SUBURBAN & COMMUNITY STREET DESIGN STANDARDS PROJECT

ORDINANCE RECOMMENDATIONS

THE DOVER/KENT METROPOLITAN PLANNING ORGANIZATION

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PREFACE

The Suburban & Community Street Design Standards Project was initiated by the Dover/Kent County Metropolitan Planning Organization for the purpose of developing a compendium of street layout and design standards and criteria for use and adoption by county and municipal planning agencies. The focus of this project is on the development of design criteria that will foster a more efficient and effective community street network that incorporates alternative modes of transportation resulting in expanded choices for citizens.

This document provides a summary of three (3) public participation workshops that were conducted by the project team during the month of March 1999. Public workshops were designed to afford average citizens an opportunity to share their thoughts, concerns and preferences with respect to subdivision and street design matters. Ideas and information gathered from participants have been applied to refine the project scope and to identify common goals, preferences and priorities as guideposts in formulating design criteria and ordinances for consideration and adoption by local governments.

Included in this document are recommended zoning and subdivision ordinance amendments intended to achieve the suburban and community street design goals, objectives and preferences as identified through the course of this study. These preliminary recommendations have been developed to address recurrent themes and issues identified through project research, the review of existing local ordinances, interviews with key individuals and organizations, and input from the general public. Preliminary recommendations are provided in generic ordinance format for specific consideration and adoption by local jurisdictions in Kent County, Delaware.

TASK 2.1 - PUBLIC PARTICIPATION WORKSHOPS

Introduction

In order that the public was provided ample opportunity to participate in and guide the development of project recommendations, a series of public participation workshops were conducted in March of 1999.

In an effort to make workshops accessible to persons throughout Kent County, it was decided in consultation with the MPO staff that three (3) workshops would be conducted within handicapped accessible public buildings at various locations during early evening hours. To that end, the first workshop was held at Smyrna Fire Hall in the northern part of the County on March 11, 1999, the second was held at the centrally located DelDOT Administration Building in Dover on March 17, 1999, and the third was held in the cafeteria at Milford High School on March 22, 1999. Workshops began at 7:30 PM and ran to approximately 10:00 PM.

Each public workshop was announced in various local newspapers by press release, by display advertisement in the Delaware State News (a local daily newspaper in central Delaware), and by way of a public service announcement on local cable television. Notice was also sent by mail to planning commission members and elected officials representing Kent County and local municipalities informing them of the time, date, location and purpose of the public workshops. Similar notice was sent to members of the MPO Council, and the MPO's Public Advisory Committee and Technical Advisory Committee members.

The workshops were designed to provide the general public with an opportunity to become engaged in identifying issues and concerns related to street design, to discuss alternative design considerations, and to help identify best solutions from both a practical perspective and local context. The workshop format consisted of three (3) distinct segments which included a brainstorming session, a photographic slide and survey questionnaire segment, and a hands-on community design exercise. Information gathered through the public participation exercises reveal those issues of most concern to local residents. The involvement of citizens lends focus to the project and helps rank issues and potential solutions in priority order.

It is important to note that attendance was light at all three workshops. The results of various workshop components and exercises are often expressed in percentages for comparison purposes in the pages that follow. These percentage figures are a reflection of the responses of workshop participants only and have not been derived from random sampling of citizens throughout Kent County. However, the consultant has no reason to believe that the results would be substantially different in either case.

The results of the public workshops have been analyzed and the results tabulated and summarized in this document.

BRAINSTORMING SESSION

Each workshop began with a "brainstorming" exercise designed to get participants thinking about certain aspects of their community, and to share their thoughts aloud. Various questions were posed to participants to gauge general attitudes about the state of their communities today, and their preferences for their communities of tomorrow.

A member of the project team presented questions and prompted discussion among participants. Questions were arranged to proceed from very general inquiries about community life toward more specific responses regarding transportation amenities and alternatives.

Responses given provide insight into some of the most commonly held views and concerns among average citizens. Verbal responses were recorded and are summarized below:

HOW DO YOU SEE YOUR COMMUNITY TODAY?

- Good Place to Live
- Growing Economy
- Valuable Aesthetic and Cultural Qualities
- An Integration of Old and New
- Haphazard Street Design
- Heavy Traffic
- Lacking Transportation Alternatives

HOW DO YOU SEE YOUR COMMUNITY 10 YEARS FROM NOW?

- A Larger Community
- Increased Population

- Demographic Changes
- An Economic Center
- Better Transportation Choices
- More Cultural Activities

WHAT DO YOU LIKE MOST ABOUT THE STREETS IN YOUR NEIGHBORHOOD?

- Good Traffic Flow
- Pedestrian Friendly
- Quiet
- Safe and Clean

WHAT DO YOU DISLIKE MOST ABOUT THE STREETS IN YOUR NEIGHBORHOOD?

- Traffic During Rush Hour
- Lack of On-Street Parking
- Inadequate Lighting
- Poor Directional Signage
- Poor Street Layout

WHAT FEATURES OR AMENITIES WOULD YOU LIKE TO SEE INCLUDED IN THE DESIGN OF NEIGHBORHOOD STREETS?

- Sidewalks
- Bikeways
- Pedestrian Crosswalks & Signals
- Benches and Park Areas
- Limit On-Street Parking
- Improved Signage

WHAT ALTERNATIVE MODES OF TRANSPORTATION WOULD YOU USE IF PROVIDED/ACCOMMODATED IN YOUR NEIGHBORHOOD?

- Bus Service with Well Designed Bus Stops & Schedules
- Local Shuttle or Trolley
- Light Rail
- Bicycle Lanes
- Park and Ride Facility

SUMMARY

Through this exercise, the project team has observed the emergence of several key themes or sentiments expressed by workshop participants. These common themes are summarized as follows:

1. People generally view their communities as good places to live supported by a healthy economy. Participants realize that economic growth is important, but they do not want their quality of life to suffer as a consequence of growth.

2. Quiet, clean, well-lit and safe streets are highly desirable neighborhood elements.

3. Efficient and effective traffic dispersion is an important attribute of good neighborhood design. People want their streets to accommodate alternative modes of transportation as a way to increase transportation alternatives and to help alleviate traffic congestion.

4. The street network should include sidewalks and bicycle lanes to provide connections from neighborhoods to various activity centers.

5. People indicate they would use transportation alternatives such as buses, bicycling, walking, and rail service if such amenities were available in a reasonably safe and accessible form in their communities.

These findings and observations tend to support the overall thesis of this project which maintains that current subdivision street design standards are limiting and do not respond well to the changing transportation needs and desires of most people in growing communities.

SURVEY QUESTIONNAIRE

The second part of the workshop format involved participants viewing a series of narrated photographic images followed by responding to a series of related questions provided in a printed questionnaire (See Appendix A - Project Questionnaire). This exercise was designed to provide participants with an opportunity to examine real life visual examples of various street design and functionality issues and to consider the impacts of existing street design requirements on the development of communities. Photo slides and related questions were segmented into several corresponding categories and presented accordingly.

In some instances, the breadth of differences in street design requirements from community to community were presented to provide a basis for understanding that streets with similar design purposes are not always created equal. In other instances, the absence of certain design considerations from existing codes and ordinances were explored, and the resultant impacts briefly discussed. Respondents were asked to rate the importance of various design considerations and alternative transportation amenities to the success of their neighborhoods or communities. Alternatives to conventional design themes were also presented to gauge reaction to new ways of resolving street design issues and concerns.

Respondents were asked to render their opinions regarding various street design issues and possible alternatives and solutions to long standing problems. The results of this exercise are provided below:

Street Design Issues

- Seventy Five percent of participants perceive an above average benefit to requiring more than one (1) point of access into subdivisions as the number of dwelling units or overall size of a development increases.

- One Hundred percent of respondents believe that subdivisions should be required to plan for street connections to surrounding undeveloped lands.

- One Hundred percent said that an interconnecting street pattern is important to achieving a more efficient and convenient transportation system. 50% believe such a pattern is very important.

- Eighty Six percent of respondents are of the opinion that local subdivision codes should limit the overall length of cul-de-sac streets, and 56% said that the frequency of use of cul-de-sacs should also be limited.

Major Collector Streets

- Seventy Five percent of respondents said that major collector streets operate at an acceptable level

or better with respect to traffic dispersion.

- With respect to bicycle and pedestrian accommodation, however, a majority perceive operational difficulties. 56% said that pedestrian accommodations were marginally acceptable to not effective. Similarly 75% are of the opinion that bicycle accommodations are below acceptable levels on major collector streets.

- A majority of participants feel that barrier free accessibility, transit accommodations and speed controls along major collector streets are provided at acceptable levels.

- A majority characterize major collector streets as ". . . generally effective in dispersion of traffic, but lacking continuity in design and visual quality, with a fragmented pedestrian system". Forty Four percent said that delays are common during peak periods and that major collectors are visually cluttered with little or no pedestrian accommodations.

- THE TOP FIVE PROBLEMS WITH MAJOR COLLECTOR STREETS MOST OFTEN CITED ARE:

  - No Sidewalks
  - High Traffic Volumes
  - High Speeds
  - Too Many Entrances
  - Poor Directional Signage

- Two thirds (67%) of those polled believe that an ordinance requiring shared entrances among adjoining properties would be **very beneficial** to their community. Fifty Three (53%) percent also said that it would be **somewhat beneficial** to limit the number, spacing and frequency of new entrances. An equal number of people feel that it would be beneficial to prohibit new entrances along major collector roads.

Land Use Relationships

- When asked to select the statement which best represents their opinion, participants selected the following two responses most often:

  "Commercial and other non-residential uses and site development should . . :

  - . . . be attractively designed and landscaped with convenient access from residential areas by car, bicycle and walking." (48%)

  - . . . be encouraged adjacent to or within walking distance of residential areas when limited to small scale neighborhood convenience shops and services." (35%)

- Participants were asked to rate the importance of certain design considerations as a tool for strengthening relationships among residential and non-residential properties. The following is a listing of those items selected as "preferred" or "highly desirable" in rank order:

    1. Limitations on Sign Height, Area & Number (100%)
    2. Fewer Commercial Entrances (86%)
    3. Linkage Sidewalks (80%)
    4. Dumpster Screening Specifications & Isolation Distances (80%)
    5. Special Setback Requirements (80%)
    6. Limitations on Sign Illumination (80%)
    7. Connecting Streets (73%)
    8. Shared Entrances (73%)
    9. Limitations on Impervious Cover (72%)

Pedestrian Issues

The average household size of those participating in our public workshop is 2.7 persons/household. Thirty five percent of persons walk frequently while another 23% walk on an occasional basis. Sixty nine percent say they walk primarily for fitness and/or recreational purposes. Conversely only 6% said they walk to school or work .

- There was 100% agreement that pedestrian amenities such as sidewalk, marked crosswalks and linkages should be accommodated through the design and construction of new subdivisions.

- Participants were asked to indicate the relative importance of various pedestrian amenities commonly found in urban and suburban neighborhoods. The following list reflects amenities of "**above-average in importance**" as selected by a majority of respondents:

    - Sidewalk along Frontage Roads (94%)
    - Marked Crosswalks (88%)
    - Linkage Sidewalk to Schools (87%)
    - Sidewalk along Internal Streets (75%)
    - Linkage Sidewalk to Adjoining Neighborhoods (75%)
    - Linkage Sidewalk to Parks & Recreation Areas (69%)
    - Linkage Sidewalk to Convenience Retail (63%)
    - Linkage Sidewalk to Bus Stops (57%)
    - Actuated Pedestrian Crossing Signal Button (50%)
    - Linkage Sidewalk to Business Parks (50%)

- Sixty two percent of respondents feel that sidewalks are also important in rural, low density subdivisions. A few persons commented that sidewalk on at least one-side of the street would be important in low density areas. As one respondent noted, **"People walk everywhere. They**

deserve a safe walkway - that means sidewalk."

- One Hundred percent of respondents are of the opinion that sidewalk should be separated from the paved edge of roadway. Pedestrian safety and comfort were cited as reasons for providing a physical separation.

Bicycle Accommodations

- Survey results indicate that the average household contains at least two bicycles. Forty Seven percent of persons surveyed said that they ride a bicycle on an occasional basis, while 25% frequently ride their bike.

- Most cyclists ride for recreational purposes (75%). Fifty percent said they ride for fitness. Only 65% said they commute to school/work or to shop by bicycle.

- Eighty One percent of respondents believe it is important to incorporate bicycle accommodations as new development occurs, and that bicycle lanes markings and "Share The Road" signage should be installed along arterial and major collector roads as new development occurs.

- Eighty One percent of participants also believe that a Bicycle and Pedestrian Master Plan would be beneficial to their community. Respondents provided the following reasons:

    - Unincorporated areas need to plan for bicycle and pedestrian facilities.

    - A Master Plan would be a tool to educate and inform the public.

    - Through a Master Planning Process, important linkages would be identified.

School Bus and Transit Issues

- A majority (60%) feel that new subdivisions are being designed to allow for efficient circulation of school buses and other transit and service vehicles.

- Seventy Five percent of respondents are of the opinion that provisions for school bus stops should be made a part of the design review criteria for major subdivision approval.

- An overwhelming majority (81%) would prefer to have school bus/transit stops be located on internal neighborhood streets rather than along arterial streets.

- Sixty Three percent believe that transit and/or school bus accommodations within their neighborhood is of "**above average importance**".

- Several respondents provided specific comments listed below:

- Many subdivisions have only one-way in and one-way out
- Buses cannot turn around in cul-de-sac's
- Bus stops on arterial roads disrupt traffic
- School districts seem divided as to where bus stops should be designed and installed
- Density in our area isn't high enough to support mass transit

Neighborhood Safety Issues

- Sixty percent of participants perceive speeding problems and/or heavy through traffic volumes in their neighborhood.
- A majority (67%) said that speeding problems occur most frequently during the AM and PM peak hours.
- Most people (75%) canvassed believe that the streets in their neighborhood are adequately illuminated to accommodate safe and convenient pedestrian and vehicular travel.
- Cul-de-sacs are perceived to be "very safe" by 40% of participants. Thirty one percent of respondents believe that major collector streets are "somewhat unsafe". The vast majority of participants (94%) said that local/minor, minor collector streets and alleys are of **"average"** or better safety.

Traffic Calming

Several traffic calming devices and design techniques were presented to workshop participants for their consideration. The advantages and disadvantages of each were briefly discussed. Participants were then asked to rate the various traffic calming devices and techniques as to their likelihood of acceptance in their community. The results of this exercise are highlighted below:

- Linkage Streets providing internal circulation between neighborhoods are considered a **"good idea"** by 57% of participants.
- Fifty six percent of respondents said that Speed Bumps/Humps are a **"bad idea"**.
- Several devices have been categorized as **"having potential"** by a majority of participants. Those devices are:

- Roundabouts (71%)
- Speed Tables (64%)
- Traffic Diverters (58%)
- Boulevard Streets (53%)
- One-Way Streets (53%)

- Participants were fairly divided on the issue of Reduced Street Widths as follows:

  - 27% "Good Idea"
  - 40% "Has Potential"
  - 33% "Bad Idea"

- Similar results were posted for the notion of Neck Downs as follows:

  - 33% "Good Idea"
  - 47% "Has Potential"
  - 20% "Bad Idea"

SUMMARY

The photo image and questionnaire exercise has yielded several conclusions which reinforce the purpose and intent of this project. This process helped to refine and sharpen the focus onto the issues and concerns most relevant to local conditions which impact the lives of average citizens. With the aide of real life images from different parts of the community, the specifications and limitations of current street design standards and the resultant development patterns were explored. This process also introduced (or reintroduced) participants to a host of alternative street design patterns and devices and prompted a thought process regarding the likelihood of employing such methods locally.

The following points represent a summarization of the results of this segment of the public workshops:

- Participants want to see planned street connections between neighborhoods and at least two (2) points of access with major collector/arterial street system for major subdivisions.

- Improved circulation and transportation route and mode alternatives such as sidewalks and bike lanes, are important features in well designed neighborhoods.

- A fragmented pedestrian system is a deterrent to walking. The survey points to strong support for requiring pedestrian amenities and linkages to common destination points as areas develop.

- Participants indicated strong support for designating bicycle lanes along arterial and collector streets as new development occurs. High value was placed on the identification of key bicycle routes through a master planning process.

- It is highly desirable to locate school bus stops on local roads within neighborhoods and not on arterial and/or major collector roads. Most people want school bus stop location and design parameters to be integrated into the subdivision design and approval process.

- Most people believe that local streets are relatively safe places. However, 60% percent said that speeding and traffic congestion are problems within their neighborhoods. Most speeding and traffic volume problems occur during rush hours.

- Relationships between residential and non-residential land uses could be influenced in a positive way through the use of certain physical design requirements such as enhanced landscaping, limits on the number and frequency of commercial entrances, and special setback requirements according to a majority of respondents.

- Traffic calming techniques and devices such as roundabouts, speed tables and boulevard streets have promise and should be permitted.

COMMUNITY DESIGN EXERCISE

The third segment of each workshop provided participants the opportunity to work in small groups on a community design project. Each group was provided with a plan sheet depicting a street network of arterial, collector and local streets along with various land uses. Color markers, pens, and stickers were also provided for the purpose of marking the plan sheets with recommended improvements to the street network.

Based upon information provided during the slide and questionnaire portion of the workshop, participants were asked to discuss amongst their group various issues and concerns that they have with the street network depicted on the plan sheet, and to come up with recommended improvements.

The consultant has analyzed the plan sheets submitted by each work group to further identify common preferences and recurrent themes expressed by participants. Based on this analysis, the consultant has summarized the results of this exercise as provided below:

Streets

- Strong concurrence that adjoining subdivisions should be connected by linkage streets.
- Exhibits also reflect that providing more than one way into and out-of neighborhoods is desirable.

Traffic Calming:

- The round-about or traffic circle appears to be the traffic calming feature of choice as evidenced by its appearance on 60% of exercise drawings.

Sidewalks:

- 100% agreement that sidewalk should be provided along arterial roads
- 80% agree sidewalk should be provided along collector streets
- Linkage sidewalk to community facilities such as parkland, shopping centers, employment centers, and schools is important

Crosswalks & Off Street Trails:

- Designated crosswalks are important to limit residential and commercial areas where major barriers such as arterial roadways and major collector streets exist.

- Off-street trails could be beneficial for access from residential areas to active recreation areas and open space parkland. Also could be useful for pedestrian linkage between neighborhoods which do not have connecting streets.

Landscaping/Buffering:

- Plans demonstrate desirability of landscaping and street trees along major collector and arterial streets and buffering of non-residential uses for residential neighborhoods.

Bus Stops

- Some indication for support of limiting frequency of bus stops along arterial and major collector streets in favor of bus stops on local streets.

Other Big Ideas:

- Bus shelters should be provided at Bus Stops

- Bus Pull Off spaces along collector and arterial streets would provide safer areas for loading/unloading passengers in areas out of traffic stream

- Streets should be planned for future extensions to serve vacant developable lands

Executive Summary

As areas of Kent County continue to grow, it has become apparent to county and municipal leaders that the current collection of street design standards are often inflexible and ill-suited to accommodate alternative modes of transportation and innovation in community design. The Suburban & Community Street Design Standards Project was initiated by the Dover/Kent County Metropolitan Planning Organization for the purpose of developing a compendium of street layout and design standards and criteria for use and adoption by county and municipal planning agencies. The focus of the project was to develop design criteria that will foster a more efficient and effective community street network that incorporates alternative modes of transportation resulting in expanded choices for citizens.

A project kick-off meeting was held with the project work group on May 28, 1998 at the DelDOT Administration Building in Dover. This meeting was conducted by Landmark Engineering, Inc. (LEI) for the purpose of introducing members of the project work group to the project and its goals and objectives.

The initial task for the project team was to complete an extensive review of existing local codes, ordinances and comprehensive plans which influence subdivision street layout and design within Kent County. The research included a review of the Zoning and Subdivision Ordinances for Kent County, the City of Dover, the City of Milford and the Towns of Camden and Smyrna. A review of the respective comprehensive plans of each of these jurisdictions was also performed. The purpose of this phase of the project was to identify areas where there is consistency in community design across jurisdictional lines and areas where weaknesses and gaps exist which run counter to the notion of achieving an integrated system of community design and transportation alternatives.

In conjunction with the review of local codes, interviews were conducted with key individuals that deal with local development issues on a regular basis. A total of thirteen interviews were conducted. A standard set of interview questions were developed to prompt discussion and to identify issues, problems and concerns to be addressed. Some questions were designed to solicit a range of possible solutions to potential subdivision street design issues. Other questions were intended to gauge reactions to possible alternative design criteria. Inquiries included general questions about public satisfaction with existing conditions, perceptions about growth and development and the receptiveness to change and innovation. More specific questions pertained to the efficiency of service delivery, roadway maintenance, neighborhood safety and alternative transportation choices. During each interview, the interviewees were encouraged to share observations, ideas and opinions relative to the strengths and weaknesses of existing subdivision street design standards and how the performance of such standards might be improved upon.

To further assess the performance of existing land subdivision codes and ordinances, four (4) representative subdivision plans that had been previously reviewed and approved under current subdivision regulations and design guidelines, were analyzed. The plans reviewed included one subdivision from each of the following jurisdictions: the unincorporated area of Kent County, the Town of Smyrna, the City of Dover, and the City of Milford. Representatives from each of these jurisdictions were asked to select one representative subdivision from their respective jurisdiction for this analysis. Each plan was analyzed to obtain a general description of the subdivision, the street layout patterns,

pedestrian amenities, bicycle provisions, the adaptability for transit services, traffic control devices and any distinguishing features.
After completion of the research of the various existing codes, ordinances, comprehensive plans, sample plans and key personnel thoughts and ideas, Technical Memorandum #1 was developed in November, 1998. Technical Memorandum #1 explained the research process and the findings to date in detail, and presented a preliminary list of potential code provisions and subdivision tools for further examination and discussion within the project work group. This listing was reflective of LEI's observations of existing code limitations coupled with dominant themes revealed in the project research. The purpose of the list was to identify various issues to be discussed and refined within the project work group and the ensuing citizen participation phase of the project.

As an additional source of information for the project, three (3) public participation workshops at different locations throughout Kent County were conducted during the month of March 1999. The workshop format consisted of three (3) distinct segments, which included a brainstorming session, a photographic slide and survey questionnaire segment and a hands-on community design exercise. The workshops were designed to afford average citizens an opportunity to share their thoughts, concerns and preferences with respect to subdivision and street design matters. Ideas and information gathered from participants were applied to identify common goals, preferences and priorities as guideposts in formulating design criteria and ordinances for consideration and adoption by local governments. Information gathered through the public participation exercises helped rank issues and potential solutions in priority order.

Once the public workshops were completed, Technical Memorandum #2 was developed. The memorandum reviewed the results of the public participation workshops and listed draft Ordinance Recommendations. The intent of the Ordinance Recommendations was to develop zoning and subdivision ordinance amendments which achieve the suburban and community street design goals, objectives and preferences identified through the course of the study. Technical Memorandum #2 was distributed to the project work group, the MPO staff and the MPO council for their comments. Once all these comments were assimilated and assessed, LEI developed the final Ordinance Recommendations.

This final project document has been developed to address recurrent themes and issues identified during the research process outlined above. There are sixteen (16) recommendations presented. The recommendations are separated into four (4) categories: 1) Community Street Design Issues, 2) Pedestrian Amenities, 3) Transit Provisions and 4) Bicycle Provisions. The recommendations are provided in generic ordinance format for specific consideration and adoption by local jurisdictions in Kent County, Delaware. The format has been developed to allow local jurisdictions to insert the recommendations which they feel are needed, directly into their codes with little or no alteration. Each recommendation has a purpose statement and then titled subsections which address the aspects of the code. Some recommendations also contain exhibits, tables and/or commentary sections. Commentary is not intended to be part of the text of the proposed ordinance. Commentary is provided to further clarify the purpose and the reasoning behind the recommendations. The ultimate goal of this document is to build on the strengths of existing planning and regulatory programs through the development of model street design standards and guidelines. These standards and guidelines should strengthen relationships and linkages among adjoining land uses, foster the creation of a street network suitable for public transit operations and incorporate design elements that accommodate alternative modes of

transportation.

Recommendation #1 - Hierarchy of Street Types

1.1 *Purpose*. It is recommended that local governments consider adoption of a common nomenclature and definition system for various types of streets. A common vocabulary is recommended as a first step toward creation of consistency among jurisdictions with respect to street design standards. This ordinance sets forth a definitional framework within which to build a readily understood system of street design standards. The following definitions are offered:

1.2 *Hierarchy of Street Types*. The following lists definitions for a hierarchy of street types:

Arterial Street. A street or road which serves or is intended to serve as the principal traffic way between separated areas of the city or region and is designated in the comprehensive plan or otherwise designated as a limited access highway, major thoroughfare, parkway or other equivalent term to identify those streets that comprise the basic structure of the regional traffic plan.

Major Collector Street. A street which primarily serves to carry higher volumes of traffic between minor collector and local streets to arterial roadways and highways. A major collector street typically provides primary street access to more than 150 dwelling lots. Direct access onto a Major Collector Street by means of private entrance driveways shall be prohibited.

Commercial Collector Street. A street typically within a planned business park that serves as a frontage street to abutting properties and which conducts traffic between commercial access streets and major collector and arterial roadways. Estimated Average Daily Traffic (ADT) generally exceeds 1000 vehicle trips per day. On-street parking is prohibited on commercial collector streets.

Minor Collector Street. A street that serves as a frontage street to abutting properties and which conducts low volumes of traffic between local streets and major collector and/or arterial roadways. No more than 150 dwelling lots shall front on a minor collector street and no more than 300 dwelling units shall be served by a minor collector street.

***Commercial Access Street*.** A street typically within a planned business park complex primarily used for access and service delivery to abutting commercial or industrial properties. Estimated Average Daily Traffic (ADT) is generally limited to not more than 1000 vehicle trips per day. On-street parking is typically not provided on commercial access streets, but may be permitted if the street is widened to designate parking lanes. Parking lanes should be 8 feet wide when provided.

Local Street. A street primarily used for access and service delivery to abutting properties. No more than 100 dwelling lots shall front on a local street.

Loop Street - One Access Point. A local street with one point of access on a collector street or other higher order street which includes an internal loop which functions as a local street. See Exhibit 1.1(a). Residential streets meeting this definition may provide street frontage to no more than 50 dwelling units.

Loop Street - Two Access Points. A local street with two points of access onto a collector street or other higher order street which functions as a Local Street. See Exhibit 1.1(b). Residential streets meeting this definition may provide street frontage to no more than 100 dwelling lots.

Boulevard Street. A street which typically functions as a collector street which involves a landscaped median of varying width which divides opposing travel lanes by green space. Travel lanes shall be designed to accommodate one directional traffic and on-street parking if planned or required.

Cul-de-sac Street. A local street with a single point of access onto a minor street or higher order street and which terminates at a circular paved turn-around. Also referred to as a "dead-end street". Cul-de-sac streets may provide street frontage to a minimum of 50 dwelling lots.

Marginal Access Street. A local street which is oriented adjacent and generally parallel to a limited access arterial roadway or highway which is intended to provide access to properties which adjoin or that are in close proximity to the limited access arterial roadway or highway. Also referred to as a "service road".

Alley. A local street which provides secondary access along the rear lot line of adjoining properties. Alleys are intended to accommodate local traffic and service delivery such as trash collection and utility service. Width should be based upon providing a single travel lane and limited pullover space to permit yielding to oncoming vehicles.

COMMENTARY:

The definitions for Minor and Major Collector Streets represent a divergence from the DelDOT standard. DelDOT standards define a Minor Collector as a street serving between 50 and 300 dwelling units, and a Major Collector as a street serving more than 300 dwelling units. This recommended change is intended to result in a reduction in total ADT on the Minor Collector classification which supports and works in concert with recommended right-of-way and cartway width recommendations provided below.

In most cases this change would manifest itself in shorter block lengths carrying less traffic for streets in the Minor Collector classification. Through the public workshop phase of this project, it became evident that these are desirable attributes for residential collector streets.

Recommendation #2 - Street Type Classifications

2.1 *Purpose*. This ordinance provides three categories for classifying subdivision streets based upon existing and/or planned land uses and residential densities as determined by the Comprehensive Plan and as permitted by operation of the Zoning Ordinance.

2.2 *Street Classifications*. Each proposed subdivision street shall fall within the parameters of one (1) of the following street classifications:

a. **Community/Urban Center Roads**. This road classification is characterized by the most intensive land use and residential density and generally relegated to those roads and streets located within towns, urban centers and employment centers. The typical residential density served by this class of roads is 4 or more dwelling units per acre.

b. **Primary and Secondary Developing Area Roads**. This road classification is characterized by streets which serve predominantly residential land uses such as suburban tract housing developments and other middle to low density development areas. The typical residential density served by roads in developing areas is in the range of 1 to 4 dwelling units per acre.

3. **Rural Roads**. The rural road classification is characterized by streets and roads which serve a low to very low density development pattern and are generally located in areas predominated by vast open spaces, agricultural lands and uses, natural resource protection areas and parklands. The typical residential density served by the rural class is one or more acre per dwelling unit.

2.3 *Minimum Right-of-Way and Pavement Widths*. The minimum right-of-way and pavement width requirements for each permitted street type are provided in Table 2.1 according to street classification. Unless specifically noted, the established dimensions are based on the assumption that unrestricted parking is permitted.

TABLE 2.1 RIGHT-OF-WAY & PAVEMENT WIDTH REQUIREMENTS
(RIGHT OF WAY/PAVEMENT WIDTH)

STREET TYPE	STREET CLASSIFICATION		
	COMMUNITY/URBAN CENTER	***PRIMARY & SECONDARY DEVELOPING AREA***	***RURAL***
Local Street **	60'/34'	50'/22'	40'/20'
Loop Street	60'/34'	50'/20'	40'/18'
Cul-de-sac Street	N/A	50'/20'	40'18'
Alley	16'/14'	16'/14'	N/A
Minor Collector Street	60'/38'	60'/32'	50'/26'
Major Collector Street	70'/50'	60'/34' *	60'/30'
Marginal Access Street	60'/24'	60'/24'	N/A
Commercial Access Street	40'/24'	40'/24'	N/A
Commercial Collector Street	60'/36'	60'/36'	N/A

* - Note: Major Collector Streets of 34' in width include two (2) -11' wide motor vehicle travel lanes and two (2) - 6' wide bicycle travel lanes and no on-street parking. If on-street parking is planned, the minimum parking lane width of 8' shall be added for each parking lane planned.

** - Note: The Planning Commission may approve a narrower street width for local streets where off-street parking areas are provided or for subdivisions involving rear lot alleys which may provide rear lot driveways and parking areas.

2.4 *Subdivision Streets under the jurisdiction of DelDOT*. Table 2.2 sets forth the minimum right-of-way and pavement width requirements for subdivision streets to be dedicated to public use as state-maintained streets. Within DelDOT defined Multimodal Investment and Management & Preservation Areas, optional design standards known as DelDOT's Mobility Friendly Design Guidelines may be followed in lieu of DelDOT standard subdivision street requirements. Table 2.2 provides the minimum right-of-way and street width requirements for both Standard DelDOT requirements and Mobility Friendly Design Guideline requirements. For a complete listing of DelDOT guidelines, refer to DelDOT Rules and Regulations for Subdivision Streets.

TABLE 2.2 DelDOT SUBDIVISION STREET RIGHT-OF-WAY & PAVEMENT WIDTH REQUIREMENTS (RIGHT OF WAY/PAVEMENT WIDTH)		
STREET TYPE	DelDOT Standard Requirements	Mobility Friendly Design Guidelines
Minor Street	**50'/22'**	**42'/21'**
Minor Collector	**60'/32'**	**53' to 60'/22' to 29'**
Major Collector	**60'/36'**	**Not Applicable**

COMMENTARY: The ordinance proposed above is an adaptation of the City of Dover ordinance which is fairly comprehensive in scope. The recommended language provides the basic elements for a complete ordinance and would apply to residential and non-residential projects. It is anticipated certain jurisdictions may wish to augment the recommended language to address particular needs. For example, the Dover ordinance includes a sidewalk waiver provision which spells out specific conditions which must be met before a waiver from the sidewalk requirements can be granted. A provision of this sort may be desired by some jurisdictions but not by others.

This recommendation suggests that streets should be designed according to intended service function and that the "one size fits all" approach to street design should be eliminated. [illegible] rural streets to community/urban center or primary and secondary developing area standards. Conversely, higher density community/urban centers should incorporate street widths that can accommodate higher traffic volumes, on-street parking and bicycle travel lanes, where needed. This recommendation is intended to respond to both the built condition and the planned condition of given areas, working in concert with adopted Land Use Plan and Zoning Map which designate corresponding community/urban, developing and rural areas, either explicitly or implicitly through the designation of specific zoning categories. Although presented as minimum dimensional parameters, some communities may want to adopt some or all of the standards set forth in Table 2.1 as maximum dimensional requirements as well.

This recommendation stems from the notion that street design characteristics play a significant role in defining the character and identity of a place. Communities would be well served by establishing a gradient of street design types that respond to and work to preserve and promote community character.

Recommendation #3 -Internal Street Circulation Ratio

3.1 *Purpose*. This ordinance sets forth a minimum internal street system circulation requirement termed "circulation ratio", which compares the number of street segments to the number of street intersections as a method for ensuring acceptable levels of internal subdivision street circulation.

3.2 *Approval Required.* All plan submissions for Preliminary Subdivision Plan approval shall demonstrate on the Preliminary Plan that the proposed subdivision street system will achieve a circulation ratio of 1.2 or greater. If a subdivision is planned to be constructed in distinct development phases, then the Preliminary Plan shall demonstrate that the initial phase individually and in conjunction with all subsequent phases, will achieve and maintain the minimum circulation ratio requirement. The Record Subdivision Plat shall also reflect compliance with this minimum requirement.

3.3 *Circulation Ratio Calculation.* The circulation ratio is determined by dividing the number of street segments (street sections between intersections and/or cul-de-sac ends) by the number of intersections and cul-de-sac ends. For purposes of this calculation, proposed street intersections with existing roads and stub roads for future access to vacant developable lands shall count as 0.5 intersections.

3.4 *Exhibit.* The exhibit circulation ratio calculation is further explained and illustrated in Exhibit 3.1:

COMMENTARY:

The Circulation Ratio is an effective, quantified measure of internal street circulation that almost always will result in the establishment of alternative travel routes if implemented effectively through the subdivision plan review process as proposed above.

For this recommendation, a target ratio of 1.2 has been selected as a reasonably attainable target. However, local jurisdictions may want to experiment with other ratios by running tests on existing subdivision plans before deciding on the most appropriate target ratio to write into local ordinances.

Recommendation #4 - Linkage Streets

4.1 *Purpose.* Street linkages shall be provided among adjoining subdivisions in order to allow convenient and effective travel among neighborhoods. Benefits include ease of access, association with neighbors, alternative travel routes for residents, sidewalk networks on local streets and internal circulation routes for service providers such as school buses, sanitation vehicles and emergency management personnel.

4.2 *Linkage Street Stub Ratio.* Proposed subdivision street layout plans shall incorporate provisions for linkage streets which shall be designed to provide future access and street connection to adjacent vacant or undeveloped lands which may be developed in the future. Linkage street stubs shall be provided at a ratio of at least one (1) linkage street right-of-way stub per 800 linear feet of subdivision boundary line or fraction thereof, which adjoins vacant or undeveloped land.

4.3 *Linkage Street Turn-Around Area.* Such linkage street right-of-way stubs shall be planned and constructed to the subdivision boundary line. Linkage street stubs shall be identified by signage which reads "FUTURE STREET CONNECTION - NO OUTLET". If the stub is in excess of 100 feet in length, then a temporary paved turn-around area shall be provided.

4.4 *Linkage Street Interconnections.* When a proposed subdivision is being planned adjacent to previously subdivided land and the previously subdivided land has incorporated linkage street stubs to its perimeter as part of its recorded subdivision plan, the proposed subdivision must incorporate street connections to the existing linkage street right-of-way stubs as part of its street system.

COMMENTARY: The recommendation proposed above is an adaptation of the City of Dover ordinance which is fairly comprehensive in scope. The recommended language provides the basic elements for a complete ordinance and would apply to residential and non-residential projects. It is anticipated that certain jurisdictions may wish to augment the recommended language to address particular needs.

This section suggests that we adopt language similar to that of Kent County and Dover Ordinances pertaining to establishing collector streets with stubs for future extension to vacant developable lands.

For example, the Dover ordinance includes a sidewalk waiver provision which spells out specific conditions which must be met before a waiver from the sidewalk requirements can be granted. A provision of this sort may be desired by some jurisdictions but not by others.

Recent history has demonstrated that over time, the typical suburban landscape becomes more and more difficult to travel as subdivisions and other land uses are created as a stand alone "exclusive" enclaves with no physical relationship with one

Recommendation #5 - Traffic Calming: Roundabout Design

5.1 *Purpose.* A roundabout is both a landscape design feature and a traffic control device intended to discourage through traffic in residential neighborhoods while allowing for continuity in the traffic flow. It is an alternative to standard two-way and four-way stop intersection designs. The use of roundabouts shall be limited to local and collector streets.

5.2 *Form and Function.* A roundabout is characterized by a circular island situated in the center of an intersection between two or more streets. Traffic approaching the roundabout shall enter a yield condition with all traffic moving to the right of the roundabout in a counter-clockwise direction. The circular interior island shall consist of landscaped open space and may contain any combination of turf grass, trees, shrubs and annual and/or perennial flower beds to be approved by the Planning Commission.

5.3 *Maintenance.* At the discretion of the Planning Commission, all open space areas created as part of approved roundabouts may be transferred by deed to a bonafide homeowners association or may remain in the public domain as right-of-way. Perpetual maintenance responsibility for open space and landscape components shall be assigned to a bonafide homeowners association and governed by the provisions of appropriate and binding deed covenants and declaration of maintenance obligations, unless accepted for maintenance by the local jurisdiction.

5.4 *Dimensional Requirements.* Minimum dimensional and material requirements for roundabout design are illustrated by Exhibit 5.1.

5.5 *Approval Merit.* Proposals to install roundabouts shall be reviewed on a case by case basis by the planning commission through the subdivision plan review process. The planning commission may receive input, review commentary and advice from its professional staff and other duly authorized state or local reviewing agency representative prior to rendering a decision on such proposals. The planning commission shall base its decision on the merits of the subdivision plan design and shall not be compelled to approve any such proposal which it deems of insufficient merit.

5.6 *Review Considerations.* In considering subdivision plans which propose the installation of roundabouts, the planning commission shall consider the following: 1) the appropriateness and relevance of the roundabout to the overall subdivision plan, 2) compatibility with the overall character of the area in which it is being proposed, 3) the quality and appropriateness of proposed landscape treatments within the open space island and 4) long term maintenance arrangements for the open space island created by the roundabout.

5.7 *Approval Conditions.* Should the planning commission choose to approve a subdivision involving the installation of a roundabout, the planning commission may impose conditions of approval which, in its opinion, shall further preserve, promote and protect the safety and general welfare of the public.

COMMENTARY:

Input received through interview and public participation workshops revealed support and interest in developing an ordinance which would permit and set forth design parameters for the use and installation of round- abouts for traffic calming devices.

Both the consultant team's research and the responses of workshop participants indicate that the public acceptance of such devices has a lot to do with the overall image. Highly mechanical and instructional models with numerous warning signs, arrows, pavement markings, and limited green space tend to lose their visual appeal, their public acceptance, and ultimately their effectiveness. On the other hand, models which treat the roundabout as an integral landscape feature and focal point within the overall subdivision design, rank high in visual appeal, public acceptance and overall effectiveness. The key is to design the roundabout as a visual amenity that appears to belong to the landscape and to avoid the tendency to over design and over warn.

Recommendation #6 - Traffic Calming: Boulevard Street Design

6.1 *Purpose.* A boulevard street involves a separation of opposing travel lanes by the inclusion of a landscaped median situated within a wide public right-of-way. The median is typically designed as a linear community open space that functions as a traffic control device, passive recreation area and green space. However, wider median spaces can accommodate active recreation pursuits.

6.2 *Minor Collector Service.* As an alternative to conventional collector street design, the developer may propose the construction of a boulevard street to serve as a minor collector subdivision street within a proposed development.

6.3 *Open Space Credit.* The Planning Commission may count the boulevard landscaped median space toward the minimum neighborhood open space requirement for the proposed development if, in the Planning Commission's opinion, the following conditions have been met:

1. The proposed boulevard street configuration enables a superior development pattern for the subject property than would be achieved using conventional street design parameters; and

2. The passive recreation benefits of a proposed landscaped median space outweigh the need for an expanse of open space elsewhere in the development; and

3. The boulevard street is an appropriate street type for the development being proposed.

6.4 *Dimensions.* Minimum dimensional requirements for boulevard street design are illustrated in Exhibits 6.1 and 6.2.

TRAFFIC CALMING COMMENTARY:

Traffic calming seeks to incorporate design elements into the street system that function to reduce vehicular travel speed, promote continuity in the traffic stream and result in a net reduction in overall traffic volume for a given street or system of streets. Some aspects of the traffic calming movement seek to reduce street design speeds by making adjustments to street geometric design criteria that have the effect of reduced travel speed. Other approaches involve physical features such as speed tables and reduced width sections designed to cause motorists to slow down at defined locations. Still other features are intended to promote continuity and efficiency in traffic movement by incorporating multiple travel routes, improved internal street system circulation and vehicular yield conditions in lieu of stop conditions at street intersections.

Recently, the DelDOT has initiated work on a Traffic Calming Manual which purportedly will include a menu of traffic calming design choices for a variety of road classifications. Although the date of completion is uncertain at this time, upon its availability, local governments are advised to review and consult the Traffic Calming Manual for a comprehensive set of traffic calming design criteria set forth by DelDOT.

Through interviews with key personnel and public involvement, the consultant team presented, both in graphic form and by means of real life photographs, seven different design techniques for achieving some degree of traffic calming for participants to consider. For purposes of this project, traffic calming recommendations set forth herein are limited to those that were identified by participants and the project work group through the course of this study as having potential benefits to communities in Kent County.

Ordinance Recommendations #5 and #6 have been developed based upon those elements that received favorable responses by a majority of respondents and are intended as optional design features that communities might employ as part of their subdivision design program.

Recommendation #7 - Intersection Curb Radii

7.1 *Purpose*. This ordinance establishes minimum curb radius requirements for intersections of various road types.

7.2 *Curb Radius Requirements.* The curb lines of intersecting streets shall be connected by radial curbing in accordance with the minimum curb radius requirements set forth in Table 7.1:

Table 7.1	**MINIMUM CURB RADIUS REQUIREMENT AT INTERSECTIONS**			
Intersecting Street Type	Local Street	Minor Collector	Major Collector	Arterial
Local Street	10'	15'	25'	25'
Minor Collector	15'	20'	25'	25'
Major Collector	25'	25'	25'	40'
Arterial	25'	25'	40'	40'

The above-referenced radius requirements are further illustrated in Exhibits 7.1 and 7.2.

7.3 *Subdivision Streets under the jurisdiction of DelDOT.* Table 7.2 sets forth the minimum corner radii requirements for subdivision streets to be dedicated to public use as state maintained streets. Within DelDOT defined Multimodal Investment and Management & Preservation Areas, optional design standards known as DelDOT's Mobility Friendly Design Guidelines may be followed in lieu of DelDOT standard subdivision street requirements. Table 7.2 provides the minimum pavement radii requirements for both Standard DelDOT requirements and Mobility Friendly Design Guideline requirements. For a complete listing of DelDOT guidelines refer to DelDOT Rules and Regulations for Subdivision Streets.

TABLE 7.2 DelDOT SUBDIVISION STREET MINIMUM INTERSECTION PAVEMENT EDGE RADII REQUIREMENTS

INTERSECTION TYPE	DelDOT Standard Requirements	Mobility Friendly Design Guidelines
Minor Street to Minor Street	**25'**	**25'**
Minor Street to Collector with Parking	**25'**	**30'**
Minor Street to Collector without Parking	**25'**	**40'**
Collector to Collector Subdivision Street with Parking	**25'**	**25'**
Collector to Collector Subdivision Street without Parking	**25'**	**50'**

COMMENTARY:

The curb line radius at intersections can have a significant influence over pedestrian comfort and convenience and motor vehicle travel speed. While broad, generous radii permit ease of turning and maintenance of travel speed for motor vehicles, they also result in a reduction in pedestrian safety and convenience by increasing the crossing distance and exposing pedestrians to higher street design and travel speeds.

Most subdivision codes specify a single "one size fits all" radius requirement, typically 20 or 25 feet.

On low volume local streets whose primary function is to provide access to abutting properties, a smaller minimum radius is proposed. On higher volume roads, the minimum radius requirement increases accordingly.

Recommendation #8 - On-Street Parking Provisions

8.1 *Purpose*. This ordinance establishes on-street parking design criteria. Marked on-street parking spaces may be desirable and/or warranted on most urban streets and along certain suburban collector roads as determined by the Planning Commission through the plan review process.

8.2 *Parking Dimensions*. Where deemed necessary by the Planning Commission, designated terminal and in-line on-street parking spaces shall be arranged parallel to the travel lane and shall be at least 8 feet in width. Terminal parking stalls shall be at least 20 feet in length and in-line parking stalls shall be at least 22 feet in length.

8.3 *Striping*. On-street parking stalls shall be designated by 6 inch wide white paint striping or adhesive pavement markings. Three alternative marking patterns are provided in Exhibit 8.1.

8.4 *Distance From Intersections*. No on-street parking stall shall be situated closer than 20 feet to an intersecting street line or marked pedestrian crosswalk. This separation distance shall be increased to 30 feet at signalized intersections.

8.5 *Transit Stop Limits*. No on-street parking shall be designated within specified transit stop limits.

Recommendation #9 - Street Lighting

9.1 *Purpose*. This ordinance establishes street lighting and illumination requirements.

9.2 *Street Classification to Receive Lighting.* All proposed streets within the Community/Urban Center and/or the Primary and Secondary Developing Area street classifications, shall be provided with a system of street lighting.

9.3 *Burden of Cost.* The subdivider/developer shall bear the burden of the cost of design and installation of the required street lighting system, unless specifically exempted from design, installation and associated costs by the local electric utility company, who shall assume such costs.

9.4 *Intensity Requirements.* Table 9.1 below sets forth minimum illumination intensity requirements that shall be provided by street type:

TABLE 9.1 STREET ILLUMINATION REQUIREMENTS (in Footcandles)

Facility Type	Residential	Mixed Use/Transition	Commercial/Industrial
Arterial/Major Collector Road	.9	1.2	1.6
Minor Collector Street	.6	.9	1.2
Local Street	.4	.7	.9
Sidewalks/Bikeways Along Roadside	.2/.5	.6/1.0	1.0/2.1
Sidewalks/Bikeways Off-Road	.5	.5	.5
Designated Pedestrian Crosswalks	1.5	1.5	1.5
Pedestrian Tunnels	4.0	4.0	4.0

9.5 *Ownership and Maintenance.* Unless initiated, designed and installed by a municipality or public electric utility provider, all required street lighting systems inclusive of all light fixtures, poles, transformers, cables and related equipment, shall remain in the ownership of the developer/subdivider, who shall be responsible for the satisfactory operation, maintenance, repair and operational costs unless and until such system has been:

1. Formally dedicated to and accepted by the municipality or other public electric utility provider for ownership, maintenance, repair and operation; or

2. Formally dedicated and transferred in title as private property to a bonafide homeowners association that shall be responsible for the operation, maintenance and

repair tasks and associated costs of the street lighting system in accordance with the provisions of this ordinance; or

3. Established by local ordinance as a special “Street Light Tax District” by the governing body, under which property owners within the defined tax district would be assessed and charged a relative proportion of the cost of operating and maintaining the street lighting system as part of the annual property tax assessment bill for their real property within the tax district.

Recommendation #10 - Private Streets

10.1 *Purpose.* This ordinance establishes limited conditions under which private streets may be considered, designed and approved.

10.2 *Minimum Design, Ownership and Maintenance Requirements.* Private streets may be approved by the Planning Commission within developing areas and rural subdivisions if each of the following conditions are satisfied:

1. *Street Type Requirement.* All streets within the subdivision meet the definition of either "local street" or "minor collector street" as provided in this Ordinance; and

2. *Residential Density Requirement.* Gross residential density for the subdivision shall not exceed 1 dwelling unit per acre; and

3. *Dimensional Requirement.* Proposed private streets shall conform to the minimum dimensional requirements by street type set forth in Exhibits 2.1 and 2.2.

4. *Ownership and Maintenance.* The developer shall establish or cause to be established a bonafide homeowners association for the purpose of assuming ownership of and perpetual maintenance responsibility for all private streets within the proposed development. The following minimum criteria shall be adhered to:

    1. *Homeowner's Association Establishment.* At a minimum, the creation and governance of the homeowners association shall be established by legally sufficient and binding instruments to include Articles of Incorporation and a Declaration of Maintenance Obligations. The applicant for subdivision approval involving private streets, shall bear the burden of producing these documents.

    2. *Incorporation.* Articles of Incorporation for each homeowners association shall be prepared by the developer for the purpose of creating a legally binding entity to which membership shall be mandatory for all owners of real property within the subdivision, except for governmental entities which may own or acquire property for utility service, recreation areas or other public purposes.

    3. *Payment of Dues.* Each homeowners association shall have legal authority to require its members to pay to the homeowners association periodic dues for the purpose of maintenance and repair of private streets approved under this section.

    4. *Administrative Structure and Management.* The Articles of Incorporation and Declaration of Maintenance Obligations shall establish an administrative structure and management procedures for the homeowners association, which shall include but not be limited to: the election of the board of directors, collection of dues, procurement of and payment for services related to the repair and maintenance of private streets and procedural and legal requirements

for the placement of liens on property of members that fail to pay the required dues.

5. *Homeowners Association Review*. All such documents described in section 10.2.D. shall be submitted in "draft" form at the time of application for subdivision plan review. The Planning Commission shall transmit such documents to its legal council for review and determination of legal sufficiency prior to acting on any plan which proposed the establishment of private streets.

10.3 *Pavement Specifications.* Private streets shall be designed in accordance with the following pavement specifications:

2. *Right-of-Way Area and Sub-grade Preparation.*

1. *Clearing.* Private road right-of-way areas shall be cleared of all trees, shrubs, brush, stumps, root masses, other vegetation, rocks, litter and other debris or obstructions in accordance with the provisions of DelDOT Standard Specifications, Section 201 (Clearing and Grubbing).

2. *Subgrade*. The private road sub-grade shall be prepared in accordance with the provisions of DelDOT Standard Specifications, Section 202.06.

3. *Subgrade Inspection.* The condition of all right-of-way areas and sub-grade preparations shall be inspected and approved for conformity with these regulations by a professional engineer registered to practice engineering in the State of Delaware prior to the start of construction of any private street. This function may be performed by the county (or municipal) engineer or a duly authorized consulting engineer, at the direction of the county (or municipal) engineer.

b. *Select Borrow Base Course*. Base course material shall meet the minimum requirements of DelDOT Standard Specifications, Section 209 for Type G Select Borrow material. Base course shall be prepared in accordance with the provisions of DelDOT Standard Specifications, Section 301 (Select Borrow Base Course).

c. *Bituminous Surface Treatment.* Bituminous surface treatment shall be applied in the following quantities and methods:

i. *Primary Course*. Priming asphalt shall be applied at a rate of 0.5 gallons per square yard and shall be covered by 50 pounds of 3/4" stone or 40 pounds of 3/4" crushed slag material.

ii. *Secondary Course*. Sealing asphalt shall be applied at a rate of 0.35 gallons per square yard and shall be covered by 20 pounds of 1/2" stone or 20 pounds of 1/2" crushed slag material.

iii. *Top Course*. Sealing asphalt shall be applied at a rate of 0.35 gallons per square yard and shall be covered by 20 pounds of 1/2" stone or 20 pounds of 1/2" crushed slag material.

4. *Material and Construction Methods*. Materials and construction methods shall be in compliance with DelDOT Standard Specifications, Section 404 (Bituminous Surface Treatment).

d. *Hot-Mix Bituminous Concrete Pavement*. As an alternative to *bituminous surface treatment* described above, the developer may choose to construct private streets using hot-mix, hot-laid bituminous concrete pavement. Materials and construction methods for hot-mix paving shall be in accordance with DelDOT Standard Specifications, Section 401 (Hot-Mix, Hot-Laid Bituminous Concrete Pavement).

10.4 *Construction Plan Development*. Construction Plans for any proposed private street shall be prepared by a professional engineer registered to practice engineering in the State of Delaware for submission to and review by the County (or municipal) engineer or duly authorized consulting engineer, as directed by the County (or municipal) engineer. Such plans shall be prepared on 24"x 36" plan sheets at a scale no smaller than 1"= 50'. All design and plan information shall comply with the provisions of this ordinance for streets to be dedicated as public streets.

10.5 *Approval of Construction Plans*. The County (or municipal) Engineer or duly authorized consulting engineer, shall review the Construction Plans for conformity with all applicable provisions of the Subdivision Ordinance. Upon approval of the Construction Plans by the County (or municipal) engineer, the preparer shall submit final signed, dated and sealed Construction Plans to the County (or municipal) engineer in a quantity specified by the County (or municipal) Engineer. The approved Construction Plans shall be adhered to in the construction of the approved private streets. Any deviation from the approved Construction Plans shall be approved by the County (or municipal) Engineer prior to implementation or construction.

10.6 *Inspection and Final Approval of Construction*. The County (or municipal) Engineer or duly authorized consulting engineer, shall establish a street construction inspection schedule and procedure for each subdivision for which private street construction is proposed. The street construction inspection is intended for the purpose of inspecting the construction of private streets for conformity with the approved Construction Plans and with all applicable provisions of the Subdivision Ordinance. All street construction completion and performance bonding requirements which govern acceptance of streets dedicated to public use, shall be in full force and effect for private streets.

COMMENTARY:

Through the interview process and review of codes and ordinances, it became evident that there is interest in establishing standards governing private streets particularly from members of the Kent County Planning Office.

It is important for local jurisdictions to understand that this ordinance provides a framework for consideration of private streets and that individual jurisdictions may wish to include additional requirements or adjust some of the qualifications (e.g. minimum density) as local preferences and conditions would dictate.

Pavement design requirements have been adapted from standards set forth in DelDOT's Standard Specifications and the Sussex County Subdivision Code, which has permitted private street subdivisions for many years with considerable success.

Individual jurisdictions may need to adjust the requirements provided in this ordinance for Construction Plan review and approval and construction inspection and street acceptance, as staffing arrangements and approval processes vary from jurisdiction to jurisdiction.

Recommendation #11 - Limited Access/Cross - Access

11.1 *Purpose*. This ordinance establishes parameters under which cross-access and shared use of site entrances and internal driveways shall be considered and implemented. The most appropriate methods to be employed in each instance shall be determined on a case by case basis through the Site Plan review and approval process.

11.2 *Major Collector Access*. Vehicular access to major collector streets planned as part of a proposed subdivision shall be limited as follows:

a. *In Residential Subdivisions*. No driveway shall be permitted direct connection to a major collector street. Major collector streets shall primarily serve as a travel route between local and other major collector and arterial streets. All access from residential properties to major collector streets shall be by way of minor collector and/or local streets.

2. In Non-Residential Subdivisions and Business Parks. Individual site entrances directly onto a major collector street shall be at least 300 linear feet apart.

3. *On Streets Maintained by the State of Delaware.* Access shall be subject to compliance with the Access Management Policy and related requirements

promulgated by the Delaware Department of Transportation (DelDOT).

11.3 *Cross Access Requirement.* In order to reduce dependency on vehicular access to major collector streets and to promote efficient, convenient access to destination points along major collector street corridors, shared entrances, cross-access easements, connecting driveways and street linkages shall be required wherever practicable.

11.4 *Cross-Access Types and Locations.* Locations and types of cross-access will vary from site to site and are dependent upon a number of factors including: overall size of the properties involved, building types and land uses of the properties being served, locations of the existing and proposed buildings, locations of existing and proposed parking lots and site utility and landscape requirements. Exhibit 11.1 provides a general illustration of the types and possible locations of cross-access arrangements that should be considered.

Recommendation #12 - Sidewalks

12.1 *Purpose.* This ordinance establishes design criteria for residential and non-residential sidewalks.

12.2 *Public Street Location.* Sidewalks shall be installed along the public street frontage of a property by the owner or developer of the property whenever such property is the subject of a land development proposal which requires planning commission or council approval.

12.3 *Private Property Location.* Sidewalks shall be constructed along private access roadways and site entrances to provide continuous pedestrian access from the frontage sidewalk required in Section 12.2, to existing and proposed buildings on the premises. Sidewalks shall be designed and situated so as to provide pedestrian linkages from parking lots to building entrances and between buildings and groups of buildings on the premises.

12.4 *Width Requirement.* Sidewalks shall be established at a minimum paved width of 5 feet.

12.5 *Access Ramps.* Barrier free access ramps shall be installed at each street corner and at other points of street crossing throughout every subdivision. Access ramps shall be designed and constructed by the developer in accordance with provisions of federal and state laws and specifications.

12.6 *Distance From Curb.* Sidewalks shall be separated from the edge of road, pavement, driveways and site entrances by a grass strip or landscape area of at least 3 feet in width and preferably 5 feet in width. Where sidewalk is planned to adjoin the pavement edge of parking lot areas, such sidewalk shall be grade separated from the parking lot surface by 6 inch vertical face curbing.

12.7 *ADA Guidelines.* Sidewalk design and installation shall comply with federal requirements of the Americans With Disabilities Act (ADA) and shall incorporate barrier free access ramping at points of intersection with street crossings and at other locations so as to accommodate barrier free pedestrian movement and access to buildings, parking areas and other site amenities.

12.8 *Obstructions.* Sidewalks shall be free of utility poles, bushes, plants and all other obstructions.

12.9 *Review and Approval.* All proposals requiring submission of a site development plan or major subdivision plan for review and approval by the Planning Commission, shall demonstrate on the submission plan how the proposed project will comply with the provisions of this Ordinance.

COMMENTARY:

This proposed ordinance is an adaptation of the City of Dover ordinance with the exception of Sections 12.4 and 12.5, which are from the Subdivision Ordinance of the Town of Camden. The recommended language provides the basic elements for a complete ordinance and would apply to residential and non-residential projects. It is anticipated that certain jurisdictions may wish to just add specific sections to address particular needs.

For example, it is recommended that Sections 12.4 and 12.5 be used to supplant the following code sections:

- Kent County Subdivision Ordinance - Article 9, Section 2, Item 8.
- City of Dover Land Subdivision Regulations - Article VI, Section B.
- Town of Smyrna Land Subdivision Regulations - Section II.B.2.

Five feet of width will provide sufficient space to permit two (2) pedestrians, including a wheelchair user to travel side-by-side and/or to pass each other. This recommended amendment would bring local ordinances into compliance with the minimum passing space requirements for an accessible route of 5 feet specified by the Americans with Disabilities Act.

It is recommended that the language in Kent County Subdivision Ordinance, Article 9, Section 2, Item 8 be revised to delete "unless specifically not required by Regional Planning Commission". It currently seems to invite requests for waiver. By right, the RPC can waive many other aspects of the Code. There is no need to give sidewalks special reference.

Recommendation #13 - Marked Crosswalks

13.1 *Purpose.* This ordinance specifies marked crosswalks at key street/sidewalk intersections within and adjoining proposed subdivisions and as linkages to destination points such as schools, parks and commercial buildings. Marked crosswalks are intended to identify the preferred locations where pedestrians should cross the street and to alert motorists of the potential presence of pedestrians.

13.2 *Location.* The developer shall be required to install marked crosswalks, which function to create a visual and tactile connection between barrier free access curb ramps for the purpose of demarcation of appropriate pedestrian street-crossing locations in the following instances:

a. At points of intersection between sidewalk and major collector and arterial streets and at all corners along a major collector or arterial street where local residential streets intersect the collector or arterial street.

b. At all signalized intersections adjoining the development site.

c. At key locations to provide marked street crossing access to active or passive parkland and open space areas, schools, playgrounds, neighborhood shopping centers and similar pedestrian destinations within and adjoining the development site.

13.3 *Striping.* Marked crosswalks shall consist of transportation industry standard reflective paint pavement markings and/or adhesive pavement marking tape applied to the street surface in "ladder bar" fashion(See Exhibit 14.1). The marked area shall be 5 feet in width and shall be oriented perpendicular to the direction of the street at the crossing point. Markings shall run from one side of the street to the other.

13.4 *Signage.* Marked crosswalks shall be identified for motorists by the universal "Yield to Pedestrians" sign situated at least 25 feet and no greater than 40 feet, in advance of the pavement marking and oriented to address traffic in both directions on the street.

COMMENTARY:

This provision would be recommended for both subdivision ordinance and zoning ordinance sections pertaining to formal plan review and approval criteria.

Recommendation #14 - School and Transit Bus Stops

14.1 *Purpose.* This ordinance specifies school and transit bus stop design criteria along local , minor collector, major collector and arterial roads.

14.2 *Transit and Bus Stop Requirements.* All subdivision and residential site development proposals involving more than 50 dwelling units shall be required to designate and reserve locations for transit and school bus stop accommodations within and/or adjacent to the proposed development.

14.3 *School Bus Stop Locations.* The following specifies school bus stop locating procedures:

a. The developer shall notify the local public school district of the location, character and layout of the proposed subdivision or residential site development by registered mail at least 30 days prior to the date of the public meeting at which such proposal will be considered for approval. The purpose of this notification is to offer the local public school district the opportunity to provide input and direction with respect to the most appropriate and serviceable location for school bus stops within the proposed development. The applicant/ developer shall use a School District Notification Form provided by the local jurisdiction developed for this purpose. (See sample form provided in Appendix A).

b. The local public school district shall have at least 30 days to provide commentary to both the applicant/developer and to the local jurisdiction with respect to school bus stop provisions. Such commentary shall describe preferred locations of bus stops within and adjoining the proposed development site. Should the local school district choose not to respond within the prescribed period, the development proposal may proceed through the review and approval process.

14.4 *Public Mass Transit Provisions.* As part of the plan review process, the local jurisdiction shall forward a copy of the proposed subdivision plan or residential site development plan to the Delaware Transit Corporation or its authorized designee, for review and recommendations relative to the reservation and designation of areas for public mass transit stops and related provisions. Review commentary and recommendations shall be offered during the normal plan review period prescribed by this ordinance. A delay in the issuance of review commentary by the Delaware Transit Corporation, shall not result in a postponement of the plan review process.

14.5 *Bus Stop Design Criteria - Local and Minor Collector Streets.* The following specifies bus stop design and construction for local and minor collector streets:

a. On local and minor collector streets, bus stops shall consist of designated curbside bus stops where transit and school buses may stop within the travel lane of the street for the purpose of boarding and discharging passengers. Every effort shall be

made to designate such bus stops as joint use facilities for use by school bus and transit service vehicles.

b. *On-Street Bus Stop*. On-street bus stops served by the Delaware Transit Corporation or its authorized designee, shall be designated by standard Delaware Transit Corporation bus stop identification signage and shall conform to one (1) of the following design standards:

1. The bus stop is designated adjacent to and immediately before a street intersection (See Exhibit 15.1). This configuration may be preferable at locations involving very limited right-turning traffic volumes. The near-side bus stop shall be at least 90 feet in length or an alternative length specified by the Delaware Transit Corporation; or

2. The bus stop is designated adjacent to and immediately after a street intersection (See Exhibit 15.1). This configuration may be preferred in locations where there are high volumes of right-turning traffic, at locations immediately following a right-turn by the bus and where significant numbers of passengers would transfer from an intersecting bus route. The far-side bus stop shall be at least 80 feet in length or an alternative length specified by the Delaware Transit Corporation; or

3. The bus stop is designated along the curbside in locations between and separated from intersecting streets (See Exhibit 15.1). The mid-block bus stop shall be at least 130 feet in length or an alternative length specified by the Delaware Transit Corporation.

14.6 *Bus Stop Design Criteria - Arterial and Major Collector Roads*. The following specifies bus stop design and construction for arterial and major collector roads:

a. Where required by the Delaware Transit Corporation or requested by the local school district, bus stops on arterial and major collector roads shall be designed as Bus Turnout Areas. These areas consist of a pull-off area of sufficient dimensional attributes to permit a bus to pull over to the curbside and out of the travel lane for purposes of boarding and discharging passengers.

b. Bus Turnout Areas shall be designed as integral features of the pedestrian sidewalk network and shall conform to the design and minimum dimensional requirements depicted in Exhibit 15.2.

c. Every effort shall be made to designate planned Bus Turnout Areas as joint use facilities for both school bus and transit service vehicles.

d. Bus turnout areas shall be required when:

i. Peak hour curb lane traffic count exceeds 250 vehicles per hour; and

ii. Existing land development patterns and the local street system does not permit

continuous internal neighborhood circulation and linkage for transit service off of arterial and/or major collector streets; and

iii. The nearest existing Bus Turnout Area or similar transit facility is more than 1,300 feet (1/4 mile) walking distance from the main entrance of the proposed subdivision.

COMMENTARY:

Both the project interview process and public workshop results indicate a strong preference for school bus and transit stops to be planned as integral components of subdivision design. Participants have indicated that school bus stops in particular should be located within residential neighborhoods rather than along arterial roadways for obvious safety reasons.

The code language suggested above provides the basic framework for addressing the need to incorporate school bus and transit design issues as part of the subdivision review process. Individual jurisdictions may wish to include additional code language to further reference specific sections of their code which sets forth the plan review process and to tailor their interface with the local school districts.

Bus stop dimensional specifications have been adapted from specifications set forth in the DelDOT Road Design Manual and the Delaware Transit Corporation's "Draft" Policy: Bus Stop and Passenger Facilities Standards.

Recommendation #15 - Bicycle Travel

15.1 *Purpose*. This ordinance specifies bicycle travel lane design requirements.

15.2 *Bicycle Travel Lanes.* On all proposed major collector streets, the developer shall incorporate bicycle travel lanes on both sides of the street in addition to the motor vehicle travel lanes. Bicycle lanes shall measure 6 feet in width and shall be delineated from the motor vehicle travel lane by a 6 inch wide painted stripe. Bicycle lanes shall also be identified by signage and pavement symbols in the bicycle lane in accordance with the Manual on Uniform Traffic Control Devices (MUTCD).

15.3 *Bicycle Curb Lanes.* In locations where it is determined that inadequate right-of-way exists to accommodate dedicated bicycle lanes, the jurisdiction may require that wide curb lanes be designated in lieu thereof. Wide curb lanes are typically 14 feet in width and serve as shared lanes for motor vehicle and bicycle travel. Such routes shall be further designated by "Share The Road" signage placed on both sides of the street and spaced approximately 1,000 feet apart.

Recommendation #16 - Bicycle Parking

16.1 *Purpose.* This ordinance establishes bicycle parking space requirements for site development projects involving the construction of vehicular parking areas.

16.2 *General Bicycle Parking.* Site development plan proposals involving parking lots with 20 or more motor vehicle parking spaces shall provide at least one (1) bicycle parking space for every 10 car spaces provided. Bicycle parking spaces shall be in the form of bicycle racks and/or bicycle lockers. Bicycle rack structures shall be limited to a maximum capacity of 10 bicycles per rack. In no case shall more than 20 bicycle parking spaces be required at any given site.

16.3 *Bicycle Rack Specifications.* Bicycle racks shall be provided with a paved parking surface and shall be grade separated from motor vehicle parking and driveway areas by minimum 6 inch vertical faced curbing. Bicycle racks shall be located in areas that are readily visible from the public street and primary building entrances and shall be setback at least 15 feet from motor vehicle travel lanes and at least 5 feet from the edge of the sidewalk. Bicycle racks shall be oriented so that parked bicycles will not protrude into sidewalk, designated pedestrian areas and/or motor vehicle parking spaces.

APPENDIX A
SCHOOL DISTRICT NOTIFICATION FORM

IN ACCORDANCE WITH THE REGULATIONS GOVERNING RESIDENTIAL LAND DEVELOPMENT PROPOSALS WITHIN (JURISDICTION), THE UNDERSIGNED IS HEREWITH PROVIDING THE _____ SCHOOL DISTRICT WITH FORMAL NOTIFICATION OF A PENDING RESIDENTIAL LAND DEVELOPMENT PROPOSAL SITUATED WITHIN THE LIMITS OF THE SCHOOL DISTRICT BOUNDARIES, AS FURTHER DESCRIBED BELOW.

THE PURPOSE OF THIS NOTIFICATION IS TO AFFORD THE SCHOOL DISTRICT AN OPPORTUNITY TO REVIEW THE PROPOSED RESIDENTIAL LAND DEVELOPMENT PLAN AND TO PROVIDE WRITTEN COMMENTARY TO (JURISDICTION) WITH RESPECT TO PREFERRED LOCATIONS FOR SCHOOL BUS STOPS WITHIN AND/OR ADJOINING THE PROPOSED DEVELOPMENT. A COPY OF THE PROPOSED LAND DEVELOPMENT PLAN IS ENCLOSED WITH THIS NOTICE FOR YOUR CONVENIENCE.

PROPOSAL DATA (ALSO SEE ENCLOSED PLAN):

LOCATION:_____
_____
_____
_____

SITE AREA:_____

NUMBER OF DWELLING UNITS PROPOSED: _____

PROPOSED HOUSING COUNTS BY TYPE (CHECK ALL THAT APPLY):

SINGLE FAMILY ____ DUPLEX ____ TOWNHOUSE _____ MANUFACTURED HOMES _____
APARTMENTS ____ AGE RESTRICTED (55 YRS. & OVER) _____

DEVELOPER: (NAME)
(ADDRESS)
(PHONE)
(SIGNATURE)

PROJECT REPRESENTATIVE: (NAME)
(ADDRESS)

(PHONE)
(SIGNATURE)

MEETING DATES:

THE (JURISDICTION) PLANNING COMMISSION WILL CONSIDER THIS PROPOSED RESIDENTIAL LAND DEVELOPMENT PLAN AT ITS REGULARLY SCHEDULED MEETING OF _____. TO ENSURE THAT ANY INPUT YOU MAY HAVE IS GIVEN FULL CONSIDERATION, PLEASE SUBMIT YOUR WRITTEN COMMENTS TO THE (JURISDICTION) PLANNING

OFFICE NO LATER THAN_____.

SHOULD YOU HAVE ANY QUESTIONS REGARDING THIS NOTICE OR THE ATTACHED PLAN, PLEASE CONTACT A REPRESENTATIVE OF THE (JURISDICTION) PLANNING OFFICE AT (PHONE NUMBER).

REFERENCE MATERIAL LIST:

Performance Streets: A Concept and Model Standards for Residential Streets, Bucks County Planning Commission, Doylestown, Pennsylvania - 1980.

Skinny Streets: Better Streets for Livable Communities, Livable Oregon, Incorporated, Portland, Oregon - 1996.

Report on New Standards for Residential Streets in Portland, Oregon, City of Portland, Oregon - 1994.

Rural Street Design Standards, City of Novato Code (Article 5, Section 45), Community Development Department, Novato, California.

Arendt, Randall, et.al., *Rural By Design*, American Planning Association Planners Press, Chicago, Illinois - 1994.

Hoyle, Cynthia L., *Traffic Calming*, American Planning Association, Planning Advisory Service, Report Number 456, Chicago, Illinois, 1995.

Jarvis, Frederick D., *Site Planning and Community Design for Great Neighborhoods*, Home Builders Press, Washington, D.C. - 1993.

Southworth and Joseph, *Streets and the Shaping of Towns and Cities*, McGraw-Hill Publishers - 1997.

Standard Specifications - January 1998, Delaware Department of Transportation, Dover, Delaware.

Sussex County Subdivision Ordinance, Chapter 99, Section 18 - Code of Sussex County, Delaware - 1995.

DelDOT Road Design Manual, Delaware Department of Transportation, Dover, Delaware.

Roadway Lighting - American National Standard (ANSI), Illuminating Engineering Society of North America, New York, New York - 1983.

Policy on Bus Stop and Passenger Facilities Standards, Delaware Transit Corporation, Dover, Delaware - 1998.

Bicycle and Pedestrian Transportation Plan: Facility Design Guidelines, City of Dover,

Delaware - 1997.

Mobility Friendly Design Standards, Wilmington Area Planning Council, Newark, Delaware - 1997.