Summary of Comments

Ada County
Livable Street Design Workshop
December 7, 2006

This memorandum summarizes the Livable Street Design Workshop held on December 7, 2006 as part of the Ada County Highway District's Transportation and Land Use Integration Plan (TLIP), comprising a morning session involving round-table input and discussion with ACHD staff and Ada County design professionals (both municipal staff and private consultants) and an afternoon session of elected officials and planning staff which focused on a presentation of the morning's concepts and an extended discussion of how to approach implementing them.

Morning Session with Design Professionals

The work session began with an introduction and a summary of previous workshops that ACHD has held:

The first workshop was the Livable Streets Workshop at which several planning concepts were discussed:

- Speed
- Transect
- Matching Design To Context

The issues discussed and ideas developed at this workshop were documented in an Issues and Opportunities Memorandum. The second workshop was the Functional Classification Workshop during which the team went into greater depth on several topics (later documented in a Functional Classification Workshop summary memorandum):

- Existing System/Issues
- Access vs. Mobility
- Importance of Network Hierarchy

This third workshop (Street Design Workshop) focused on design issues. The participants in the first half of the workshop day were technical professionals: designers and engineers from both local agencies and consulting engineering firms. The work session was an opportunity to share ideas about different models for street design and some of the considerations that can help to bring about positive change in the nature of transportation projects that are built.

The Process of Change

Dan Burden of Glatting Jackson began the design session by talking about the nature of change. Since the ideas to be discussed represent a change in approach and thinking from what has traditionally been pursued in project design, this difficult yet inevitable prospect was important. Dan illustrated the following points of a paradigm shift toward livable transportation:

In the past 50 years, the engineering and design community has:		*More recent studies and the current state of engineering practice suggest that in the next 50 years we will likely:*
Removed on-street parking for safety	**Community Choice and Policy Change →**	Add on-street parking for safety
Removed trees for safety		Add trees for safety
Added lanes for safety		Remove lanes for safety
Widened lanes for safety		Narrow lanes for safety
Expanded intersections for safety		Shrink intersections for safety
Removed sidewalks for added capacity		Add sidewalks for added capacity

Ada County will be facing this paradigm shift in the upcoming years. The hope is that the community will be able to ease the transition by learning from the experience of other communities around the country.

Changing Standards

These new ways of approaching design are based on a wealth of data and experience, most prominently from studies by Robert Noland[1]. Unlike previous studies, Noland's is not a localized study or one reflecting unusual roadway types. It is specific to collectors, and it applies to all roads of this category throughout the United States. Noland states directly that "as more arterial and collector lane widths are increased up to 12 feet or more, traffic fatalities and injuries increase. These results are quite stunning as it is general practice to 'improve' the safety of roads by increasing lane widths."

Recent research by Eric Dumbaugh of Texas A&M University[2] also provides results surprising to some: landscaping, street trees and roadside elements typically regarded by engineers as fixed-object hazards are not empirically shown to have negative impacts on a road's safety and, in fact, are supported by substantial evidence suggesting that they will enhance safety.

Numerous other recent studies provide compelling evidence that trees and planters correlate to 5-20% reduction in crashes (Toronto), that on-street parking reduces unnecessarily higher speeds (New Hampshire) and that trees in urban areas are associated with decreases in crashes (Washington).

The cumulative effect of all of these studies has been to suggest that old standby approaches such as wide lanes or high design speeds are probably no longer sound public policy. It is only sensible that as we learn more, our design standards should change accordingly.

Design Elements - Lane Width

Standard practice has traditionally been to provide 12 foot vehicular lanes whenever possible. This is based on language within the AASHTO *Policy on the Geometric Design of Highways and Streets,* or "Green Book," that suggests this as a width for which communities should strive. However, the Green Book provides communities a great deal of flexibility in this regard and suggests that local engineering judgement should determine these criteria. Indeed, as Dan Burden told the group, the 12 foot dimension was originally set to correspond to army tank dimensions (since the interstate highway system was built as a national defense mechanism.)

Dan showed examples of livable streets from around the country for which narrower lanes had the effect of reducing vehicle speeds, improving safety and contributing positively to the image of the community. These are the types of experience and results that design engineers are expected to employ in determining design criteria. Not only do these reduced vehicle speeds make travel safer for vehicles, bicycles and pedestrians; the Highway Capacity Manual indicates that speeds of 25 to 30 miles per hour provide the highest level of vehicular capacity.

Likewise intersection size can be an impediment to the accommodation of both pedestrians and vehicles. Of course very wide intersections are intimidating and difficult for pedestrians, but the long signal clearance time required for walk signals is inefficient for vehicle movement as well. By virtually any measure (safety, efficiency, aesthetics) over-sized streets and intersections perform poorly and are a mark of poor planning.

Design for the Pedestrian

Dan spoke about sidewalk designs and dimensions, both in terms of what elements are required for a good, functional sidewalk and what dimensions are desirable. These design elements affect not only the function of the sidewalk, but the types of development that are willing to invest in a given area.

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[1] For more information, see Noland's article in the journal *Accident Analysis and Prevention* (2003). A digital pre-print copy is available at http://www.cts.cv.ic.ac.uk/documents/publications/iccts00203.pdf.

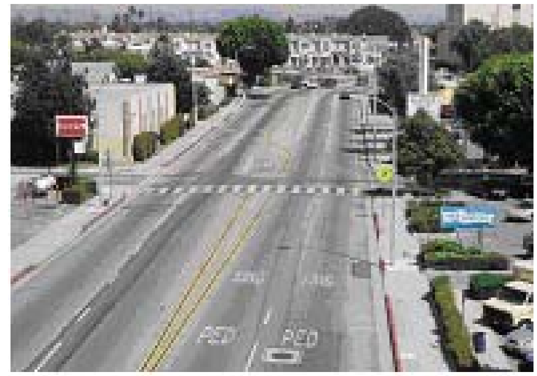
[2] Dumbaugh, Eric. 'Safe Streets, Livable Streets.' Journal of the American Planning Association, Vol. 71, No. 3 (2005), pp. 283-300.

Pedestrian dimensions should allow ample space for groups walking and passing, generally accepted to be a minimum of five feet of clear walkway on sidewalks.

Trees and Landscaping

Dan next spoke about the importance of trees to the effectiveness of a street. Currently numerous streets in Ada County are without any trees or landscaping, adding to the hostility of the environment for area pedestrians. If this environment is to change, both the presence and the form of trees must be considered.

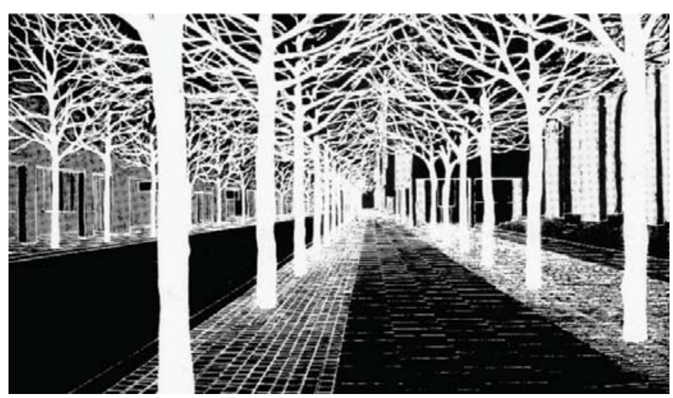
One of the basic tenets of street trees is that they are functional in addition to being aesthetically pleasing. They are vital to the function of the pedestrian system. They are one of the most effective tools for influencing driver speed and improving safety. This presence of trees is one of the elements that relates to the quality of both the pedestrian and driving environment. They also pay for themselves. Well-placed trees and landscaping raise adjacent property values and create higher property tax revenues.



Narrowing vehicle lanes and other traveled way elements can make an intersection safer for pedestrians. Pedestrian safety is greatly compromised by wide intersection crossings without opportunities for refuge midway.

Tree form. When considering trees for a street, the form of those trees can make a significant difference in their effectiveness. In some locations, canopy trees might be appropriate. Canopy trees are trees with a spread and foliage that ideally extends to about eight to ten feet or more from the tree trunk. Also, this foliage needs to be at least eight feet above the pavement surface. That said, the only forms out of the ones in the graphic shown below that lend themselves to being canopies are trees with rounded, spreading or weeping forms. Trees with fastigate, columnar or pyramidal forms often form excellent screens. It is also not possible to gain a canopy feel on very wide streets. Therefore, the character of the corridor, the likely presence of pedestrians, the need to affect vehicle speeds and the space available must all be considered in determining the optimal tree form for a corridor.

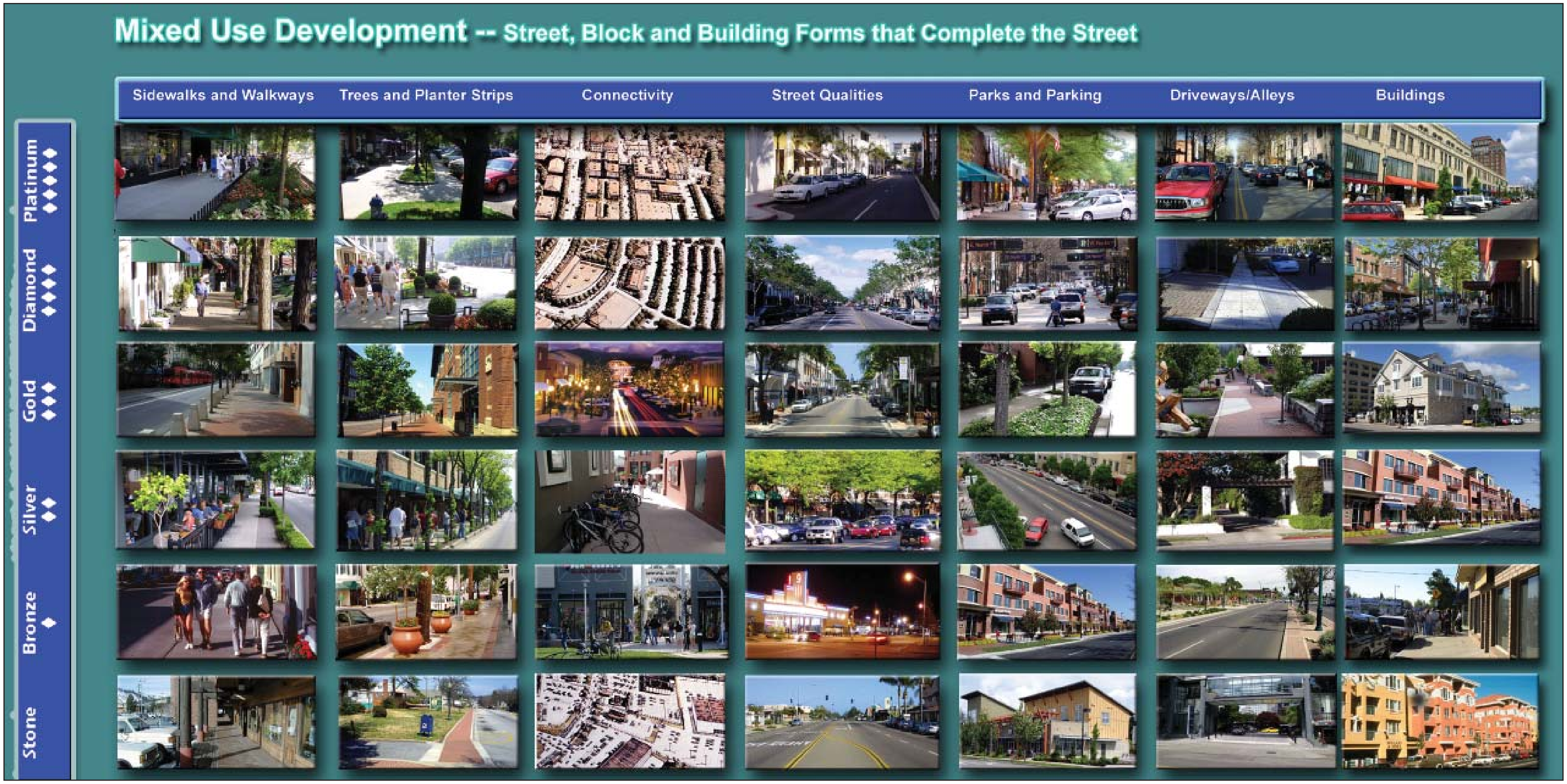
Tree placements. Tree placement is as important as choosing the right tree form. The intent of a tree lined canopy street is to provide structure and enclosure to the street. This can be achieved by spacing trees regularly and in the correct location across the street right-of-way (ROW). Trees spaced too far apart or too wide across the ROW, do not provide enclosure and appear more as free-single trees rather than as a canopy. On the other hand, if placed too close, the lack of space for growth of foliage may prove to be a problem for the development of canopies. A 4 foot planting strip or amenity strip with tree grates with an additional 6-8 foot sidewalk is typically needed for canopy trees to flourish. Ideal conditions may call for more space for trees. In any case, it will be critical to follow the local landscape design guidelines for street and canopy tree planting requirements.



Correct tree form and placement provides side as well as overhead enclosure.

Design speed of the street. As discussed in all of the workshops, this is perhaps one of the most critical design components. Standard engineering practice suggests that when the 40 mile-per-hour design speed threshold is breached, automobile safety issues take precedence causing a significant shift in design parameters. This adversely impacts the

(continued on page 5)

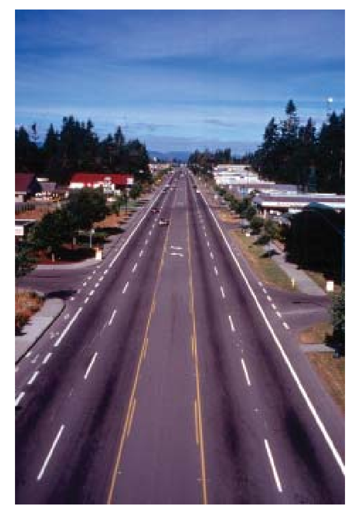


The different levels of place depend not only on aesthetics of buildings and off-street landscaping but also on the quality of public space as provided in the street right-of-way.

The ratings described here (on the left column) evaluate different dimensions of the integration of land use and transportation in forming a composite picture of streets and the built environment. The idea behind this system of ratings is that the best, most defined places are rare (and this rating is difficult to attain), where most streets and places are described by different performance ratings for their different components.

Test Cases

The image at the left is a street in Toronto and provides a good example of strong performance in the indicators in the matrix above. Wide sidewalks are provided along its entire length, though landscaping and planter strips are only on one side (perhaps this indicator would only receive a silver rating, where sidewalks would be rated gold or diamond). It is part of a large connected network of streets, though 'points might be deducted' for relatively large blocks (again, perhaps silver or gold, as its connectivity outperforms the example to the right, a typical suburban arterial with only driveway cuts, perhaps earning a bronze or even stone rating).



development of tree line canopies on streets because of increased spacing between the travel lane and the trees and wider spacing between trees in consideration of sight distance. Tree lined canopy streets are best developed on streets with design speeds of 40 mph or less.

The Value of Public Investment

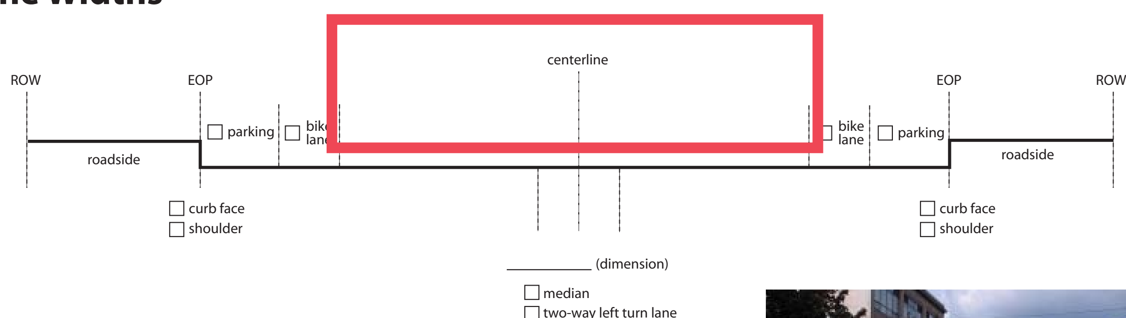
Dan next spoke about how the design decisions about a corridor can impact the entire character and image of an area. By way of example, Dan showed photographs of one street running between Claremont and Pomona, California. While both are five lane roads, the feel of the entire areas are impacted by the designs of the streets. The land uses that locate along each section also respond to the care taken in the design of the street.

Table Work Sessions

The primary interactive portion of the morning session was focused on gathering input from design professionals on suitable dimensions for roadway design in a selected range of contexts. Participants were asked to define parameters for speed, cartway (the traveled way between shoulder edges or curb faces) and the pedestrian way outside of the cartway. In the interest of time participants focused on defining arterial and collector roadways each in commercial, residential and town center (or urban mixed use) contexts.

Table facilitators guided the discussion with a sample roadway section sheet, a copy of which is attached at the end of this memorandum, that allowed general comments and suggestions to be applied to an elevation view of the desired roadway session as expressed in the table sessions. Also attached is a summary table of the input received from the design professionals with notes indicating special caveats, concerns or exceptions. The following sections on design parameters will provide a general sense of each of the four tables' thoughts on appropriate roadway design for the given contexts. Rather than summarizing dimensions that each table defined, they are listed in the Summary Table as recorded by the facilitator.

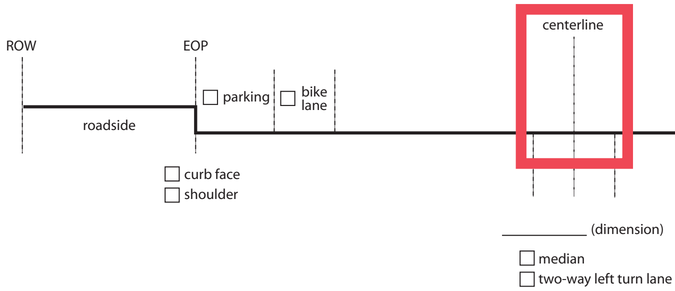
Travel Lane Widths



In the context of this discussion, participants were asked to consider both single-lane and multi-lane sections. In multiple instances participants acknowledged that inner lanes of a multi-lane roadway do not have to have the same widths as outer lanes, which must accommodate parking movements, right turns and other contingencies. Many participants were willing to reduce lane widths when faced with other design concerns that were discussed later in the session.

Narrowed lanes to accommodate other design features.

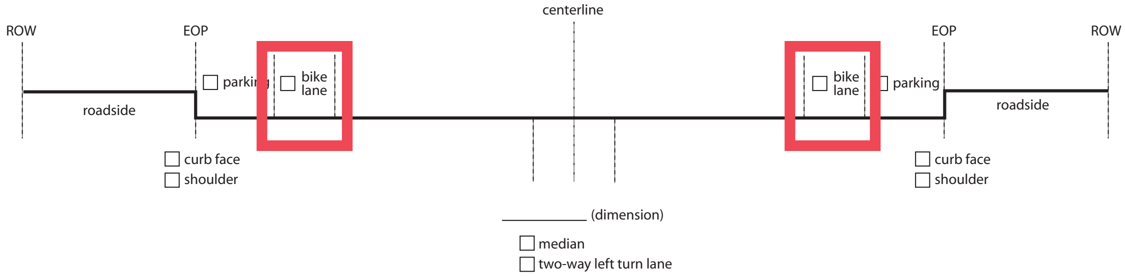
Center Lane Widths



When center lanes need to be used, what will their width be? Dan Burden's presentation illustrated the possibility of using generally narrower lanes, as these facilities do not have the same needs for moving vehicles at the roadway's target speed.

If the lane is to be used, will it be a continuous two-way left turn lane or will it accommodate a median (that could be substituted for left turn storage bays as needed)?

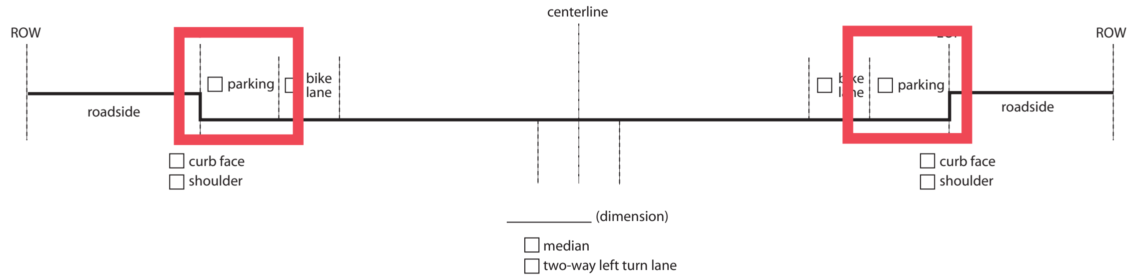
Bicycle Lanes



Glatting Jackson's presentation communicated the benefits to the roadway from adding bicycle facilities. Dan Burden argues that of the many benefits of bike lanes, only two directly apply to the bicycle and the rest facilitate vehicle movement, parking, pedestrian crossing and other needs of livable streets.

Workshop participants generally saw the benefit of adding these facilities, noting reservations primarily in cases of high vehicle speeds (such as commercial arterials) or a combination of vehicle speed and land use patterns that do not offer many directly-accessed origins and destinations (such as residential arterials with internal access, or 'back-on' arterials common in suburban environments). While some participants saw five-foot lanes as sufficient, many noted the benefits of wider lanes (most commonly expressed as six feet) to allow for contingencies in both the parking space and the travel lanes.

Parking



Parking surfaced as an important issue due to the balance of mobility needs and community concerns. The primary problem with on-street parking, of course, is its tendency to compromise the free-flow mobility of the outer travel lane as parking vehicles need to enter and exit parking spaces. Table facilitators noted that in commercial contexts the provision of parking is especially beneficial for business viability, and its provision on the street in denser urban areas (where on-site parking is either too costly to provide due to land economics or disallowed by land development regulations) is one of the most important assets to businesses.

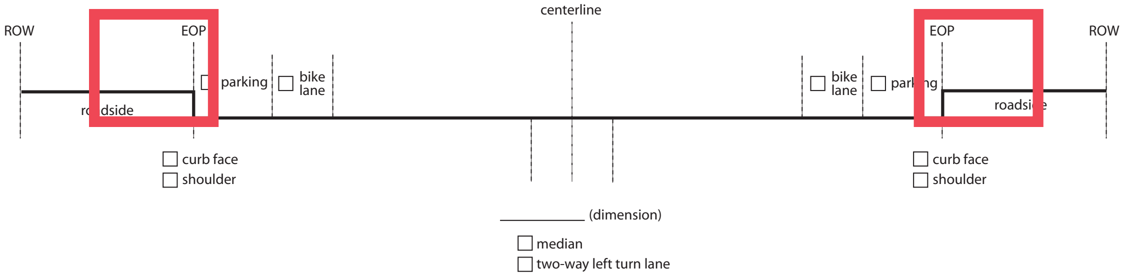
One particular concern noted throughout the table sessions was the need for facilities sufficient in width to accommodate the larger vehicles that are common on Ada County roads and streets. While participants noted the benefits of narrower parking space and acknowledged the usefulness of bike lanes to 'pad' the parking width (thus allowing cyclists to better clear the opening doors of parked cars and, through their greater width, allowing motorists in adjacent travel lanes to use the bike lane as needed to accommodate operating contingencies), they expressed concern in developing 'target' dimensions that rely on bike lanes to allow these movements.

While it is understood that angled parking provides a greater yield of parking supply than parallel parking, back-in angle parking (upper), because of vehicle operation and safety concerns, can use two feet per street side less than front-in angle parking (lower).

Generally, participants seemed to favor widths of at least 7 feet for parallel parking, though few insisted that widths of eight feet or greater were necessary. Discussion on angled parking acknowledged the greater amount of spaces that can be accommodated in a given street length but also noted the difference in needed space (distance from curb) for back-in and front-in angled parking: the former can reasonably fit in 15 feet, where the latter needs 17.

On-street parking can be narrowed in the event of right of way constraints, though workshop participants noted the special need in Ada County roadways for accommodating larger-width vehicles.

Edge Zone and Amenity Zone



Participants generally seemed to favor minimum widths for the edge zone that exceed the AASHTO Green Book standard of 18 inches, opting instead for two (and sometimes three) feet.

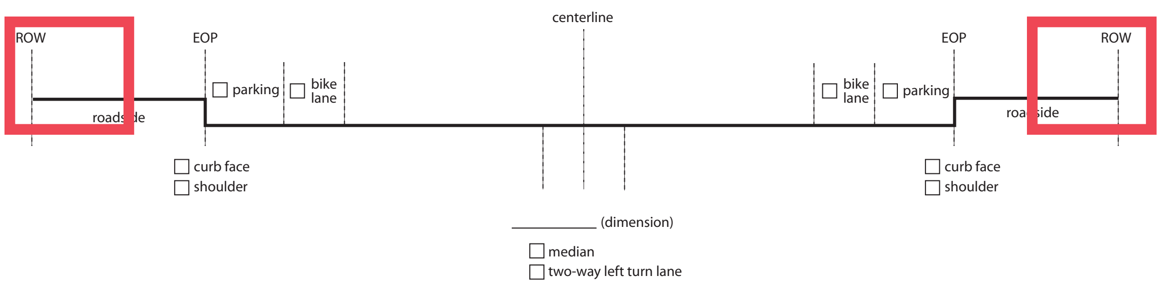
Trees

Glatting Jackson's presentation discussed the benefits of street trees, not only as an aesthetic element but also a safety element: the addition of a vertical element functions to manage travel speeds and provides a clear separation between motorists and pedestrians.

Furniture

Participants generally considered the 'furniture zone,' which would accommodate benches and other street elements between the walkway and the curb, as one and the same with the landscaping/tree area, most commonly giving one dimension for both.

Walkway/Sidewalk



The issue of sidewalk activity, namely such amenities as sidewalk café seating, stairs to elevated building entrances and street kiosks and displays, is a factor that adds a desired vibrancy to urban environments but that is not well defined in relation to its need for public right-of-way. The general consensus was that the walkway should focus on the clear path that pedestrians would use and that additional space for the amenities described above would not be included in a typical section right of way.

Afternoon Stakeholder Session

It was the hope of the moderators that the sessions on design parameters would spur active discussion of how to implement these new concepts: presumably if a solution to build them were self-evident, ACHD and the Ada County municipalities would have already explored at least some of these concepts. The table facilitators encouraged the design professionals participating in the workshop to share their concerns on how to implement the recommendations of context-sensitive design guidelines with particular emphasis on the policy constraints and institutional limitations that would make implementation difficult.

Costs

An obvious question in moving toward more context-sensitive roadway design is what the cost implications will be. Many workshop participants suggested that cost efficiency was a partial or significant factor in their decisions on the particular roadway dimensions defined earlier in the workshop, pointing to their being tasked to build roads as efficiently and cost-effectively as possible. This underscores a larger tension in the general discussion of the livable streets workshop: this emphasis on cost efficiency has been a good basis for and reflection of public stewardship engineering; but it has perhaps not adequately addressed the needs involved in establishing revised, community-based livable street design standards.

At this point in the design concept process it is difficult to make dollar comparisons between different design approaches, though generally it was well understood that a greater emphasis on amenities and additional traveled-way facilities (especially bike lanes and on-street parking) will likely imply higher overall project costs.

Although cost decisions on transportation projects have historically been based on gross project construction cost, many agencies are now trying to enumerate financial considerations that are not always as evident at first glance. Among these are the cost tradeoffs than can be achieved in context sensitivity. If a goal on a corridor is to reduce vehicle speed, adding street trees may be one tool with an associated cost. However, narrowing lanes could be a companion tool that allows for reduced right-of-way costs. On the whole, the project cost may not change, but two tools have been employed in furtherance of the overall goal.

Likewise, some agencies are considering the opportunity costs of creating unattractive corridors. Ugly streets tend to cause corridor disinvestment which, in the long run, leads to lower tax revenues. So while money may have been saved at the front end of some projects, there could be long term costs in the form of a reduced revenue stream. This type of long term, strategic thinking can also be the basis of finding common ground between city, county and community wants and needs.

Landscaping

One particular cost described by many participants was the landscaping of an expanded pedestrian streetscape which, though may be desired by many, incorporates additional costs.

However, facilitators introduced the idea that many of these facilities could be paid for in new ways as a community choice. In other words, funding that has typically been the sole responsibility of the highway district could be divided to reflect the public benefit to be had by the municipal governments, with a city government contributing some (or all) of the landscaping cost. This is a critical issues to refine, as the highway district has based its programming on cost assumptions that have not always included landscaping. City governments may be willing to explore the use of public funds to add amenities to streets that serve their interests, though this issue still needs further discussion.

Public vs. Private Responsibilities

The above description of the participants' thoughts on landscaping describes one of the major topics of concern. Participants did not discuss the hypothetical division of costs in detail, but did note that city commitment and contribution to street amenities would greatly facilitate the adoption of street design standards that relied on them more strongly.

Funding Mechanisms

A number of financing mechanisms were discussed which might be effective in capturing the costs of improved street character and transferring them to the beneficiaries. While the team is not yet fully cognizant of what is allowable under Idaho law, these were ideas that have been successfully utilized around the country. They included:

> *Tax Increment Financing* – This is a mechanism by which infrastructure bonds (backed by anticipated increases in future property tax revenue that is likely to result from a project) are used to finance all or part of the project's construction cost. The tax revenues being realized at the time the bonds are issued are set as a 'baseline,' with all normal revenue distribution continuing as before the bonds and any new revenue in excess of the baseline being used to repay the bonds.
>
> *Self-Taxing Districts* – Sometimes called BIDs (Business Improvement Districts) these areas levy a tax upon property owners within a designated boundary, the proceeds of which fund projects that are important to those owners.
>
> *Adoption* – Adopt-a-road programs are sometimes used to offset funding needs; usually for maintenance. While public agencies can act as the adopting entity, roads are usually adopted by private organizations in exchange for recognition along that section of the highway. During the discussion, Dan Burden mentioned Gainesville, Florida as a city where all sections of major streets and roads have been adopted, with landscaping and cleaning maintenance entirely provided by the adopting entities.

Generally these ideas work best when the local community can see that their money will be leveraged. If for a moderate amount of private sector money spent, a sum of public dollars can be accessed, it becomes easier for property owners to see benefits accruing.

Charrettes as a Consensus Building Tool

Participants in this session discussed the possibility of 'test projects' that would allow both the Highway District and the relevant municipalities to express their concerns and understand the application of the context-sensitive guidelines being developed through TLIP. In the interim between the guidelines' adoption and their iterative application, participants and facilitators also noted the possibility of 'first step' measures that can be accommodated relatively easily, such as re-striping lanes for different dimensions and additional facilities (especially bike lanes). A staff member from the Idaho Transportation Department noted that these types of projects would be endeavors in which they would be willing to participate and cooperate with ACHD and local governments.

SAMPLE ROADWAY SECTION SHEET

Total ROW width ____________________

1. Design Speed ____

2. Cartway Concerns

Travel lane width ____

Center lane width ____

Substitution with medians ____________________________________

Gutter pan/width ____

Bike lanes ____

Parking ____

3. Pedestrian Realm Concerns

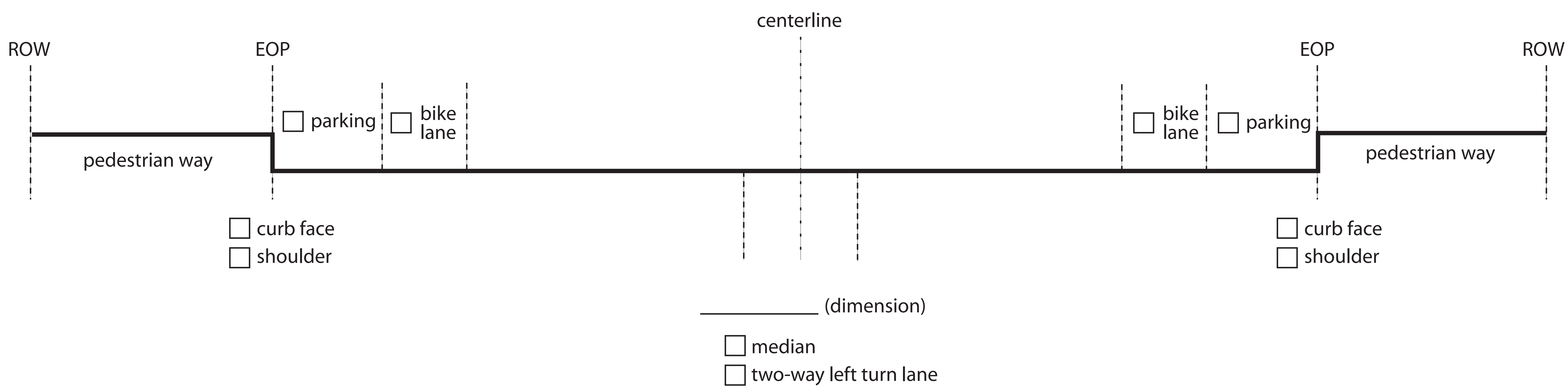
Horizontal clearance/edge zone ______________________________

Trees/Landscaping ____

Amenity zone ____

Pedestrian zone/walkway ____________________________________

Section Diagram - Not To Scale



Design Standards as Suggested by Design Professional Workshop Participants

	Town Center Arterial				Town Center Collector				Commercial Arterial				Commercial Collector				Residential Arterial				Residential Collector			
	Table 1	*Table 2*	*Table 3*	*Table 4*	*Table 1*	*Table 2*	*Table 3*	*Table 4*	*Table 1*	*Table 2*	*Table 3*	*Table 4*	*Table 1*	*Table 2*	*Table 3*	*Table 4*	*Table 1*	*Table 2*	*Table 3*	*Table 4*	*Table 1*	*Table 2*	*Table 3*	*Table 4*
Target/Design Speed	30/35	25 - 35	25		25 - 30	25	25	25 - 30	30/35	35 - 45	35	30◊	25 - 30	30 - 35	25 - 30	25 - 30	30/35	30	30 - 35	35	25 - 30	25	25	30
Cartway Concerns																							did not assign values	did not assign values
Travel Lane Width	10-11	10-11	10-11	11	10	10	11	11	10-11	12		11	10	11-12	11	11-12●	10-11	10-11	10-11	11	10	10		
Inner lane(s)	10	not differentiated			not differentiated				10	n/d	10	n/d	not differentiated				10	not differentiated			not differentiated			
Outer lane	11	not differentiated			not differentiated				11	n/d	11●		not differentiated				11	not differentiated			not differentiated			
Center Lane Width	13*	none	none	none	9	none	none	none	13*	12	none	12	9	11-12	10-11	12◊	13*	10-11	none	none	9	none		
Medians?	yes/10	10**		12**	yes	yes ◊	no	no	yes	yes	yes►	yes	yes	8-12	no		yes		8●	12	yes	no		
Gutter pan/width		1.5			in parking	1.5	none			1.5	1.5		in parking	1.5	in parking	1.5		1.5	1.5	1.5	1.5	1.5		
Bike lanes	6	6●		4	7*	none	none		6	5**	5	4	7*	5	6	5	6	5	none	4	5	none		
Parking	7	7-8	7	7	15-17**	8 or 15●	7		7	none	none	7 ‡	15-17**	none	7.5	7	7	7	none		none	7		
Pedestrian Realm Concerns																							did not assign values	
Horizontal clearance/ edge zone	2	2	2-3	2-3	2	2	2-3	1.5	min 2	2	2	1.5	2	2	2	1.5	2	2	2	2	2	2		1.5
Trees/landscaping	6-8	4	4	5-12	6-8	4	4	5-12	6-8	6	min 4	min 2	6-8	6	min 4		6-8	min 6	6	5	6-8*	min 6		5
Amenity zone		10-12				10-12										5								
Pedestrian zone/walkway	7	5-10	7-10	6 min	7	5-10	7-10	6	min 7	5-10	7	5	7	5-10	7	5	5	5-8**	5	5	5	5-8		5

General Notes

When target and design speeds differed, they are noted as two values separated by a slash (30/35)
When non-specific target and design speeds covered a range of values, the range is indicated with a hyphen (25 - 30).
When they were expressed in table sessions, differing lane widths are broken down by inner and outer travel lane dimensions. These were not broken down when a table did not explore a 4- or 5-lane section
Medians refers to the option to subsitute a center two-way left turn lane with medians and what their dimension would be, if specified as different from the center turn lane, in the case of substitution
In most cases, tables agreed on an aggregate value for the tree/landscaping zone and the amenity zone.

Notes on:

Town Center Arterial
*13' total dimension indicates 9' turning/storage lane with 4' refuge median
**Medians can be used, but center lanes are not to be added.
●6' bike lane at 25 mph target speed; no lane added when target speed is 35 mph

Town Center Collector
*7' bike lanes provided with back-in angled parking only, no bike lanes for front-in angled parking
**15' for back-in angled parking, 17' for front-in angled parking
●8' for parallel, 15' for back-in angled
◊ Medians can be added for landscaping as ROW allows, but center lanes are not to be added.

Commercial Arterial
*13' total dimension indicates 9' turning/storage lane with 4' refuge median
**5' dimension does not include gutter
●11 foot lane could be reduced with auxiliary shoulder space
◊ 30 mph target/design speed for urbanized/developed areas, 45 mph for typical (newer suburban commercial) areas
► Medians can be added for landscaping as ROW allows, but center lanes are not to be added.
‡ Parking provided on one side only

Commercial Collector
*7' bike lanes provided with back-in angled parking ***only***, no bike lanes for front-in
**15' for back-in angled parking, 17' for front-in angled parking
●11' lanes used for three-lane sections; 12' lanes used when only 2-lane sections are needed
◊ Two-way left turn lane optional

Residential Arterial
*13' total dimension indicates 9' turning/storage lane with 4' refuge median
**Minimum dimension 5', 8' used if multi-use path desired
●8' medians can expand to 11' storage lanes at intersections (as needed), though no continuous two-way left turn lane is to be provided

Residential Collector
*Trees should be provided.