway Connection project on a single page with a full-color schematic diagram that combines photos and photo simulations with text to describe the opportunities to fit this major project into its urban context. An additional map notes the number of vehicles projected to be removed from surrounding streets, thus conveying how the project will improve conditions across the system. The recommendations specific to the Glenn Highway corridor are also presented by combining notes on site-specific elements with a corridor map. The various multimodal projects, transportation demand management (TDM) programs, and interchange and road improvements are shown mapped directly to the corridor. The range of presentation methods helps convey not only where projects will be located, but also how they will look and feel.

Based on Adopted CSS Policy: AMATS is unusual among MPOs in that it has a formally adopted CSS policy (the policy refers to "context sensitive design" reflecting a past focus on project development). A grass-roots advocacy group, the Anchorage Roads Coalition, recognized CSS as a way to improve decision-making processes, and spearheaded a campaign to gain neighborhood committee support for an official CSS policy. In 2004, the technical advisory committee of AMATS signed a resolution requesting that the MOA Department of Public Works and the Alaska DOT & PF use a context sensitive approach to project design, promote fuller stakeholder involvement throughout the decision-making process, and review policies and procedures to implement CSS as an integral part of doing business. In the "2025 LRTP," AMATS further integrated CSS into its activities by applying CSS to the long-range planning process and product. The plan document supports AMATS' adopted CSS policy by promoting greater application of CSS among its partner agencies. For example, the plan states that the MOA's road classifications should be updated to reflect CSS best practices in planning, design, and operation.

Evaluates Multimodal, Operational, and Innovative Strategies: Aside from the major construction project recommended to complete the Glenn-Seward Highway connection, the LRTP includes a number of non-construction projects. In fact, the first major plan recommendation is a "call to action" to effectively manage the existing system. The recommended strategies include improving signal timing and transit operations efficiency, responding quickly to resolve bottlenecks for transit and traffic, initiating corridor management plans, and upgrading the MOA signal system to include intelligent transportation system (ITS) technologies.

The existing Glenn Highway corridor is targeted for a number of programs and projects to manage congestion. The plan highlights the use of improved transit service, including express bus service and park-and-ride facilities, employer-based TDMs and van- and carpool programs, corridor and incident management programs for commuters and freight operators, phasing in high-occupancy vehicle (HOV) lanes, and notes that the idea of commuter rail should be considered as a long-term possibility.

Outside the Glenn Highway corridor, other multimodal plan recommendations include developing a bike plan to address the needs of bike commuters. As mentioned above, Anchorage has an extensive recreational trail network that, while well-used, does not meet the travel needs of bike commuters. The commuter bike plan will focus on improving connectivity of on-street bicycle facilities. The plan also recommends a number of planning policy priorities for pedestrians. In many cases, recommended road projects in the plan include improvements to complete links for cyclists and pedestrians, on roadways, and on the trail system.

The importance of snow removal in maintaining accessibility to transit facilities is emphasized to better serve current transit riders and attract new riders. The wintry climate is also noted as a consideration in managing congestion. The construction season in Anchorage is brief, so the scale and number of construction projects underway at the same time can be large. The plan notes that more attention needs to be given to scheduling, construction zone management, and public information to ease construction-related congestion.

Since the adoption of the LRTP, AMATS has initiated a transit study that will focus on a high-performing transit corridor. The study will analyze bus delays and make recommendations for optimizing stops and prioritizing signals with the goal of demonstrating a 30-percent time savings over auto trips on the same route. The corridor slated for study also happens to be slated for a roadway reconstruction project, which should improve the potential for coordinating and implementing the study findings.

Lessons Learned

One of the components of the 2025 LRTP public involvement/participation process was the citizen roundtable committee. The office of the mayor of Anchorage and the Alaska DOT & PF appointed over 40 individuals to serve on the committee. While having many citizens interested in serving on an advisory committee is commendable, some of the committee members felt they had not had equal opportunity to speak and cited the large size of the committee as the reason. This points to the importance of balancing the need for keeping the size of the group small enough to allow all members to fully participate yet large enough to bring all perspectives to the table. It also highlights the need to adopt carefully structured ground rules for larger groups to ensure full and equitable participation.
Since the 2025 LRTP process, AMATS has begun a smaller-area plan for the Midtown area of Anchorage. Early in this planning effort, AMATS conducted one-on-one interviews with stakeholders to understand their perspectives and general attitudes. These interviews have proved to be an effective way to compile a list of committed individuals to serve on an advisory board, with a balance across various constituencies. A similar strategy might prove effective for convening citizen committees for future updates of the LRTP.

Challenges Ahead

Anchorage faces a number of significant transportation challengesin the future. The "2025 LRTP" repeatedly notes the pressing need to manage rising congestion levels, recommending a suite of policies and programs in addition to some major construction projects. Many of these programs rely on changes in individuals' travel patterns to have any appreciable effect. Experience has shown that changes in travel behavior, especially shifts away from single-occupancy vehicles, are difficult to effect, and significant policy and planning coordination are required to bring them about. Certainly, the studies underway will provide AMATS with important insights into how to move plan recommendations for transit, bike, and pedestrian travel into implementation. Effectively managing congestion will also require a long-term commitment to the Anchorage 2020 comprehensive plan and to planning coordination.

The plan also faces a challenge in connection with the potential land-use changes related to the proposed Knik Arm Crossing, a two-mile, tolled bridge project that would directly connect Anchorage with substantial amounts of developable land on the north side of the Knik Arm waterway. The bridge could potentially trigger a massive shift in development patterns. The project can also expect environmental and community opposition and will likely require the formation of a public-private partnership to cover the financial costs. Without a doubt, if the Knik Arm Crossing project moves forward, the next update of the AMATS LRTP will face a very different planning context.

The increasing development and population growth in the nearby [illegible]-Su Borough and Chugiak-Eagle River areas present perhaps the greatest challenge to the region's transportation system. The LRTP notes the importance of regional collaboration. Instituting a collaborative planning and policy relationship would be an important step toward improving outcomes for the transportation system and lobbying for State funding for infrastructure projects. Regional cooperation should shape future transportation planning in the region, whether the Mat-Su Borough establishes its own MPO in the future or becomes part of AMATS.

In Closing

The "Anchorge Bowl 2025 LRTP" faces considerable challenges to its full implementation and the realization of all of its goals. By taking a CSS approach to long-range planning, however, the plan has laid a solid foundation for implementation. The efforts of the public and of the AMATS staff are already being carried forward into the project development phase of several major projects. For example, the concepts for the Glenn-Seward Connector will play an important role in shaping

For More Information:

- AMATS website
- The Glenn Highway Projects website
- FHWA CSS website
- AASHTO CSS website
- Online Resource Center for CSS

project outcomes that offer the most benefits possible to all stakeholder groups. More generally, the CSS-driven process used by AMATS during the 2025 LRTP shows a commitment to broad-based discussion of transportation issues in the region. Such discussion will serve the region well as it moves forward and continues to address complex transportation questions in the future.

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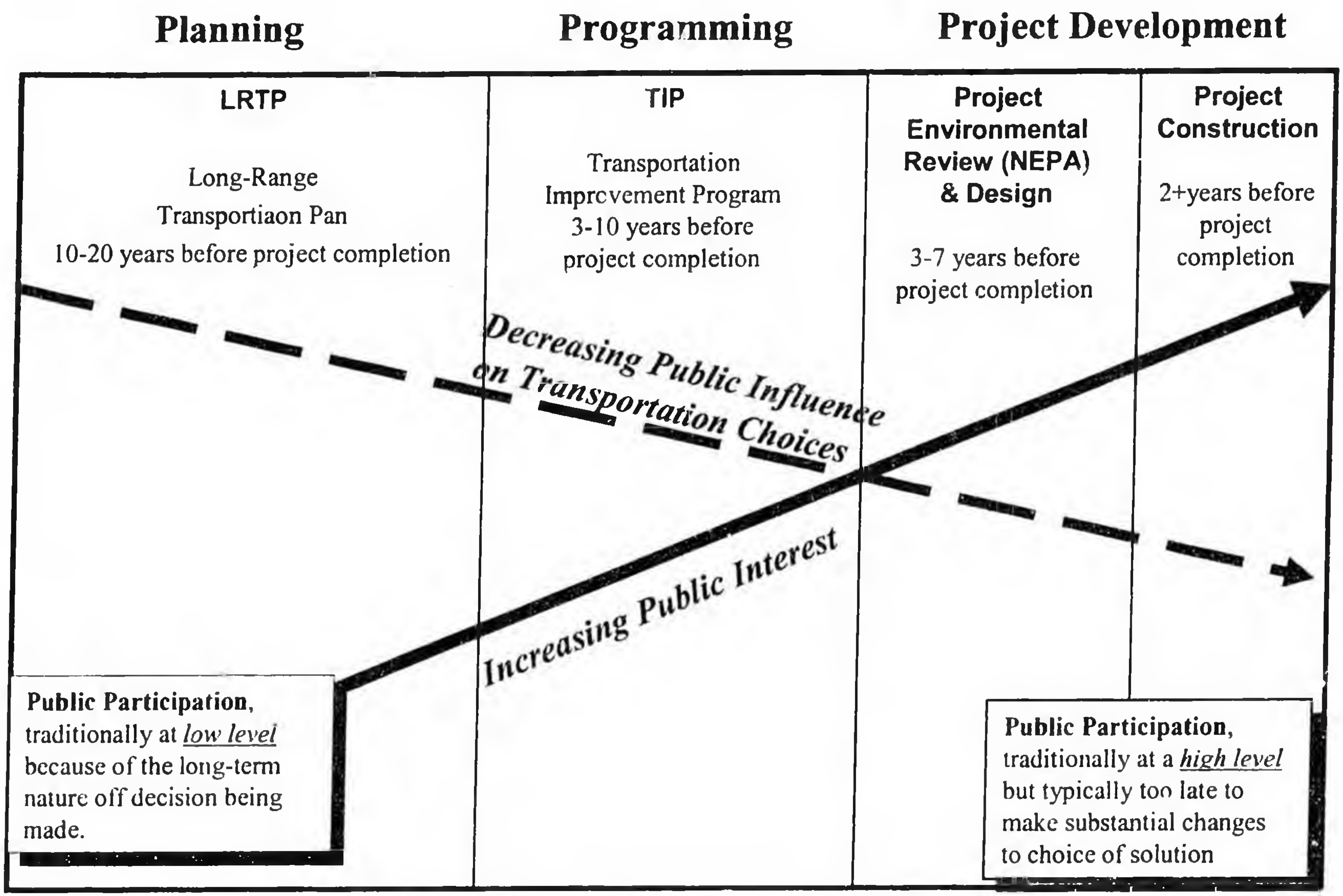
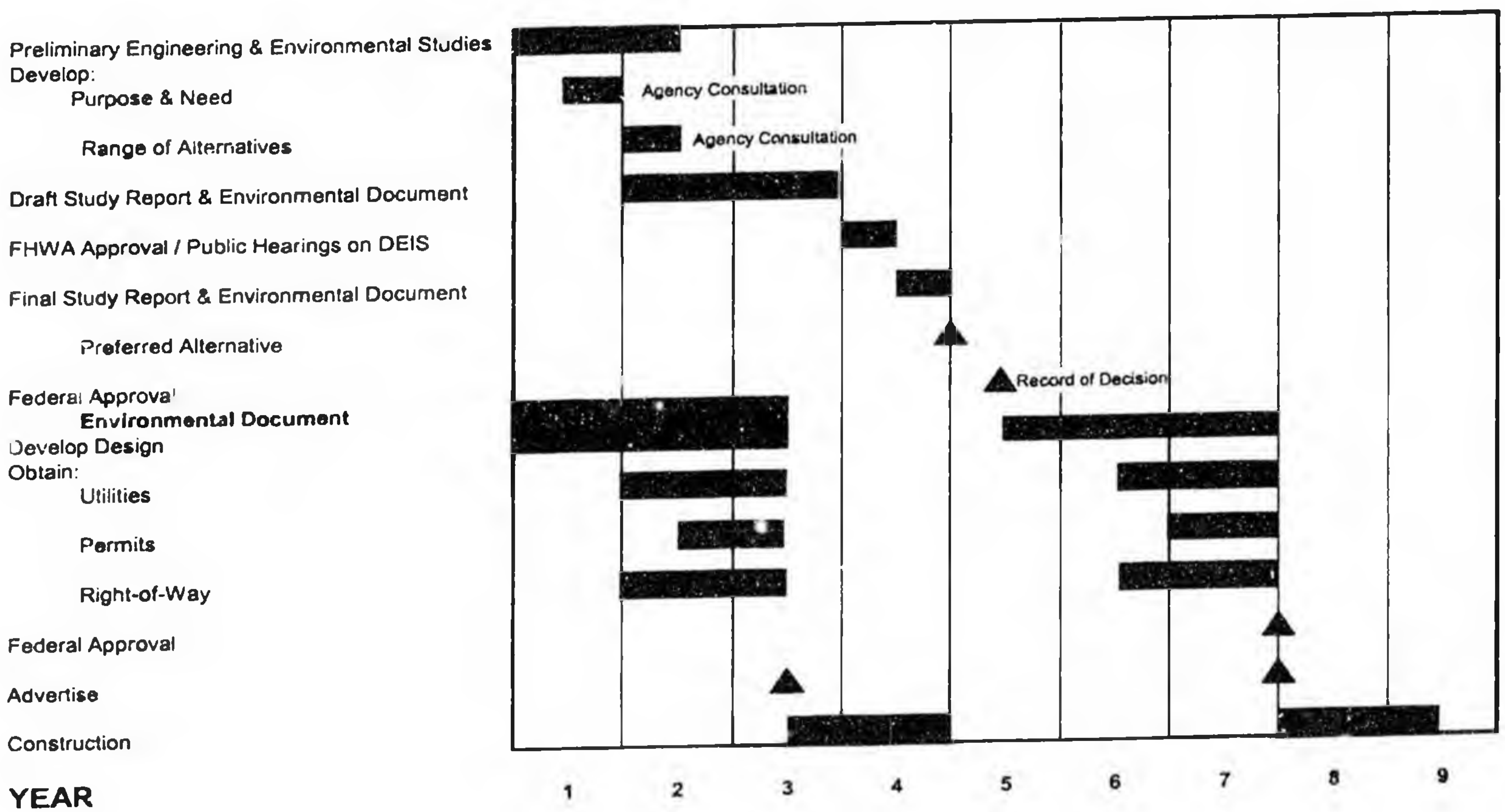


Challenge: How to motivate the public to be involved during the planning, programming and early project development phases, when they have the greatest opportunity to influence decisions

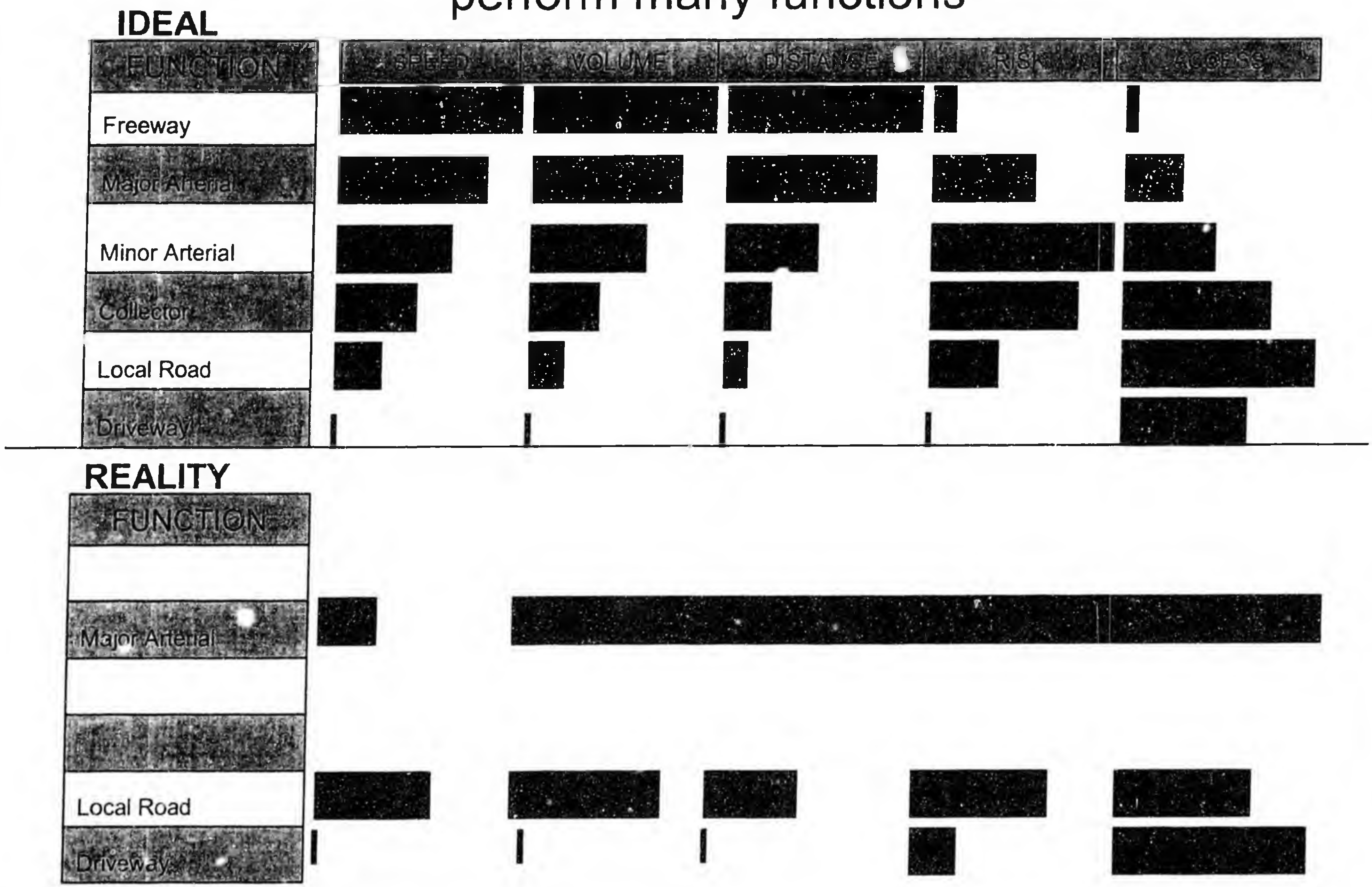
Challenge: projects take a long time to reach construction

TYPICAL SCHEDULE FOR A FEDERAL-AID HIGHWAY PROJECT
Requiring an Environmental Impact Statement

TYPICAL SCHEDULE FOR A STATE-FUNDED PROJECT



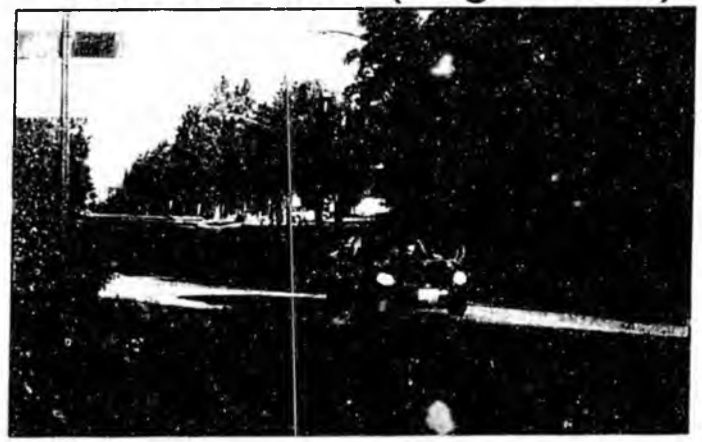
Challenge: "road hierarchy" lacking; few roads perform many functions



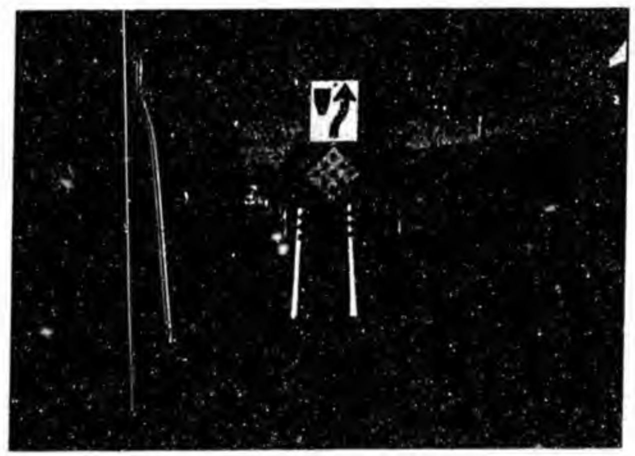
Challenge: Improving existing roads that function as collectors

Wisconsin Street

Baranof Street (Eagle River)



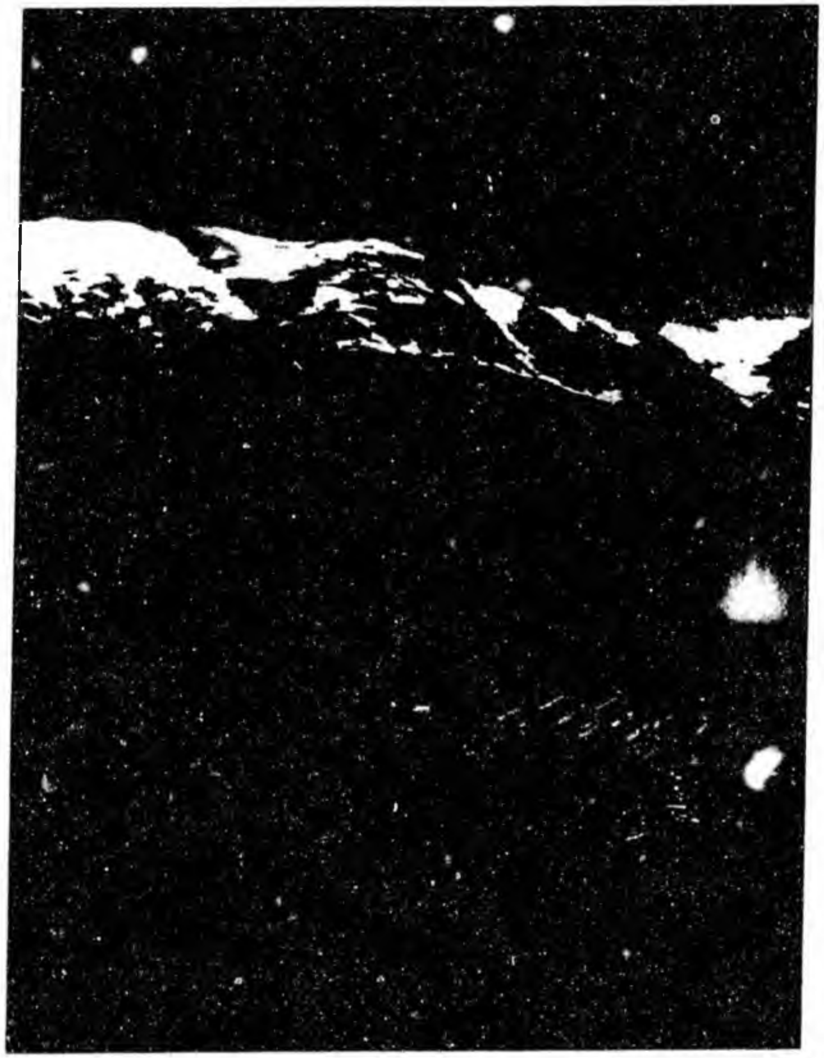
Meadow Creek Drive (Eagle River)

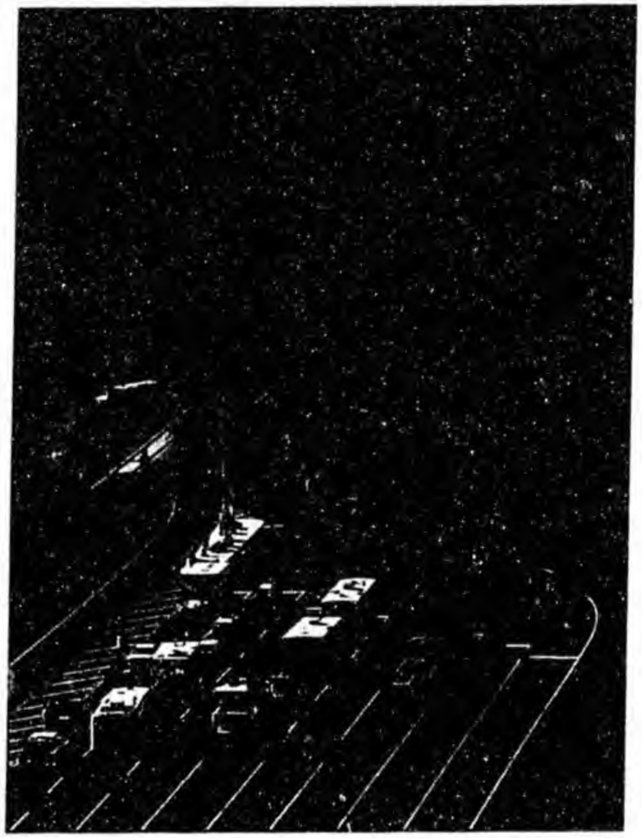


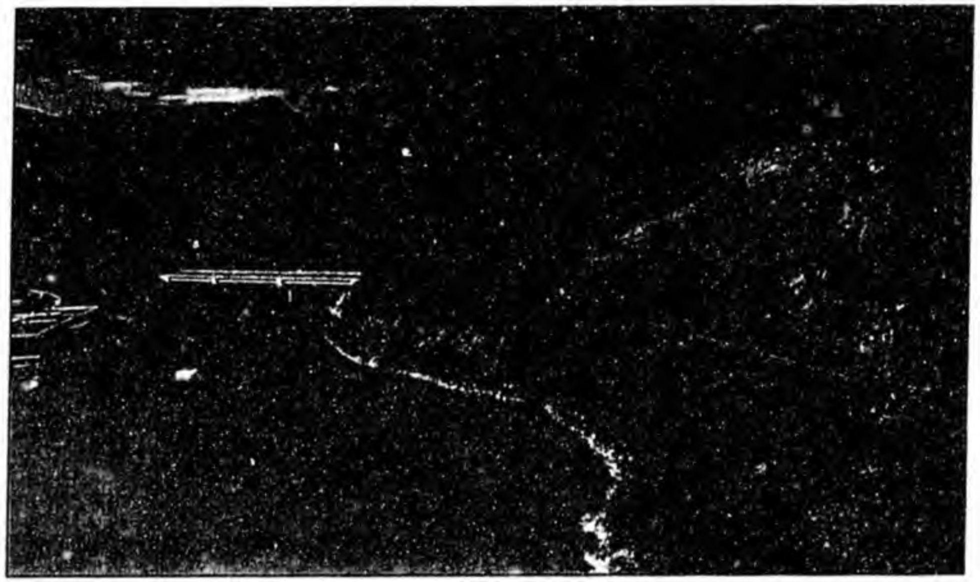
Business Boulevard
(Eagle River)

Whittier Tunnel

Project developed to blend into natural setting

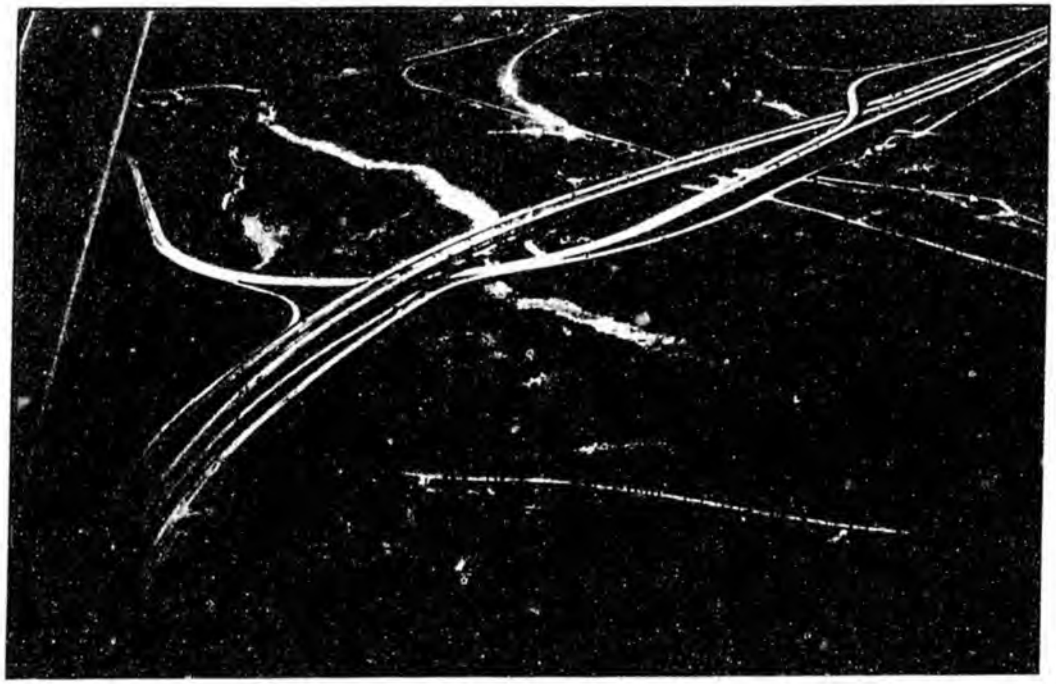


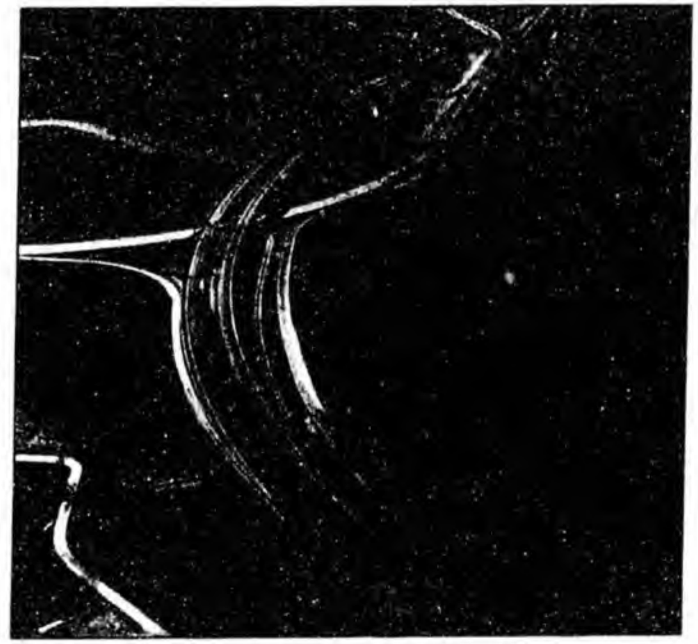




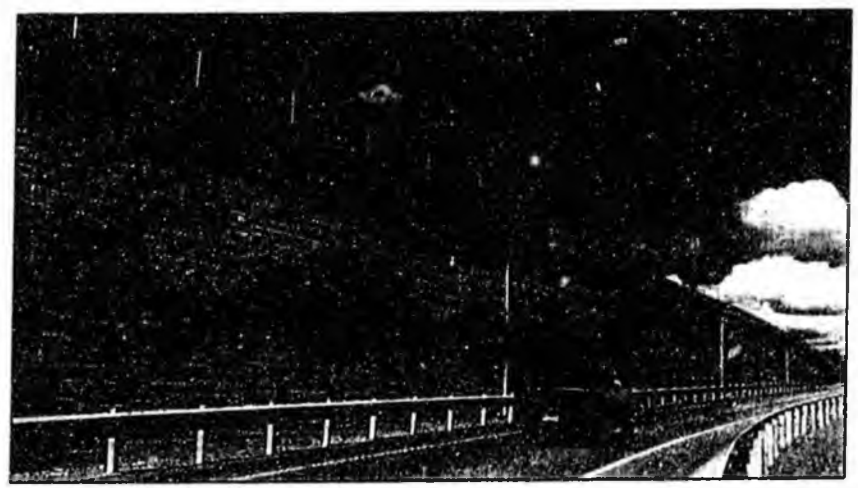
Glenn/Parks Interchange

Little Spring Creek – little disturbance





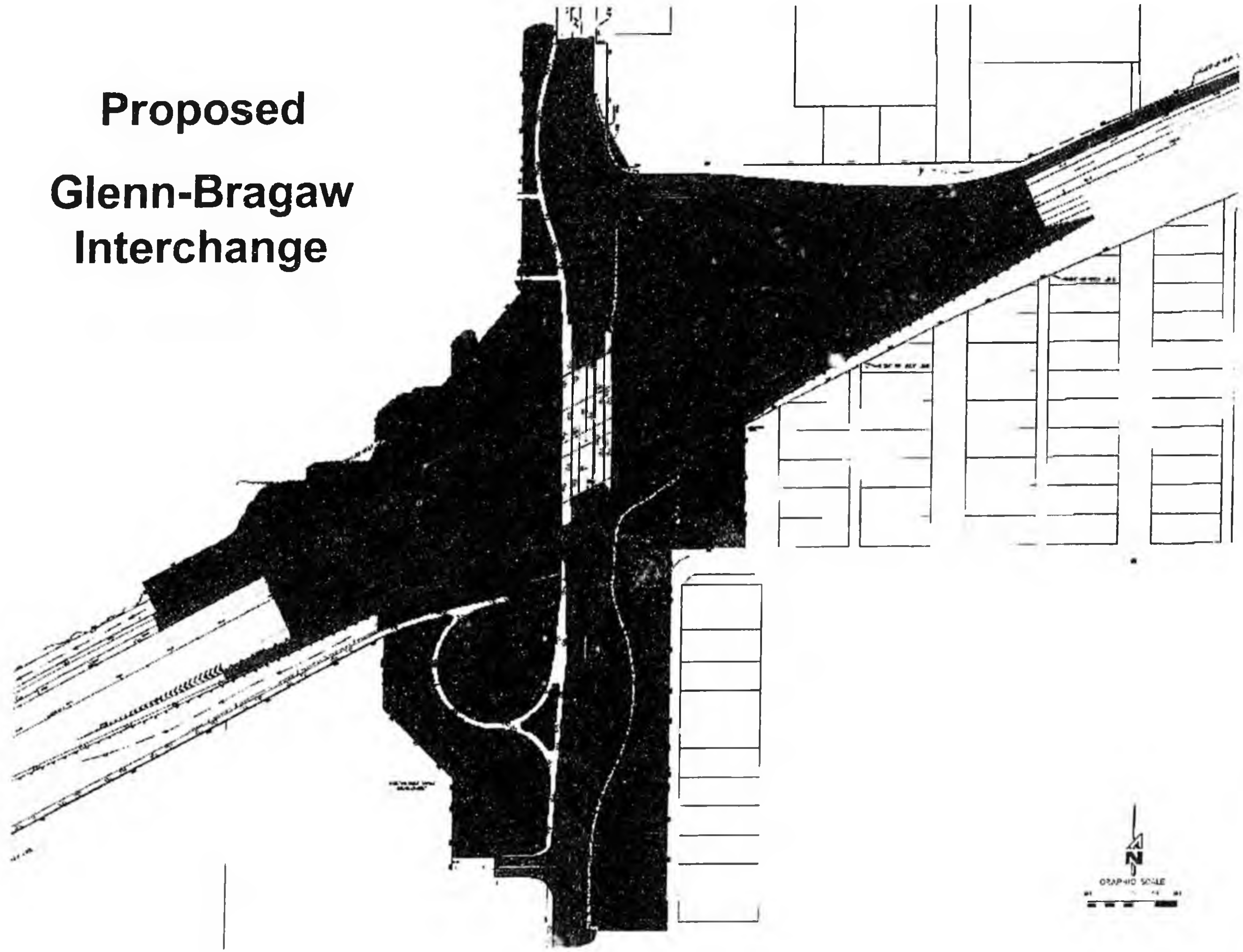
Sensitive Coho rearing habitat was preserved by the project



Local artist designed artwork for the project

Proposed

Glenn-Bragaw Interchange



U.S. Department of Transportation
Federal Highway Administration

400 Seventh St., S.W.
Washington, D.C. 20590

November 1, 2006

Refer to: HIPA-20

Mr. Gordon Keith
Alaska DOT & PF, Central Region
PO Box 196900
Anchorage, AK 99519-6900

Dear Mr. Keith:

Congratulations! The Federal Highway Administration (FHWA) is pleased to inform you that the project you submitted for the 2006 Excellence in Highway Design Awards competition has won an award. The brochure identifying all of the winners within the 11 design award categories is attached.

As with past years, award winners will be individually recognized at a later date to be identified by the state DOT and local FHWA Division Office. Our Division Office will be in contact with you to coordinate the details associated with arranging a date and time suitable to present this award. Plaques are being prepared and sent to our Division Office to present to the organizations or individuals that were listed on the entry form. The Division Offices will receive the awards by the end of the calendar year.

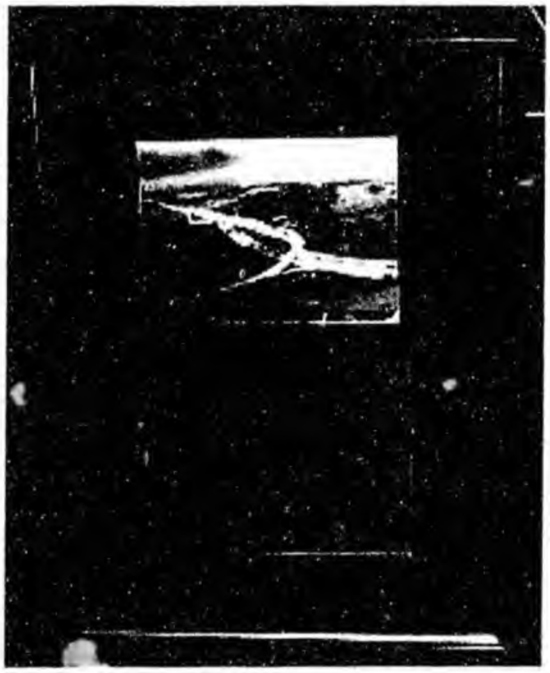
One of the critical challenges facing our industry is providing context sensitive highway solutions that improve safety, mobility, and meet our transportation needs; while at the same time considering their surrounding environment and desires of local communities. The 2006 award winners showcase outstanding design projects or initiatives providing exemplary examples of innovative initiatives and practices that have embraced this challenge with resounding success.

Thank you for participating and contributing to the success of this very important awards program. We look forward to your future participation in this program. For additional information with reference to receiving this award, please contact your Division Office.

EXCELLENCE IN HIGHWAY DESIGN

BIENNIAL AWARDS
FEDERAL HIGHWAY ADMINISTRATION

2006-Glenn/Parks Interchange



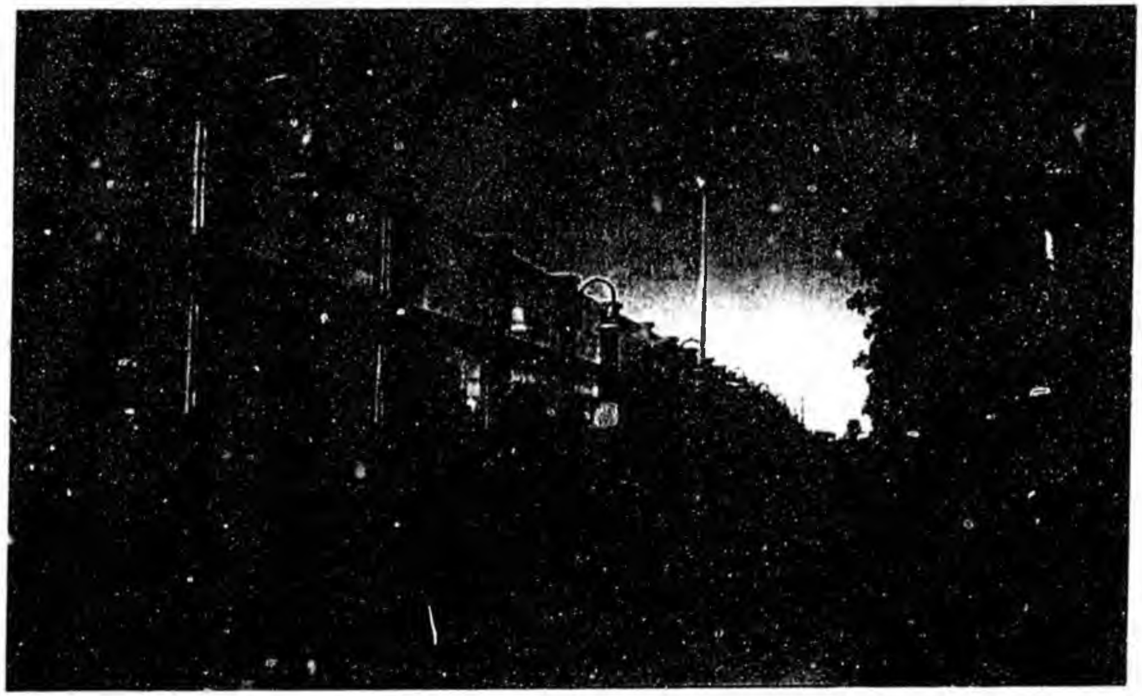
"This program is conducted biennially by the Federal Highway Administration (FHWA) to recognize outstanding initiatives and examples of innovative approaches to develop and design context sensitive highway solutions. As the demands on our highway system become increasingly complex, the need for innovative and context sensitive solutions will continue to grow. CSS has an important role to play in meeting today's complex transportation challenges!

CSS is a collaborative interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. Many highway agencies are modifying and incorporating CSS into how they plan for and design transportation projects."

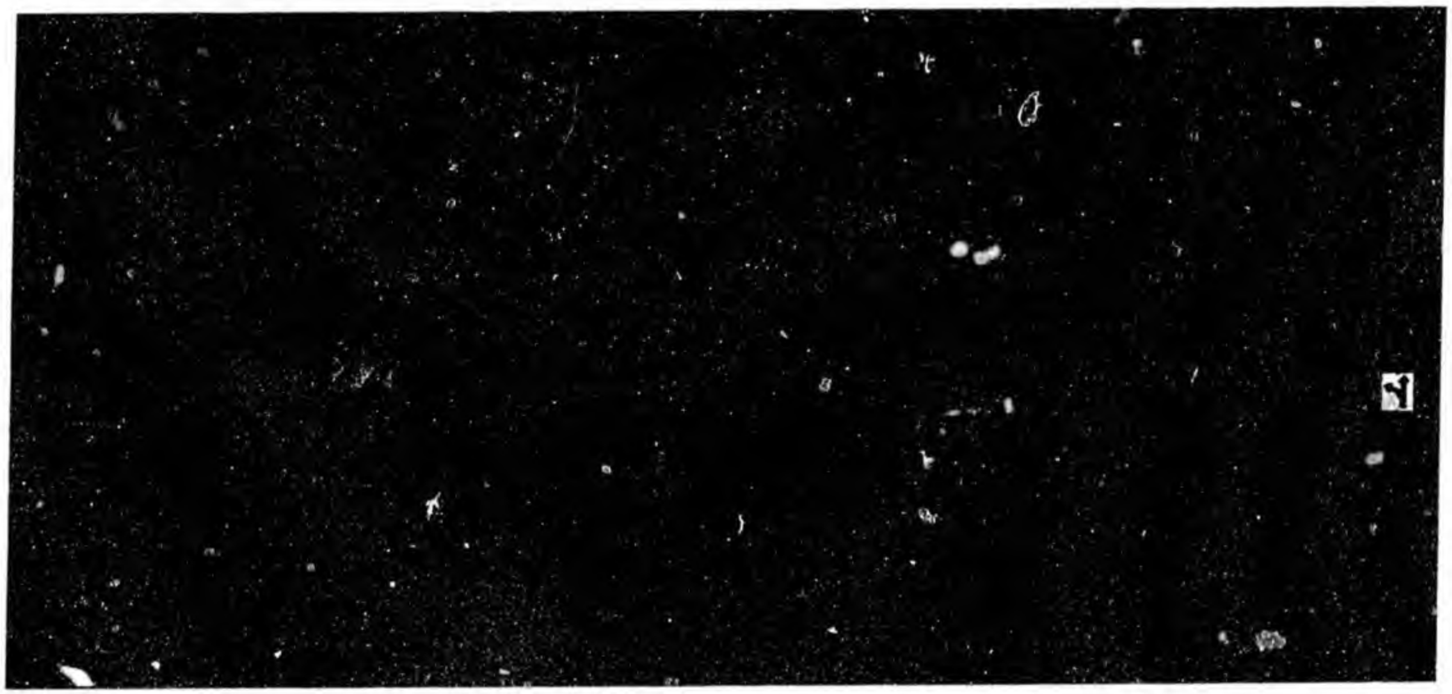
-FHWA Website

http://www.fhwa.dot.gov/eihd/

C Street



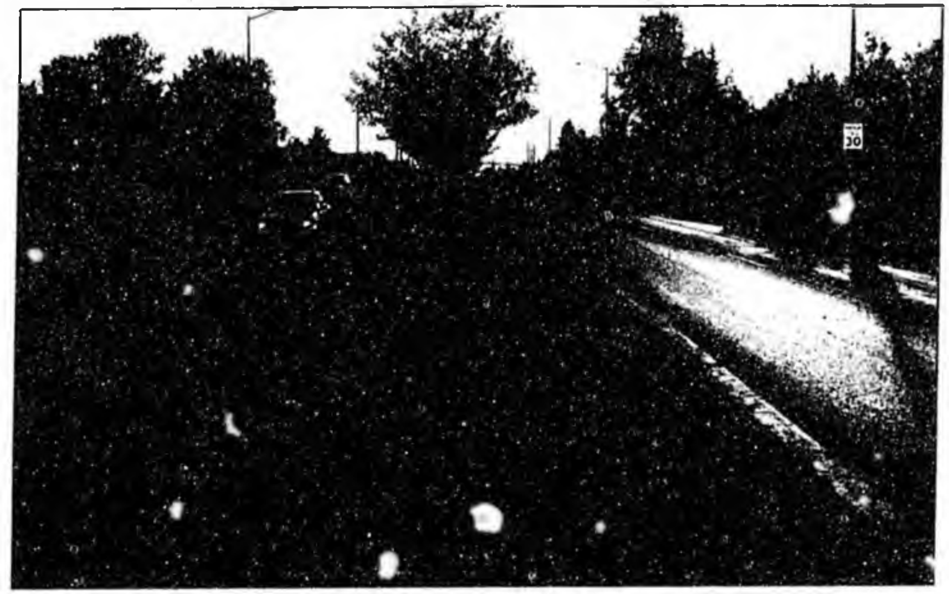
Sound barrier adjacent to condos

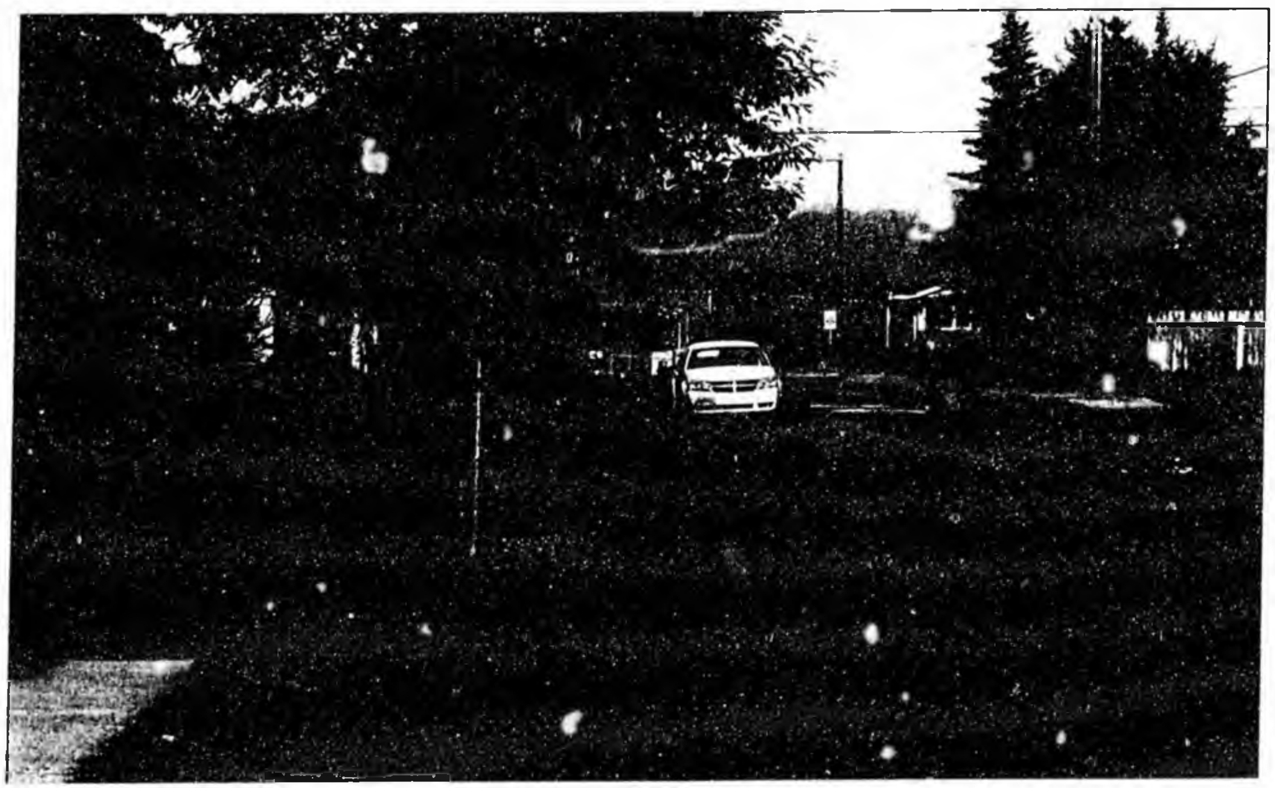


Roundabout at O'Malley Road

15th Avenue (arterial)

Cordova to Orca: road widened from 2 to 4 lanes with separated pathways on both side and median landscaping

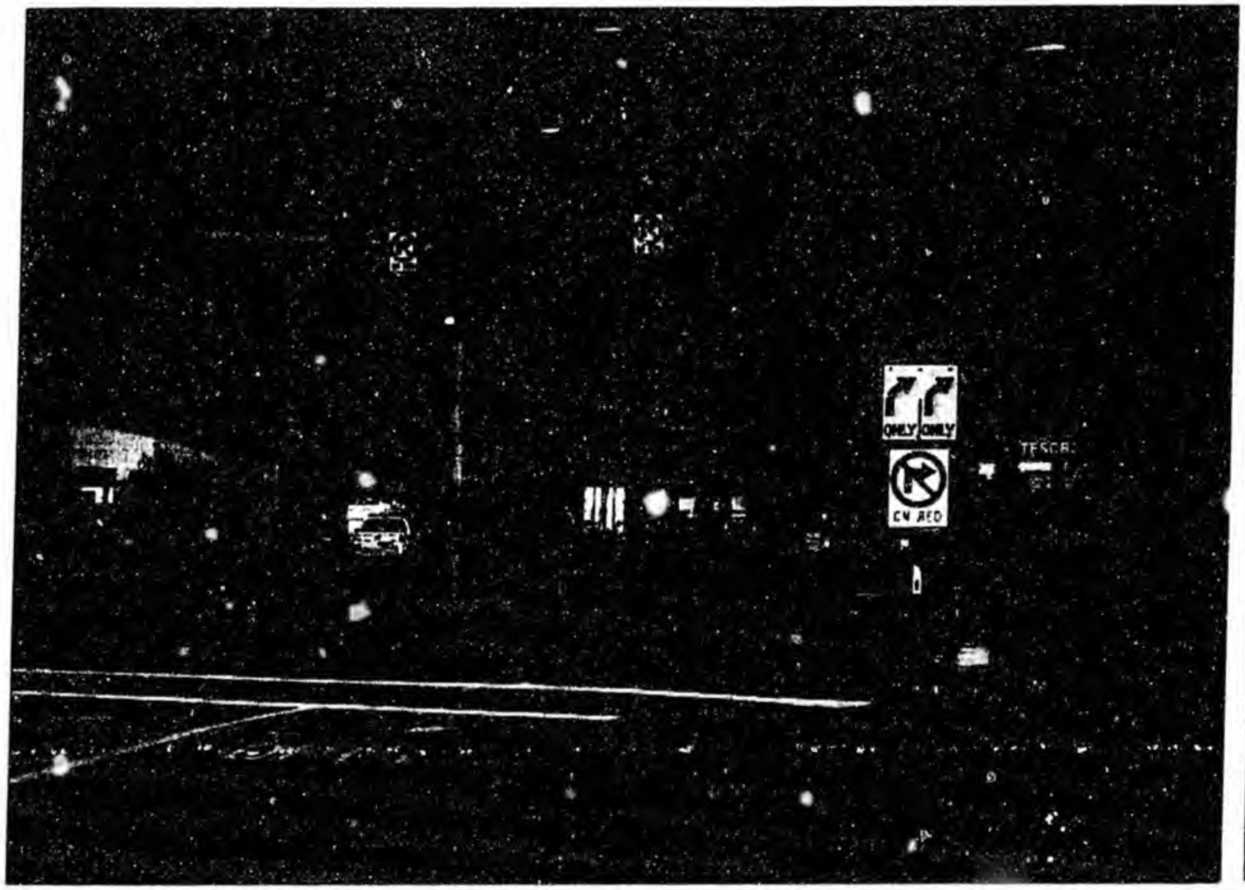


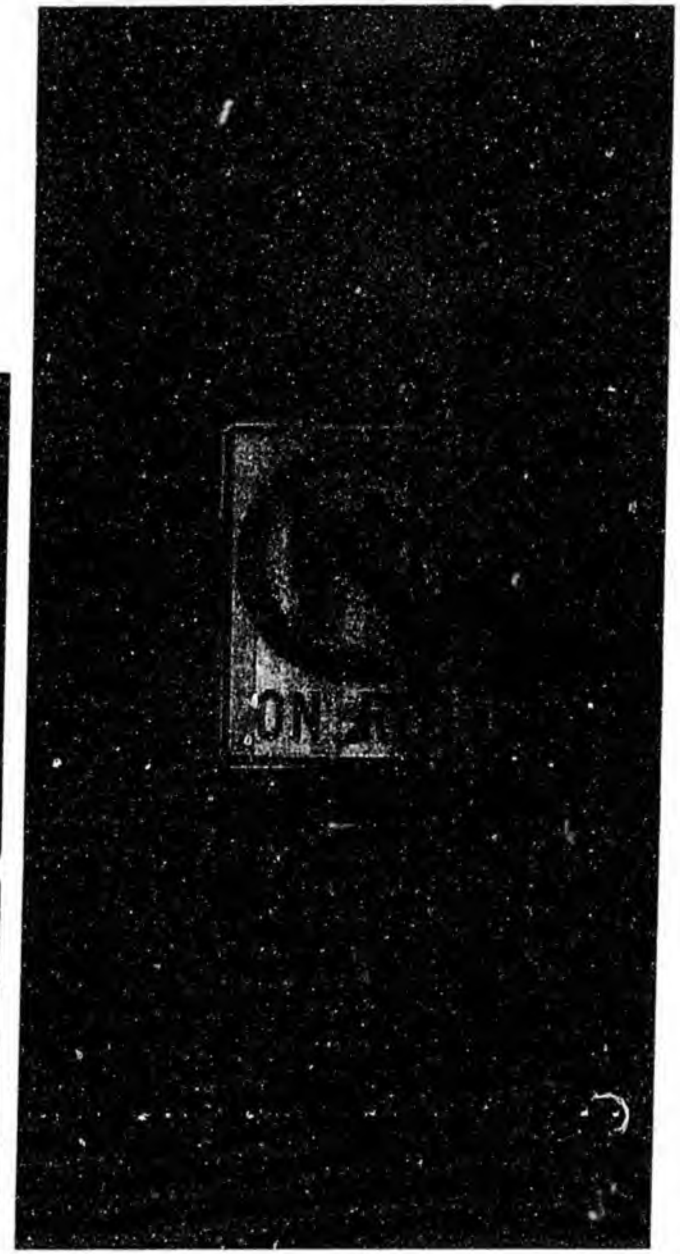


L Street to Cordova: road narrowed from 4 to 3 lanes to allow separated sidewalk for pedestrians

A Street at Benson Boulevard

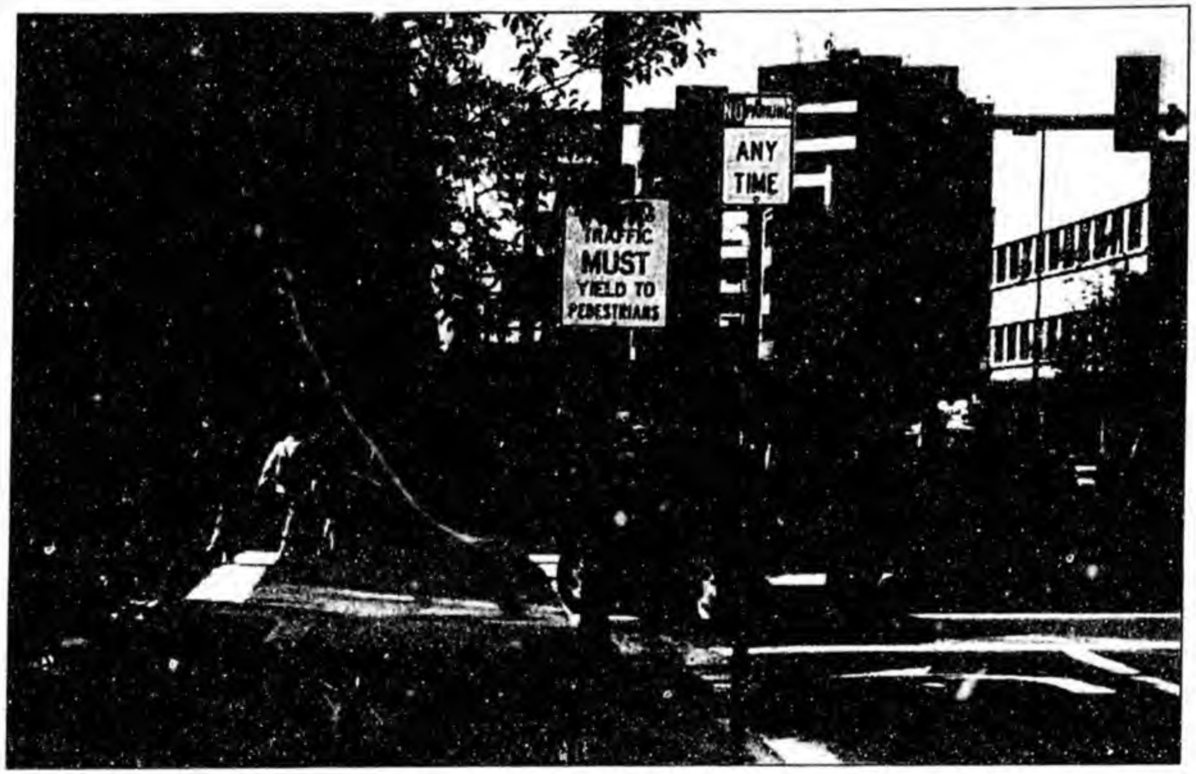
Dual right turns prohibited on red to accommodate pedestrian crossings





5th Avenue at C Street

On-street parking eliminated to provide dedicated left turn lane to allow better visibility for pedestrians and drivers



HOUSE COMMITTEE REPC T

(7)
Date Referred to Committee: February 19, 2008 **FURTHER REFERRALS: Finance**

Date of Committee Action: 3/18/08

The TRANSPORTATION Committee considered: **HB 372**

HOUSE BILL NO. 372 **HIGHWAY DESIGN FLEXIBILITY/MUNICIPALITIES**

"An Act relating to highway design flexibility and to the assumption by municipalities of certain duties related to highways."

Recommends it be replaced with [ ] HCS *or* [X] CS for HB 372 (TRA)
***For Senate Bills with new title: [ ] Technical Title [ ] New Title: HCR*_______ [ ] Same Title [X] New Title**

[ ] attach amendments
[ ] add new referral to ___________Committee
[ ] Letter of Intent__________Committee

List of Abbrev for Depts.: ADM CED COR CRT EED DEC DFG GOV HSS LWF LAW LEG MVA DNR DPS REV DOT UA

***NEW* FISCAL NOTES**
*Assigned by Chief Clerk's Office

List by Dept(s):	*FN#	Fiscal	Indet.	Zero
DOT		X		

***PREVIOUS* FISCAL NOTES**

List by Dept(s):	FN#	Fiscal	Indet.	Zero

Signing with recommendations	Printed Last Name	DP	DNP	NR	AM
Mike Doogan	Doogan			X	
[signature]	Salmon			X	
Anna I. Fairclough	FAIRCLOUGH		X		
Chair: Kyle B. Johansen	JOHANSEN			X	
Chair:					