FINAL
STREETSCAPE
MASTER PLAN

For the
CITY OF
DANVILLE, KY

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I. Overview and Primary Goals

In March 2006, the City of Danville authorized the creation of a Streetscape Master Plan for the Downtown area. The Master Plan is intended to assist those who will plan for our City's future public spaces. Input and guidance has been sought from many individuals, representing both public and private sectors, who share a common goal of addressing Danville's current assortment of streetscape components. A public hearing was held in October 2006 presenting potential streetscape elements and overall plans. Comments and suggestions from individuals, interested committees, and the public, combined with design concepts developed by FRA Engineering, form the Streetscape Master Plan. The Streetscape Master Plan was adopted by the City Commission, in April 2007, establishing the vision by which we create a livable and economically inviting Downtown area.

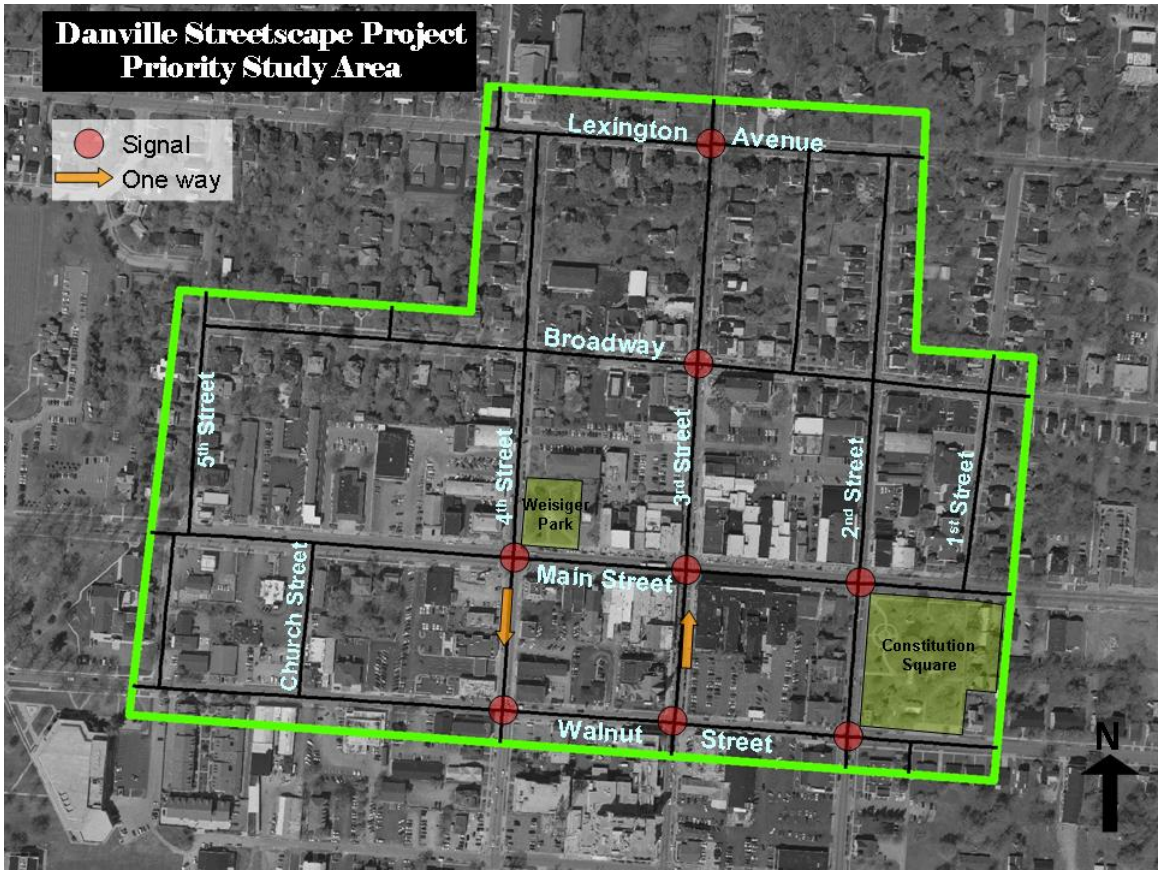
The primary goal(s) of the Streetscape Master Plan is as follows:
To create a durable, safe, and attractive streetscape that withstands the test of time; to celebrate the City's unique heritage and distinctive Downtown; to reinforce a sense of place and economic vitality, and to promote visual continuity in an effort to enhance and promote Downtown destinations for visiting, working, playing and living.

Revitalized streetscapes will assist with attracting new residents, businesses, and visitors to the richness of the City's urban landscape. With careful implementation, the Streetscape Master Plan will support and promote this revitalization process, while creating safe and inviting public spaces and generating a greater sense of community pride.

The City Commission, in establishing this Streetscape Master Plan project for Danville, directed a twenty year planning horizon year for the project.

The process involved the entire Community, and the resulting plan sets the bar for Danville's future place locally, regionally and in the Commonwealth. The Streetscape Master Plan, described in detail in the following pages, is a conscious effort to distill Danville's historic design precedents, building traditions, and generally low-key, functional, and common-sense style into a design 'vocabulary' for future investments in public spaces.

To avoid replacement of Danville's diverse urban landscape with strictly standardized improvements, implementation of the Master Plan should be managed by balancing uniformity with diversity, rather than an exercise strictly focused on 'beautification' and homogenization.



Master Plan Limits and Boundaries

The Study Area:

The Master Plan boundaries include essentially all of the Downtown commercial core, and bordering streets. The Study area includes 1st Street to 5th Street, Broadway to Walnut. Current, as well as the recommended future, streetscape elements differ significantly over the area. The hardscape elements of Main Street should not be reproduced on Walnut Street. Similarly, the priority placed on vehicular traffic movement on arterials should not take place on collectors and local streets. Therefore, the Master Plan defines distinct areas within the Study boundaries, and recommends varied treatments for each.

II. Streetscape Definition and Specific Components

The term 'streetscape', as utilized throughout the Master Plan, refers to exterior *public* spaces located *between* street curbs and building facades. Pedestrian crosswalks and traffic calming measures located within vehicular spaces are two exceptions to this definition, however, and are included as streetscape elements. This is because their design directly impacts the safety, aesthetic and functional success of the streetscape.

Basic streetscape components include:

- Paving
  - Sidewalks
  - Curbs
  - Accessible Sidewalk Ramps
  - Traffic Calming Measures
  - Crosswalks
- Plantings
  - Street Trees
  - Other Supplemental Plantings
  - Container Plantings

- Street Furnishings
  - Benches
  - Litter and Ash Receptacles
  - Movable Tables and Chairs
  - Bollards
  - Bicycle Racks and Bollards
  - Bus Shelters (future)
  - Sign Poles
  - Fences
  - Utility Covers
  - Banners
  - Planters
  - Lighting

The Streetscape Master Plan does not address objects mounted to building facades such as signs, canopies, awnings, window boxes, railings, building mounted lighting and other architectural features. The City has adopted specific regulations related to these elements, and if proposed within the Downtown Commercial District or the local Historic District, such items, typically intended to enhance *private* property, are subject to review and approval by the City's Historical/Architectural Review Board and the City Commission.

While greater visual continuity will be achieved through the use of similar streetscape elements in the core areas of Downtown, replication of *identical* paving patterns, street tree species, site furnishings and lighting are not intended for *all* areas of the City. For example, the design vocabulary selected for Main Street may not be appropriate for use on the predominately residential areas of North 5th Street. Specific streetscape enhancement budgets, coupled with a desire to maintain distinctive identities of Danville's diverse neighborhoods, require slight variations on common streetscape objectives.
For this reason, the Master Plan provides options for many of the basic streetscape components noted above. Variations on standard streetscape components may be permissible with proper City review and approval as future enhancement projects are implemented. Review and adoption of the Streetscape Master Plan must, therefore, consider the complimentary aspects of these options, and how they combine to achieve the desired objectives.

III. Designated Areas for Streetscape Variation

Recognizing the need for variation within the Streetscape Master Plan, two streetscape types have been identified, each requiring a distinctive approach. These designated areas are depicted below. The first of these streetscapes is the City's DT, Downtown Zoning District (formerly the C-1 Commercial Zone), as depicted on the City's current Zoning Map. Main Street also includes the Downtown Historic District, which is an overlay district intended to provide preservation and protection of the primary historic architectural landmarks in Downtown Danville.

Throughout the Streetscape Master Plan, the designated streetscape variations are as follows:

- Central Business District and Key Corridors –Streetscape 'A'
  - Main Street (1st Street to 5th Street)
  - 4th Street (Broadway to Walnut)
  - 3rd Street (Broadway to Walnut)
  - 2nd Street (Broadway to Walnut)
  - 5th Street (Main to Walnut)
  - Walnut Street (2nd Street to 5th Street)
  - Broadway (2nd Street to 4th Street)

- Residential Areas within the Master Plan Boundaries – Streetscape 'B'
  - 1st Street (Main to Broadway)
  - Walnut Street (East of 2nd Street)
  - Broadway (1st Street to 2nd Street)
  - Broadway (4th Street to 5th Street)

An example of Danville's Central Business District (Streetscape A)

An example of Danville's residential districts (Streetscape B)

Residential areas of the City not included in the Master Plan boundaries are envisioned to have slightly different streetscape treatments, but could easily utilize some (but not all) of the same elements included in residential areas within the Master Plan boundaries.

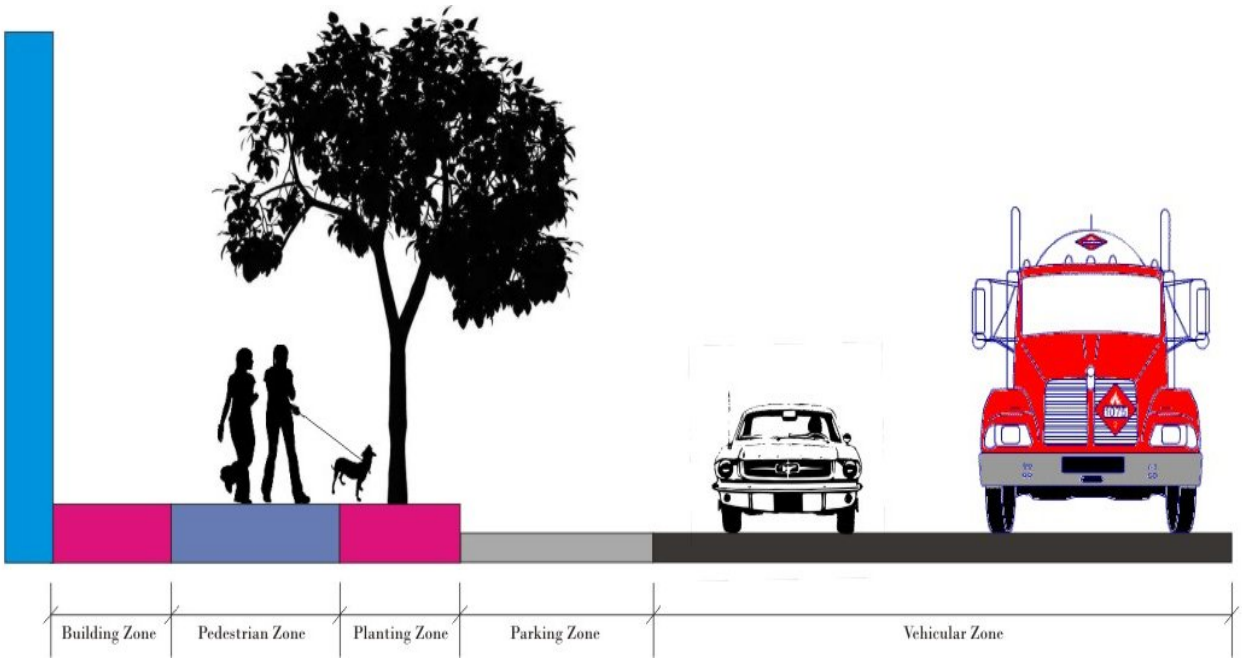
Finally, all non-residential areas of the City not already addressed in the two previous categories will ultimately comprise a third area for streetscape design variation. These areas include the institutional zones of Ephraim McDowell Regional Medical Center, the Kentucky School for the Deaf, and other areas. Centre College has and will likely continue to lead the investment in defining streetscape elements within the campus boundaries. For that reason, elements of the campus streetscape are identified and included in the Master Plan. Arguments can be made for and against carrying common themes from the Centre campus throughout Downtown Danville. The Master Plan is intended to be respectful of and complimentary to the Centre streetscape theme, but does not expand that theme to include all of Downtown Danville.

Beyond the above detailed streetscape designations, subtle variations on common streetscape elements may also be used to celebrate distinctive neighborhoods/districts located within each of the broader areas of the City of Danville and Boyle County. Following further study and streetscape planning efforts, such unique places may be identified through the use of decorative banners, customized plaques on street furnishings, and distinctive public art incorporated into standard paving patterns, for example.

Finally, if the desire to be a “destination” is to remain a priority, the Streetscape not only defines the “look and feel” of the destination, but it also must point to it. Therefore directional signage, wayfinding markers and ease of travel through Downtown must also be a priority.

IV. Sidewalk Zones

The proposed streetscape materials and furnishings identified in the following sections of the Streetscape Master Plan require appropriate placement between street curbs and building facades. The space between the building and the curb line, available for streetscape elements, varies street to street and block to block, Therefore, for the purpose of identifying appropriate locations, the area immediately adjacent to the curb line will be defined as the Planting Zone. Progressing from the Planting Zone toward the building façade, the intermediate streetscape area will be referred to as the Pedestrian Zone. Finally, the streetscape area nearest the façade will be designated as the Building Zone (see Sketch A).



Sketch A – Streetscape zones

The actual dimensions of these three zones, defined by function and activity, vary greatly throughout Streetscapes ‘A,’ and ‘B’ (as previously identified in Section III). Typically, the Planting Zone extends 2 ft. to 6 ft. from the curb line. In addition to accommodating street trees, pole mounted site features, and some pedestrian circulation needs, the Planting Zone functions as an effective buffer between the vehicular areas near the curb and the Pedestrian Zone. Items such as lighting, signs, bollards, benches, newspaper boxes and litter receptacles will be located here.
The Pedestrian Zone requires a minimum of 4 feet of width to permit safe, unimpeded circulation routes. Downtown streetscapes typical will set 5 feet as the minimum width of the

pedestrian zone where possible. A 5 ft. clear path from any building entrance/exit shall remain within the Building Zone for all streetscapes.

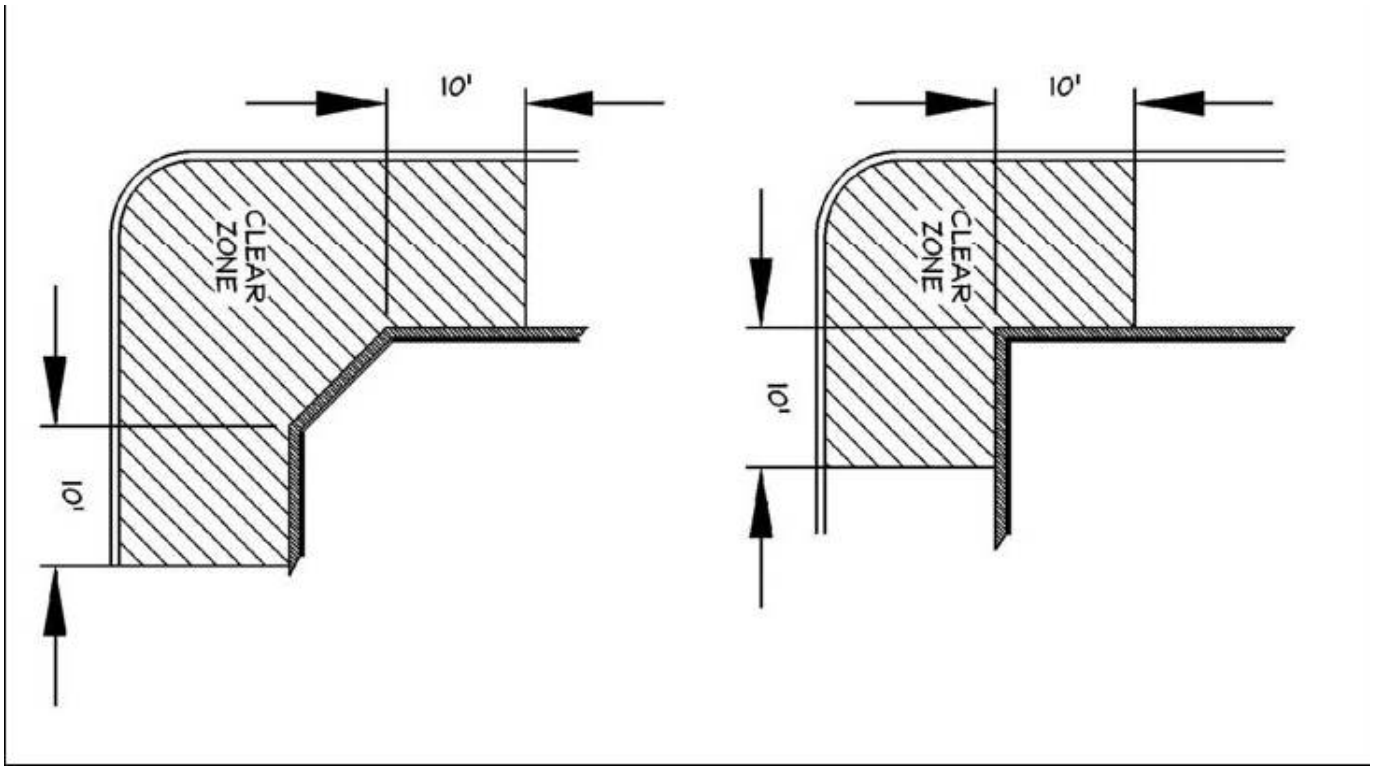
Where additional sidewalk width exists within the remaining Building Zone, such spaces may accommodate ADA accessible ramps to building thresholds, seating areas, sidewalk café uses, moveable container plantings (Streetscape 'A'), and/or permanently installed foundation plantings (Streetscape 'B').

In addition to the three previously noted sidewalk zones, Clear Zones must be maintained at all sidewalk intersections. Clear Zones are areas of the streetscape where only traffic signals, lighting, and street signs are permitted. Clear Zones accommodate higher pedestrian volumes that typically occur at sidewalk intersections, and permit safe viewing distances for both motorists and pedestrians. All Clear Zones include the sidewalk intersection and a 10 ft. minimum area measured along the building corners at street intersections (see Sketch B).

Within Streetscape 'A', decorative paving areas adjacent to curbs should fully accommodate pole-mounted streetscape elements such as lighting and street amenities.

Where approved by the City and adjacent property owner(s), items such as mailboxes, newspaper boxes, and other literature dispensary containers must generally be located beyond the required Clear Zone and within the Building Zone. Due to safety and security concerns, such elements must never be placed within the Pedestrian Zone, or adjacent to a public building or outdoor gathering area. Where inadequate Building Zone area exists, and where specifically approved by the City, such items may be considered within the Planting Zone, provided that they are located beyond the Clear Zone and at least 18” from the face of adjacent curb.

Regardless of location near an intersection or elsewhere, placement of all proposed streetscape components must meet the requirements set forth within the City’s ordinances and the Americans with Disabilities Act (ADA). For example, minimum distances must always be maintained between all proposed site enhancements and items such as accessible ramps, fire hydrants, and vehicular access drives. Also, recognize that elements placed above grade may protrude into the pedestrian zone creating potential hazardous conditions for pedestrians..



Sketch B – Clear Zones

While existing ordinances and laws govern placement of proposed enhancements, the following section of the Streetscape Master Plan provides a specific palette of streetscape materials to be incorporated into the future design of all public spaces throughout the City of Danville

V. Palette of Streetscape Materials

Danville's diverse streetscapes consist of an assemblage of (1) paving, (2) plantings, (3) street furnishings (e.g. litter receptacles, signs, benches), and (4) lighting fixtures. The following four sections of the Streetscape Master Plan address each of these four typical components.

Paving

Brick has dominated the City of Danville's built landscape for over a century. Utilized in construction of the City's landmark buildings such as Hub Building, Gilcher Hotel, and the Boyle County Courthouse, and in our most cherished outdoor spaces such as Constitution Square and Weisiger Park, brick is a material strongly identified with Danville's rich architectural heritage.

Danville's existing brick architecture and paving

Existing sidewalk pavements include primarily concrete paving, complimented with a thin brick-like paver to create sidewalk patterns (see above). These elements have not weathered well, nor are they particularly attractive or historic in appearance. These elements do have some aesthetic value, but citizen input has indicated other streetscape elements might be more appropriate and representative of the goals of the Master Plan.

Brick paving is significantly more expensive than concrete; in first cost as well as life-cycle cost. Nonetheless, it is an appropriate choice for paving material in public spaces like Weiseger Park and Constitution Square. In areas where brick paving is prescribed for sidewalks or other flat surfaces exposed to the elements, Glen-Gery Corporation's wood-formed brick Model #53-DD or equal is suggested. Patterns similar or complimentary to those used in Weiseger Park (the Courthouse portion recently reconstructed), are appropriate to differentiate from the typical sidewalk patterns.

Running bond paving patterns (wythes parallel to the curb) are suggested for all paving patterns located in the building zones.

Base material for all brick paved sidewalks within Master Plan area Building Zones should include concrete as required by City specifications.

All Main Street building zones within Streetscape ‘A’ are proposed to use brick or colored stamped concrete made to look like brick. The exact width of this band is to be determined by the overall sidewalk width, and should not be greater than approximately 20% of the overall width. This paving band width must be consistent throughout any given block (both sides of the street), however; width variation may occur between adjacent blocks depending upon existing sidewalk dimensions.

Existing Pavement Patterns – Streetscape A

Sketch D – Proposed Streetscape 'A' with bumpouts at corners

For practical reasons as well as the aesthetic objectives previously noted, non-mortared, wood-formed brick, such as Glen-Gery Corporation's Model #53-DD (or approved equal), is recommended throughout the Central Business District and along all key corridors (Streetscape A). This specific brick model includes a subtle range of compatible colors. It is a less porous and more slip-resistant type of paving brick than many of the older bricks used in construction of early brick sidewalks.

Standard concrete can also be an attractive material for sidewalks, street curbing, accessible ramps, and crosswalks when handled with a bit of creativity. For example, diagonal scoring patterns (prescribed paving joints where sidewalks shift during annual freeze-thaw cycles) can be used as an inexpensive, low-key design feature. Simple alternating orientation of light broom finish on adjacent sidewalk flags also provides visual breaks in the mass of continuous sidewalks.

Rather than utilizing a standard scoring pattern consisting of 4' x 4' or 5' x 5' squares, a pattern of diagonal squares, resulting in a diamond and triangular pattern for the main sidewalks was selected by the City as the preferred pattern (see Streetscape A on previous page).

The use of integral color, surface texturing and pattern imprints or stamps is becoming common in areas where significant pedestrian activity and turning vehicles frequently use the pavement. Centre College has had intersections and crosswalks in place in Danville for a number of years using this material and considers it to have performed well. High traffic areas of Downtown, as well as future pocket parks, can become attractive streetscape elements when these materials are used effectively in combination. Colored concrete installed with the intent of producing durable, inexpensive stamped flagstone, slate, cobblestone or brick paving patterns is an acceptable paving material. Simple, easily replicated, consistently colored paving patterns (such as the previously noted interlocking, rectangular pattern) must be utilized wherever textured paving is used.


Colored, textured, stamped concrete paving giving the appearance of random slate


Examples of colored, textured and imprinted concrete, creating a variety of different surface elements and working well with unit concrete pavers

Selected paving patterns must be complementary to the overall streetscape, but must not be visually distracting.

Supplements to this Paving Section of the Streetscape Master Plan including details for installation of Sidewalks, Curbs, Accessible Sidewalk Ramps, Traffic Calming Measures, and Crosswalks are provided. Some details apply to all Streetscape 'A', while others will apply to Streetscape 'B' or other specific areas within the City of Danville.

Ashlar slate pattern selected by the City of Danville as the preferred material for the planting zone pavement in Streetscape A areas

L.M. Scofield Systems:

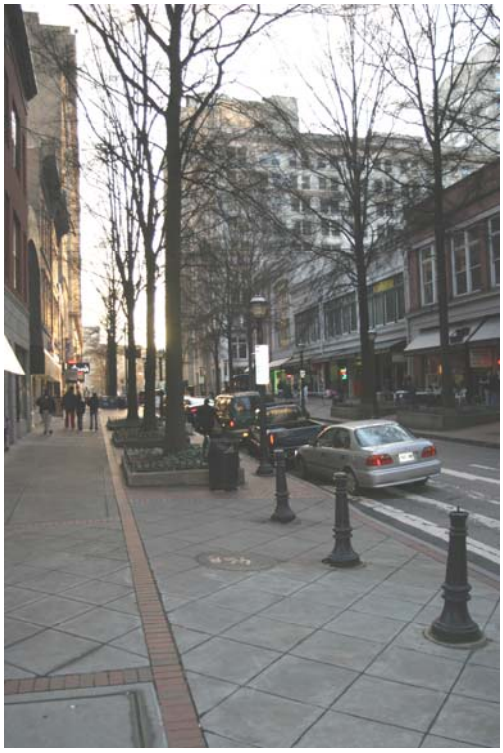
Colored Concrete -
CHROMIX® Admixtures for Color-Conditioned® Concrete - Shadow Slate

Release Agent -
LITHOCHROME® Antiquing Release - Stedman Buff, Slate Gray

Stamped Concrete -
LITHOTEX® Pavecrafters® - English Yorkstone

Sidewalks

As previously noted, sidewalk installations in Streetscape 'A' areas must include a 2.0 to 4.0 ft. primary band of colored-stamped concrete adjacent to, and flush with, the inside face of the street curb (within the Planting Zone). This stamped concrete band should only be interrupted with light fixtures, street trees to remain, hydrants and the traditional hitching posts.



An example of longitudinal banding to define pedestrian areas of the streetscape

Typically, sidewalk paving for Streetscape 'B' will not include brick pavers, because the building zone does not extend into the more residential areas. However, the use of colored–stamped concrete in keeping with Streetscape A patterns and tones may be utilized where planting zones are near the minimum width of 1.5 ft. and historically difficulty to maintain as a curb lawn. It will likely be important that the majority of property owners on both sides of a given street favor these proposed paving enhancements, as continuity of a particular streetscape theme is critical. Where the Planting Zone is currently maintained as a lawn area within Streetscape 'B' areas, it is preferable to maintain this lawn rather than replace it with colored – stamped concrete paving.

Minor variations to standard paving patterns in areas adjacent to a particular landmark building may also be considered by the City. For example, the secondary brick paving band locations previously noted may be slightly altered to emphasize unique architectural features of adjacent structures such as column or entrance locations. To further identify and celebrate distinctive neighborhoods within Streetscape 'B' areas, a series of inset sidewalk markers may also be used to delineate a specific urban trail or walking tour, if first reviewed

and approved by the City. Such opportunities to include public art in otherwise non-distinctive settings create an unique sense of place, while fostering artistic expression among Danville's extensive arts community.

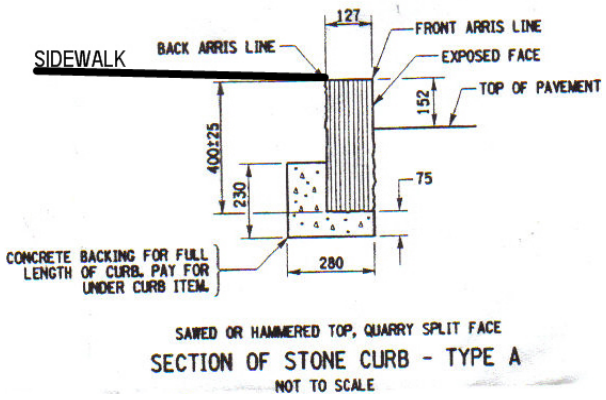
Curbs

Essentially three options are available for creating curbs; barrier curb, which has a sharp step and near vertical face at the curb line; mountable curb, which has a sloped face, allowing tires to pass over more easily, and a curb – gutter combination. Except in specific and infrequent areas within the Master Plan boundaries, curbs are barrier type, but have reduced curb reveal due to pavement overlay.

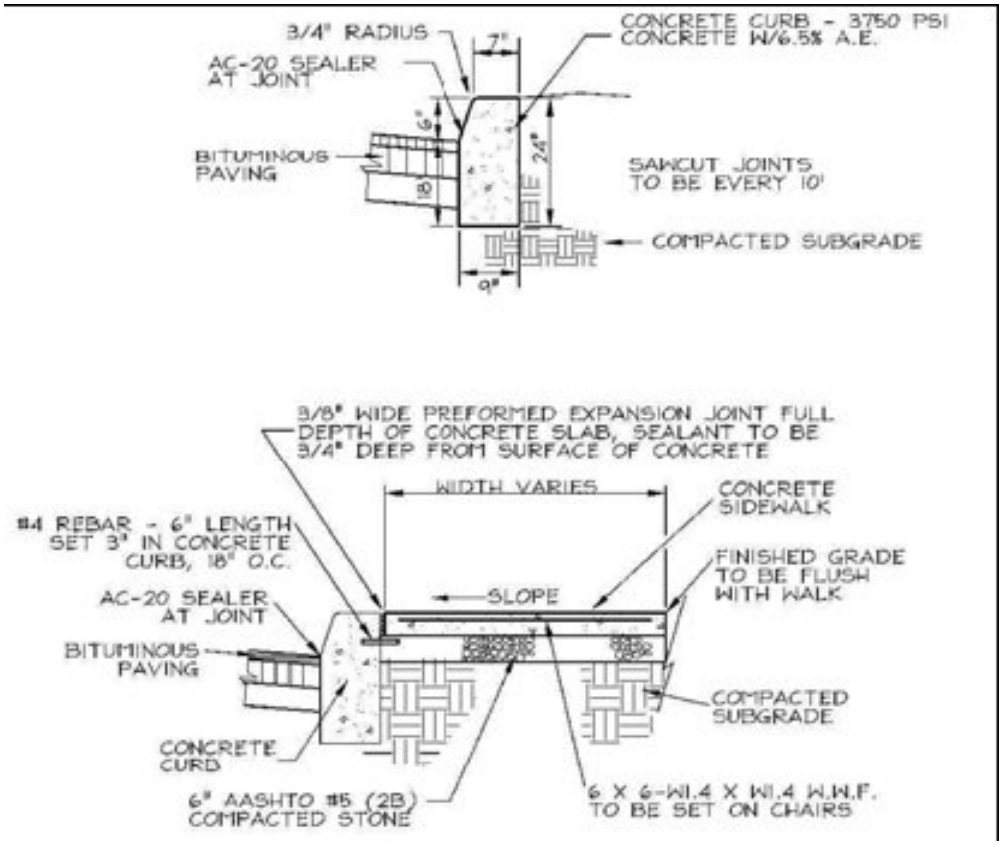
Existing curbs throughout the Master Plan area are constructed of cast-in-place concrete. Some new curb elevations may require modification from existing elevations to ensure adequate curb reveal and correct sidewalk slopes. City construction standards specify a 6" curb reveal, and minimum sidewalk slopes of 1/4" (1/2" desired) vertically for each 1', horizontally. Curb width must be a minimum of 5 inches (7 inches for concrete) measured along the top curb surface.

The use of stone curb creates a more crisp delineation between street and sidewalk. Stone curb also has the advantage of weathering very slowly, and being a re-usable product that can be removed and reset.

The City has selected granite stone curb for Streetscape 'A' areas; and may extend its use to other areas as opportunities arise.



Sketch I-1 – Granite Curb



Sketch I-2 – Concrete curb (Alternate to Granite where required)

Accessible Sidewalk Ramps

Within designs for Streetscapes 'A,' and 'B', detectable warning strips which incorporate raised, truncated domes must be used for all accessible sidewalk ramps as required by the Americans with Disabilities Act.

To comply with ADA requirements that detectable warnings contrast visually with adjoining pavement surfaces, warning strips may be composed of brick pavers such as Whitacre-Greer's Shade #32 and #33 (colors need to match building zone brick), wherever accessible sidewalk ramps adjoin concrete paving, extending from the planting zone into the crosswalk areas. Where such ramps are adjacent to brick paving, concrete pavers with raised truncated domes such as Whitacre-Greer's Shade #52 are to be used. All pavers are to be mortared securely to an appropriate concrete base. All ramps must have a minimum width of 4' and a minimum length of 5'. Accessible ramps must slope upward from the inside edge of depressed concrete curbing (maximum reveal of ½") toward the adjoining sidewalk elevation at a maximum slope of 8:1 (8' of horizontal area for each 1' of vertical ramp transition) for adjoining sidewalks less than 6' in width. This slope should be decreased to 12:1 wherever possible, including in locations with adjoining sidewalk widths greater than 6 ft. Width of transition areas on both sides of the concrete ramp must be 4 times the adjoining curb height.

Sketch J – Accessible sidewalk ramp detail

Two accessible sidewalk ramps are to be provided at all street corners. In addition to street intersection locations, accessible ramps are to be provided at all access drives, alleys, and any other locations where sidewalks intersect with vehicular zones and where existing grades require the use of ramps to maintain accessible routes. Ramps at intersections are to be aligned with existing or future opposing ramp locations on adjacent blocks.

Traffic Calming Measures

Combinations of paving enhancements and curb extensions are proposed at street intersections to slow vehicle approach and turning speeds, while creating shorter crosswalks and more prominent staging areas for pedestrians preparing to cross our City's streets. These extensions are commonly referred to as 'bump-outs" or "bulb-outs". Essentially, well-designed curb extensions effectively narrow the vehicular travel-way and reduce vehicular turning radii in an effort to slow motorists' travel speed at street intersections. Space lost to vehicular use is gained for pedestrian use at street corners, and the pedestrian crossing distance at busy street intersections is minimized. Maintaining adequate curb radii is essential to provide larger vehicles with ample turning space without encroachment into designated pedestrian areas.

In the 1950's and 1960's, many of Danville's key corridors appear to have been designed to move vehicular traffic through the City as quickly as possible. As new streetscapes are designed, every effort should be made to regain pedestrian 'territory' at street intersections, and to further buffer Pedestrian Zones from moving Vehicular Zones.

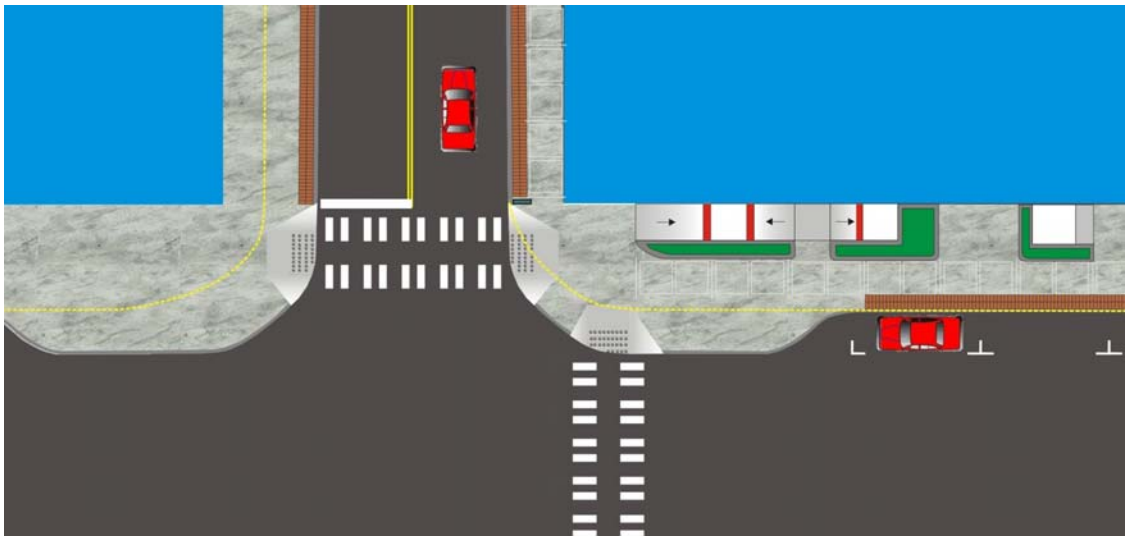
The potential for creating center medians on Main Street has been suggested, if it could be accomplished without impeding traffic capacity and parking. This possibility appears to be worth exploring as part of the long-term master plan for the City.

Crosswalks

To further accommodate pedestrians and cyclists, crosswalks are to be placed at all street intersections, connecting opposing accessible ramps on street corners. Textured concrete paving is one approach to addressing aesthetic and safety issues related to crosswalks. Such crosswalks are to be edged with flush concrete curb (7" width) to create a visual and functional transition between textured, stamped areas and adjoining bituminous paving of Vehicular Zones.

Brick pavers on a strong concrete base are also an option, but cracking of pavers becomes a problem if the concrete base and the subbase are not extremely consistent. Further, the turning movement of heavy vehicles creates tremendous stresses on unit pavers. Therefore unit pavers are not recommended for this application.

For Danville's downtown areas, painted crosswalks are proposed for Streetscapes 'A' and 'B', using a striped bar type pavement marking (see Sketch M). The proposed striping intends to allow for wheel tracks to pass between stripes, reducing the frequency of repainting of the crosswalks due to tire wear. Such crosswalks are to be immediately re-striped whenever removal of bituminous paving and subsequent street patching occurs within painted crosswalk areas. Applied striping must permit the texture of the bituminous street base material to remain, allowing for a more slip-resistant walking surface.



Sketch M –Proposed sidewalk bumpouts and Painted crosswalk detail

Plantings

More than any other streetscape component, plantings enliven our public spaces, define an identifiable pedestrian scale, and herald the changing seasons with natural vibrancy. Spring and summer flowers are typically followed with brilliant autumn foliage and ornamental winter fruit, bark, and seed pods. In addition to this seasonal succession of landscape interest, plantings may be used to buffer undesirable views, reduce detrimental effects of wind and noise, provide comfortable shade, lower energy consumption and reduce carbon dioxide levels through the photosynthesis process. In short, plants make cities such as Danville more livable.

Many trees planted in an urban environment struggle to survive due to environmental stress from soil compaction (required for standard concrete sidewalk construction) and low soil fertility combined with inadequate soil moisture, low levels of oxygen near root zones, limited soil volume, detrimental de-icing salts, pet urine, air pollution, and excessive solar heat reflected from surrounding paving and structures.

Basically, paved areas are unfriendly to trees. Add detrimental human forces such as vandalism and poor tree species selection to this list of environmental stresses and the relatively short life span of many urban street trees becomes more understandable. Danville's Streetscape Master Plan should promote innovative tree planting methods, encourage the use of un-mortared brick pavers over tree root zones (Streetscape 'A') and provide recommendations for proper tree placement. A list of tree species proven to be tolerant of urban environments and able to withstand the stresses of street plantings is available in the Danville/Boyle County Zoning Code, and should be used whenever new plantings are planned.

Existing Street Trees

As new development occurs and existing streetscapes are modified, it is imperative that proper consideration first be given to the protection and preservation of *existing* street trees. Factors to consider when evaluating existing street trees for preservation or removal from new streetscapes include a specific tree's age, health, size, and overall form. Many valuable, healthy trees worthy of preservation for their inherent social, aesthetic and physical benefits exist.

Some of Danville's existing street trees

Tree removal or pruning, if warranted, will require the permission of Danville's Beautification Committee.

Once a determination to preserve an existing tree during construction is made, certain construction procedures must be followed. Tree protection fencing must be installed around existing trees. Storage of construction materials and/or machinery will not be permitted beneath any tree canopy's drip line (edge of branch tips). Damage to any existing tree's canopy or root system during construction must be brought to the immediate attention of the City, and the City will determine if corrective pruning is warranted. Harmful construction runoff to root zones must also be avoided.

When selecting new street trees for an entire block or for a more limited area, it is *not* essential to replicate the species of existing trees within the same area. It is imperative, however, that due consideration be given to the following guidelines for correct tree species selection, size, placement, and planting practices.

Proposed Street Tree Species
To partially offset the numerous environmental stresses imposed upon City street trees, appropriate species selection for tolerance of urban conditions and ability to grow within confined areas (overhead utilities, nearby building facades, limited root zones) is essential when choosing a tree species. Consideration must also be given to a site's specific micro-climate resulting from the effects of shade and wind. Tree species which naturally produce large surface roots that may damage pavements and trees with dense canopies that block store front landmarks should be avoided. Also, avoid trees that can litter the pavement with excessive fruit, branches, and large leaves. Trees which provide an ephemeral display of spring flowers, but offer little interest in other seasons, and those which have high levels of susceptibility to pests and diseases must also be avoided. All installed street trees must meet the requirements of the *American Standard for Nursery Stock* (latest edition), as published by the American Association of Nurserymen. The appropriate selection of tree species is critical to the health and longevity of the City of Danville's urban forest. A list of

urban tolerant street trees to be used when selecting desirable height, form, and seasonal attributes is provided within the Danville/Boyle County Zoning Ordinance.

Consider establishing individual identities for neighborhoods by utilizing a distinctive palette of two or more species from the Street Tree List for each neighborhood's landscape. Maintain visual cohesiveness of a newly planted streetscape through repeated tree species throughout the blocks of a specific neighborhood.

Plantings of a *single* species (monocultures) are to be discouraged because a single pest or disease could potentially eradicate entire plantings.

Proposed Street Tree Size
Select tree species with mature heights less than 30' where trees could potentially conflict with overhead utility lines, street lighting or building overhangs. Wherever feasible, overhead utilities located along key corridors should be relocated underground, or to adjacent alleys which parallel these key routes in an effort to reduce visual 'clutter' and to permit the use of larger, canopy producing trees.

Following careful species selection, tree size must be the next important consideration. To comply with City ordinances and to minimize conflicts of lower tree limbs with Vehicular and Pedestrian Zones, bottom tree branches shall be at least 9' above adjacent sidewalk elevations and at least 13' above vehicular circulation areas at the time of tree installation. No street tree shall be smaller than a 2" caliper size (the diameter of the trunk measured 4' above grade) at the time of tree installation.

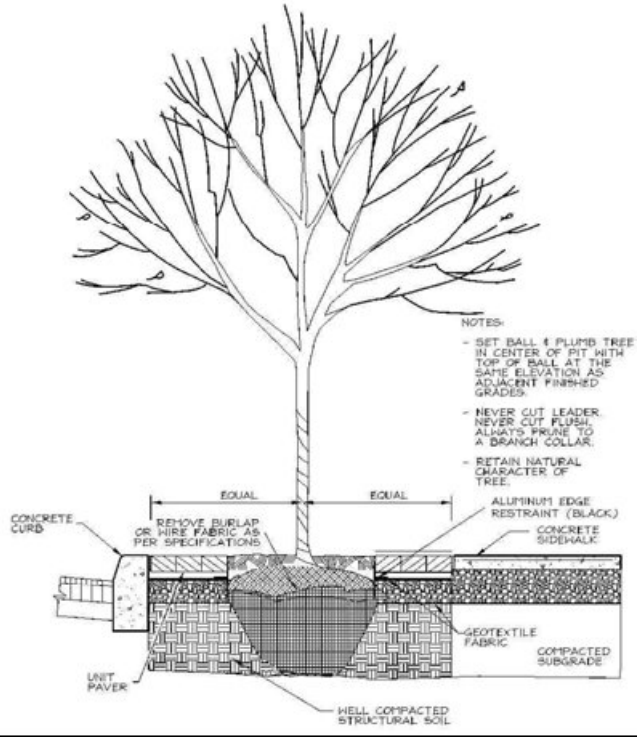
Proposed Street Tree Placement
Street tree placement should only occur within the center of the Planting Zone of all streetscape designations, unless sidewalk widths (pedestrian zone) exceed 9 feet, and adequate space exists within the building zone. Where street widths are 40 ft. or less, trees should generally be staggered on opposing sides of the street. Where street widths exceed 40 ft., generally require alignment of lighting (and trees) on opposite sides of the street to achieve proper levels of illumination. Spacing along streets will typically coincide with proposed street light locations which, in turn, relate to locations of designated on-street parking spaces. Careful coordination of tree placement, lighting, and parked vehicles will prevent blocked lighting patterns and blocked access to car doors caused by poorly located street trees and light poles.

Generally, street trees are to be spaced a minimum of 42' apart (the length of two on-street parking spaces), however, specific tree placement is subject to existing locations of underground utilities, vaults, and/or basements which extend beneath sidewalk areas). Trees must *not* be planted within the Clear Zone, within 10 ft. of access drives, within 25 ft. of preserved existing trees, within bus stop zones, below fire escape balconies, where blockage to building entrances presents safety concerns, or within 5' of hydrants, manhole covers, or permanent streetscape furnishings. When planting trees, visibility of traffic signals and way-finding signage (both vehicular and pedestrian forms) must always be maintained.

Street Tree Installation
For newly installed tree plantings in areas without lawn Planting Zones, continuous trenches of engineered soil should be provided under the Planting Zone's pavement. Such planting

trenches located parallel to curb lines and under non-mortared brick pavers will provide greater volumes of soil for root growth, while permitting air and water to reach critical tree root zones. Individual tree planting pits should not be permitted within paved Planting Zones unless only a single tree is to be installed due to a limited streetscape improvement area, or where existing tree and utility locations render continuous trenches impossible.

Where inadequate area for root growth exists, sidewalk pavements often fail. Forced into limited growth areas shallow tree roots frequently grow laterally and cause sidewalks to crack and heave. Uneven displacement of adjoining concrete or brick paving sections typically follows. Resulting from this 'root vs. pavement' conflict, removal of street trees and repair of paved surfaces is often eventually required following conventional tree plantings in individual tree pits. To provide un-compacted soil for root growth and compacted sub-surface base materials for sidewalk pavements, engineered soils are now being used for many urban plantings. Such soils contain a mix of soil loam, stone, water, and a moisture-retaining polymer so that weight-bearing loads are transferred from stone to stone, leaving the soil between the stones essentially unaffected by compaction. Larger volumes of soil with increased porosity, nutrient holding capacity and drainage are thereby created. Tree planting height is critical. The base of the root collar (area where the trunk transitions to the tree's root mass) will be above surrounding soil backfill, if the tree root ball height has been properly established. If the collar is too low, the entire root ball must be raised and reset over compacted soil to the correct elevation. Engineered soil should be installed around tree root balls for all tree plantings where lawn areas do not exist within the Planting Zone. Where unpaved areas will remain within the Planting Zone, soil loam amended with ample organic matter may be used in place of engineered soil.



Sketch N – Street tree planting detail with engineered soil and brick pavers

Street tree planting with engineered soil

Covering of Tree Planting Areas
Following tree planting in areas with paved Planting Zones, brick or concrete paving may be placed over both engineered soil and a typical 4" stone paving subbase which has been adequately compacted to minimize settling of Planting Zone areas, while simultaneously allowing enough void space in the soil-stone mix for air and water.

Planting trenches containing engineered soil must be approximately 30" deep to accommodate new trees, but must not negatively impact existing curbs which are to remain on undisturbed soil.

Due to associated costs and on-going maintenance requirements, tree grates are not recommended for any of Danville's streetscapes. Instead, tree plantings within Streetscape 'A' will be covered with unmortared brick pavers, while most Streetscape 'B' planting areas will be covered with either lawn and/or groundcover plantings. Both treatments permit some storm water to reach thirsty tree roots.

Pavers over street tree planting trenches within Streetscape 'A' will retain 2'x2' pavement openings centered on tree trunks. This opening will include a sub-surface, paver edge restraint (carefully installed to avoid root ball damage) to keep brick pavers in place, and double-shredded hardwood mulch (2" depth) over the tree's root ball. Mulch must not be placed in direct contact with the tree trunk, however. As street trees grow and additional trunk area is required within the pavement opening, pavers may be removed in equal increments on each side of the original 2'x2' square before new paver edging is carefully installed.

Trees within Streetscapes 'B' and 'C' will typically not be located in trenches covered with brick pavers. More typically surrounded by lawn, such trees must be centered within a planting pit extending a minimum of 5 ft. along the curb line. This planting area should remain free of concrete and lawn, but may be planted with a low-maintenance groundcover to minimize planting area maintenance following groundcover establishment:

All groundcover should be planted at the time of tree installation to discourage foot traffic over tree root zones. Initially, all soil surrounding groundcover plantings (but not immediately adjacent to tree trunk) is to be covered with double-shredded hardwood mulch (2" depth) until the groundcover forms a continuous 'carpet' effect around the tree's base. As with street tree species selection, selected groundcovers may be repeated throughout a specific block or neighborhood to further distinguish a particular area from surrounding neighborhoods. If residents of a particular neighborhood desire further distinction in their plantings, groundcovers may also be combined with bulbs.

Other Supplemental Plantings
Throughout the City of Danville, there are places which afford undesirable views to parking and service areas from adjacent streetscapes. Such places could be enhanced with supplemental plantings. Typically, these potential planting areas do not exist within the public streetscape area as defined in Section II, but are instead located on private property.

As with selection of appropriate street trees, microclimatic conditions inherent to specific sites (sunlight, wind exposure, etc.) must be carefully considered for these supplemental plantings. With City approval, alternative plant materials may be utilized, however, all plantings are recommended to have a minimum height of 2 ft. when installed. The City Zoning Ordinance also contains acceptable plantings of these types.

Equally important to initial planting height is the height at which such plantings are maintained. To enhance public perceptions of safety and security, sight lines must remain *over* all proposed buffers such that undesirable views are only *partially* screened from pedestrian zones. To address perceptions of safety, no supplemental plantings should be allowed to exceed a mature height of 3' adjacent to parking areas and 5' adjacent to service areas such as dumpster locations.

Container Plantings
One successful effort to improve our City's streetscape is the container plantings program. Each year in May, colorful annuals are added to designated areas of the streetscape. Annuals add a much needed colorful 'punch' to our urban landscape from mid-May through mid-October. This section of the Streetscape Master Plan addresses the materials for inclusion within future container plantings proposed for Streetscape 'A.' The Site Furnishings section of these Streetscape Master Plan also provides information on proposed planting containers and container placement. Containers for planting must be large enough to accommodate sufficient soil volume to prevent soil from drying too quickly. Ideally, container plantings should be 3' to 4' in diameter. Containers must have drainage holes in their bottom sides, and these holes must be covered with fine wire mesh (or fabric cover supplied by the container manufacturer) before planting mix is added. Within appropriate planting containers, commercial grade soil-less potting mix containing ample organic matter such as shredded bark and/or peanut shells should be combined with a commercial grade, moisture

retaining polymer product which is saturated prior to mixing into the soil-less medium. Soil-less mix in each container must be replenished once each year with fresh growing medium.

Seasonal annuals, bulbs, vines, and shrubs to be used in container plantings must be selected for drought tolerance and specific micro-climatic conditions such as wind and shade. Rather than continuing the practice of a one annual planting per year (leaving planting containers empty from mid-October to mid-May), a rotation consisting of three or four seasonal plantings each year is recommended, if possible. Following summer annuals, cold-tolerant annuals, bulbs, vines, and shrubs could be installed to continue a colorful, seasonal succession of landscape interest throughout the entire year. Where intense, seasonal color is not desired, containers may be planted with more permanent installations of evergreen materials with proven root hardiness and an ability to survive in containers through the winter months. Such permanent plantings are especially warranted on streets where extensive underground utilities and vaults render street tree plantings impossible.

Regardless of the permanent or temporary nature of container plantings, private plant maintenance sponsors should be sought wherever possible as an alternative to public maintenance of container plantings. Routine maintenance is essential during the summer months when container plantings will require watering and fertilization several times per week. Before extensive container plantings are implemented to enhance areas of Streetscape 'A', a detailed planting maintenance plan must be reviewed with the City of Danville.

Street Furnishings

The urban landscape of the City of Danville and surrounding communities maintains visible connections to iron features of the streetscapes of the 19th century. The legacy of ironmasters may still be seen in preserved iron storefronts and various architectural details which comprise the streetscape.

Proposed street furnishings including benches, litter receptacles, bollards, bike racks, bus shelters, fences and sign poles (excluding existing vehicular way-finding signs) are to be powder-coated metal to replicate the appearance of historic ironwork .

In addition to the previously noted site furnishings, this section of the Streetscape Master Plan includes recommendations for moveable tables and chairs, utility covers, banners, and planting containers. In order to create consistency in both quality and appearance for Danville's public spaces, some standardized options for these site furnishings are provided.

Iron "Hitching Posts" along Main Street.

Benches

Provision of benches within streetscape areas encourages social interaction, and such interaction is the very foundation for successful neighborhoods and commercial areas. To replace the City's current assortment of benches constructed from a variety of materials, benches for Streetscape 'A' will have a black, powder coat finish, and will be of a quality and style to match the horizontal, flat slat construction of Canterbury International 1969 metal bench with Aluminum slats.

Existing street bench

Canterbury International 1969 metal park bench, with aluminum slats

Proposed Street Bench

Streetscape 'B' areas may utilize this same bench, or select something of similar style but slightly unique such as the Victor Stanley C10 series.

In some specific settings, available backless versions of the two benches cited above may be utilized to give pedestrians options with seating orientation. Typically, benches *with* backs should be provided for extra comfort and ease of use by the elderly and those with disabilities.

All benches should typically be located within the Building Zone and oriented toward the Pedestrian and Vehicular Zones of the adjacent street. They are best placed near street corners (but outside the established Clear Zones), mid-block, and other desirable resting locations. Locations in proximity to shade provided by street trees and buildings are also preferred. Bench locations must not create unsafe obstructions for such things as building entrances and fire hydrants. All benches located within public areas must be permanently mounted to sidewalk paving per the bench manufacturers' specifications. Use leveling hardware to compensate for sloping sidewalk conditions.

If desired, bronze plaques may also be installed to the backs of benches per bench manufacturers' instructions. Such plaques may be used to identify a specific neighborhood, or to acknowledge the hard work of local neighborhood leaders.

Litter and Ash Receptacles:
As with the bench options noted in the previous section, proposed litter and ash receptacle options presented in this section are constructed of flat metal straps with a black powder coat finish. Together, the benches and litter receptacles, which are often located in close proximity to each other, will appear visually coordinated.

Litter and ash receptacles which mirror the quality and appearance of Landscape Forms' Scarborough cylindrical receptacles (side opening, lockable door model) are required for Streetscape 'A.' Such receptacles have 30 gallon capacities and include removable black polyethylene liners. Only black trash bags may be installed within these removable liners.

For Streetscape 'B', Victor Stanley's Ironsites (model numbers S-424 and S-35) litter receptacles may serve as additional models and acceptable alternatives to the previously noted Landscape Forms receptacle. These receptacles feature 36 and 24 gallon capacities respectively, and should also be lined with black bags for refuse collection. All litter receptacles must be permanently mounted to sidewalk pavement per receptacle manufacturers' specifications. They must be located near street intersections (but outside the established Clear Zones), at mid-block crosswalks, and near proposed bench locations. Typically, two litter receptacles located on opposite corners of a street intersection will be sufficient. Unlike the bench locations typically located within Building Zones, litter and ash receptacles are to be placed within Planting Zones of all streetscapes. While commemorative bronze plaques may be less desirable on litter receptacles than on benches, litter receptacles may be customized with insignia which relates to a unique district or neighborhood within the City. Again, this suggestion is provided as a means to celebrate specific areas of the City. While such additions to litter receptacles are encouraged, these street furnishings may not be used to post advertising materials.

Existing litter receptacle

Proposed Litter Receptacle

Moveable Tables and Chairs:
The City of Danville is fortunate to have potential areas for small outdoor café spaces within Streetscape 'A'. Such outdoor gathering spaces enhance the quality of the pedestrian experience, reinforce a vibrant sense of place, and add to the City's economic vitality. Typically, moveable tables and chairs serving these establishments are located within Building Zones. Moveable furnishings must not encroach into the adjoining Pedestrian Zones. Clear, accessible pedestrian routes must be maintained at all times.

Because the installation of all such improvements is considered temporary in nature, and subject to the aesthetic preferences of business owners, specific table and chair selections for future use within Streetscape 'A' are not provided. All moveable furnishings must, however, be made of safe, sturdy, and durable materials such as wood, steel, plastic, or wrought iron. They must also be of commercial grade and specifically manufactured for outdoor commercial use. Tables may be no larger than 2 ½' wide, and they should visually complement adjacent chairs. All moveable furnishings must be regularly cleaned and maintained. They must be stored indoors and/or out of the public rights-of-way beyond hours of business operation. Neither moveable tables nor chairs may be secured to sidewalk pavement, street lights, trees, benches or other public street furnishings. The owner of moveable furnishings must also supply a specified litter/ash receptacle noted in the previous section of the Streetscape Master Plan, if such receptacle does not currently exist.

Existing moveable furnishings on Main Street

Bollards:
Bollards may be used to designate and control access to Pedestrian and Vehicular Zones. Three alternative bollards are provided in the Streetscape Master Plan. The first two bollards are more decorative in nature, and are to be utilized within public areas. The third bollard option may be used only within privately owned areas where views to bollard locations are intentionally buffered from public streetscapes by fences or plantings (e.g. loading areas, service drives).

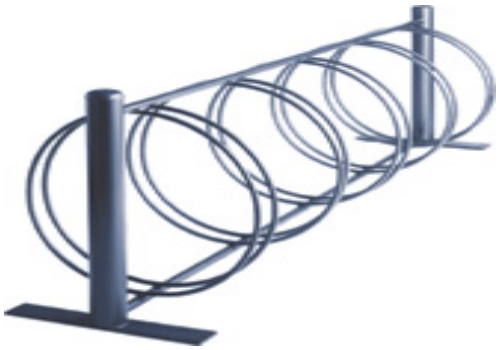
Decorative bollard options for public areas must match the quality and appearance of either Spring City's 37" Reston bollard, or Trystan Site Furnishings' 43 ¼" Victorian bollard. The former option is a heavy, cast aluminum alloy product, while the latter is constructed of cast iron. Both must have a black finish and must be spaced 6' on center in areas where traffic separation and additional security are desired, but where optional chains connecting individual bollards are not provided. Where chains *are* utilized between bollards, recommended spacing may be increased up to 10' on center. All bollards must be anchored and installed per bollard manufacturers' specifications.

A less expensive bollard option for service areas (and one which may only be used in areas not directly visible from public streetscapes) is a 6 inch hollow steel pipe (.280 wall thickness) filled with concrete and topped with a matching steel cap. Steel must be painted with a durable, black and yellow enamel finish. All intended applications of this bollard alternative must be approved by the City.

Bollards in the existing Streetscape

Bicycle Racks/Bollards:
Providing opportunities for the safe storage of bicycles promotes an alternate means of urban transportation. It also supplies an amenity for couriers, shoppers, and commuters who bike within downtown areas. Bollards provide a better alternative to chaining bicycles to trees, streetlights, and signposts. Typically, one bicycle bollard per block will likely be sufficient for current use, however, the City may determine that more or fewer bicycle

bollards are warranted, depending upon specific streetscape locations. It seems clear from the public comments received, that bicycle use in Downtown will continue to increase. Therefore, the Streetscape Master Plan should accommodate the growth and interest. The bike bollard below could be used in combination with the 'hitching posts' that are already on Main Street, limiting added poles in the limited space of the planting zones.



Bicycle Rack/Bollard
Receiving Most Votes From Public

More compatible Bike Rack

Anchor and install per manufacturer's specifications. Locate the bollard such that parked bicycles are parallel to the street and do not block Pedestrian Zones. Bicycle bollards should be located within the Planting Zone of Streetscape 'A' and near street intersection (but outside of established Clear Zones). Alternative, customized bicycle bollard designs could be considered by the City if the design is determined to be compatible with other streetscape furnishings.

Bus Shelters:

The Bluegrass Area Community Action Partnership (BGCAP) has identified a need for a Downtown Circulator bus system, which may prompt the consideration of bus shelters within the Master Plan area. Such shelters provide improved waiting conditions for commuters who utilize public transportation in place of automobile use. New bus shelters may also include lighted advertising displays which offset the maintenance and installation costs of these structures.

To complement other street furnishings, all future bus shelters (and eventual replacement of existing shelters) must have a black, powder-coated finish. Bus shelters must also match the quality and appearance of Daytech Manufacturing, Ltd.'s Classic Model #AHC04x08D. Safety stripes attached to a shelter's glass panels must be of a color compatible with the City's way-finding colors.

If an existing litter receptacle is not located within 20' of a shelter, a new receptacle must be provided. Likewise, any benches used to furnish future shelters must also comply with the

guideline established by this Master Plan. Safety markings must be color coordinated with City's wayfinding colors

Typically, shelters will be located within the public rights-of-way. Where such locations are not feasible due to limited right-of-way area, permission must be obtained from the private property owner. In all cases, applicable permits must be obtained from KYTC, and/or the City of Danville prior to bus shelter construction.

Signs and Sign Poles:

Signage is a critical element in the ability of visitors to successfully navigate Downtown. Three types of signs exist within the streetscape of Downtown: Regulatory signs, Way-finding signs and Historic markers. Regulatory signs are generally governed by the highway owner, and are subject to compliance with the State and Federal Manual of Uniform Traffic Control Devices (MUTCD). As such, there is little that can be done to change the presence and appearance of the regulatory signs in Downtown Danville.

Way-finding signs include street signs, as well as destination signs. In Streetscape 'A' areas, it is recommended that street signs be attached to the overhead signal mast arms or span wires, improving visibility and allowing for larger signs and lettering. Side-streets can be pole mounted signs, with a design and lettering style similar to those of the overhead street signs on Main Street. The following images provide the preferred styles based on public input.

Preferred Street Signs and Way-finding Signs

Preferred Historic Marker Style

Sign poles within Streetscape 'A' must be consolidated wherever possible. For example, some 'No Parking' signs could be incorporated on pole-mounted street lights rather than on separate poles.

Example of Signal mounted Street signs

Existing Wooden sign pole

Future pedestrian wayfinding signs should either be added to the vehicular way-finding poles, or attached to street lights in an effort to reduce the total number of required poles.

Wherever separate sign poles are necessary, these sign poles (excluding those for vehicular way-finding signs) must be of steel construction with a black, powder coat finish. Only galvanized (inside and out) schedule 40 steel posts (2.375" O.D.) or painted 't-posts' may be used for street signs. Round posts must include a galvanized flat cap (color to match) welded to the post's top surface. Wooden sign posts are unacceptable in all public streetscape areas of the City of Danville. It is suggested that sign pole designs be reviewed with KYTC for all state routes through the City of Danville.

Fences:
Wherever fencing is used to separate adjacent site areas, wrought iron, steel, or aluminum fences with a black, powder coat finish should be used. Specifically, fencing which matches or exceeds the quality and appearance of Jerith's Style #202 or Monumental Iron Imperial Style 'B' is acceptable. Wooden fences, fences with barbed wire, and chains connecting wheel-mounted posts, and metal guide rails are not to be used within any streetscape area. Chain-link fence may only be used if it has a black finish and its proposed location is first reviewed and approved by the City. Wherever spatial separation is required due to safety issues rather than a desire for a visual buffer, one of the previously noted bollard options should be employed.

Existing fence on Main Street

A delicate balance of adequate spatial separation and public surveillance must be met in order for proposed fencing to be beneficial. Fencing should be of an open picket construction (a specific picket design meeting BOCA or UBC code specifications may vary) and should not exceed a height of 42". Where adequate space for shrub buffer planting is unavailable, vines requiring only a 12" wide planting area may be grown in front of, and supported by fencing, provided that such vines are maintained at permissible heights.

Fences and railings also present excellent opportunities to exhibit the work of Danville County's many talented artists and artisans. Custom designed fences which serve utilitarian purposes while simultaneously adding public art to Danville's streetscape are encouraged. Such designs for fences visible from the public rights-of-way must be reviewed and approved by the City prior to construction.

Utility Covers:
Perhaps the lowliest of streetscape components, utility covers galore exist throughout all of Danville's streets served by public utilities. Where highly-visible covers exist within sidewalk areas or within crosswalks, their status could be elevated to the realm of public art with a bit of creativity. Any customized vault or manhole cover must meet all standards of existing manhole covers. Following City and utility company review and approval, covers may also include designs which celebrate Danville's distinctive history, or which make an artistic statement rather than simply proclaiming 'SEWER' or 'ELECTRIC' to passing pedestrians.

Banners:
One colorful streetscape element currently in use on Danville's key corridors is the pole-mounted banner. Banners can mark seasonal changes, holidays, special events, local history, City gateways and unique neighborhood distinctions. Repeated throughout a specific neighborhood, colorful banners further add to the appearance of a well-planned and executed streetscape enhancement project. Banners and other seasonal decorations may be mounted to proposed light fixture poles. Their graphic designs must be clear and simple in order to quickly convey an intended message to both pedestrians and motorists. Banner colors should match colors selected for Danville's pedestrian and vehicular way-finding systems. Specific way-finding colors (or a slight variation thereof) may be used to identify

unique neighborhoods and City districts. Any banners promoting particular events must be removed in a timely manner after the event occurs.

Like some previously noted streetscape furnishings, banners provide excellent opportunities for local artists to create urban landscape enhancements unique to the City of Danville. While banners may not contain advertising, they may note a specific sponsor or neighborhood association responsible for banner acquisition. All designs for banners must be coordinated with the Heart of Danville and forwarded for review and approval by the City. Coordination of proposed banner colors with the colors of seasonal container plantings should be considered in an effort to visually unify areas of Streetscape 'A.'

All banners must contain at least one wind vent and be of a quality which matches or exceeds the quality of banners currently utilized by the City. Banner mounting height must be at least 9' above sidewalk elevations and at least 13' above vehicular areas. No banners may block traffic signals, street lighting, and/or signage.

Planters:

Two containers of two different heights, but both constructed of durable, dry cast limestone, are suggested for Streetscape 'A.' Manufactured by Longshadow Planters, the International 36 (Model #LS9093) and International 60 (Model #LS9095) could be used in areas where the City desires to extend the look of the current planters. Avoid placing these planters within Clear Zones and immediately adjacent to curbs where high levels of heat and vehicle exhaust are more prevalent.

In Streetscape 'A' areas, supplemental planters similar to those shown below are suggested to be located in the building zones, where space is available without encroaching on the pedestrian zone. These planters can be used to highlight or frame building entrances, break up long spans of uninteresting façade, and to add color and inviting greenery to the streetscape.

No planter may be used if planter widths exceed 25% of the entire sidewalk width. A neutral stone planter color should be selected to harmonize with brick pavers, concrete sidewalks, most building facades, and the color combinations produced by annual plantings. Planter designs are simple and intentionally understated in character.

Planters must always be leveled with leveling shims when installed on sloped surfaces.

Supplemental container planting may also be sited near street corners (with respect to previously noted location requirements), to flank entrances to landmark buildings, or to physically and visually define outdoor café spaces. Combined height of containers and plantings should not obstruct motorists' or pedestrians' views at street intersections and access drives.

In an effort to reduce potential vandalism, container plantings should only be installed following implementation of other suggested streetscape enhancements such as adequate lighting. In addition, a plan for planting maintenance must be established and reviewed by the City as noted in the previous Container Plantings section.

Existing Planters used to define sidewalk zones

Preferred additional planters, to be used in the building zones

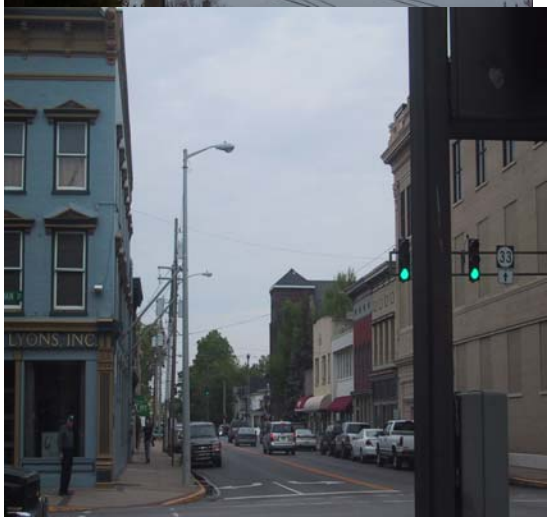
Lighting

Objectives:

The basic objectives of street lighting can be grouped into four interrelated categories: safety, security, convenience, and aesthetics. Satisfaction of human needs in these four areas is the reason for the existence of lighting systems and the ultimate standard by which they should be judged. Attainment of these objectives requires that the lighting design go far beyond the simple satisfaction of quantitative criteria for illumination. The qualitative aspects of the design, while difficult to quantify and prescribe, are typically the most important.

Physical Safety

Safety is the ability of users, both drivers and pedestrians, to reach their destination without causing inadvertent physical harm to themselves or others. There is never a guarantee of safety, only the ability to increase or decrease the safety of an environment. A well designed streetscape with the inclusion of a properly implemented lighting system can help increase the relative safety of public spaces. In combination with other streetscape elements, a lighting system must provide adequate visual information to allow users to avoid stumbling, loss of orientation, collisions (with vehicles, pedestrians, or inanimate objects), and other causes of accidental physical harm. In most instances, over-illuminating an area does not statistically increase one's physical safety.



The variety of existing streetlights in Downtown Danville today

Security
Security can be defined as perceived freedom from deliberate harm or threat by others. Unlike physical safety, security is primarily a subjective psychological matter, involving much more than the provision of adequate amounts of light. What needs to be created is really a *sense* of security, which may have only a secondary correlation to the actual likelihood of attack. The potential of being identified by key witnesses can be a major deterrent to many types of crime. Because of slower speeds and relative vulnerability, security is primarily a matter of concern for pedestrians rather than motorists. While this seems obvious, it is common to find street lighting designed primarily for drivers. Fixtures that hang over driving lanes very commonly do not emit enough light to the adjacent pedestrian sidewalks. As with physical safety, over-illumination may not be the solution for security problems. Often, overly bright spaces are falsely perceived as high crime rate areas.

Convenience
Convenience relates to a degree of ease associated with a person's ability to perform desired tasks. In city streets, tasks for drivers include navigation, understanding driving lanes and organization of streets, identifying obstacles such as pedestrians at street crossings, and locating street names, buildings, and places to park. For pedestrians, tasks include locating streets and buildings, finding one's parked car and identifying approaching

vehicles when crossing streets. The ease of accomplishing these visual tasks is not so much dependent on the *quantity* of illumination, but rather the *quality* of visual cues and information provided or enhanced by the configuration of the lighting system. Convenience also includes the ability of the City to easily maintain its street lighting system to ensure a continued high quality of light.

Aesthetics
Probably the most difficult objective to quantify is visual pleasure or appeal. It is also the easiest objective to compromise or denigrate. Visual appeal implies not only the satisfaction of all the foregoing objectives, but also the creation of a strong and positive image of the City, both by day and by night. This image should be distinctive, recognizable, and memorable to Danville residents and guests.



Preferred Combination Street / Pedestrian Poles

Design Principles:
The general objectives previously outlined can be translated into a series of practical design guidelines or principles for the execution of future streetscape lighting designs. In formulating these principles, it is helpful to remember that a lighting system is a means to provide or transfer visual information. This information is the desired visual signal, and any factors which distract one's attention from this signal, making seeing more difficult, is considered to be visual noise.

In general, design principles should lead to an enhancement of visual signals and to a reduction in visual noise. For example, a lighting system should not become a distraction by producing excessive glare or confusing light patterns.

Illumination
Based upon specific use patterns and distinctive characteristics of various streets, a lighting system must provide enough illumination in the technical sense of footcandles measured at

some reference surface. Although a horizontal reference plane is typically chosen, a vertical reference plane is usually more relevant. For example, illumination required for safe driving is needed more on vertical surfaces such as potential vehicle obstructions and pedestrians than on horizontal paved surfaces. For pedestrian security, illumination of other pedestrians is of primary importance. Reflectance of target surfaces, such as the sidewalk or street, should also be considered, as surface brightness (the amount of light reflected from a surface) may be a more relevant criterion than the illumination (the amount of light striking a surface).

The Illuminating Engineering Society of North America (IESNA) proposes not only standards for illumination, but also for luminance, or brightness of roadways. What is important for good vision is not necessarily the absolute quantity of light, but rather uniformity and appropriate changes in light levels. According to the IESNA, the recommended illumination uniformity ratios range from about 3:1 to 6:1 average to minimum. It is only the change or anomaly in a regular pattern that attracts attention. It is therefore helpful, especially to a driver, to have higher illumination levels at node points, such as intersections or crosswalks, to alert the driver of potential conflict with other vehicles or pedestrians.

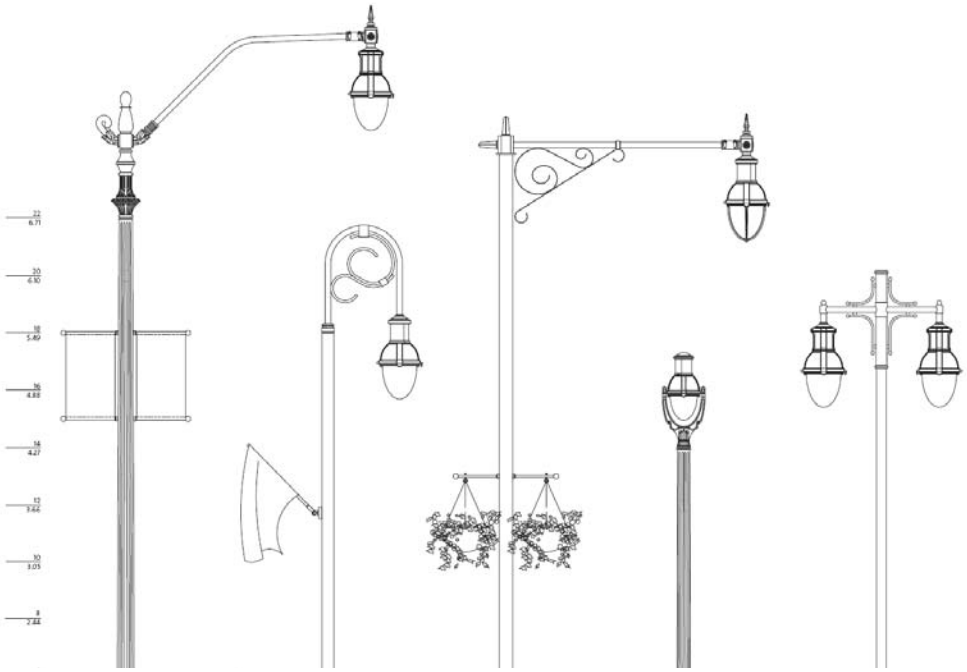
It should be noted that the actual quantity of illumination required for adequate vision may be quite low. Raising illumination beyond modest basic levels may not result in much noticeable improvement. However, illumination is the easiest criterion to quantify. It is therefore commonly relied upon disproportionately to its importance in establishing lighting standards. Care must be taken not to over-light areas, as this may have negative affects (crime implications, glare, etc.).

Glare
A common source of visual 'noise' is glare caused by luminaries with improper beam control. Independent of illumination level, glare makes the task of seeing more difficult, and produces a subtle sense of discomfort or annoyance. The City of Danville's lighting system should be designed to minimize glare – a condition which often causes attention to be drawn from the roadway to the lighting fixtures themselves. If a street or sidewalk surface is illuminated to required levels, yet light from overhead fixtures is shining directly into a person's eyes, he or she may be momentarily blinded, much like shining a flashlight into one's eyes while they are trying to read. Selecting fixtures which have a visually pleasing aesthetic value and an acceptable light distribution requires careful consideration to find an appropriate balance.

Orientation
Both drivers and pedestrians need quick and effective orientation to develop a visual sense of locations, destinations, and pathways. This is of clear importance for safety, security, and convenience. Highlighting of important features such as nodes, monuments, landmarks, paths, or edges can enhance nighttime orientation. In addition to drawing attention to other features, lighting can be a valuable source of visual cues, both by day and by night.

Fixture Palette and its Uses
The following section lists appropriate fixture types and configurations for various areas of the City.

Streetscape 'A'
Throughout the core of the City of Danville and along its key corridors, a unified lighting theme should be prevalent, while residential areas may adopt a slightly varied standard that differentiates from rest of the City.



Examples of preferred streetlights

Key corridors, with wide pavement areas could have double-headed lighting fixtures or alternating higher and lower mounted lights, while less heavily traveled corridors and narrower pavements can have single-headed, pedestrian scale fixtures. Spacing and layout of all fixtures must be based on the desired level of maintained illumination and uniformity of light. Where appropriate, the design should consider pedestrian level lighting and street lighting on the same pole. Exact fixture placement must be determined based upon street width and coordination with other streetscape elements such as street trees and parking meters.

In commercial areas, a target illumination on street surfaces should achieve 0.6 to 1.2 footcandles average (0.8 footcandles recommended), with a uniformity ratio of 4:1, or better. Sidewalks should target 0.6-1.0 footcandles average. Each of the target illumination should be measured at the traveling surface, and vertical illumination levels on pedestrian ways may vary from 1.1 to 2.2 footcandles average where security or safety is of particular concern. These values are recommended IESNA design values. Key corridors and intersections should target the upper illumination range, while less traveled streets may target the lower illumination range.

Streetscape 'B'
In Streetscape 'B' areas, 0.3 to 0.5 footcandles average on street surfaces and 0.2 to 0.3 footcandles average on sidewalks is typical. While safety in these areas remains a priority, the suggested lower light levels are a function of relative use. A commercial district within Streetscape 'A' will naturally have more traffic and use than residential areas of Streetscape 'B'. Single-headed fixtures shall be used in these residential areas.

Relatively new, single-headed acorn fixtures already in use in the City's Streetscape 'A' areas may be reused and relocated to residential areas.

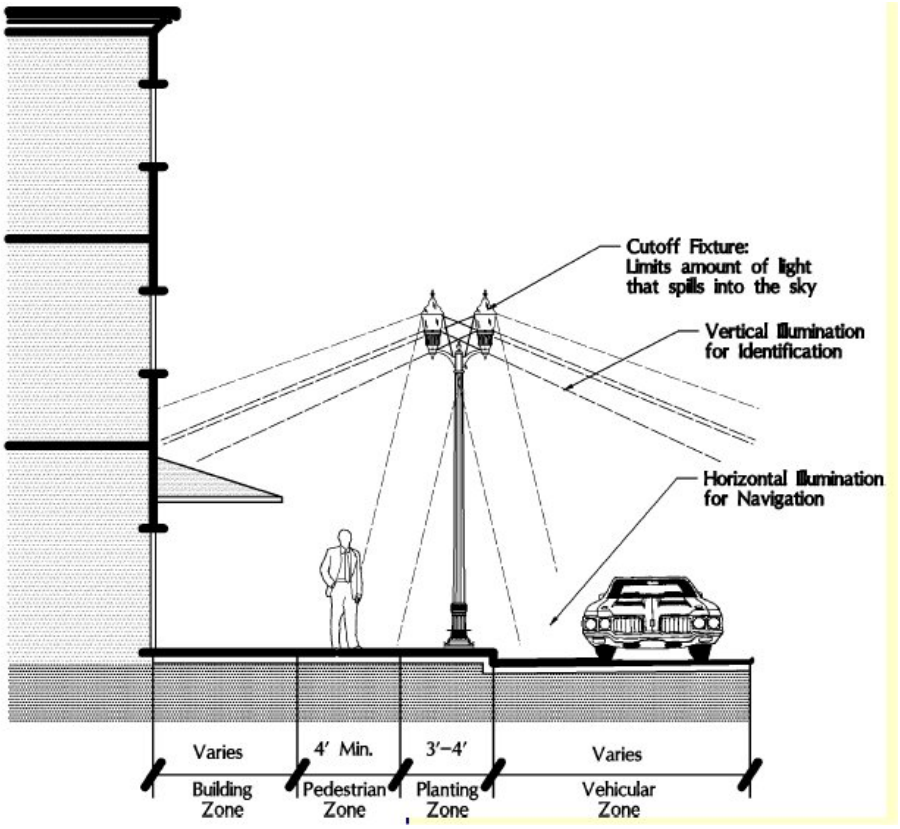
While increasing light levels in residential areas may increase safety levels, special attention must also be given to specific placement of fixtures in these neighborhoods. Light trespass is a typical problem that occurs when light projects from one property into adjacent properties. Locations of street lights must minimize light trespass, wherever possible.

Intersections and Crossings
Intersections and mid-block crosswalks require slightly elevated illumination levels to adequately allow for safe vehicle turning and crossing, as well as safe pedestrian crossing. A 50% increase in light levels at crosswalks is recommended to alert pedestrians and motorists of potential conflict areas ahead. If light fixtures located on the sides of streets cannot provide enough illumination to meet added demands of crosswalk and intersection areas, supplemental fixture types may be needed or desired for aesthetic purposes.

A post and cable system, similar to the systems used in many cities during the early 20th century, might be implemented at key intersections and major crosswalks. In an effort to maintain the appearance of continuity, the post and cable system should only be used to highlight a key intersection.

Building Mounted and Alley Spanning Fixtures
In tight spaces such as alleys and narrow streets, a pole-based lighting system may prove impractical due to limited streetscape area. It may be possible, with owner permission, to install building-mounted fixtures which complement the City's lighting standards. Not every structure should have its own fixture; however, lighting designs may incorporate a complimentary mix of fixture types. Some alleys and pedestrian ways may also employ a custom decorative lighting system which spans the breadth of the alley. With owner permission, this fixture type could be used in narrow locations where adequate wall support is available, and where the City's residents and guests extensively use a particular corridor.

General Fixture Spacing and Location:
These general guidelines provide a starting point from which a lighting layout design may develop. As with any design, the entire scope of a streetscape enhancement project and all items therein should be taken into account.



When considering specific placement of light fixtures and poles, the designer should address locations of existing or proposed trees, buildings, driveways, street furniture (benches, mailboxes, planters, etc.), roof overhangs, residential window heights, canopies over pedestrian areas, underground structures (vaults, manholes, gas and water valves, etc.), signs, and parking meters, among other items.

An effort should be made to space fixtures consistently based on the width of a given street and length of a given block. Incorporating existing or future trees into the light fixture spacing pattern is another important consideration. While most street trees are deciduous and lose their leaves in the winter, they produce foliage during the growing season which blocks light from inappropriately spaced fixtures.

The setback of each pole light from the curb edge must also be consistent to create visual alignment and to protect the poles from the bumpers of vehicles. Alignment of light poles with other streetscape elements, such as trees, must occur within the middle of the Planting Zone. Whenever possible, this alignment must be consistent along each street. Different poles may have different base sizes, but all can be centered along the same alignment. A minimum setback distance of 20" from curb face to pole center is required. Two standard layout methods are provided for arrangement of light fixtures on both sides of a street. The first method staggers fixtures on one street side with those on the opposite side of the street, such that each fixture falls in-between two on the opposing street side. This layout may generally be best for distributing the light evenly along the length of a narrow street.

The second arrangement pairs fixtures on opposing street sides directly across from each other. This arrangement provides a better sense of symmetry, and should be used for wider streets. Wherever possible, light poles and street trees should be intentionally placed in relation to on-street parking delineation in an effort to prevent conflict with vehicular doors.

In all cases, existing 'cobra head' fixtures and all unused or abandoned lights must be removed, and stored for use in other districts, during fixture streetscape enhancement projects.

Street Element Incorporation:
By incorporating desirable streetscape elements such as signs, hanging planters, and banners into a lighting system layout, visual clutter is minimized. Relocating these items, if possible, to a streetscape component that must be there to provide a necessity, such as night illumination, reduces the number of overall streetscape components.

Frequently, signage can be attached to street light poles via semi-permanent or pre-installed hangers. Plant hangers, in locations where a design dictates, can be mounted directly to light poles on pre-manufactured brackets. Through careful selection of light poles, provisions have been made for inclusion of these potential elements.

Common traffic signaling equipment can also be incorporated into the spacing and placement of light fixture poles, if not included directly on standard streetlight poles. More often than not, pedestrian crossing signals and equipment are independently mounted at each street corner. Maximizing use of all available pole space aids with elimination of visual streetscape clutter.

Special Conditions
At various times of the year, it may be desirable to attach seasonal, decorative adornments to light fixtures. For inclusion of decorations requiring power such as holiday street tree lighting, GFI receptacles must be integrated into all light poles to minimize additional wiring required for temporary installations. Attachment points must be included on light poles to make such installations and removals easier for the City. An attachment with pins or bolts which fits into existing locking collars or holes at the appropriate heights must be provided where seasonal decorations are anticipated by the City.

When attaching items such as banners, signs, signals, and holiday lighting, it is necessary to consider if light poles can support the additional weight of these features. The poles noted in these Guidelines can accommodate the addition of accessories; however, such anticipated additions must be noted to the manufacturer when ordering fixtures. For appropriate poles to be ordered, it is important to understand the City's desired uses for new light poles on a given street prior to installation.

Fixtures must be located in areas where accessible by standard service vehicles. Relamping, cleaning, banner and sign replacement, and other regular maintenance items should be considered. All items attached to a light pole must be secure enough to resist environmental stresses and vandal damage. The fixtures specified in these Guidelines have many unique maintenance-friendly features such as hinged relamping and tool-less ballast removal.

Selective Building Highlighting

At times, it may be appropriate to illuminate privately or publicly-owned buildings at the request of the owner. In an effort to limit the amount of street clutter, it may be possible to incorporate separate, customized lighting systems into the street lighting pole system. There are various possibilities for fixture choices and applications, but each should be considered on an individual basis as each building selected for highlighting is addressed. Such customized lighting must be reviewed and approved by the City prior to installation.

Highlighting specific structures can make Danville a festive, active destination while assisting with nighttime orientation and navigation for visitors and residents. It is recommended that a façade lighting plan be completed in an effort to select appropriate structures to be highlighted, and to define appropriate façade lighting techniques. Lighting of specific structures must achieve appropriate light levels while utilizing lighting, which adds to the overall aesthetic of the public streetscape.

VI. OVERHEAD UTILITIES

One of the easiest, but more expensive ways to improve Downtown Streetscapes is to eliminate the overhead utilities. Wherever possible, in the Downtown area, Utilities should be moved to rear alleys or placed underground. This provides a visual and aesthetic benefit, but also a public service benefit in that the potential for loss of service due to severe weather is greatly diminished. The Streetscape Master Plan recommends placing overhead utilities underground wherever rear alley access is not available to relocate utilities off the main streets.

Visualization of the Effect of Removing Overhead Utilities

VII. PUBLIC INVOLVEMENT PROCESS

A significant portion of the effort involved in creating the Streetscape Master Plan for Downtown Danville involved the solicitation of input from involved agencies including the

Chamber of Commerce, Heart of Danville, Downtown Business Committee and the Danville Beautification committee. Presentations were made to the Heart of Danville and the Downtown Business Committee on May 8, 2006; the Chamber of Commerce Board on May 10, 2006 and the Beautification Committee on August 22, 2006. Input was sought at each of these meetings regarding preferred streetscape elements, as well as any other concerns these involved agencies might have.

Additionally, a public meeting was held on October 24, 2006 to present Master Plan concepts to the public and to seek input from the community. Many different comments were received, and are included in the Appendices of this document. A selection of the most significant and recurring comments are discussed further below.

Traffic Related Input

Analyses of traffic movements, lane widths, turning lanes and similar vehicular access and circulation issues are beyond the scope of the Streetscape Master Plan. However, it is difficult to complete a Master Plan for the Streetscape of Downtown Danville without some consideration of these elements of the travel system. In fact much of the discussion, with Advisory groups and through the Public Involvement process, has been focused on the movement of traffic through the study area.

Some folks like the wide pavement on Main Street, and the ease of traveling through Downtown quickly. Others would like to see the Main Street be more pedestrian friendly, the traffic calmed to slower travel speeds, and the available right of way width adjusted to accommodate bicycle lanes, wider sidewalks other pedestrian scale amenities, with fewer travel lanes.

Public comments were in favor of bicycle and pedestrian improvements, slower traffic, even at the expense of the number of travel lanes, by a margin of four to one.

At the same time, it is noteworthy that there are certain activities within the City that have some difficulty in operating successfully even with the pavement widths that currently exist. One such activity is funeral processions at the Churches in the Downtown area. Lack of off-street parking at these historic properties requires motorcades to line up in the street, sometimes opposing traffic flow in order to adequately serve the facilities. This frequent, but unplanned activity can always be managed with adequate police protection and support, but streetscape and traffic related planning should not be designed to make the situation worse.

Plans exist to extend the Bypass from Route 127 to Route 34 around the northern side of Danville, which will alleviate some of the other traffic concerns expressed by the public in connection with trucks bound for Lexington via Garrard County and Nicholasville. However, local deliveries will still occur and the pavement has to be able to accommodate truck traffic in all future schemes.

Turning Movements:

Turning movements, in and around Main Street and Lexington Avenue were also pointed out as a concern from both the public hearing and the focus groups. The concern is the ability of large trucks to make the turns from and onto Main Street in the 3rd and 2nd Street areas, and at the intersections with Lexington Avenue.

The Streetscape improvements must take into account the positioning of trucks on the approach lanes as well as the width of pavement on the street being entered. If the trucks are required to position themselves too close to the curb lines on the approaches, there is a tendency to drive over the curbs on the inside of the turn, in order to avoid crossing into opposing lanes on the streets being entered.

It is recommended that arterial and collector streets be designed with a minimum curb radius of 10 ft. and that the approach lanes be striped to allow
Trucks to position themselves away from the curb line so that right turns can be made without encroaching on the sidewalks.

Main Street currently widens from a generous two way, single lane cross-section at the west end of the Study Area to a six lane section, including two travel lanes in each direction with parking lanes on both sides.

The curb to curb width of Main Street is approximately 60 feet (varies from 59 to 61). Striping includes four 11 ft. lanes and two 7-8 ft. parking lanes.

Third Street, north of Main, is approximately 38 feet wide, with one travel lane and one parking lane in each direction. South of Main, the section is similar but all traffic is northbound, with through, right and left turn lanes at the intersection with Main and two travel lanes and parking on both sides south of the Main Street intersection.

Second Street, north of Main is approximately thirty-two feet wide, with one travel lane in each direction. Parking actually exists on both sides of the street, with one parking space on the northbound side (proposed to be removed), between Main and Broadway.

The following traffic related data is provided by the KYTC:

Main Street – Urban Principal Arterial
- 15,000 ADT Third to Maple

Third Street - Urban Principal Arterial
- 7,490 ADT – North of Main
- 9,340 ADT – South of Main

Second Street – Urban Collector
- 4,560 ADT – North of Main
- 8,590 ADT - South of Main

Fourth Street – Urban Principal Arterial
- 6,310 ADT - North of Main
- 9,160 ADT - South of Main

Walnut - Urban Minor Collector
- 3,030 ADT - 2nd to Maple
- 2,680 ADT - 2nd to Stanford

As a general rule, for a principal arterial, threshold volume for capacity is 6,000 vehicles per day per lane, while the threshold volume at which congestion occurs is 8,000 vehicles per day per lane.

Design Hour Volumes, or DHV, are arrived at using peak Hour factors and other empirical data for each urban area. For urban areas, the ADT is converted to a Design Hour volume using factors that generally range from 8 to 12 percent for smaller urban areas. The Design Hour volume is then converted into a directional volume using a directional factor that ranges from 50 to 80 percent.

Using conservative factors (K=0.7, D=.12), the directional design hour volumes for the streets in the study area are as follows.

Main Street – DDHV = 1,260
Third Street - DDHV = 784
Second Street – DDHV = 722
Fourth Street – DDHV = 767
Walnut Street - DDHV = 254

These figures suggest that there may be some opportunities for consolidation of travel lanes on some blocks within the Study area. However, before such decisions are made, there would need to be a thorough analysis of turning movements, signal phasing and timing, etc. so as to not disrupt traffic movements through the Downtown area.

Traffic patterns and through movements in Downtown are critical to its future. The goals should be to make the Downtown area accessible, friendly and attractive for residents and as a destination; but discouraging to travelers passing through. Planned completions of bypass segments should reduce traffic traveling through Downtown, but additional measures may be necessary to encourage its use, since it is/will be a longer and less direct path from east to west than the route through Downtown. If the City Commission chooses to pursue possible future travel lane changes in the downtown area, KYTC will need to be involved to assure that all travel issues on State Routes are considered.

Bicycle Related Input

A great deal of interest in the master planning process has been expressed by the local citizen's group which promotes bicycle use and education, B.I.K.E. | Boyle County. The B.I.K.E. committee and its constituents, as well as several members of the community that attended the Public Hearing and listened to their comments, suggests that planning efforts include incorporating bicycle lanes on major streets in and through Downtown. Interest was also expressed in bicycle racks in strategic locations in Downtown. Efforts are currently underway to prioritize and seek public funding for a menu of bicycle education, safety and infrastructure projects for the enhancement of bicycling opportunities in Danville and Boyle County.

The recommended minimum width of a "designated" bicycle lane is 4 ft. The desirable width of a designated lane is 6 ft. Desirable widths increase in areas where parallel parking occurs adjacent to bicycle travel lanes, to allow for car doors opening into the same space.

The edge of the bicycle travel way (lane) is the inside edge of the curb pan where integral curb & gutter is used, which is a common occurrence in Danville. The reason for this is that the edge between the pavement and the curb & gutter often creates a hazard to bicycles because the gutter pan is significantly lower than the pavement. Accordingly, where integral curb and gutter is used, the effectively available pavement width is reduced by the width of the gutter pan, 12 inches.

For this reason and others described in other sections of this Master Plan, standard concrete or granite curb is recommended as the choice of curb configurations in Downtown Danville.

Photo of curb and gutter at edge of pavement (not recommended in Downtown)

More common in urban areas is the use of widened curb lanes which are shared by bicycles and motor vehicles. Shared bike lanes are not striped, and therefore not "designated" lanes. However, they can generally be designed to make bicycle use reasonably safe in areas where available right of way width is not abundant. Shared curb lanes need to be a minimum of 14 ft. to the edge of the bicycle travel way (as described above), with 15 or 16 ft. being more desirable.

In order to accommodate bicycles on Main Street, existing travel lane configurations would need to be modified. Widened curb lanes, allowing for shared use of that lane by vehicles and bicycles could be accomplished; making curb lanes shared bicycle lanes in Downtown.

VIII. Implementation

Because specific streetscape enhancement budgets, coupled with a desire to maintain distinctive identities of Danville's diverse neighborhoods, may require slight variations on the common streetscape objectives noted in this Master Plan, a process for streetscape design review and approval has been established.

Per City of Danville ordinance requirements, requested variations on standard streetscape components as described in the adopted Streetscape Master Plan may be permissible with proper City review and approval as future enhancement projects are implemented. All future designs for new streetscape enhancements within the City of Danville's public spaces must be reviewed by the Heart of Danville and the City Engineer for compliance with the Streetscape Master Plan.

Plans for streetscape modifications are to be forwarded to the City Engineeer located at 455 West Main Street, Danville, KY 40422. The Bureau's office telephone number is (859) 238 - 1200. Where proposed improvements are to be located on private property within the City's Historic District, review and approval Architectural Review Board and by the City Commission are required.

The preceding pages specify the products that are to be used in each streetscape area as a general guide or reference. Manufacturers' names are used within these Streetscape Master Plan (including the following Appendix Reference List) to describe specific streetscape components. They are not meant, however, to be used as the single source. Alternate manufacturers are acceptable, provided they meet the aesthetic, quality and functional criteria established by the products listed herein. The Architectural Review Committee and/or the City Engineer must approve and alternates to the products listed in these Streetscape Master Plan.

Through implementation of the Streetscape Master Plan, Danville will address current streetscape deficiencies and will effectively end the potential for permitting an incompatible assortment of streetscape paving patterns, tree planting practices, lighting, and street furnishings throughout the City. Our public spaces will appear more visually cohesive without the complete design homogeneity common to non-urban environments. This Master Plan have been adopted to ensure an appropriate measure of design uniformity, enhanced pedestrian safety, and elevated perceptions of security for the visitors, workers, and residents of Danville.

IX. Conclusion

The Streetscape Master Plan has been produced by the City of Danville as part of a larger effort aimed at improving the visual quality and economic vitality of our City. The key to revitalization will be thoughtful implementation of the aesthetic treatments recommended here, combined with the many other current initiatives from both the public and private sectors.

It is anticipated that these initiatives will build consistency and continuity of our urban landscape, while retaining some flexibility for neighborhood distinctions. Enhancement of these public spaces is one of the most tangible ways in which we are able to improve the quality of life for all residents and businesses.

X. Appendices

- **Summary of Public Hearing Comments and Written Materials Related to the Public Involvement Process**
- **Reference List of Streetscape Products and Suppliers**
- **Rendered Images of Intersections on Main Street**