

The Town of Bath



Streetscape Guidelines

Imagination.

Innovation.

Involvement.

Impact.

FOREWARD

The Town of Bath Streetscape Committee is a volunteer group of citizens who are committed to the mission of creating safe, walkable, welcoming streets that showcase the unique quality of the community by improving the appearance of the Town for the benefit of residents, business owners, visitors and economic development.

To accomplish this the Committee brought together the public, stakeholders and professionals and worked with Johnson, Mirmiran & Thompson to develop these guidelines.

The Town of Bath (Berkeley Springs) has a unique character that was incorporated into the plan. The key features of the community include:

WATER - the springs, the run, International Water Tasting Festival, spas, the Roman Baths, etc.

STONE - stone walls along the run and throughout the town, Oriskany sandstone, etc.

CULTURE & HISTORY - vibrant arts community and historical significance

We trust that the Town of Bath, Morgan County, the State of West Virginia, residents and business owners will continue to take advantage of these guidelines to keep improving our community and enhancing our “sense of place”.

Respectively,

Streetscape Committee
Sally Marshall and Larry Lower
Co-Chairs

Updated July 2013

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ACKNOWLEDGMENTS

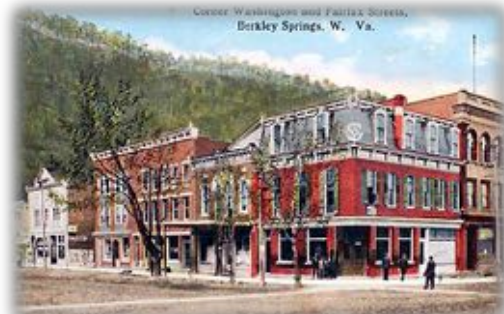
I. Introduction

These Streetscape Guidelines have been developed for the Town of Bath, Berkeley Springs, West Virginia by the Town of Bath Streetscape Committee with planning and engineering support of Johnson, Mirmiran and Thompson consultants and engineers.

The Streetscape Committee was established by a Town of Bath ordinance to serve as an extension of the town to oversee the development and implementation of streetscape enhancements.

Through coordination with town, county and state government and continual interaction with the public, representatives of the Streetscape Committee of the Town of Bath, West Virginia, set out to establish a set of formal Streetscape Guidelines to provide uniform criteria for streetscape elements which could be implemented throughout the Town as efforts to create a safe “walkable community” move forward.

Streetscape and street improvements projects are a part of the everyday landscape in Bath/Berkeley Springs. However, they have not always been implemented through a systematic approach which would allow for a uniform palette throughout the Town of Bath which is cognizant of the history and character of the area, but also is sustainable for the future. Understanding this, the Streetscape Committee began a process to define guidelines and design concepts which would shape and strengthen the community’s identity, aesthetics and create a “sense of place.” The primary goal of these guidelines is as follows:



*Intersection of Fairfax & Washington Streets
1913 postcard image*

Augment ongoing actions and objectives of the Town’s multi-dimensional programs to improve the physical, economic and cultural infrastructure of the Town in order to preserve, maintain and enhance the Town well into its third century of existence.

The Streetscape Committee consists of a core group of local volunteer citizens that have a passion and desire for pedestrian enhancements throughout the

town to spark a revitalization that will have a direct impact on the social and economic status of the Town of Bath and Berkeley Springs.

In addition to coordination with the Town and County entities, the general public was provided an opportunity to express their feelings for the overall streetscape plan for the Town. This was accomplished through a series of three public workshops which were interactive in nature to provide ample opportunity for the general public to provide their opinion on the vision for streetscapes throughout the Town of Bath/Berkeley Springs.

One of the key activities throughout the planning process and public involvement was the definition of the elements that are a part of the Town of Bath. This includes the Warm Springs Run and the Berkeley Springs State Park, as well as businesses and restaurants within the downtown area. Also identified were the local events including festivals, the farmers market, other outdoor activities and the presence of the Morgan County Courthouse and county offices. One final element identified was the amount of stone found throughout the town, whether it be stone in its natural setting along the Run and up the hill sides, or the stone walls that are so prevalent across Bath's landscape.



Warm Springs Run

These elements were used to establish three key themes in which the development of the streetscape plan was to use as inspiration. The themes included:

- **WATER.** Water is key to the Town of Bath/Berkeley Springs as the warm mineral springs were an early draw for Native Americans centuries ago and the springs and spas are a current draw for residents and tourists. Warm Springs Run flows through the town and Berkeley Springs Water provides delivery of great tasting water to homes and businesses. The International Water Tasting and Competition is hosted in Berkeley Springs every February. The importance of the water has inspired the curvilinear design elements in patterns, surfaces and features (rather than exclusively linear or rectangular patterns) to reflect the flowing nature of the Warm Springs Run.
- **STONE.** Because of the geography of the area, the town is filled with stone walls. Shale, limestone and Oriskany sandstone are found and mined in the county by US Silica. Materials for the pedestrian and

sidewalk improvements should be identifiable with the stone found throughout the town.

- **CULTURE - history and the arts.** From Native Americans to George Washington's time surveying the town and buying property here, there is a rich history that can be explored on the Washington Heritage Trail which runs through the Town of Bath/Berkeley Springs. Berkeley Springs is regularly voted one of the Top 25 Small Art Towns in America. The Morgan Arts Council is very active in the community supporting 125 local working artists. There is a vibrant live music scene, popular annual Apple Butter Festival, artist studio tour weekends, award winning quilter's guild and creative culinary experiences which are enjoyed by both residents and the thriving tourist industry.



Stone & Water in Park

These streetscape plans and guidelines are a culmination of a collaborative process focused on defining period-sensitive pedestrian facility improvements to sidewalk surfaces, street furnishings, energy efficient lighting, ADA facilities and signage & wayfinding which would promote the continual effort to making Berkeley Springs a “walkable community.”

II. Area of Study and Conditions

The project study area includes the roadway network within the town limits of Bath. **Figure 1** provides an overview of the project study area and the primary roadways within the Town. The primary corridor or main street through Bath is US Route 522. Route 522, also locally known as Washington Street is a north-south thoroughfare through the center of town. Washington Street consists of heavier traffic volumes with a substantial amount of truck traffic. One of the challenges streetscape improvements will face along Washington Street is the incorporation of traffic calming to slow down traffic and make motor vehicles more aware of pedestrian traffic. Crossing the Town in an east-west direction is Route 9, running concurrently with US 522 through the downtown area. Other key streets within the Town of Bath include Fairfax Street, Union Street, Mercer Street, Wilkes Street, Congress Street Williams Street and Independence Street. Mercer Street and Wilkes Street are parallel roadways to Washington Street. Both are characterized as mixed use and include residential, commercial and institutional uses. Williams Union, Fairfax, Congress and Independence Streets

travel perpendicular to Washington Street and connect Mercer to Wilkes Street. Additional streets within the study area, which are primarily residential streets, include:

- Kent Street
- Bath Street
- Liberty Street
- Market Street
- Warren Street
- Green Street
- Harrison Avenue
- Independence

The existing pedestrian facilities found throughout the study area range in function, need and condition. There are formal curbs and sidewalks, primarily in the immediate downtown core along Washington Street, Fairfax Street and Wilkes Street between Williams Street and the southern boundary of town and along some portions of cross street blocks. Beyond these points, the remaining downtown area is characterized by lack of curbs, undefined parking spaces, poor drainage and disconnected sidewalk sections interspersed with areas of no hard walkway surfaces, forcing pedestrians to use streets as sidewalks. The peripheral areas of the town have few to no sidewalks, no curbs and poorly defined street edges. These characterize the Town's existing streetscape. The primary lighting features in Town are traffic oriented cobra type lights rather than pedestrian oriented lighting. Utility lines (electric, telephone and cable) are primarily above ground on wooden poles. Storm water facilities are aged and vary in condition, creating many areas of poor and insufficient drainage along downtown streets.

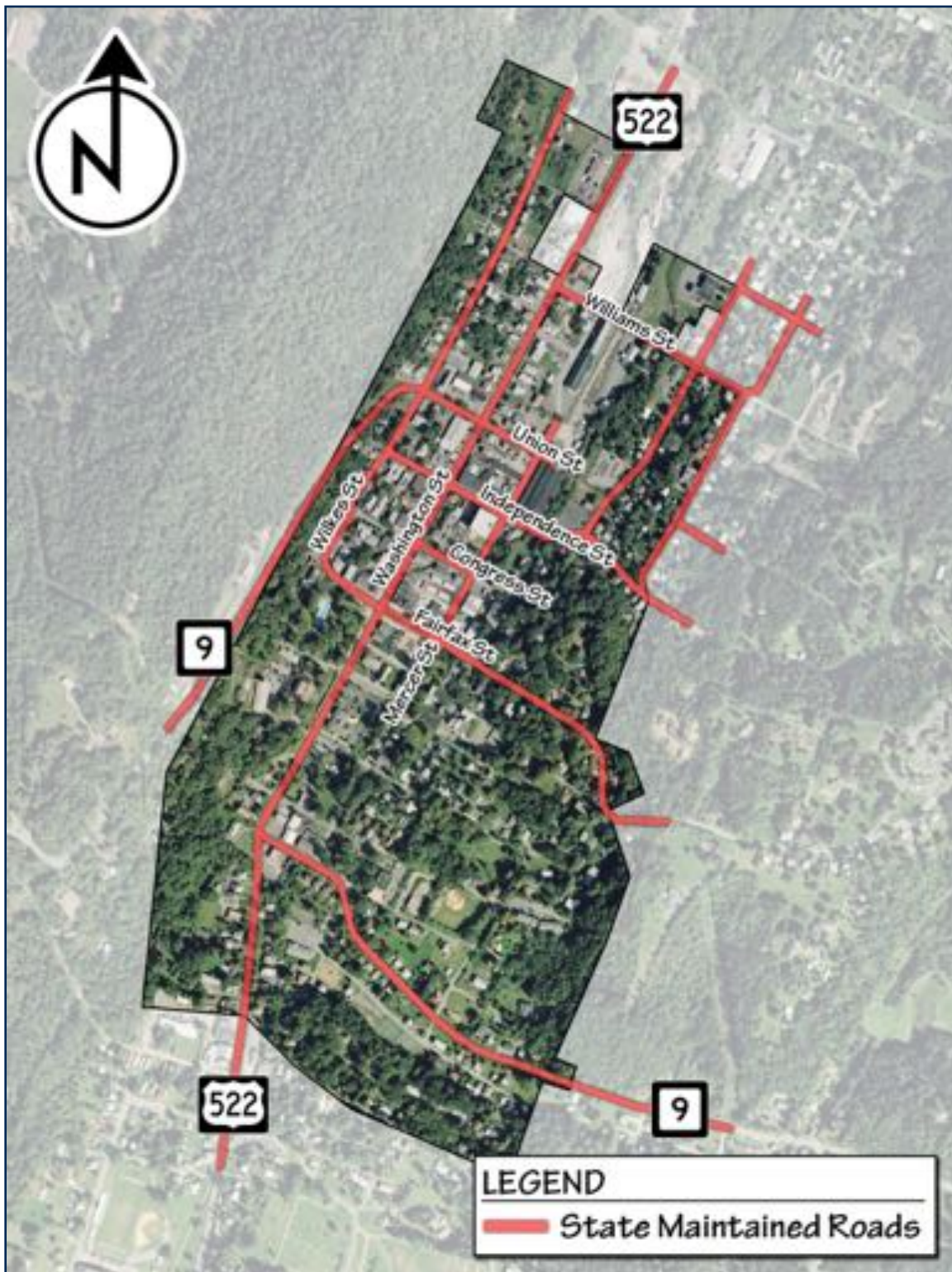
Due to the historic nature of the Town, buildings and associated features within the original Town of Bath often encroach into the public right-of-way defined and granted to the Town by Lord Fairfax. Additions to Town boundaries are characterized by steep and varying topography, limited and varying street widths, encroachments and poor pedestrian ways, often with limited lighting.

To guide development of streetscape improvements, the town has been broken up into four levels. The levels are used to identify the typical sidewalk treatment for the varying areas throughout the town. The four levels include:

- Level 1 – Primary Commercial and Retail Areas
- Level 2 – Secondary Commercial and Retail Areas
- Level 3 – Primary Residential Areas
- Level 4 – Secondary Residential Areas

These levels, which are defined in more detail in later sections, help to define the site analysis and unique opportunities available within the town of Bath. The following figure 1 provides a glimpse of the pedestrian sidewalk levels, existing vehicular and pedestrian trends and available opportunities.

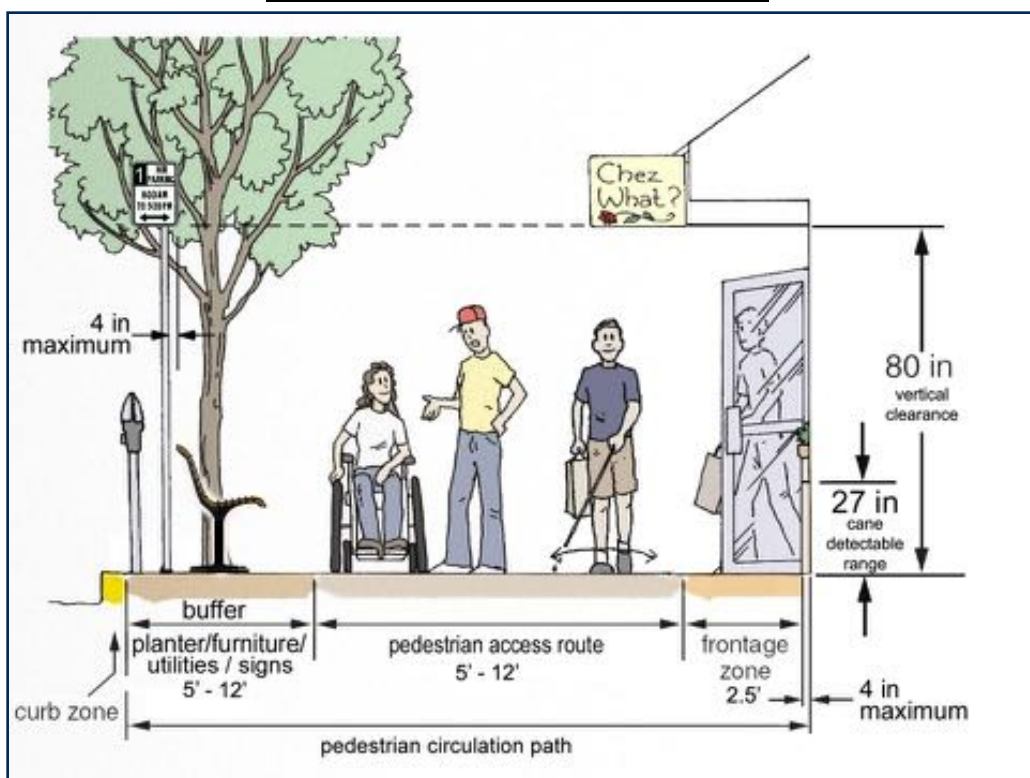
Figure 1. Project Study Area



III. Pedestrian Facilities

Before defining and implementing streetscape guidelines, it is important to understand the various components that make up pedestrian facilities. The primary component is the **Pedestrian Circulation Path (PCP)**. The PCP contains three areas that will vary in width based on the availability of right-of-way and the proximity of the adjacent development. These factors are critical to the design and operation of accessible pedestrian facilities.

Figure 2. Pedestrian Facility Components



The three primary areas which make up the PCP include:

- **Buffer** - This area is located directly behind the curb and typically is used to locate regulatory and other signs, street lights, fire hydrants, overhead and underground utilities and other street furniture. Of equal importance, is that the buffer provides pedestrians with a separation from moving traffic and a greater level of comfort. This area typically has a contrasting surface such as grass, landscape materials or is paved in a contrasting material, color or pattern to distinguish it from the pedestrian access route.

- **Pedestrian-Access Route (PAR)** – The PAR is the portion of the PCP that provides pedestrians with a safe, convenient, continuous and unobstructed pedestrian route that connects all accessible elements of a pedestrian system in the public transportation right-of-way. The PAR is required to meet the necessary standards and guidelines as per the Americans with Disabilities Act (ADA) and other state requirements.
- **Frontage Zone** – is the linear portion of the pedestrian corridor that is adjacent to buildings or the right-of-way line.

A. Sidewalk Levels

1. Level 1 – Primary Commercial Areas

The first level of pedestrian facilities is defined as areas with the highest level of pedestrian activities highlighted by common destination points. As shown in the figure below, level 1 includes segments of Washington Street and Fairfax Street.

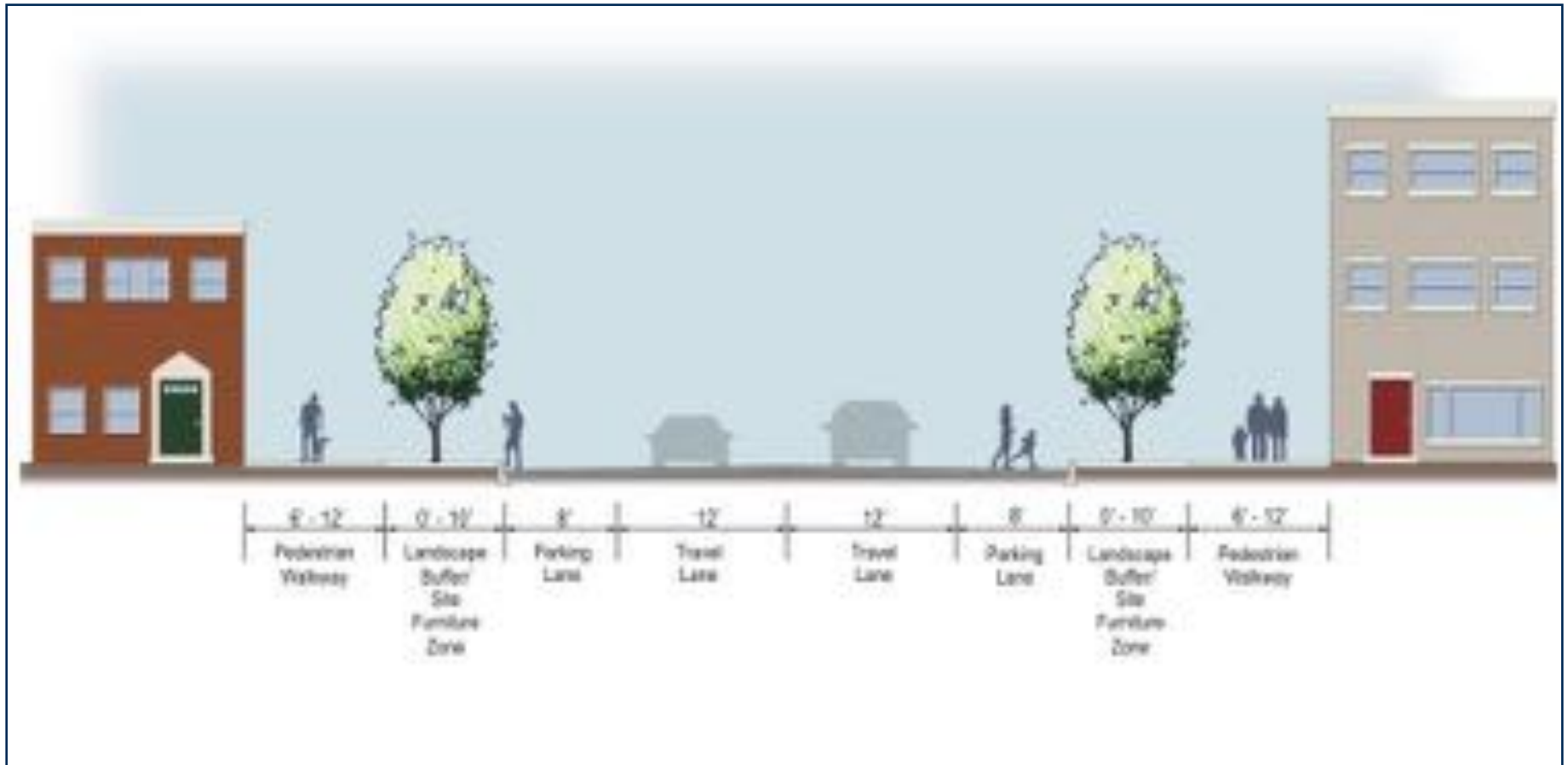
Figure 3. Level 1 Sidewalk Areas



The typical proposed components of improvements for the Level 1 sidewalk areas include:

- Wide sidewalks, curbs and drainage
- Sidewalk accent treatments
- ADA compliance upgrades
- Individual tree pits
- Pedestrian lighting
- Benches
- Trash Receptacles
- Bicycle Racks

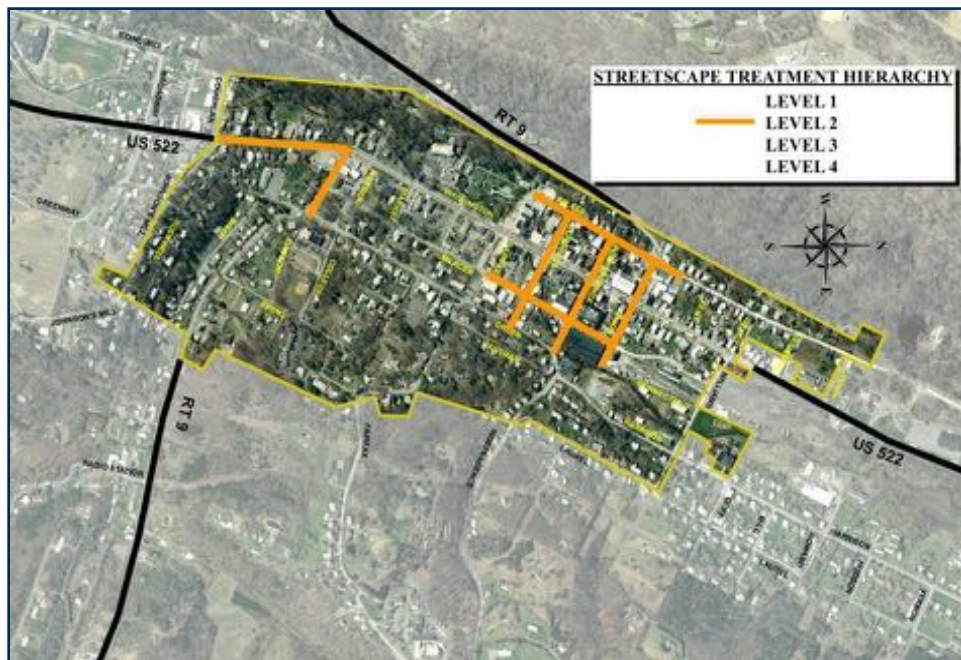
Figure 4. Level 1 - Ideal Typical Section



2. Level 2 – Secondary Commercial & Residential Areas

The level 2 areas are defined as containing medium levels of pedestrian activity through the mixed-use area, which includes some commercial properties and some residential properties. Common with mixed-use districts, the Level 2 area consist of both origin and destination points. Roadways included as a part of level 2 include segments of South Wilkes Street, Independence Street, Congress Street, North Mercer Street, Union Street and portions of Route 9 and Washington Street.

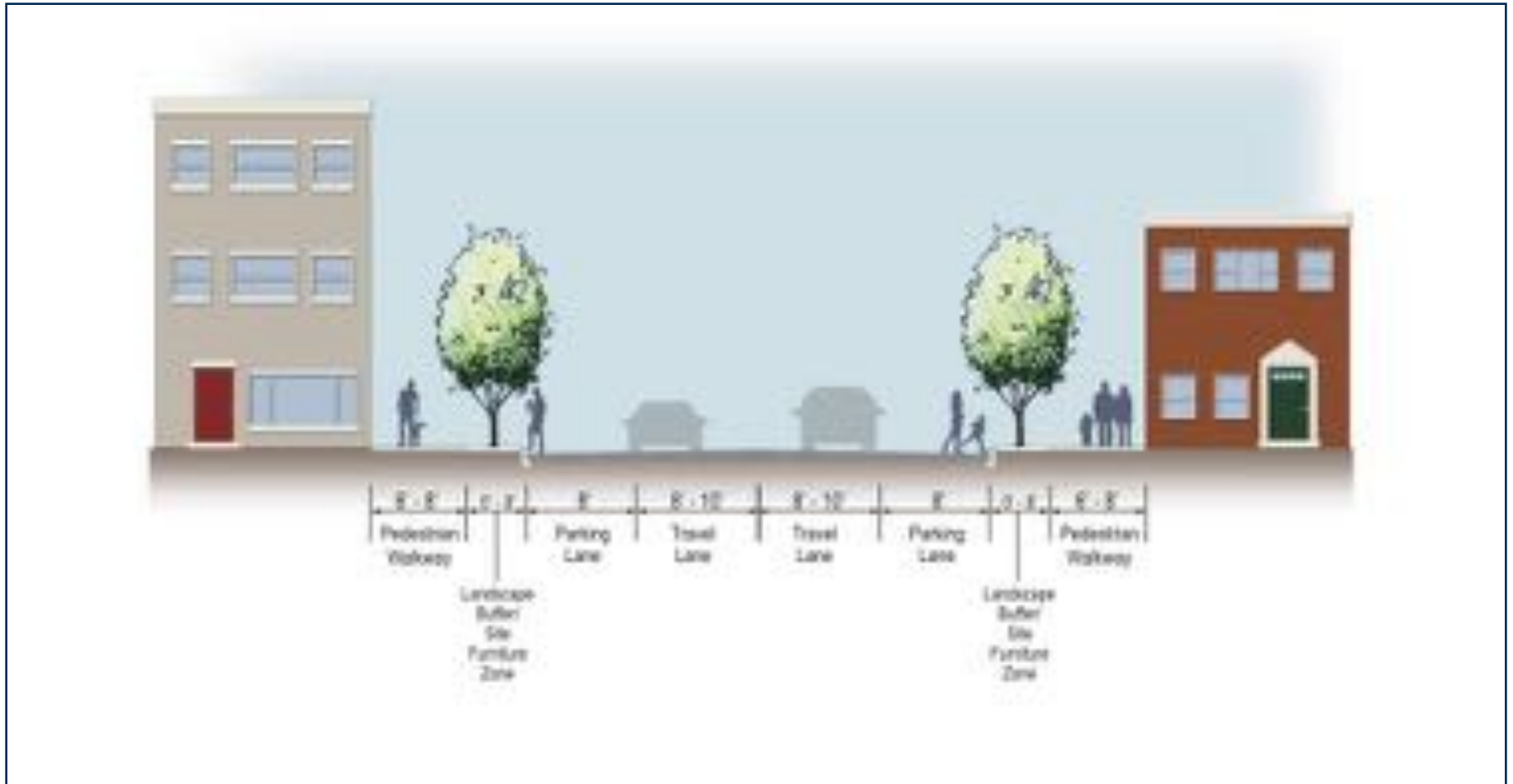
Figure 5. Level 2 Sidewalk Areas



Components of proposed improvements for the Level 2 sidewalk areas include:

- Narrower sidewalks
- Some areas of curbs and designated parking
- Sidewalk accent treatments
- ADA compliance upgrades
- Focused planting areas
- Pedestrian lighting

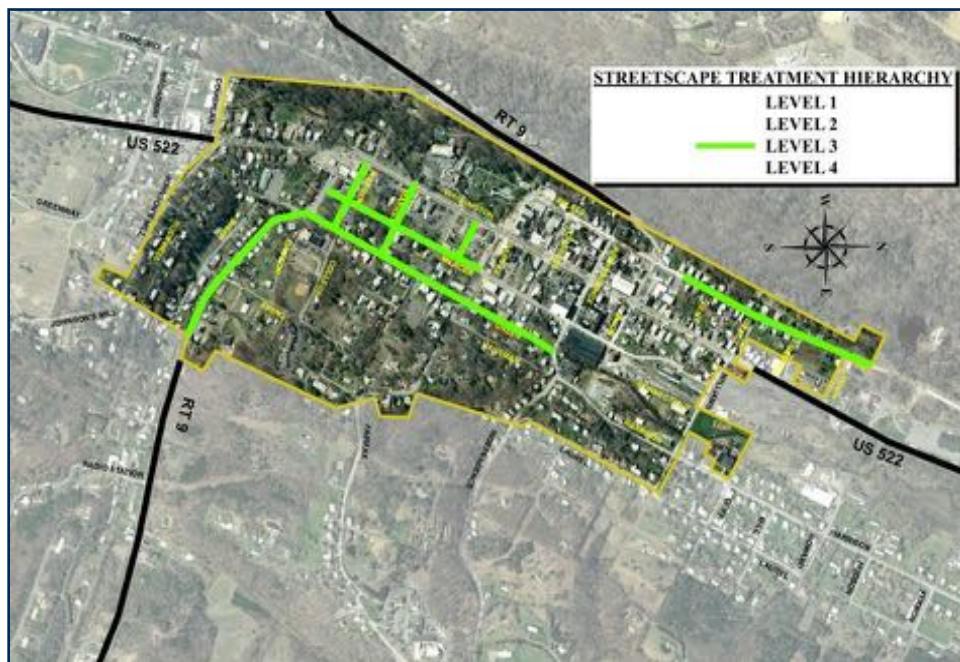
Figure 6. Level 2 – Ideal Typical Section



3. Level 3 – Primary Residential Areas

This level of pedestrian facilities is defined as having medium level of pedestrian activity within areas of higher density residential dwellings. The level 3 area is typically located adjacent to the primary and secondary commercial districts. The level 3 area is made up of road segments of North Wilkes Street, Williams Street, Green Street, Market Street, South Mercer Street, portions of Route 9, Warren Street, Bath Street and Liberty Street.

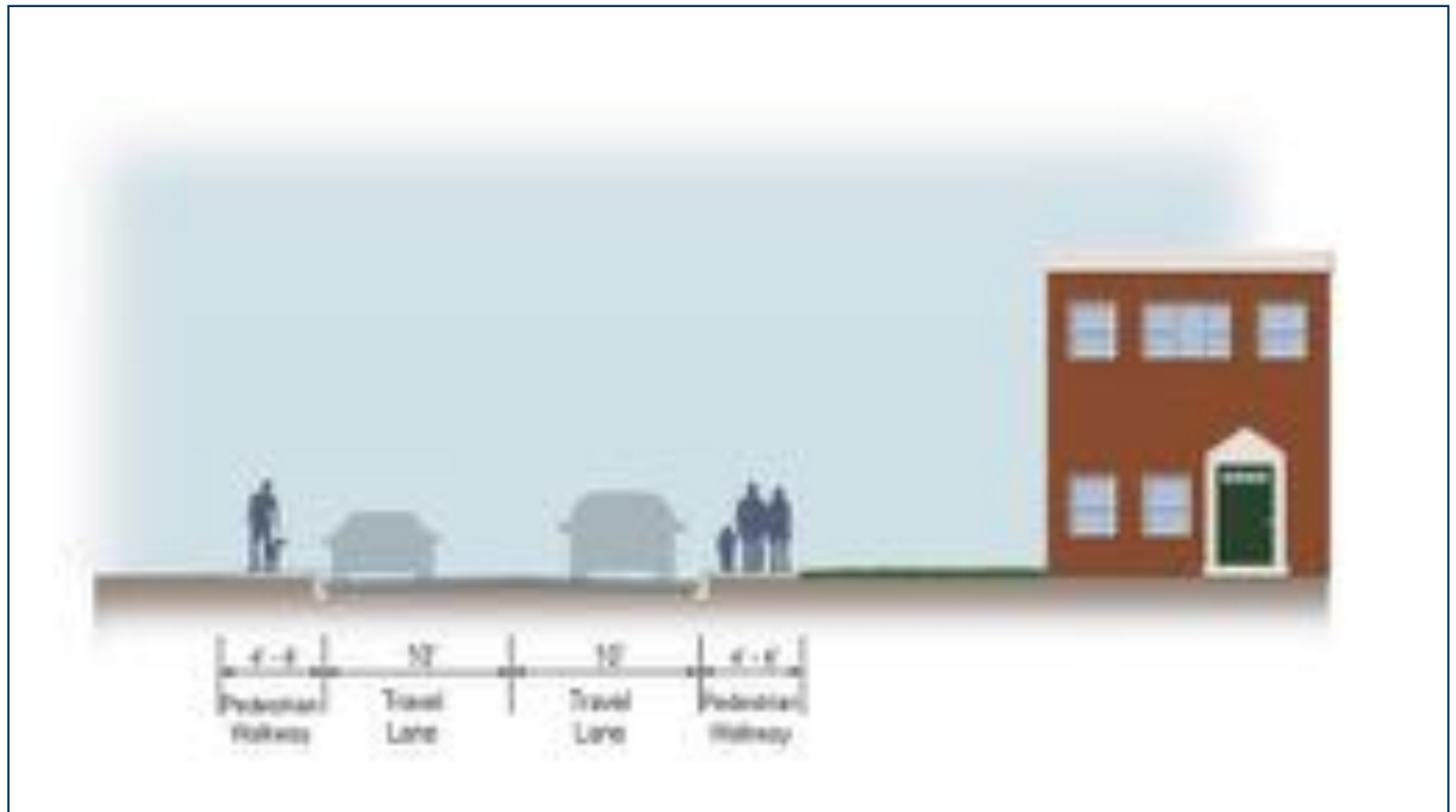
Figure 7. Level 3 Sidewalk Areas



Components of proposed improvements for the Level 3 sidewalk areas include:

- Minimum sidewalks
- Limited parking designation; no curbs
- Sidewalk accent treatments
- ADA compliance upgrades

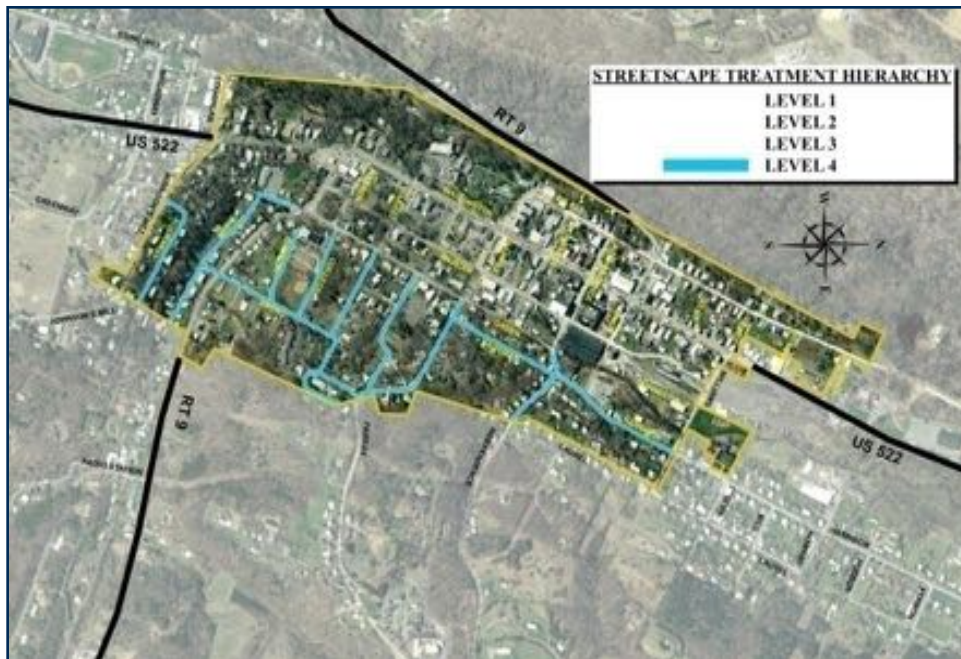
Figure 8. Level 3 Typical Section



4. Level 4 – Secondary Residential Areas

The fourth level of pedestrian facilities is defined as areas with low levels of pedestrian activity within areas of lower density of residential dwellings. Walking distance/time to commercial districts from this level is less convenient than from the primary residential areas. Level 4 is made up of all remaining road segments, as shown below.

Figure 9. Level 4 Sidewalk Areas



The anticipated levels of pedestrian facility improvements within Level 4 include:

- Repair/replace existing sidewalk segments in poor condition
- Infill of missing sidewalk segments
- ADA compliance upgrades, where sidewalks exist

Typically, the streets within the Level 4 area do not include curbs or designated parking spaces.

B. Design Standards

Design standards for sidewalk facilities must meet all current local, state and federal guidelines and standards. The pedestrian access route section of the sidewalk must meet the following criteria to meet the ADA requirements as defined by the United States Access Board.

- Surface shall be smooth, stable and slip resistant
- Preferred width of the pedestrian access route is 5'
 - Minimum allowable width is 3'
- Maximum cross slope of 2%
- Maximum running slope of 5%
 - Greater running slopes are acceptable if required to match the slope of adjacent roadway
- Vertical elevation differences between surfaces shall not exceed $\frac{1}{4}$ "
- Horizontal and lateral sidewalk joints shall not exceed $\frac{1}{2}$ "

The two primary sidewalk materials to be used throughout the town of Bath include a concrete sidewalk and a concrete paver sidewalk. The following are the standard cross sections for each of these types of sidewalks.

Figure 10. Concrete Sidewalk Section

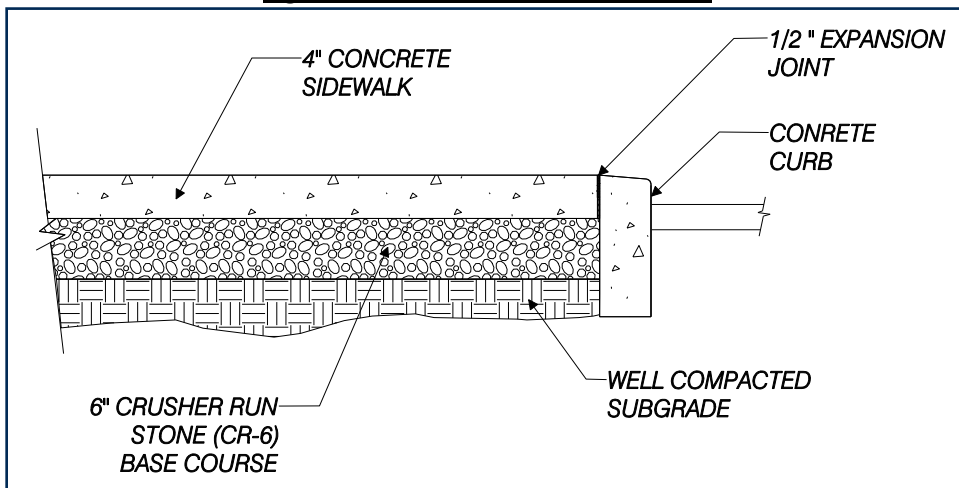
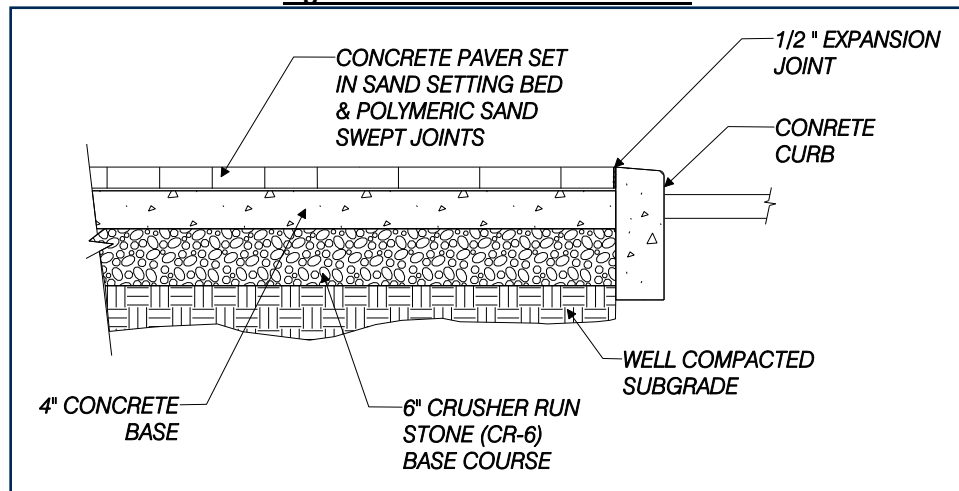


Figure 11. Paver Sidewalk Section



To maintain consistency, the Town of Bath has identified the preferred material for use as a part of concrete paver sidewalk areas. The preferred material is made up of three paver stones as manufactured by Pavestone; 11831 Hopewell Road; Hagerstown, MD 21740. Future streetscape improvement projects should include the pavestone products, or approved equal products. Approval for use of a substitute stone would need to be granted by the Town of Bath, in coordination with the Streetscape Committee.

1. Field Pavers

The field pavers shall be the Venetian Stone, Heritage Series, installed in the “Random” installation pattern. Installation shall include pavers stones of all four varying sizes, including giant, large rectangle, and medium rectangle and square. A blend color is to be used for the field pavers. The preferred blend is “Edington Blend”.



Venetian Stone Paver; Edington Blend

2. Paver Band

The field pavers are to be outlined using a paver band along the outside perimeter of the field pavers. The paver band shall be the Holland Stone (4" x 8" paver) in the “Chicago Blend” color.



Holland Stone Paver; Chicago Blend

3. Detectable Warning Surface Paver

The DWS surface shall be constructed using Pavestone's current ADA Compliant Detectable Warning Surface Paver. The color of the DWS paver must be in contrast to the concrete surface of the ramp. The preferred color is "River Red."



Truncated Dome Paver; River Red

4. ADA Compliant Curb Ramps

ADA compliant curb ramps are essential components of accessible pedestrian facilities. Federal guidelines require that curb ramps be installed whenever pedestrian walkways on sidewalks and across streets are newly constructed or altered. Curb ramp design shall meet the following minimum design criteria.

- Ramp running slope shall be no steeper than 12:1 (8.33%)
- Minimum ramp width of 4'-0"
- Side flares shall be sloped at 12:1 (8.33%)
- Ramp shall include 2' Detectable Warning Surface at back of curb
- 4' x 4' level landing area (less than 2% in all directions) at the top of the ramp

The following plan and section views provide typical design details for curb ramps to be located within the Town of Bath.

Figure 12. Diagonal Curb Ramp

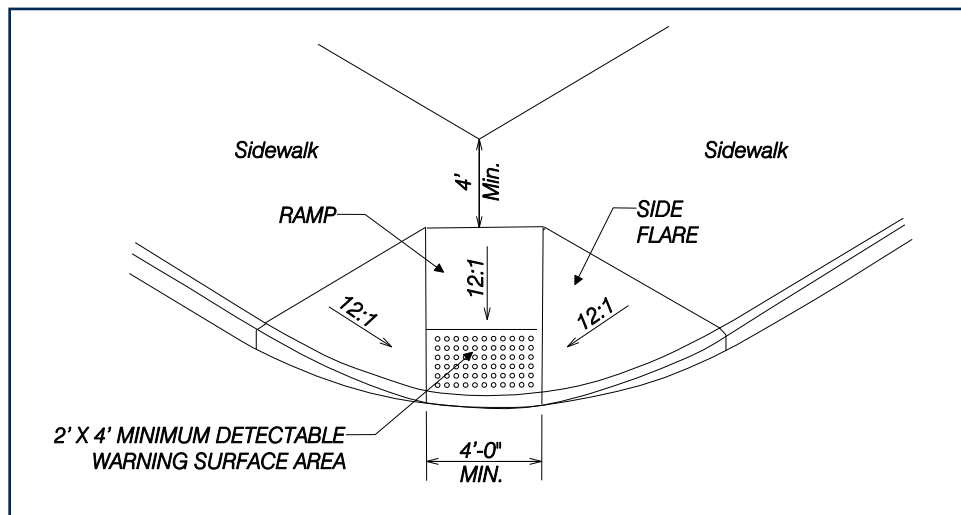
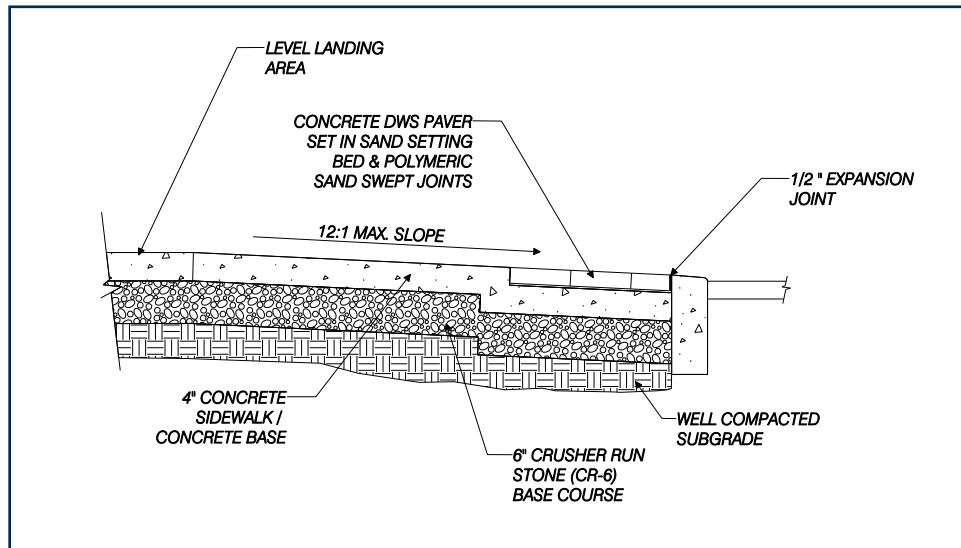


Figure 13. Curb Ramp Section

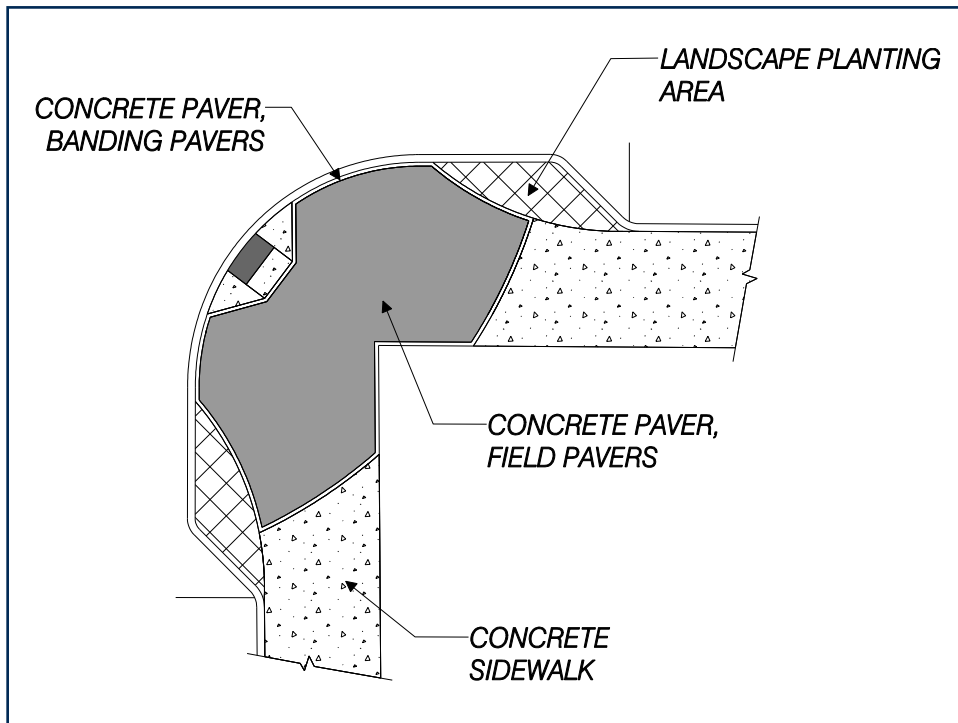


C. Intersection Treatments

Intersections provide a unique opportunity to enhance the overall function of the sidewalk area by enhancing the sidewalk aesthetics through the use of accent treatments. Such intersection treatments for the town of Bath were born through the unique Warm Springs Run which bisects the center of town. The water theme has been transferred into the streetscape concept by using circular or curvilinear elements to represent water flow.

Proposed intersections treatments within sidewalk levels 1 & 2 utilize a unique paver pattern outlined with an arc which spills over onto each individual leg of the intersection. The following figure shows the proposed intersection treatment at an individual leg.

Figure 14. Typical Intersection Treatment



The proposed treatment includes a combination of concrete paver accent and concrete sidewalk areas, along with opportunity for landscape planting areas. The concrete paver area is to include the “field pavers” throughout, outlined by the “banding pavers” in a running bond pattern.

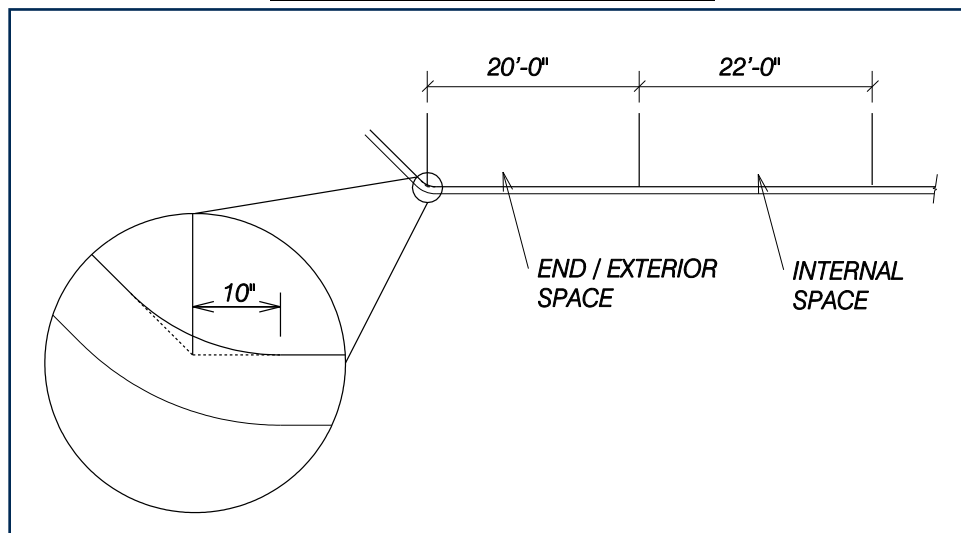
Curb bump outs or “bulbouts” can be incorporated into designs as allowed. The bulbouts allow for a safer means of travel for pedestrian by reducing the width required to cross a given roadway. Bulbouts also help to control speed and to define and protect parking spaces. The use of bulbouts shall be determined on a case by case basis through the evaluation of each intersection, including turning maneuver analysis at each individual intersection.

IV. Parking Facilities

Parking facilities is an essential component to the overall operations and economic stability of any town. Recognizing this, the Town of Bath completed a parking inventory and study to identify deficiencies and determine recommendations that would enhance the town's parking facilities while providing an opportunity for improvements to the town's parking operations. The study, which was completed in 2009, should be utilized as a resource during the development of streetscape enhancements throughout the town. While parking may not be the primary focus of streetscape improvements, it is important to ensure consistency and conformance with the parking study.

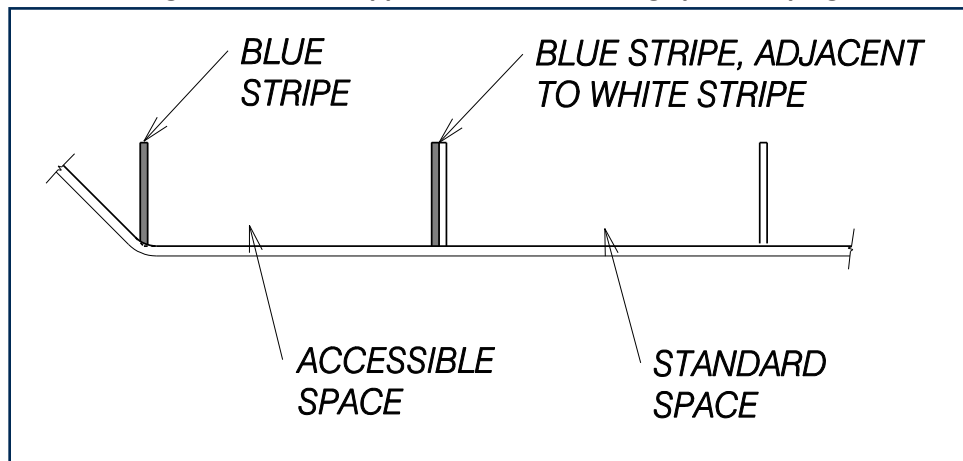
Pavement markings for parking facilities should be consistent throughout the town of Bath to meet patron expectancy. The recommended marking for parking spaces is a 6" wide white stripe, extending from the face of curb to the extent of the parking stall width. Parking space dimensions for parallel spaces shall be consistent with the AASHTO recommendation of minimum of 20' for exterior or end spaces and 22' for internal spaces. Parking stall width will vary from 7' to 9' throughout the town based upon the available roadway sections.

Figure 15. Parking Space Dimensions



Pavement markings for handicapped accessible parking spaces shall include two, blue 6" stripes at either end of the parking spaces. If a standard spaces is provided adjacent to an accessible space, the blue stripe shall be installed directly adjacent the white stripe identifying the standard space. Accessible parking spaces should include the appropriate signage identifying the space as an accessible space.

Figure 16. Handicapped Accessible Parking Space Striping



V. Bicycle / Trail Facilities

Streetscape improvements may, and frequently, include various kinds of walkways and trails in addition to the usual sidewalk improvements along the established street grid. These may take advantage of natural and unique features such as streams or abandoned rights-of-way. They may shorten pedestrian routes and allow pedestrians to get away from street traffic. Opportunities for specialized walkways and trails in the Town of Bath may include organized walking, historic and tourist trails and recreational fitness trails which would include rails to trails project for hikers and bicyclists north of Berkeley Springs. The goals of the town should be to encourage the ease of walking throughout the community with inter-connectivity of all pedestrian facilities. Consideration should be given for upgrades to sidewalks and handicapped accessibility as a part of the overall trail network through town. Possible sources are the Transportation Enhancements Program and Safe Routes to School funds through the WV DOH.

A. Tourist historic walks

An existing walking tour through the town of Bath emphasizes the historic nature of the community and creates opportunities for those interested in the rich history of the Town of Bath. The self-guided tour includes informational placards for an educational and interesting walk around the community. These informational points of interest need to be maintained and additional items added along with additional historic emphases. Points of interest items could include facts concerning early Native Americans, founding fathers, original lot owners of Lord Fairfax, General Daniel Morgan and the unique history of the natural resources of our geology and warm springs. These improvements can be done incrementally as funds are available. Improvements to walkways to improve access to and provide connections between sites should be considered in planning.

B. Recreational and Fitness Trails

Recreational and fitness trails include areas such as the North Berkeley Community Park at Williams Street and the proposed north Berkeley Rails to Trails project. This proposed project will allow a new form of egress into the Town of Bath by those in the north Jimstown area and will provide another family oriented attraction for tourists visiting the community. By working with the existing businesses a designated area along North Mercer Street can be utilized to connect the rail trail to the town. A short term project includes a paved right of way across the

eastern edge of the CSX property, continuing through the current right of way owned by the Warm Springs Public Service District and through the US Silica property to Factory Road. A Long term project would include a trail to River Road with a connection to the Tuscarora Trail. Written legal rights of way for the rail trail should be pursued and potential funding sources include Transportation Enhancement and Recreational Trails Grants from the WV DOH.

Potential trail connections include possible paved walking/biking trail from the town to the Warm Springs Middle School and Intermediate School.

Bicycle/trail facilities should be developed with a clear understanding of the existing facilities within the region. Providing a link between the Town of Bath and regional trails such as the Washington Heritage Trail, C&O Canal Towpath, Great Allegheny Passage and the Western Maryland Rail Trail will provide enhance recreational opportunity, but more importantly provide a opportunity to draw visitors to Bath.

C. Warm Springs Run Opportunities

The First Impressions and Community Design Team reports, prepared with the assistance of the WVU Extension Service, identified Warm Springs Run as a predominant feature of the downtown area. It suggested the development of a creek side walkway that would



Sample of a "Pocket Park"

connect the streets and provide another thruway for pedestrian traffic presenting a natural and potentially beautiful travel area. The trail would also provide a convenient connection between several locations that highlight the local heritage or Bath. This includes the Morgan Arts Council located in the Ice House building, the downtown shopping district, the Morgan County Courthouse and the Berkeley Springs State Park.

Opportunities exist for pocket parks along the pedestrian walkway and should be further investigated to enhance the experience along the run. The pedestrian walkway could also incorporate interpretive signage at

key locations highlighting the history and culture of the Bath/Berkeley Springs area.

Planning should be done for future development of the thoroughfare. Preliminary discussion and possible buy in by property owners should begin and planning of

alternative routes should be mapped for future

development. Efforts should be given to support lighted cross walks throughout the town for ease of crossing and additional safety measures for visitors and children.



Sample of a "Pocket Park"

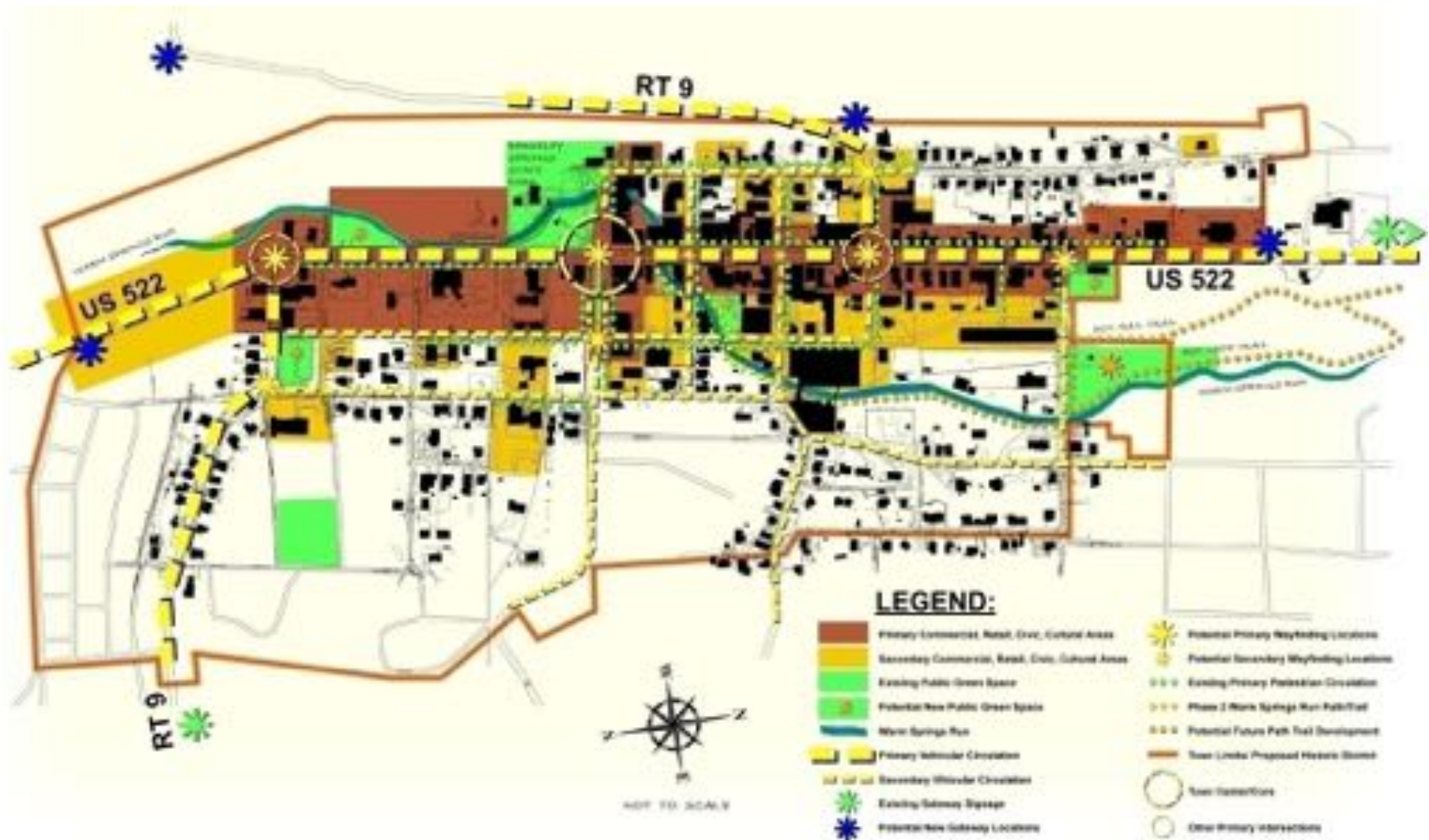


Figure 17. Pedestrian Facilities/Trail Opportunities

VI. Utilities

Utilities, both existing and proposed can have a drastic impact on pedestrian facility improvements. For example, existing utility poles, fire hydrants, manhole covers, storm drains or other facilities can impact the layout and design of proposed pedestrian facility improvements by requiring unique designs to meet all relevant width and slope requirements. Proposed utility improvements can have a similar adverse effect on recently complete pedestrian facility improvements by requiring removal and patching of concrete or concrete paver sidewalk.

To limit the impact utilities can have on a sidewalk improvement project, it is recommended that the project team coordinate with all key utility players, including the Town of Bath, West Virginia Department of Transportation (WVDOT) and Morgan County. Coordination should include a pre-design meeting with representatives from the utility companies and government agencies to determine if scheduled utility improvements are on-line which could have a direct impact on the design/construction of sidewalk improvements. A second meeting should be conducted at the preliminary design stages to review the proposed design with the key stakeholders and allow for identification of potential conflicts.

A majority of existing private utilities throughout the town of Bath are located along aerial facilities. Utility poles and lines, while are often necessary, are not desired when trying to achieve a certain aesthetic look along a roadway or pedestrian facility. Ideally, implementation of streetscape improvements would include the relocation or undergrounding of existing aerial facilities to provide a cleaner streetscape. However, the process of relocating and/or undergrounding existing facilities is expensive and time consuming and it typically not realistic of a smaller streetscape project.

It is recommended that funding opportunities be evaluated at the beginning of each project to determine the possibility of relocating the aerial facilities to underground or condensing the amount of aerial facilities. If funding is available, the potential for relocation of the utility facilities should be discussed with the relevant utility companies and potentially incorporated into the streetscape design.

Coordination regarding overhead utilities should focus on consolidation of lines and fixtures to minimize negative aesthetic impacts. Coordination on underground facilities should focus on protecting existing water and sanitary lines and to insure adequate storm drainage on Town streets.

The key utility companies with facilities in the town limits include Potomac Edison, Frontier, Comcast and Fiber Net, as well as the Town of Bath, Morgan County and WVDOT for water, sanitary sewer and storm drains, respectively.

VII. Signage, Wayfinding & Parking

The purpose of a well-planned signage and way-finding system is primarily aimed at helping visitors find their way to the many services, businesses and targeted destinations such as historic sites in the Berkeley Springs area. Any signage plan has the purpose to coordinate a relatively seamless travel experience, which should improve traffic flow as well as motorist and pedestrian safety. Specific goals of an effective signing system include:

- Create a clear and understandable directional signage at key points
- Provide information regarding special events
- Highlight public parking opportunities
- Eliminate redundant, unattractive signs within the town

The five levels of signage that need to be evaluated include highway/regulatory signage, gateway signage, interpretive and historic feature signage, wayfinding signage and business/directory service signage. Where not controlled by regulation, the design of gateway, wayfinding and directory signage should follow a developed integrated appearance.

A. Highway/Regulatory Signage

These signs include the standard Department of Highways, local roadway and regulatory signs. Implementation of streetscape improvements should review opportunities to consolidate or combine the highway/regulatory signage where possible to reduce visual clutter and to replace damaged and aged signs.

B. Gateway Signage

The goal of gateway signage is to announce arrival at the entranceways to a particular destination. Entryway/ gateway signage is typically located at the perimeter of a town and is most effective when located along major highways or local arterials/collectors. The photo shown is the typical gateway signage included at the northern and eastern edges of the unincorporated Berkeley Springs. The town could also look to incorporate gateway signage that welcomes visitors to the Historic District of the Town of Bath.



C. Interpretive and Historic Feature Signage

Incorporation of interpretive and historic feature signage should be considered and integrated into streetscape plans. The Berkeley Springs State Park, the Washington Heritage Trail and local historic structures provide opportunities to develop pedestrian and automobile oriented focal points to enhance the Town's streetscape.



D. Wayfinding Signage

The goal of a wayfinding sign system is to take advantage of known geographical sequences to replace turn by turn, street by street driving directions with short, easy to remember geographical narratives that get visitors within a few blocks of any destination. The signage should also assist with getting the traveler back out to the gateway or major highway. The town should look to evaluate the following types of wayfinding signs: directional, parking, attraction and pedestrian signs. Some existing wayfinding signage exists for the business district. This theme could be continued or revamped as additional wayfinding signage is introduced throughout the Town of Bath.



E. Business/Service Directory Signage

The goal of this type of signage system is to provide a location to identify businesses and to provide a place for announcement of community events. The inclusion of business/service directory signage systems requires a higher level of maintenance than the other systems as business and events are ever changing.

Some existing signage improvements have been completed within the Town of Bath. It is recommended that as future signage improvements are implemented, a common theme and color scheme be established to provide continuity throughout the town. It is also important to that the implementation of signage improvements is consistent with DOH and Town standards.



F. Parking Signage

A Separate study was under taken to address parking issues. The complete document is available on the Chamber of Commerce website www.berkeleyspringschamber.com.

VIII. Site Furnishings

Along with the unique Warm Springs Run which dissects the town of Bath, the existing landscape within the town includes a wide array of existing stone walls. These two elements were utilized as themes for the development of the site furnishing palette for future streetscape improvements throughout the town. The use of circles, metal elements and stone accents are apparent in the preferred site furnishings identified below.

A. Benches

Benches within a downtown area provide a way of promoting social interaction which is an essential component of a small downtown community. There are two recommended bench alternatives dependent upon the location and desired use. Both benches are manufactured by Victory Stanley, Inc. and are a part of the City Series. All benches shall have a black, powder coat finish.

The first bench, City Series CBF-12, is a traditional bench accented by the circular arm rests located on either end. The traditional bench is available in 4', 6' and 8' lengths. The length of the bench can be determined by the design team to best fit the available space.



Standard Bench

An alternative bench is a backless bench which can be utilized in locations where patrons may desire to face in either direction. The standard backless bench is the City Series CR-14. As with the traditional bench, the backless bench is available in either 4', 6' or 8' lengths. The length shall be determined by the design team to best fit the available space.



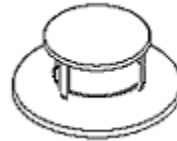
Backless Bench

All benches should be located within either the buffer area of the frontage zone within the pedestrian circulation path to avoid impact to the pedestrian access route. Benches should be oriented toward the adjacent pedestrian access route. In addition, all benches shall be anchored to the sidewalk pavement surfaces as per the manufacturer's specifications.

B. Trash Receptacles

Trash receptacles should be a component of streetscape improvements which will help to keep the Town of Bath clean. The standard trash receptacle should match the appearance and specifications of the Concourse Series, FC-12 trash receptacle, as manufactured by Victor Stanley, Inc. Proposed trash receptacles shall have a powder coat, black

finish and shall include either the optional rain bonnet lid or rain bonnet lid with ash tray.



Rain Bonnet

Trash Receptacle and Lid Option

Trash receptacles should be located within either the buffer area of frontage zones within the pedestrian access path to avoid impact the pedestrian circulation route. All trash receptacles shall be anchored to the sidewalk pavement surfaces as per the manufacturer's specifications.

C. Bicycle Racks

The inclusion of bicycle racks within the streetscape element of the town of Bath has several benefits. Bicycle racks promote the use of alternative transportation which in turn is beneficial to the area by reducing the amount of motorized vehicles, as well as beneficial to the individual due to the obvious health benefits.

Available space will be the critical criteria for the determination of installation of the bicycle racks throughout the town. While the desire to include bicycle racks exists, the responsibility of the designer will be to balance the need for the bicycle racks with the need to assure that the functional elements of the pedestrian access route are not hindered.



Hitching Post Bicycle Rack

Two styles of bicycle racks are recommended for use within the town of Bath. The first is a “hitching post” style rack that can accommodate up to two bicycles at a time. The hitching post style bike rack shall match the appearance and specifications of the #937-SM bike rack as manufactured by Toronto Fabricating and Manufacturing Company.

The second is a “wave” style rack which allow for multiple bicycles to utilize one rack. This style rack is manufactured in a wide variety of lengths dependent upon the desired bicycle parking spaces.



“Wave” Style Bicycle Rack

All bike racks are to be powder coated, black in color and shall be secured to the surface as per the manufactured specifications.

D. Pedestrian Lighting

Pedestrian scale lighting should be included to enhance the nighttime aesthetics of the streetscape improvements as well as provide an additional level of safety along the town’s pedestrian facilities. The energy efficient lighting would be included to replace the existing overhead cobra lights.

The design of the pedestrian scale lighting was developed to provide sufficient brightness while minimizing the light pollution in the sky. Two lighting alternatives have been chosen. The first is a single luminaire, which will be the most common as it fits the scale of a majority of the

Town of Bath. A double luminaire option is also an acceptable alternative for the higher pedestrian areas.

The pedestrian scale lighting should be manufactured by Lumec to match the lighting improvements which have recently been implemented along Wilkes Street and Washington Street.



Single & Double Luminaire Pedestrian Lights

E. Planters

Planters provide an additional means for incorporating landscape plantings into the design of a streetscape. Future streetscapes can include two variations of planters. The first is a movable planter manufactured of glass fiber reinforced concrete.



Movable Planters

The second is a combination planter and seating wall. These should be reserved for the Level 1 sidewalk areas and shall include a stone façade similar to the various stone walls located throughout the Town of Bath and constructed to a height to promote the top of wall as an alternative seating area.



Seating Wall Planter

F. LED Bollards

Existing conditions may warrant the use of LED Bollards to provide additional accent lighting. The bollards could also be used to highlight an entrance or plaza area within or adjacent to the existing pedestrian network.



IX. Landscape Plantings

The use of landscape planters is one means of providing opportunity for landscape plantings along a streetscape to help soften the appearance of the hardscape improvements. An additional means is to incorporate landscape zones along the pedestrian facilities. As well as softening the appearance, these landscape zones will also provide a positive effect by creating a visual barrier between the pedestrians and motor vehicles. This is more critical within the Level 1 Pedestrian Facility areas where the vehicular traffic is heavier.

There is limited opportunity for street trees within the study area. The primary corridor with sufficient space for the inclusion of street trees is Washington Street. The future selection of street trees should include trees which are common to the area and also consist of a branching height that allows for the passage of pedestrians below, but does not grow too high to interfere with the overhead utility wires found throughout the town.

A more common means of landscape plantings should be the use of low level perennial plantings and clusters of annual plantings. Similar to the street trees, the low level perennial plantings should be common to the region, as well as a hardy variety able to withstand de-icing salts.

Maintenance is a primary concern associated with the inclusion of landscape plantings within public space. The town would be responsible for the overall maintenance, which could be best accomplished through a contract or agreement with the local gardening club to assure that the trees, shrubs and general planting areas are kept watered and clean. Cooperation in planning tree plantings and maintenance should be accomplished with and meet requirements of the Town of Bath Tree Board.

X. Ordinance Review

As a part of the development of the Streetscape Plan for the Town of Bath, the project team conducted a review of selected sections within the town's current Code of Ordinances (2008). The goal was to identify sections which could be modified to promote future streetscape opportunities, as well as assure that the implemented improvements are properly maintained. The sections reviewed included ***Streetscape Committee*** (Section 2-141), ***Urban Trees*** (Chapter 30, Article 3), ***Offenses and Miscellaneous Provisions*** (Chapter 50), ***Streets, Sidewalks and Other Public Properties*** (Chapter 66) and ***Subdivisions*** (Chapter 70).

The following are a list of potential revisions to the existing ordinances which would assist in creating a more walkable community throughout Bath.

- Within Chapter 50, Offenses and Miscellaneous Provisions, provide more clear and specific requirement regarding Obstructions. For instance, provide language that moveable obstructions within a sidewalk area shall not reduce to the usable pedestrian walkway width below 48 inches.
- Increase the minimum width of sidewalk within Chapter 70, Subdivisions, from 36 inches to 48 inches.

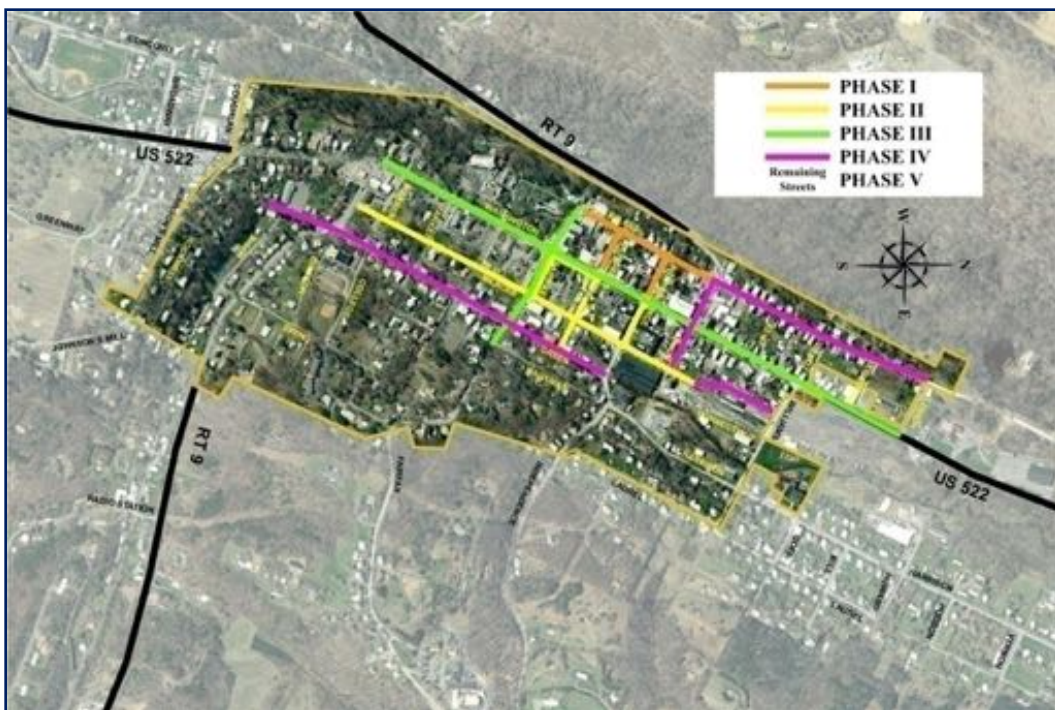
In addition, it is the recommendation of this plan, that the Town considers adopting a Sign Ordinance to provide guidance for orderly implementation of signing throughout the community, as well as protect the safety of the general public. The various sign categories the ordinance could address include advertising signs, real estate signs, business signs, identification signs, announcement signs and temporary signs. The ordinance could address specifications such as size, location, illumination and review/approval process.

XI. Phasing / Implementation

Phasing and implementation of the streetscape improvements was established during the planning and public involvement process which took place during the development of the conceptual streetscape plan. The phasing was established based upon need and street locations in proximity to the downtown area of Bath.

The initial phases, Phases I & II, are focused on Wilkes Street, North Mercer Street, Independence Street and Congress Street. The third phase is focused on improvements along the town's two primary streets, Washington Street and Fairfax Street. The fourth phase focuses on the continuation of improvement along Mercer Street and Wilkes Street, as well as Green Street and Union Street.

Figure 18. Phasing Plan



Phasing of the streetscape improvements will need to be constantly evaluated by the town based upon opportunities that may present themselves as well as available funding. The above phasing should only be used as a guide and the overall phasing of the streetscapes should be redefined as time goes by.

APPENDIX A – Benches

CITY SITES SERIES™

UNIQUELY CURVED CASTINGS



C12*



CBF12



CBF12

Designs that delight the eye and enhance the setting. Castings are available with wood slats, patented 2nd Skin System® reinforced recycled plastic slats, vertical steel scrolls, horizontal steel rods and horizontal steel slats.

**Natural wood colors will vary. Weathering may occur on site which will alter the color of the wood over time.*

Victor Stanley, Inc.® Castings are

GENUINE DUCTILE-IRON

and carry our 10-year Warranty against breakage.

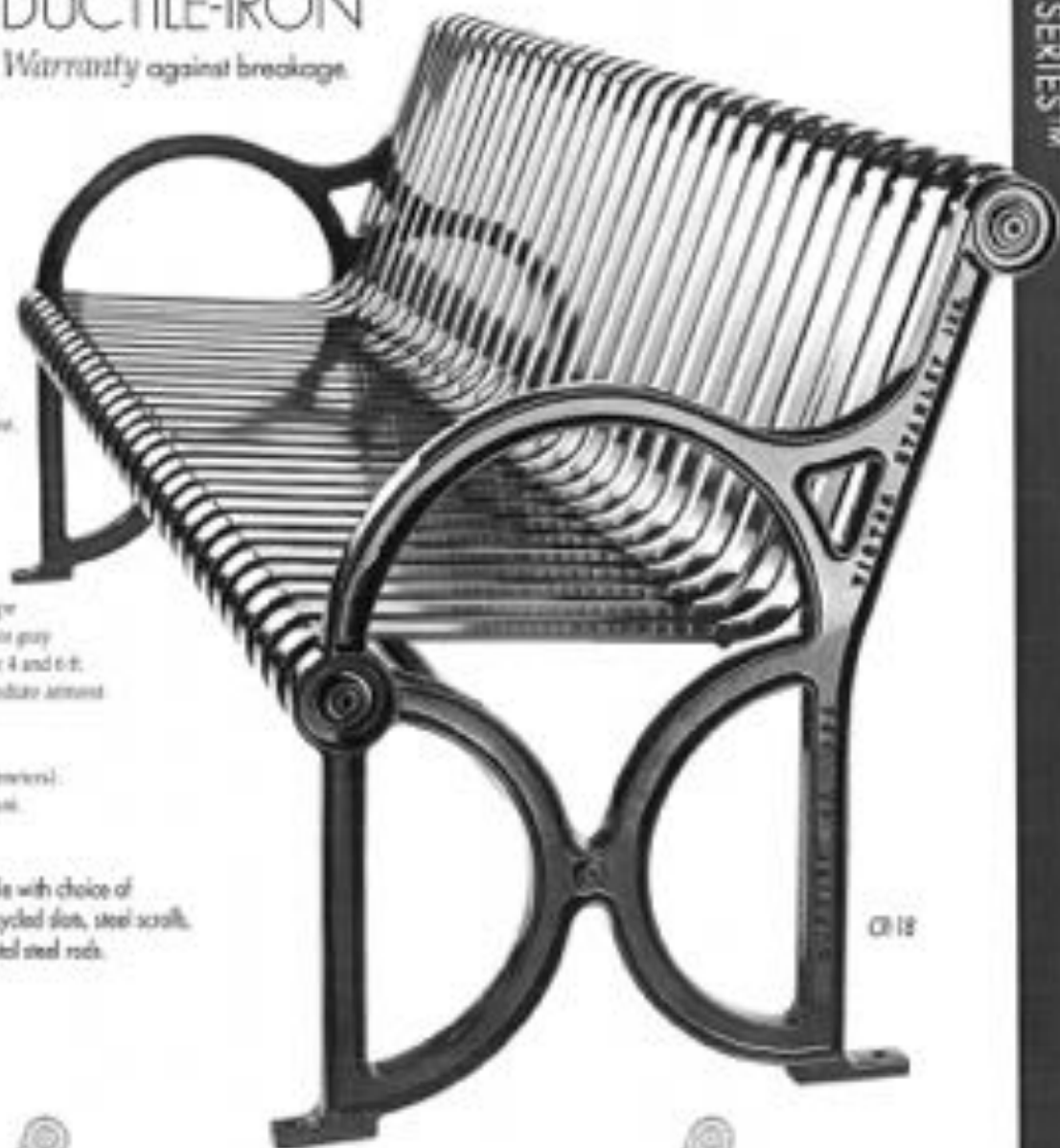
- CR-18 Bench
CR-14 Backless Bench
Length: 4.5 or 8 ft. (1.2, 1.8 or 2.4 meters). Steel scrolls. Surface mount.
Option: Intermediate armrest.

C-12 Bench

Length: 4.5 or 8 ft. (1.2, 1.8 or 2.4 meters). Surface mount.
Options: Philippine mahogany or ipé wood slats. Maple, cherry, walnut or gray 2nd Site Systems® recycled slats for 4 and 6 ft. (1.2 and 1.8 meter) lengths. Intermediate armrest.

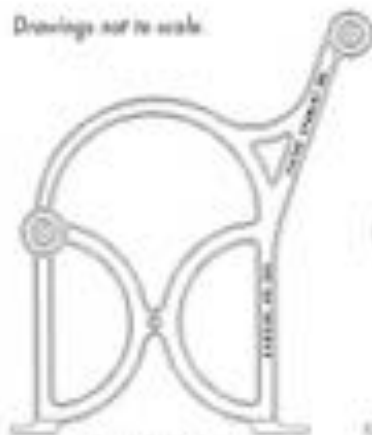
- CRF-12 Bench
Length: 4.5 or 8 ft. (1.2, 1.8 or 2.4 meters).
Horizontal steel slats. Surface mount.
Option: Intermediate armrest.

All City Sites castings are available with choice of wood slats, 2nd Site Systems® recycled slats, steel scrolls, horizontal steel slats and horizontal steel rods.



CR-18

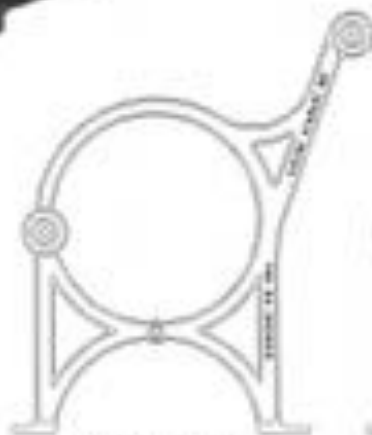
Drawings not to scale.



#18 bench casting.



#14 backless bench casting.



#12 bench casting.



#14 backless bench casting.

APPENDIX B – Trash Receptacles

ECONOMY SERIES

lighter weight designs
resembling our industry-standard
Ironsites® Series.

Smaller scale with 1/4 in. (6.4 mm)
thick vertical steel bars.



ES-142

ES-142 Litter Receptacle

Capacity: 36 gallons (136 liters). Standard tapered
formed lid. Black plastic liner. Leveling feet.
Options: Dome lid (with or without ashtray).
Cones lid (with or without self-closing door).
Rain funnel lid (with or without ashtray).
Galvanized steel base (with
or without powder coat).



ES-242

ES-135 Litter Receptacle

Capacity: 24 gallons (90 liters)
available (not shown).

ES-242 Litter Receptacle

Capacity: 36 gallons (136 liters). Standard tapered
formed lid. Black plastic liner. Leveling feet.
Alternating width bars.
Options: See ES-142 Options above.

ES-235 Litter Receptacle

Capacity: 24 gallons (90 liters)
available (not shown).

ES-342 Litter Receptacle

Capacity: 36 gallons (136 liters)
available (not shown).

ES-335 Litter Receptacle

Capacity: 24 gallons (90 liters). Standard tapered
formed lid. Black plastic liner. Leveling feet.
Alternating width bars.
Options: See ES-142 Options above.



ES-335 with **OPTIONAL** dome lid with ashtray.

CONCOURSE Series



RC-12



• Concourse series RC-12 ash um.

Includes large
10 in. (254 mm) heavy-duty
stainless steel ashtray
and black plastic liner.



CONCOURSE Series

BOLDNESS OF CIRCULAR DETAILING
WITH THE SUPERB STRENGTH AND
DURABILITY OF STEEL.

The high quality and excellent design of litter receptacles and ash urns from the Concourse Series bring a blend of curvature and strength to public spaces.

RS-12 Litter Receptacle

Capacity: 36 gallons (136 liters). Standard tapered formed lid. Black plastic liner. Leveling feet.
Options: Dome lid (with or without ashtray).
Cones lid (with or without self-closing door).
Roll-in basket lid (with or without ashtray).
Galvanized steel liner (with or without powder coat).



FC-12 Litter Receptacle

Capacity: 36 gallons (136 liters). Standard tapered formed lid. Black plastic liner. Leveling feet.
Options: See RS-12 Options above.

FC-10 Litter Receptacle

Capacity: 24 gallons (90 liters). Standard tapered formed lid. Black plastic liner. Leveling feet.
Options: See RS-12 Options above.

RS-10 Litter Receptacle

Capacity: 24 gallons (90 liters) available (not shown).

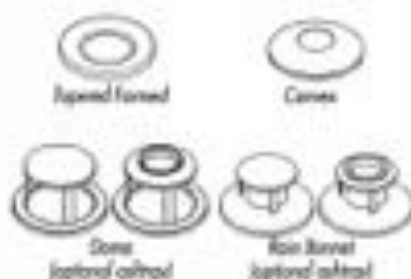
FC-6 Stand-Alone Ash Urn

RS-6 Stand-Alone Ash Urn (not shown)

Stainless-steel ashtray is 16-gauge solid stainless-steel with 2 in. (51 mm) depth and 30 in. (762 mm) diameter. Black plastic liner. Leveling feet.



Vertical steel slats with open lattice work and bold circular detailing make the RS-12 distinctive in design and concept.

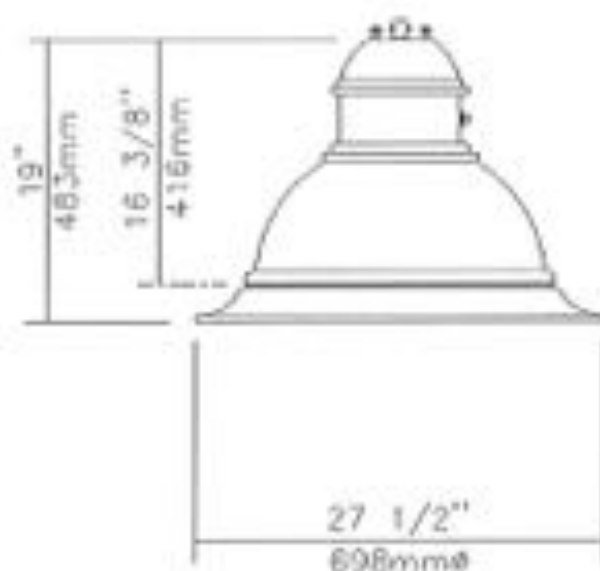


Drawings are close representations of actual lids.



• RS-10 24 gallon (90 liter) receptacle

APPENDIX C – Lighting



Qty	1	Luminaire	DMS58-90W49LED4K-LE3F-VOLT-PH7-BKTX
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Description of Components:

Hood: A die cast A360.1 aluminum dome complete with a cast-in technical ring with latch and hinge. The mechanism shall offer tool-free access to the inside of the luminaire. An embedded memory-retentive gasket shall ensure weatherproofing.

Skirt: A die cast A360 aluminum skirt complete with a cast-in technical ring.

Housing: In a round shape, this housing is made of cast 356 aluminum, c/w a watertight grommet, mechanically assembled to the bracket with four bolts 3/8-16 UNC. This suspension system permits for a full rotation of the luminaire in 90 degree increments.

Light Engine: LifeLED™ composed of 5 main components: Lens / LED lamp / Optical System / Heat Sink / Driver. Electrical components are RoHS compliant.

Lens: Made of soda-lime tempered glass lens, permanently sealed onto the lower part of the heat sink.

Lamp: (Included). Composed of 49 high performance white LEDs, 90w lamp wattage. Color temperature of 4000 Kelvin nominal, 70 CRI. Operating lifespan, 70 000 hours after which the system emits 70% of its original lumen output, all of those parameters are tested for 100% of light engines. Use of a metal core board ensures greater heat transfer and longer lifespan of the light engine.

Optical System: (LE3F), I.E.S type III (asymmetrical). Composed of high performance collimators, optimized with varying beam angles to achieve desired distribution. System is rated IP65. Performance shall be tested per LM63 and LM79 (IESNA) certifying its photometric performance. Street-side indicated.

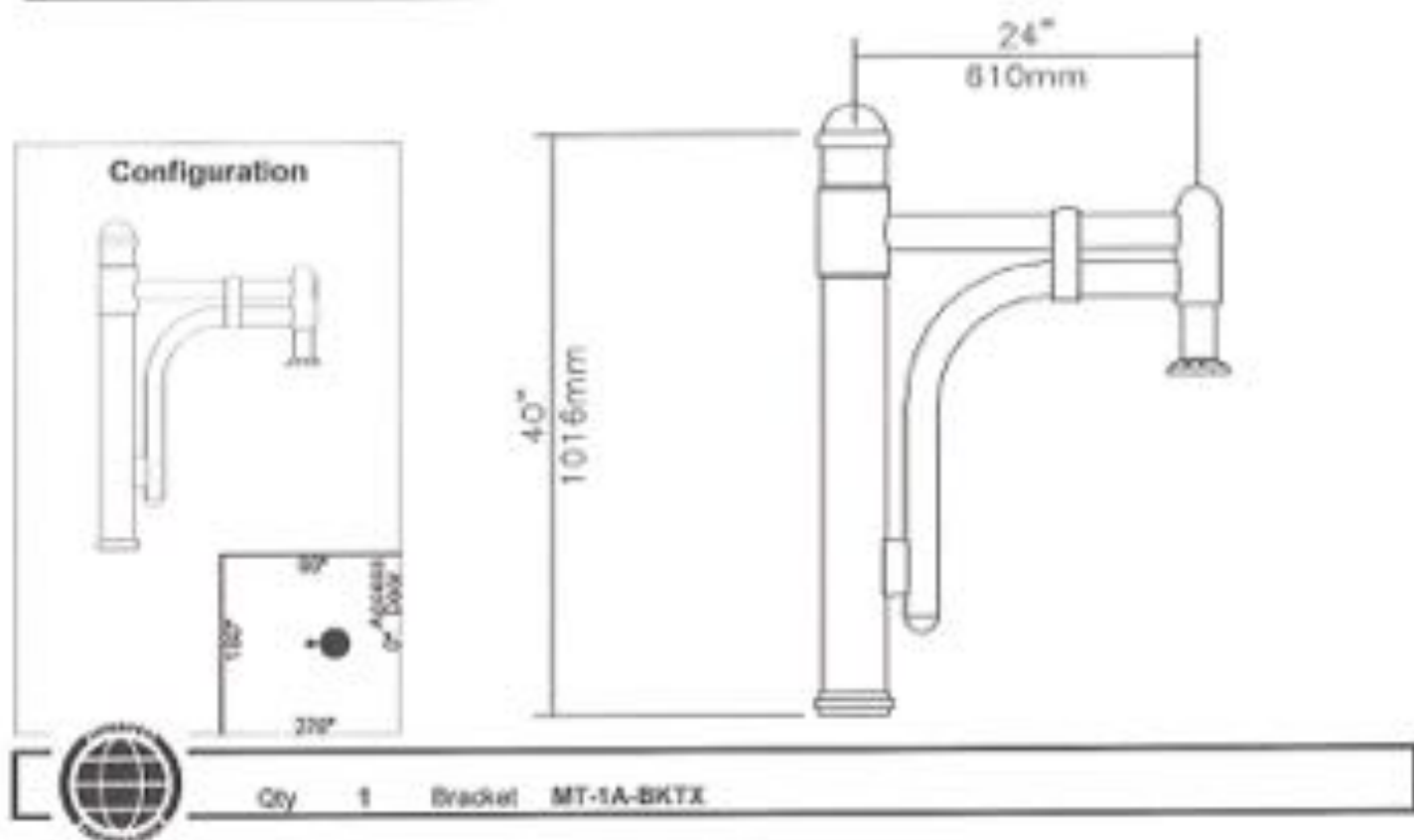
Heat Sink: Made of cast aluminum optimising the LEDs efficiency and life.

Driver: High power factor of 90%. Electronic driver, operating range 50-60 Hz. Auto-adjusting to a voltage between 120 and 277 volt AC Class II. Lamp starting capacity -40F(-40C) degrees. Certified in compliance to UL requirement. Weather

tightness rating IP65. Assembled on a unitized removable tray with quick disconnect plug.

Surge Protector: LED Driver 3 poles surge Protectors that protect Line-Ground, Line-Neutral, and Neutral-Ground in accordance with IEEE / ANSI C82.41.2 guidelines.

Luminaire Options: (PH7), Photoelectric Cell, Button Type



Description of Components:

Arm: Made from 2 3/8in. (60mm) outside diameter aluminum tubing, welded.

Decorative Element: Made of bent aluminum, 2 3/8" (60mm) outside diameter.

Central Adaptor: Made of aluminum 6061-T6, 4 1/2" (114mm) outside diameter. Slip-fits 9" (229mm) over a 4" (102mm) outside diameter pole base. Mechanically fastened by two sets of three set-screws at 120 degrees around the bracket.

Base & Bolt Information



Comes with 4 steel anchor bolts, 3/4" x 1 1/2" x 3", 8 nuts and 8 washers. Important: Do not obstruct space between anchor plate and concrete base.

Anchor Plate

Ø C:
12 1/2" (318mm)

Material:
Cast Aluminum

(for Access door)

NOTE:
Bolt Circle Allowed
12" to 18"
305mm to 457mm



Qty 1 Pole RA57U-14-BKTX

Description of Components:

Pole Shaft: Shall be made from a 4" (102mm) round extruded 6061-T6 aluminum tubing, having a 0.225" (5.7mm) wall thickness, welded to the pole base.

Joint Cover: One-piece round joint cover made from cast 356 aluminum, mechanically fastened with stainless steel screws.

Pole Base: Shall be made from a round fluted cast 356-T6 aluminum base having a 0.375" (9.5mm) wall thickness, complete with a cast-in anchor plate.

Maintenance Opening: The pole shall have a 3 3/8" to 7" wide x 6 1/2" long (86mm x 178mm x 165mm) maintenance opening centered 16 1/2" (419mm) from the bottom of the anchor plate, complete with a weatherproof cast 356 aluminum cover and a copper ground lug.

IMPORTANT: Philips Lumec strongly recommends the installation of the complete lighting assembly with all of its accessories upon the anchoring of the pole. This will ensure that the structural integrity of the product is maintained throughout its lifetime.



Miscellaneous

Description of Components:

Hardware: All exposed screws shall be stainless steel with Ceramic primer-seal basecoat. All seals and sealing devices are made and/or lined with EPDM and/or silicone.

Finish: Color to be black textured (BKTG). Application of a polyester powder coat paint. (4 mils/100 microns). The chemical composition provides a highly durable UV and salt spray resistant finish in accordance to the ASTM-B117-73 standard and humidity proof in accordance to the ASTM-D2247-68 standard.

Note: IMPORTANT: All missing details must be clearly specified on the return of these approval drawings. Thank you for your cooperation.

VOLTAGE_____

Lamp Technical Information									
Lamps #	Rated life hrs. ¹	LED Manufacturer	CRI	Color Temperature ²	Initial lumens	Voltage		Max System AC connect LEDs	LED watt
						Lamp	System ³		
40W/830 CRI	75,000	Philips Lumileds Rebel or Core XP	70	8000K	3000	4.0V	4.0V	8.43A	100Watt
40W/930 CRI	75,000		70	8000K	3000	4.2V	4.2V	8.43A	100Watt
60W/830 CRI	75,000		70	8000K	4000	4.0V	4.0V	9.7A	100Watt
60W/930 CRI	75,000		70	8000K	4000	4.2V	4.2V	9.7A	100Watt
90W/830 CRI	75,000		70	8000K	6000	4.0V	4.0V	14.5A	100Watt
90W/930 CRI	75,000	Philips Lumileds Rebel or Core XP	70	8000K	6000	4.2V	4.2V	14.5A	100Watt
130W/830 CRI	75,000		70	8000K	8000	4.0V	4.0V	17.9A	100Watt
130W/930 CRI	75,000		70	8000K	8000	4.2V	4.2V	17.9A	100Watt
200W/830 CRI	75,000		70	8000K	11000	4.0V	4.0V	24.7A	100Watt

¹ Rated life represents the time it takes for the LED system to reach 50% of initial lumen output.

² On average.

³ System voltage includes the lamp and the LED driver.

- How to calculate the lamp lumen per watt value in the above table and according to your choice of lamp, please note the initial lamp lumen value and divide this value by the lamp voltage. (Example: 40W/8000K = 3000/4.0V)

- How to calculate the system lumen per watt value (LPI). First, visit our website at www.berkey.com and download the .flr file (photometric file) of your selected Philips luminaire product. Then, use a photometric software to get the absolute system lumens value and divide by the system voltage. (Example: 10000/4.0V = Absolute system lumens / 4.0V = LPI)

APPENDIX D – LED Bollards

LED BOLLARDS

LANDSCAPE & PATHWAY LIGHTING



GARDCO
LIGHTING



Gardco Lighting is a Philips group brand

PHILIPS

FORM





The Gardco 830 Series LED Bollard with Demand Response combines refined aesthetics, exceptional light output and maximum energy savings to create the most sophisticated and versatile LED walkway lighting product available today. It begins, of course, with impeccable form – a simple, seamless design that eases into any location, yet retains the rugged strength, all-weather sealing and vandal resistance necessary for the punishing environments where bollards are used. What truly sets the 830 Series apart, however, is its incredible energy-efficient LED Bollard technology exclusively from Gardco. The patent-pending system uses stacked modular louvers to control glare and uniformly distribute LED light in patterns of 180 or 360 degrees. Most impressively, the Demand Response component uses motion-sensing technology to switch between low light and high light modes. This revolutionary feature ensures that low light levels are used when maximum light is unnecessary, resulting in energy savings of up to 90 percent.

CONSTRUCTION

LED Driver for Bi-Level Lighting

The LED driver manages the brightness of the LED lights of the 830 Series, switching between two light levels as needed. On low level – the default used when no motion is present – the bollard power consumption is 8 watts at 120VAC. When triggered by the motion sensor, high level increases to 41 watts at 120V, still well below the wattage of fluorescent and incandescent bulbs.

Concealed Demand Response Motion Sensor

Completely and safely concealed within the bollard head, the 830 Series motion sensor uses microwave technology to detect motion within 20 feet of the bollard, at which time the LED lights switch from low level to high level. Lights return to low level to save considerable energy when high light is no longer needed. The system includes adjustments for duration on high level and motion sensitivity.

Durable, Vandal-Resistant Construction

The 832 and 836 models feature a high-strength galvanized steel tenon that runs the length of the luminaire, providing a solid anchorage, while concealed screws provide the significant vandal resistance required for schools and other settings where bollards are typically used.

Long-Lasting Finish

The finish is a fade- and abrasion-resistant, electrostatically applied, thermally cured textured polyester powdercoat finish. The painted finish is bonded to the exterior surfaces utilizing chromate conversion as a pretreatment. Custom colors may vary in texture, so please consult factory.

Complete Weather Protection

The 830 Series is completely sealed at all points of material transition to exclude the intrusion of rain, insects, dust and contaminants while assuring years of trouble-free service. Truly, this bollard can stand up to the most punishing environments.



Die Cast Head

The die cast aluminum head is available with a domed or beveled top to meet a variety of aesthetic needs and preferences. It secures to the one-piece louver assembly with three (3) concealed tamper-resistant screws.

Long-Lasting LEDs

The LEDs used in the Gardco 830 Series provide a typical lifespan of 50,000 to 60,000 hours, ensuring a long life of trouble-free maintenance. This is far greater than the lifespan of other sources, including fluorescent (typically 10,000 to 30,000) and incandescent (usually 1,000 to 2,000) bulbs.

Stacked Louver LED Technology

The 830 Series features patent-pending stacked modular louvers that can be easily replaced at the end of LED life or as future developments increase the efficiency of the LED source. The louvers contain a ring of ten (10) 1-watt LEDs for 360-degree coverage or ring of five (5) 1-watt LEDs for 180-degree coverage. A louver is shown in detail at right.

Variety of Power Options

The LED power supply in the 830 Series is an efficient rectifier that converts 120-240VAC with an input of 50 to 60 hz to 48VDC. 277V bollards require and include a step-down transformer to provide proper input voltage.



Energy-Efficient LED

Light Emitting Diodes (LED) produce more light per watt than other light sources, resulting in significant energy savings even before the bi-level Demand Response system is taken into account. Additionally, the placement of the LEDs near the edge of the stacked louvers increases luminaire efficiency by up to 100% versus conventional light sources placed behind the louvers. LEDs are available in several colors, and have a typical lifespan of 50,000 to 60,000 hours. One benefit of bi-leveling LEDs is that the longevity increases due to the reduced temperature. Since the LEDs are not driven by high current, the expected life will increase.

Uniform Light Distribution

Modular louvers in the 830 Series conceal glare from the source and spread LEDs for a uniform distribution of light in either a 360- or 180-degree pattern. Light levels can vary based on the quantity of louvers used.

DEMAND RESPONSE

The 830 Series LED Bollard is the most sophisticated and energy-efficient bi-level LED bollard available today, thanks in no small part to its revolutionary Demand Response system. Designed to reduce energy costs and aid in “Green” development, Demand Response allows for different levels of light at different times, ensuring that the system operates at an acceptably low level when maximum light is unnecessary.



After a quick warm-up in high mode, the luminaire switches to low mode, which provides sufficient pathway lighting during the many hours of use – approximately 90 percent of a typical night – when the walkway is unoccupied.



The 830 Series has a concealed motion sensor that detects when a person approaches within 20 feet of the bollard. When this occurs, Demand Response system switches the luminaire to high mode, increasing the light output. The system returns to low mode when the pedestrian leaves the area.

The lighting system can also be configured for 180-degree coverage, ensuring complete backside cutoff. The system includes the ability to make adjustments for the duration of high mode and motion sensitivity.

ENERGY SAVINGS

The 830 Series LED Bollard with Demand Response was conceived, designed and constructed with energy savings in mind. Through the use of highly efficient LED lights as well as the bi-level Demand Response system, the 830 Series provides the required light at all times and significantly reduces the costs of operation.

LED SAVINGS

- The 830 Series uses durable and efficient Light Emitting Diode (LED) technology, which provides many advantages over the light sources typically used in bollards.
- Lower Power Consumption – LEDs use a mere fraction of the electrical power required for other sources, resulting in significant cost savings.
- Improved Light Output – The LEDs in the 830 Series output an impressive 80 lumens per watt, much more than the 15 to 30 lm/w of typical sources.
- Longer Lifespan – Each LED in the 830 Series is rated to last 50,000 to 60,000 hours, multiple times that of other sources.
- Easily Updatable – Because the LEDs on the 830 Series are housed on patent-pending modular louvers, the luminaire can be easily updated to more advanced LED technology as it becomes available via a simple louver replacement.

DEMAND RESPONSE SAVINGS

The Demand Response system allows the 830 Series to operate on two distinct settings based on the specific needs of the environment, resulting in huge energy savings.

- Low Mode – As a default, the system operates in low mode, which consumes only 8 watts of energy.
- High Mode – When pedestrians are present, the Demand Response system initiates the high mode, which consumes 41 watts of energy.

Compared to the most common walkway bollard using a 100-watt metal halide source, the 830 Series produces energy savings of more than 60 percent even when operating in high mode. Yet because typical usage indicates that the 830 Series will operate in low mode for the vast majority of time, the result is energy savings of up to 90 percent or even higher. Truly, the 830 Series LED Bollard with Demand Response is energy-efficient lighting at its best.



BRM832/BRM836 SCHOOL BOLLARDS



Featuring Demand Response

GENERAL DESCRIPTION: Gardco's BRM832 dome top and BRM836 beveled top louvered LED School Bollards provide uniform illumination and superior spacings. A high-strength galvanized steel tenon throughout the length of the luminaire provides solid vandal resistance. Rugged extruded and cast construction with silicone seals and gasketing assure years of trouble-free service. Gardco's patent-pending stack-louver LED technology and Demand Response provide maximized light output and maximum energy savings.



Dome Top



Bevel Top

ORDERING

Example	PREFIX	HEIGHT	LED CONTROL	LED SELECTION	LIGHTED COVERAGE	VOLTAGE	FINISH
	BRM832	42	DR	CNW	360	120-240	BRP
	BRM832	42"	DR	<u>Neutral White</u>	360	120-240	BRP
	BRM836	36"	CWL	CNW	180	Accepts 120V through 240V, 50hz to 60hz input.	BLP
				LNW		277	WP
				<u>Cool White</u>		Requires and includes step-down transformer in Bollard.	NP
				CCW			BGP
				LCW			VP
				<u>Colors</u>			LGP
				LA			DGP
				LR			LSP
				LG			DSP
				LB			RBP
							OC
							SC

PREFIX

BRM832 LED Dome Top School Bollard
BRM836 LED Bevel Top School Bollard

LED CONTROL

DR Demand Response
LEDs stay on Low Level (8 watts) when no motion is present. LEDs increase to full light output (41 watts) when motion detected.

CWL Constant Wattage with Full Light Output
LEDs operate at full wattage (41 watts) and light output. No motion sensor included.

LED SELECTION

Neutral White
CNW Cree® Neutral White (3,300°K - 3,700°K, 75 CRI).
LNW LUXEON® Rebel Neutral White (3,650°K - 4300°K, 75 CRI).

Cool White
CCW Cree® Cool White (5,000°K - 10,000°K, 80 CRI).
LCW LUXEON® Rebel Cool White (5,300°K - 6000°K, 70 CRI).

Colors
LA LUXEON® Rebel Amber
LR LUXEON® Rebel Red
LG LUXEON® Rebel Green
LB LUXEON® Rebel Blue

LIGHTED COVERAGE

360 360° Lighted Louvers
180 180° Lighted Louvers
Provide complete backside light cutoff.

FINISH

BRP Bronze Paint
BLP Black Paint
WP White Paint
NP Natural Aluminum Paint
BGP Beige Paint
VP Verde Green Paint
LGP Light Granite Paint
DGP Dark Granite Paint
LSP Light Sandstone Paint
DSP Dark Sandstone Paint
RBP Red Brick Paint
OC Optional Color Paint
*Specify RAL designation.
 Ex. OC-RAL7024*
SC Special Color Paint
Specify. Must supply color chip.



A Gardco Green Team product

Prior to ordering, consult Submittal Data Sheet on sitelighting.com for the most current information, notes and exclusions.

SPECIFICATIONS

UPPER HOUSING: A die cast aluminum dome top secures to a one-piece diecast zinc louver assembly with three (3) concealed tamper resistant screws.

LOWER HOUSING: .125" (.318cm) wall 6063-T5 extruded aluminum which connects to the top flange of the mounting tenon with four (4) internal hex bolts, inaccessible after installation.

LENS & OPTICAL SYSTEM: Gardco LED Bollards feature the exclusive, patent pending, Gardco stacked louver LED technology, assuring maximized light output. Each individual louver is replaceable if needed or desired.

ANCHORAGE: A high strength steel mounting tenon, hot-dip galvanized after fabrication, is secured and double-nut leveled to the concrete footing with (4) 3/8" x 8" x 1 1/2" (.953cm x 20.32cm x 3.81 cm) anchor bolts on a 4 3/4" - 5" (12.07cm - 12.70cm) bolt circle.

ELECTRICAL: The LED power supply is placed within the Bollard shaft and accepts from 120 Volts through 240 Volts, 50hz to 60 hz, input. 277V bollards require and include a step-down transformer to provide proper input voltage to the LED power supply. The LED driver is located in the upper dome. LED power supplies and LED drivers are replaceable. LEDs provided as specified.

Luminaires ordered with Demand Response include a microwave motion sensor. The motion sensor is completely and safely concealed within the LED Bollard head to avoid potential vandalism to the sensor. With Demand Response, LEDs operate on low level (8 watts) when no motion is present. LEDs increase to full light output (41 watts) when motion is detected. Demand Response system includes adjustments for time on high level and motion sensitivity.

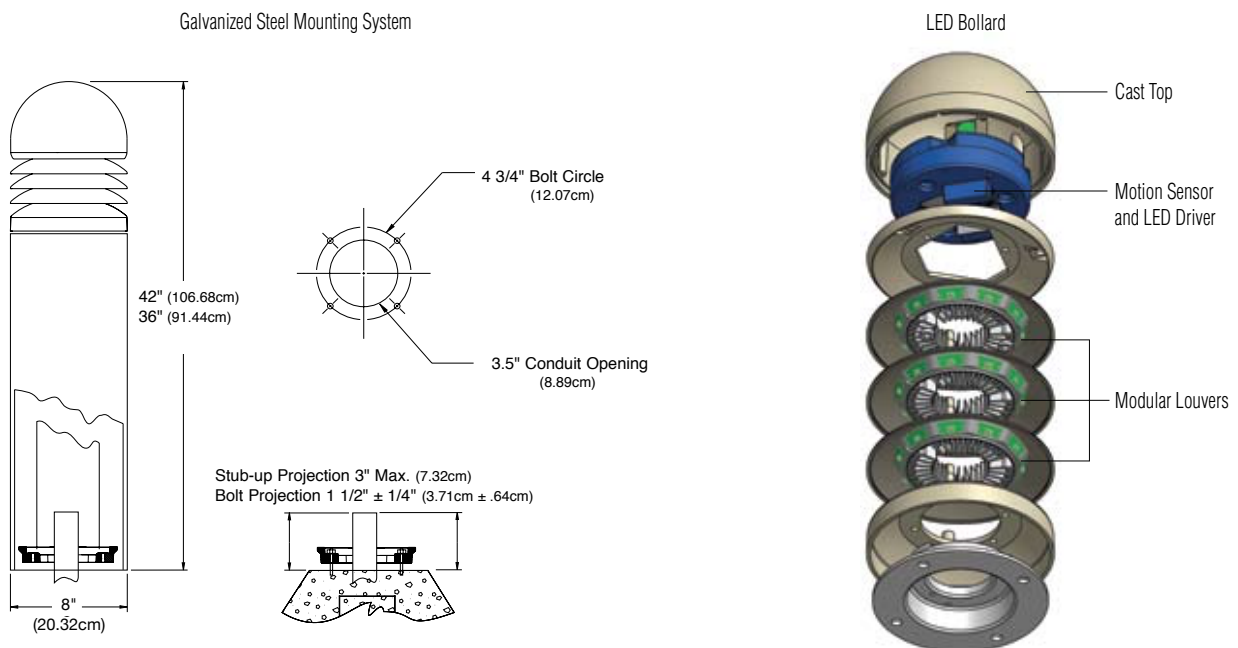
Consult supplemental submittal data sheet (available on sitelighting.com) concerning placement of bollards with Demand Response.

FINISH: Each luminaire receives a fade and abrasion resistant, electrostatically applied, thermally cured textured polyester powdercoat finish. The painted finish is bonded to the exterior surfaces utilizing chromate conversion as a pretreatment.

LABELS: All luminaires bear UL or CUL (where applicable) Wet Location labels.

NOTE: Factory supplied template must be used when setting anchor bolts. Gardco Lighting will not honor any claim for incorrect anchorage placement from failure to use factory supplied templates.

DIMENSIONS



BRM830/831/833 DOME TOP LOUVER



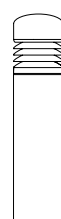
BRM834/835/837 BEVEL TOP LOUVER

Featuring Demand Response

GENERAL DESCRIPTION: Gardco's dome top and bevel top LED Louver Bollards provide uniform illumination, superior spacings and solid vandal resistance. Rugged extruded and cast construction with silicone seals and gasketing assure years of trouble free service. The BRM830 and BRM 834 are complete assemblies with an aluminum base. BRM831 and BRM835 head only units affix to custom architectural elements. BRM833 and BRM837 luminaires include a concrete base assembly. Gardco's patent-pending stack-louver LED technology and Demand Response provide maximized light output and maximum energy savings.



Dome Top



Bevel Top

ORDERING

Example	PREFIX	HEIGHT	LED CONTROL	LED SELECTION	LIGHTED COVERAGE	VOLTAGE	FINISH
	BRM830	42	DR	CNW	360	120-240	BRP
See chart below.		42" 36"	DR CWL	Neutral White CNW LNW Cool White CCW LCW Colors LA LR LG LB	360 180	120-240 Accepts 120V through 240V, 50hz to 60hz input. 277 Requires and includes step-down transformer in Bollard.	BRP BLP WP NP VP LGP DGP LSP DSP RBP OC SC

PREFIX

DOME TOP	BEVEL TOP	HEIGHT
BRM830	BRM834	with Cast Aluminum Base 42, 36"
BRM831 ¹	BRM835 ¹	Head Only 11"
BRM833	BRM837	with Natural Concrete Base 42"
BRM833B	BRM837B	with Beige Concrete Base 42"
BRM833G	BRM837G	with Grey Concrete Base 42"

1. Not Available in 277V.

LED CONTROL

- DR** Demand Response
LEDs stay on Low Level (8 watts) when no motion is present. LEDs increase to full light output (41 watts) when motion detected.
- CWL** Constant Wattage with Full Light Output
LEDs operate at full wattage (41 watts) and light output. No motion sensor included.

LED SELECTION

Neutral White

- CNW** Cree® Neutral White (3,300°K - 3,700°K, 75 CRI).
LNW LUXEON® Rebel Neutral White (3,650°K - 4300°K, 75 CRI).

Cool White

- CCW** Cree® Cool White (5,000°K - 10,000°K, 80 CRI).
LCW LUXEON® Rebel Cool White (5,300°K - 6000°K, 70 CRI).

Colors

- LA** LUXEON® Rebel Amber
LR LUXEON® Rebel Red
LG LUXEON® Rebel Green
LB LUXEON® Rebel Blue

LIGHTED COVERAGE

- 360** 360° Lighted Louvers
180 180° Lighted Louvers
Provide complete backside light cutoff.

FINISH

- BRP** Bronze Paint
BLP Black Paint
WP White Paint
NP Natural Aluminum Paint
VP Verde Green Paint
LGP Light Granite Paint
DGP Dark Granite Paint
LSP Light Sandstone Paint
DSP Dark Sandstone Paint
RBP Red Brick Paint
OC Optional Color Paint
Specify RAL designation.
Ex. OC-RAL7024
SC Special Color Paint
Specify. Must supply color chip.



A Gardco Green Team product

Prior to ordering, consult Submittal Data Sheet on sitelighting.com for the most current information, notes and exclusions.

SPECIFICATIONS

UPPER HOUSING: Die cast aluminum dome top secures to one-piece louvered casting with three (3) concealed tamper resistant screws.

LOWER HOUSING:

BRM830 / BRM834: Luminaire features a cylindrical .125 (.318cm) wall 6063-T5 extruded aluminum base housing. Bottom section has a welded-in cast ring for attachment to base assembly with four (4) hex head set screws.

BRM831 / BRM835: Louver head assembly is affixed to ballast mounting bracket which is suitable for insertion into architectural elements (by others).

BRM 833 / BRM837: Luminaire includes a pre-cast concrete base constructed with steel molds and wire reinforcing. Base is acid-etched to provide a smooth textured aggregate finish.

OPTICAL SYSTEMS: Gardco LED Bollards feature the exclusive, patent pending, Gardco stacked louver LED technology, assuring maximized light output. Each individual louver is replaceable if needed or desired.

ANCHORAGE:

BRM830 / BRM834: Base assembly consists of a cast aluminum platform and ballast mounting bracket. Assembly is secured and leveled to the mounting foundation with four (4) 3/8" X 8" x 1 1/2" (.953cm x 20.32cm x 3.81cm) anchor bolts on a 4 3/4" (12.07cm) bolt circle. Ballast is prewired with quick electrical disconnects and mounting bracket is secured with two (2) Phillips head screws for ease of installation and servicing.

BRM 831 / BRM835: Mounting plate is cast aluminum with slots to accept anchor bolts (by others) at 90° on a 6 1/4" (15.88cm) diameter bolt circle. A 4 1/2" (11.43cm) diameter opening is required to house ballast assembly.

BRM833 / BRM837: Base assembly consists of four (4) galvanized steel base tabs fastened to pre-cast concrete base. Assembly is secured and leveled to the mounting foundation with four (4) 3/8" X 8" X 1 1/2" (.953cm x 20.32cm x 3.81cm) anchor bolts on a 9 1/2" (24.13cm) bolt circle. Base is designed for 5" (12.7cm) direct burial.

ELECTRICAL: The LED power supply accepts from 120 Volts through 240 Volts, 50hz to 60 hz, input. 277V bollards require and include a stepdown transformer to provide proper input voltage to the LED power supply. The LED driver is located in the upper dome. LED power supplies and LED drivers are replaceable. LEDs provided as specified.

Luminaires ordered with Demand Response include a microwave motion sensor. The motion sensor is completely and safely concealed within the LED Bollard head to avoid potential vandalism to the sensor. With Demand Response, LEDs operate on low level (8 watts) when no motion is present. LEDs increase to full light output (41 watts) when motion is detected. Demand Response system includes adjustments for time on high level and motion sensitivity.

Consult supplemental submittal data sheet (available on sitelighting.com) concerning placement of bollards with Demand Response.

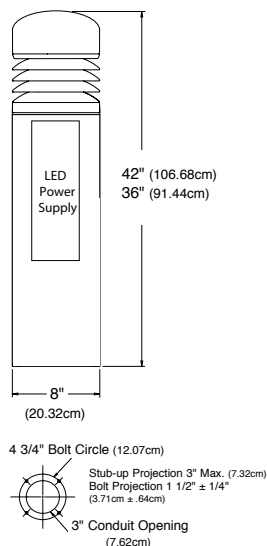
LUMINAIRE FINISH: Each luminaire receives a fade and abrasion resistant, electrostatically applied, thermally cured textured powdercoat finish.

LABELS: All fixtures bear UL or CUL (where applicable) Wet Location labels.

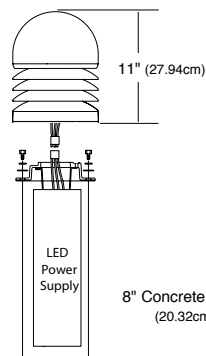
NOTE: Factory supplied template must be used when setting anchor bolts. Gardco Lighting will not honor any claim for incorrect anchorage placement from failure to use factory supplied templates.

DIMENSIONS

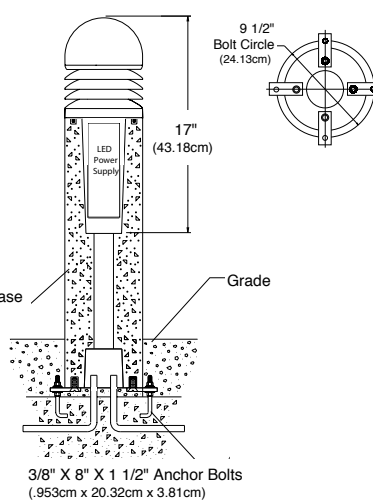
BRM830/BRM834



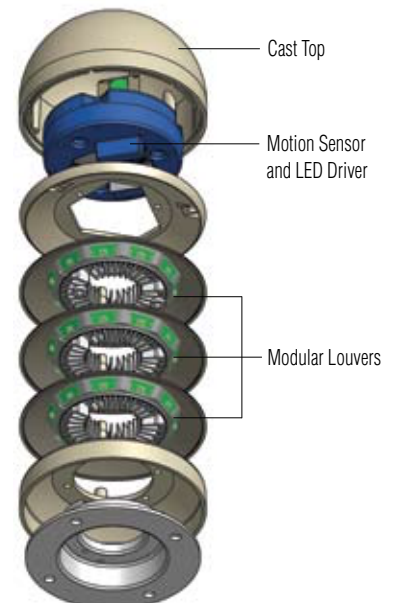
BRM831/BRM835



BRM833/BRM837



LED Bollard



Form Ten Round



Gardco Sconce



Floodlight



Step and Aisle Lights



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