

Summary of Comments

Ada County
Functional Classification Workshop
September 28, 2006



The functional classification workshop was a continuation of the ongoing stakeholder collaboration process underpinning ACHD's Transportation-Land Use Integration Project. The workshop was well attended and included several participants who have worked with the team throughout the process. There are also many other stakeholders with a stake in the outcome of this process, and this memorandum is intended to give those who were not able to attend some sense of the topics covered and work accomplished. As those additional stakeholders have an opportunity to provide input to these topics, they will be refined accordingly.

The workshop began with a presentation and discussion of some of the progress to date and goals of the work session. The initial group discussion was followed by table work regarding some of the framework topics in break-out groups. While the initial group session was in a presentation format, it was informal and there was dialogue among the participants throughout.

Ada County's Functional Classification System

The session began with a discussion of Ada County's current functional classification system (an unofficial map of the current functional classification system is provided on the next page). The initial discussion dealt with why we have functional classifications of the street network. These policies relate to:

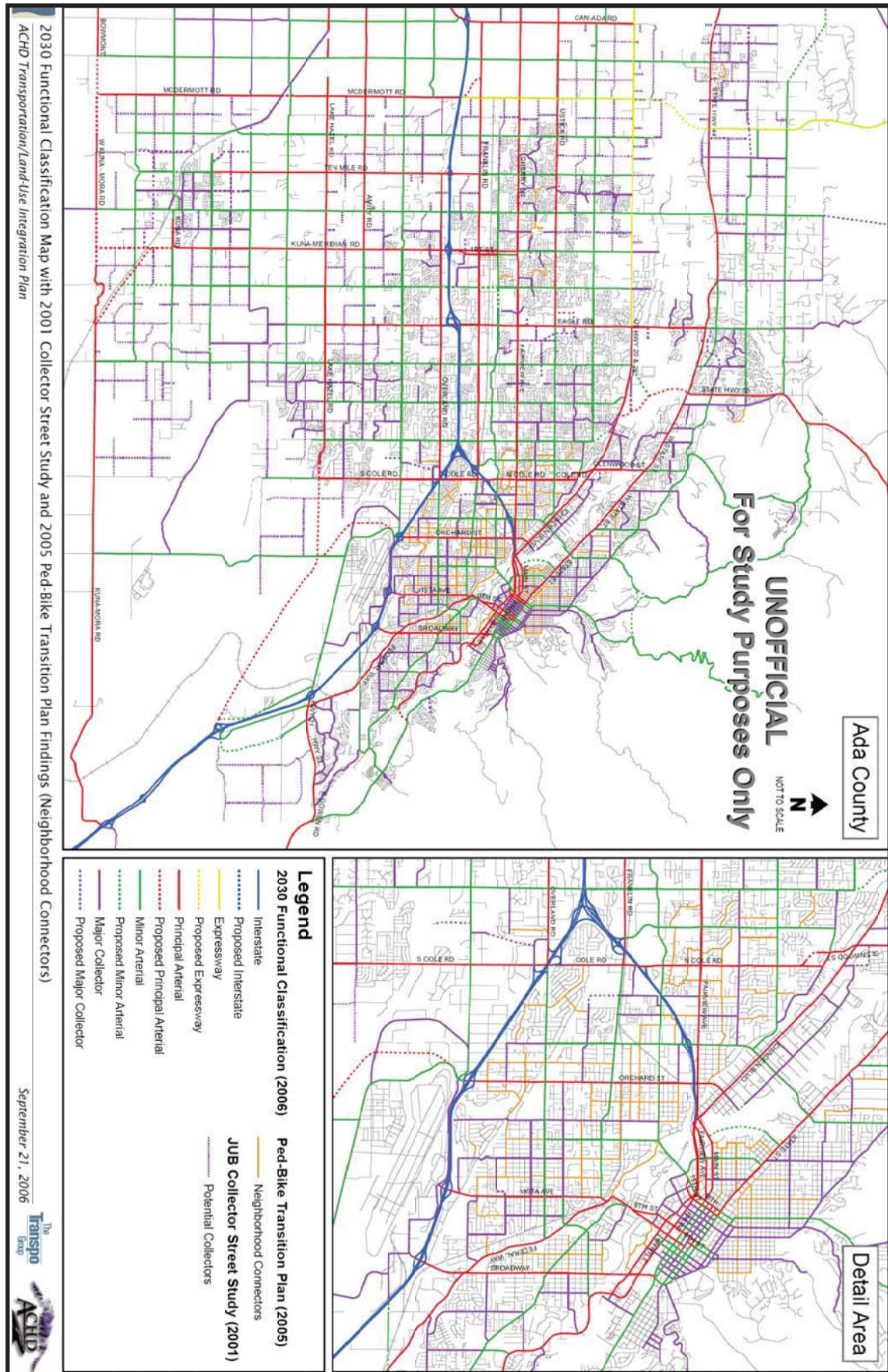
- ***Federal Funding*** – Various Federal funding sources are tied to particular street functional classifications.
- ***Right-of-Way Planning*** – In order to assure that sufficient forethought is given to a street's future cross-section, and potentially to acquire needed right-of-way at lower costs, the functional classification can be considered.
- ***Impact Fees*** – In Ada County, only streets of a certain classification are eligible for impact fee funding.
- ***Local Plans*** – The "sizing" of arterial streets in local plans has, historically, followed based on the functional classification designation.

One of the issues discussed was that in current practice, volumes are the primary determinant of a street's functional classification. If a street has, or is expected to have high vehicular volumes, it is classified as an arterial and becomes eligible for impact fee funds for widening.

This system, while effective in some respects, has also resulted in some issues that are a concern locally. It was suggested that this system can result in context mismatches. In other words, the design of a road may not complement its surroundings, because its design was based primarily on traffic volumes. A second issue that has been mentioned is the problem of "gaming the system." In other words, there is some sense that changes to a street's functional classification is the most effective way to assure a desired design or outcome for that street.

Of course, none of these aspects of the current system are desirable. All of the participants involved in the process to date have expressed a desire to develop a system that is more logical and transparent and that allows the region to have street designs that will improve communities.

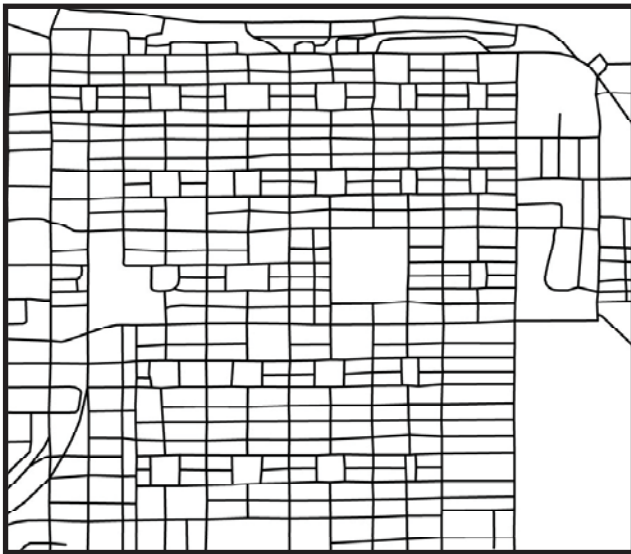
Unofficial Ada County Functional Classification System Map



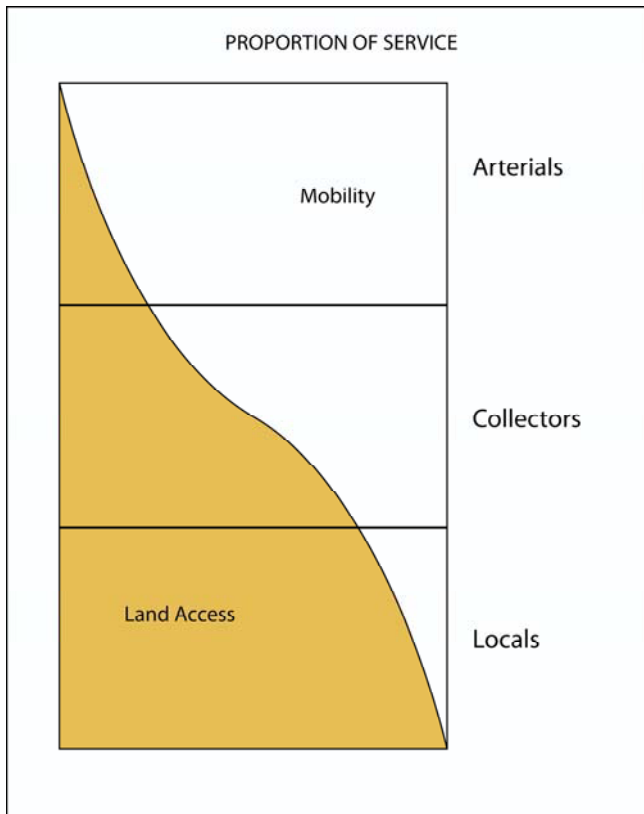
It was suggested that, rather than volume, available network options, expected trip lengths, cross access or land access requirements should be employed in determining the right functional classification for a given street.

The presenters explained to the participants that it is also a goal of this project that the streets be comfortable for all users, not just vehicles. This is especially difficult to accomplish with one-size-fits-all designs. Vehicle levels of service should be weighted against other community goals. It does the community no good if the solution is worse than the problem. The safety of pedestrians must be a priority in many areas. Statistics were presented related to the impact of vehicle speeds on pedestrian safety. It was suggested that vehicle speeds around 30 miles per hour were more compatible with pedestrian environments. This would not degrade vehicle capacity as the Highway Capacity Manual indicated that capacity is optimized around this same 30 mph level.

This idea of different designs for different areas was described in terms of a transect. This is simply the practice of assuring that built elements match up with one another. Urban streets should be matched to urban land use densities. Rural parking solutions should be found in rural areas, etc.



Abercorn Street in Savannah, Georgia is two lanes to the north (above) and 10 lanes to the south (below), yet the northern section supports a greater variety of land uses due to the presence of a full street network and hierarchy.



Functional classification that truly considers whom and what the road is serving will consider the needs of those interests in roadway design and contextual relationship.

Federal Guidance on Functional Classification

Our discussion moved to the technical definition and guidance on functional classifications provided by the Policy on Geometric Design of Highways and Streets, by the American Association of State Highway and Transportation Officials (known as the "Green Book"). This book provides the technical basis for much of modern street design in practice. This document is routinely cited as the basis for legal arguments and defense and, as such, is an important resource for design engineers. It can also provide a wealth of interesting lessons to non-engineers. Among those lessons is the role of a street in providing access and mobility to a community.

Rather than a reflection of volumes or numbers of lanes, the functional classification should ideally relate to the street's function. As basic as this concept sounds, it is often lost in the planning and design process. Implicit in this definition is that different streets will have different functions. These functions are related to the two primary jobs we ask of our streets; to provide access and to provide mobility. Typically well-designed streets fall somewhere along a spectrum of these two functions, as illustrated in the accompanying diagram. Again, implicit in this diagram is the idea that a system of streets, each

serving a different function, is required in order to adequately serve a community.

Unfortunately, this is precisely the mistake we make most often throughout the United States. We have created arterial streets that we expect to carry vehicles on long mobility based trips, with driveways to accommodate access based trips, and no supporting network so that every type of trip in-between must also occur on the arterial. Providing a system or network of streets across the functional spectrum has numerous benefits. By allowing the primary access and mobility functions to occur on separate facilities, less space is needed on arterial corridors. Connected streets provide options for drivers that forestall calls for road widenings. This allows for a planned and functional hierarchy of streets that enhances both mobility and wayfinding.

As a group we explored several questions. Do we need all of these types of streets? How does this system of streets fit together? Where do bikes, pedestrians and transit fit into the mix? The Green Book lays out a hierarchy of movements as follows:

- Main Movement***
- Transition***
- Distribution***
- Collection***
- Access***
- Termination***

The manual goes on to say that “conflicts and congestion occur... when the functional transitions are inadequate.” What this essentially means is that when a corridor such as an arterial is asked to provide mobility functions (main movement) and access functions (driveways) with no transition, congestion is a predictable consequence. The natural solution to this design flaw is to plan and design more network hierarchy so that streets with mobility functions can transition to streets with access functions.

It was suggested that, rather than volume, available network options, expected trip lengths, cross access or land access requirements should be employed in determining the right functional classification for a given street.

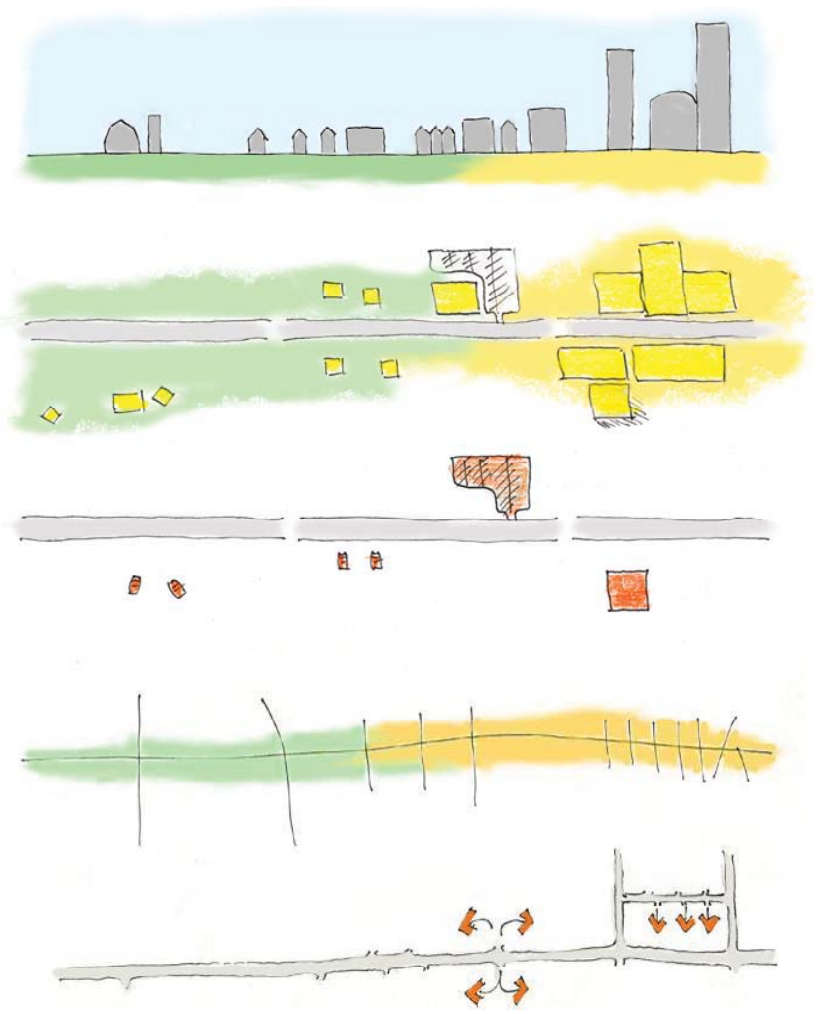
The Role of Context and Character

The concept of street function does a good job of pointing us to the “types” of streets we need, but how should those street types be designed? Most of the participants involved in the process to date agree that one type of design cannot effectively serve all situations. An arterial in downtown may not look at all like an arterial in a rural or suburban area. This difference in the needs that drive design can be boiled down to character or context. The Green Book supports this idea when it says “the complete hierarchy of circulations facilities relates especially to conditions of low-density, suburban development.” The types and systems of streets, sidewalks, bicycle and transit facilities that we develop for urban areas are bound to be different.

One of the goals of this project is that the streets should be safe and comfortable for all users; not just vehicles. This is especially difficult to accomplish with one-size-fits-all designs. As streets transition from rural, to suburban, to urban environments the users, the functions, the forms and, therefore, the designs will need to change.

This idea of different designs for different areas was described in terms of a transect. This is simply the practice of assuring that built elements match up with one another. Urban streets should be matched to urban land use densities. Rural design solutions, on the other hand, should be found in rural areas.

Our process is moving towards matching an area’s context to its functional classification in order to suggest an



Land form, parking, street spacing, access and all other elements of design should be consistent with context.

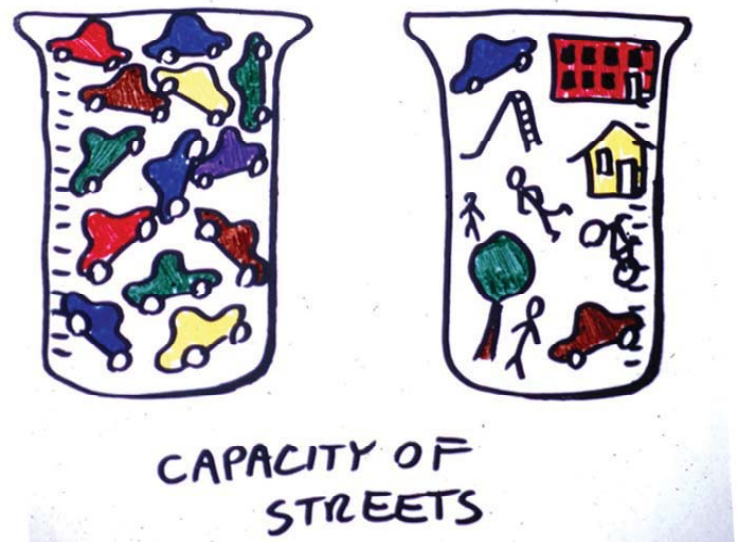
appropriate design. ***These specific design ideas will be explored more fully in the December 7 workshop.***

Evaluation of Alternatives

The group briefly discussed how alternatives are evaluated. Vehicular roadway capacity, the most common measure of roadway conditions, is a key factor in determining roadway level of service. The level of service of a roadway is an assessment of the relationship between total roadway capacity and the volume of vehicles using the roadway at a given time, usually the peak morning and evening rush hours. Level of service is measured on a scale of A through F, with A considered the best (unconstrained) condition and F considered the worst (congested) condition. In urban areas, level of service D is often regarded as the minimum acceptable vehicular level of service. Some lightly developed fringe and rural areas might strive for LOS C. Most regions utilize vehicle LOS as the primary determinant of transportation needs and solutions.

It is important to bear in mind, however, that vehicular level-of-service focuses solely on the comfort of vehicular travel on a corridor. This metric does not take into account community character, pedestrian safety or any other factors that might be important to an individual community. Often, a good vehicular level-of-service is inversely related to the quality of travel for non-motorized travel. An analysis focused solely on vehicular level-of-service tends to produce investments that cater solely to vehicular travel, such as widening and grade separation.

Broadening the tools of analysis to include other community considerations is one important step towards developing a multi-modal transportation network. Vehicle levels of service should be weighted against other community goals. It does the community no good if the solution is worse than the problem. The safety of pedestrians must be a priority in many areas. Statistics were presented related to the impact of vehicle speeds on pedestrian safety. It was suggested that vehicle speeds around 30 miles per hour were more compatible with pedestrian environments. This would not degrade vehicle capacity as the Highway Capacity Manual indicated that capacity is optimized around this same 30 mph



Vehicle levels of service should be weighted against other community goals. Streets and roads do have capacity, but that capacity can be measured either purely in terms of vehicle mobility or in a broader sense, namely, in a way that accommodates other community concerns.

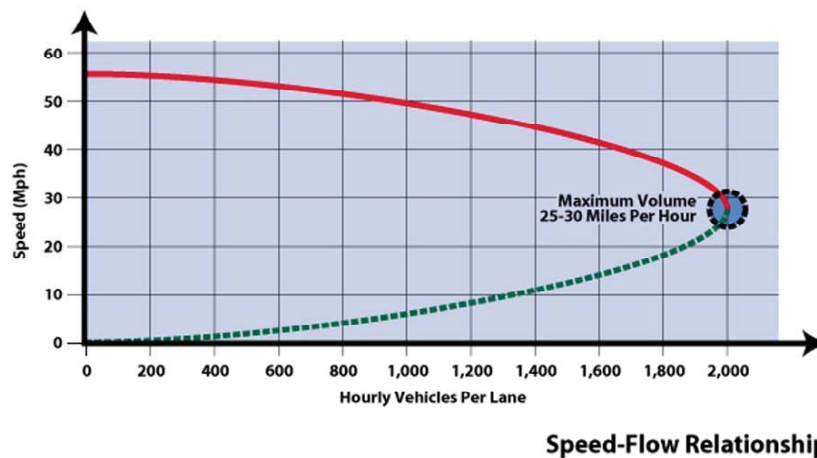
level.

Some communities have found a solution in redefining the problem. If the quest to meet a goal of vehicle level of service (LOS) "D" is causing larger, detrimental effects to the community, perhaps it is not the right goal. The solution for some communities has been to develop a process that utilizes vehicle LOS as only one component of a larger evaluation process. For other communities, the solution has been to develop LOS standards that vary based on the area and its needs. In either case, the right answer will be one that relates to the community's context.

Speed vs. Capacity

The group discussed the relationship of vehicle speeds to roadway capacity. Contrary to common intuition, an increase in vehicle speed does not necessarily indicate an increase in capacity or an improvement in level of service. Similarly, a decrease in speed does not indicate a decrease in capacity. This is explained by the following truths about vehicular travel flow:

- a. The Highway Capacity Manual produced by the Transportation Research Board postulates that, under most circumstances, *the hourly flow of vehicles per lane is maximized at a speed of 25-30 miles per hour*. At higher speeds, the number of vehicles that can be carried in a lane per hour goes down, due to the natural inclination of motorists to increase spacing between vehicles which offsets the potential capacity advantages of higher speeds.



The optimum speed-flow relationship is found in the 25-30 mile-per-hour range.

- b. For multi-lane roads, higher speeds dictate a larger gradient in the different flow speeds per lane. This gradient leads to many “weaving” movements as motorists struggle to find the fastest lane, decreasing the overall capacity of the roadway. The more lanes there are, the greater the effect of weaving on capacity per lane.
- c. Intersections are the main determinants of capacity and level-of-service. Implementing coordinated signal systems and maintaining steady flows are simpler to accomplish at lower rather than higher speeds.

Assuring that discussions of “speed” and “capacity” remain separate is imperative in achieving context-sensitive design. By doing so, we may find that it is possible to build a high capacity, moderate-speed arterial that can accommodate trees, bike lanes, cross-walks or other amenities that may benefit the community.

Stakeholder Input

The workshop continued with table sessions where participants shared comments and suggestions on integrating context into the design of Ada County’s roadways and particular areas of concern where context needed to be prioritized over mobility (and vice versa). The stakeholders were asked to provide suggestions in two primary areas:

Character Areas

For purposes of the work sessions, these were defined simply as areas worth preserving or areas that people care about. It is hoped that this identification, while certainly not a technical process, can begin to suggest areas where transportation design standards that match area context might be especially important.

The first of the following two diagrams illustrates some of the character areas suggested by workshop participants and reflects a general concern for established town and city centers as well as places with special needs (such as the Boise State University campus and surrounding area).

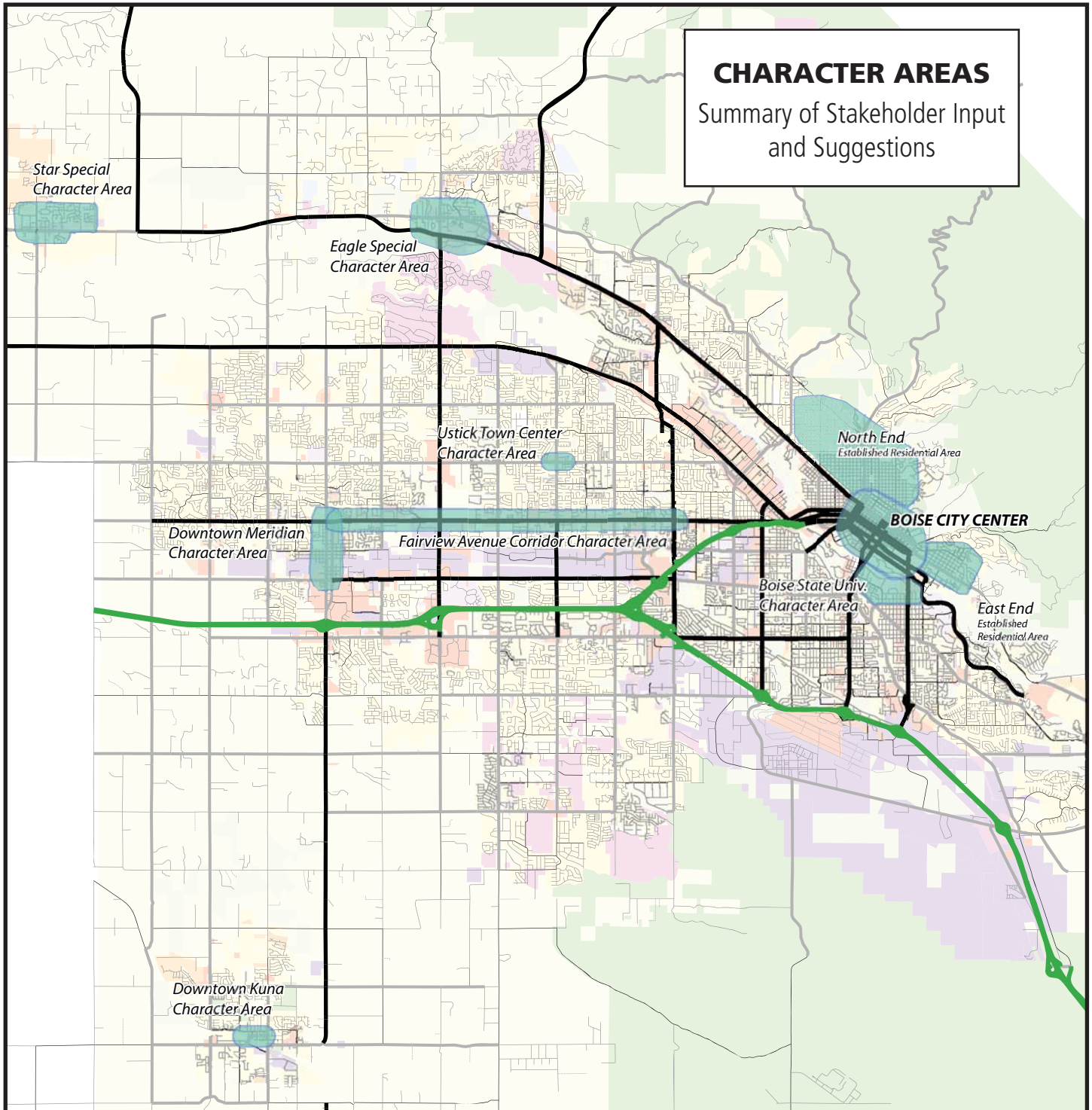
Constrained vs. Mobility Corridors

One of the concepts discussed was the balance of constrained roadway design (namely, preserving some roads from indefinite future widening) and mobility needs: if certain corridors are special and should be limited in some way with regard to mobility-oriented projects, then those corridors must likely be supplemented by corridors that do have more of a mobility character. The stakeholders were asked only to identify corridors that they thought should be primarily about mobility and those that they felt should be constrained.

It is likely that each stakeholder has a different definition of a constrained corridor at this stage. To some it may mean that no further lanes or no more right of way should be considered. To some it may mean that vehicle speeds should be limited. To others it may mean that development along a corridor should be limited. As we progress on this project, we will work with stakeholders to identify the benefits and costs of each of these types of constraint and work to develop a common language and approach to defining constrained corridors. As was mentioned earlier, these ideas will continue to be explored with additional stakeholders and will be subjected to more technical assessment (Land use, travel forecasts, Level of Service policies, collector street system, etc.) throughout the process.

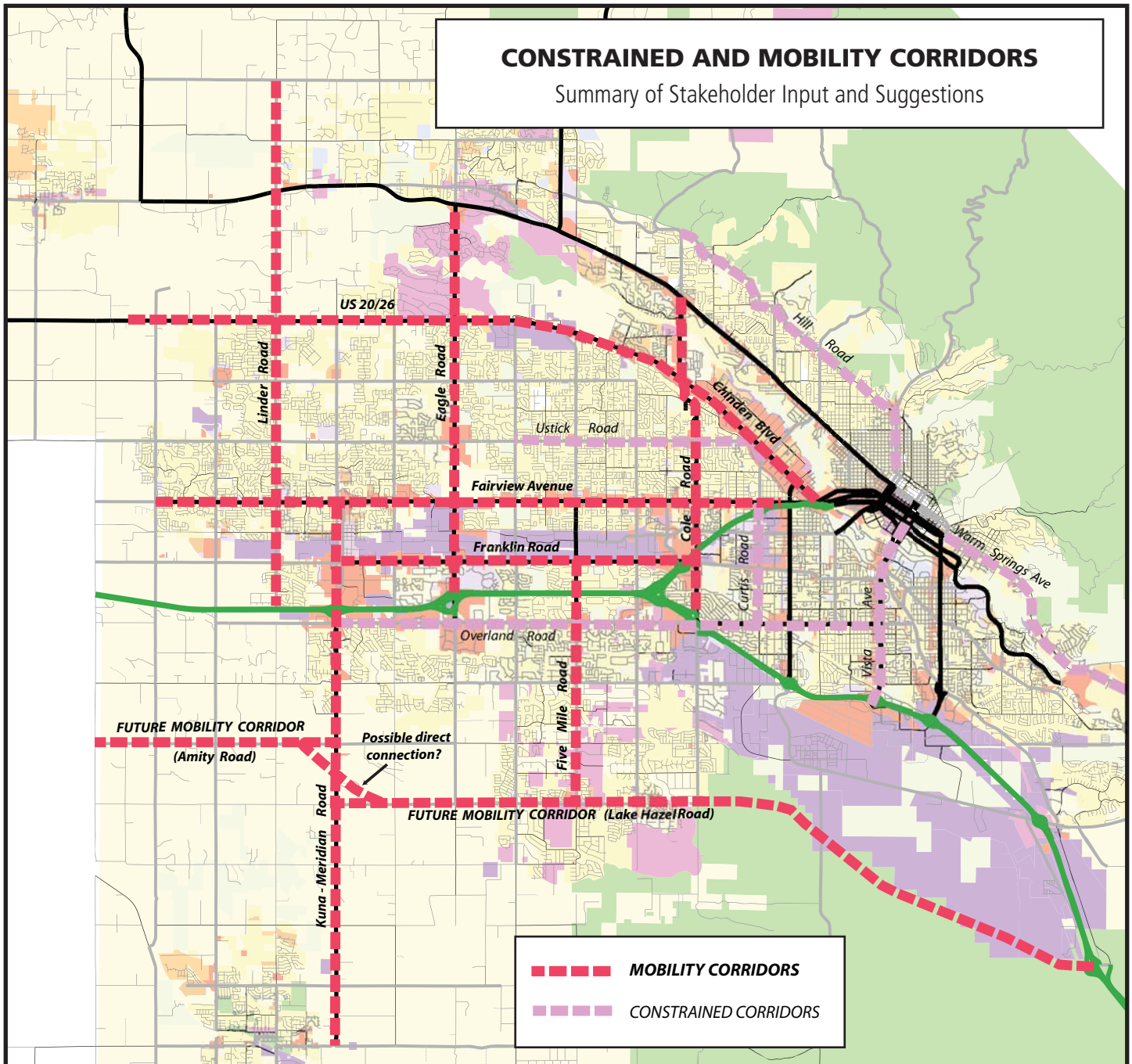
One goal of the workshop was to identify character areas throughout the county to understand well-established communities that are particularly sensitive to transportation impacts. In addition to the older, established residential and commercial areas of Boise City, workshop participants noted other town centers and neighborhood areas throughout the county notable for mature street trees and landscaping, traditional building patterns (i.e. buildings close to the street) and schools or other community facilities.

In these special character areas, roadways will be focused on the context provided by the built environment. Roadway design will seek to minimize impacts on the built environment by limiting lanes and lane widths and by enhancing roadway design elements.



Ada County's section-line grid system provides relatively direct access throughout the urbanized area, though many of these section-line roads have also historically borne the duty of serving smaller areas. The workshop participants expressed their understanding of the conflict between the community areas of established character and the widening of roads to serve traffic demand, yet they also appreciate the need for regional mobility to accommodate Ada County's rapid growth.

With that in mind, workshop participants were encouraged to identify the constrained corridors that would prioritize context (especially character areas) in roadway design and the mobility corridors that would be the primary facilities for regional through-movement. The diagram presented here summarizes the discussions at the workshop and the general suggestions from participants on which corridors should be considered for what purpose.



It is important to note that the character areas and corridors shown here are identified from direct suggestions from workshop participants or general corridors mentioned as meriting a more context-sensitive treatment as development occurs along them. These are only suggestions. The character areas depicted in the previous diagram are areas that workshop participants noted may need special consideration in roadway design, but as previously noted, the development and definition of these character areas is far from a technical activity. Character areas indicate land use patterns to be explored in further detail. As broadly defining character areas may create conflict between the region's mobility needs and the need to preserve established communities, we are refining our understanding of how to integrate the context of character areas into roadway design.

It is also important to point out that conflicting ideas on how mobility and context-sensitive constraints to corridors must be worked out. From the Functional Classification workshop, different participants offered different ideas on treating certain corridors.

These suggestions have formed a partial basis for the consultant team's reconsideration of the functional classification system in Ada County and how different street designs can be developed based on the contextual need (or, as the case may be, the regional need). As was the case with the previously produced "Issues and Opportunities Memorandum," the material reflected in this memorandum merely suggests initial ideas or areas of stakeholder interest. All of the suggestions and recommendations in this document are to be vetted, tested and refined as a part of the development of a final product. The next step in the process will be to bring these ideas forward into a Livable Streets Design Workshop to occur in December 2006. At this workshop we will explore how some of the theoretical concepts discussed in this memorandum can be reflected in street designs.