

Administrative Policy  
City of Lawrence, Kansas

SUBJECT Brick Streets and Sidewalks		APPLIES TO City of Lawrence Municipal Services and Operations and property owners	
EFFECTIVE DATE	REVISED DATE None		
APPROVED BY		TOTAL PAGES	POLICY NUMBER: AP-

**1.0 Purpose**

This policy provides guidance for the preservation, restoration, and maintenance of brick streets, alleys, and sidewalks.

**2.0 Scope**

It is the desire of the City of Lawrence, Kansas (City), to maintain the unique character and charm of existing historic neighborhoods by preserving the exposed brick streets and brick sidewalks as an historic asset through the adoption of certain standards and specifications. However, the desire to preserve those historic assets must be balanced with the City's ongoing commitment to developing and maintaining public ROW infrastructure that removes barriers to access and mobility and increases accessibility and equitability for all people in the City.

**3.0 Context**

Bricks are rectangular pavers made from fired clay. Historically, bricks have been used for streets and sidewalks concentrated in the one-mile radius centered on Massachusetts Street between 4th Street and 14th Street. That area is generally referred to as the Original Townsite, as platted in 1863.

**4.0 Definitions and References**

Historic District – An historic area established by City Ordinance, Register of Historic Kansas Places Nomination, or National Register Nomination, with defined boundaries, that contains a high concentration of historically and/or architecturally significant resources. Historic Districts may be [locally](#), [state](#), or [nationally](#) designated.

Overlay Zoning District – As defined in the City's [Land Development Code](#), Chapter 20 of the City Code, as amended, overlay districts are tools used to address special situations or to accomplish special zoning goals. Overlay districts are "overlaid" on base zoning district classifications to alter base zoning regulations

PROWAG Standards – [Public Right-of-Way Accessibility Guidelines](#), as published, under the Americans with Disabilities Act of 1990, codified as amended at 42 U.S.C. § 12101 *et seq.*, and the Architectural Barriers Act of 1968, codified as amended at 42 U.S.C. § 4151 *et seq.*, by the United States. Access Board (also known as the Architectural and Transportation Barriers Compliance Board) and as adopted by the City.

MSO Design Standards and Specifications – The City's Department of Municipal Services and Operations has published technical resources online, detailing design criteria for

construction conformance (also referred to as “MSO Design Criteria” and referenced by “City standard material(s)”). MSO Design Standards and Specifications are updated regularly by the City Engineer, or designee, and can be [found online](#).

## **5.0 Applicability**

Brick sidewalks are permitted in the areas shown on the Brick Sidewalk Policy Applicability Map, subject to meeting the identified conditions established by this policy. In order to assure that PROWAG Standards are met for all sidewalks in public rights of way (ROW), installation standards and ongoing maintenance needs are outlined herein.

Exposed brick streets and covered brick streets are shown on the Brick Street Existing Condition Map. This policy identifies maintenance standards and restoration priorities for the existing condition of brick streets in the City. No new public street that historically has not been a brick street shall be substantially designed with brick.

Brick Street and Sidewalk Standard Detail Sheet and Specifications can be found in Section 1900 of MSO Design Standards and Specifications.

Bricks salvaged from the ROW are the property of the City. Purchased bricks may be used for decoration on private property anywhere within the City. Examples of that include residential walkways, landscaping beds, retaining walls, and hardscaping outside of the public ROW.

## **6.0 Brick Sidewalks**

Where brick sidewalks are present in the public ROW, they must be properly installed and maintained to meet accessibility standards. Wherever existing brick or stone sidewalks remain in good condition, they should be preserved. However, when brick sidewalks have fallen into disrepair and do not meet [MSO Design Criteria](#) or [PROWAG Standards](#), then they shall be reconstructed to the standards described in this policy.

### **6.1 Location Criteria**

Brick Sidewalks are permitted inside the boundaries of Historic Districts. Additionally, properties within an urban conservation Overlay Zoning District or Historic District Overlay Zoning District are permitted to have brick sidewalks. Those areas are shown on the Brick Sidewalk Policy Applicability Map. Should additional Historic Districts and Overlay Zoning Districts be approved by the Governing Body, wherein existing brick sidewalks are character-defining they shall be added to the Brick Sidewalk Policy Applicability Map.

Properties located outside of designated Historic Districts or Overlay Zoning Districts shall have concrete sidewalks, constructed to City standards. Should those properties have existing brick sidewalks, then they are permitted to remain brick sidewalks, so long as they meet PROWAG Standards.

Conditional site considerations: Any property in the highlighted area, shown on the Brick Sidewalk Policy Applicability Map, may construct a brick sidewalk in the public ROW unless the particular section of sidewalk meets one or more of the following conditions as determined by the City Engineer:

- Sidewalk grade exceeds 5%;
- There exists conflicting utility infrastructure.

Property location:	Brick Sidewalks	Concrete Sidewalk
Inside local, state, or nationally designated historic district	P*	P
Inside an urban conservation overlay zoning district or historic district overlay zoning district	P*	P
Outside of historic districts and outside of overlay districts	NP	P

P = Permitted, NP = Not Permitted

\*Conditional permission dependent on site conditions

## 6.2 Materials

Bricks, also referred to as brick pavers, are found in various conditions and designs on sidewalks in the City. Historic bricks, generally red and sometimes marked with Lawrence, Kansas, or Lawrence Vit. Brick Co. are to be preserved whenever possible. When unavailable, other like materials can be used but should resemble historic bricks to the greatest extent possible. Bricks salvaged from the ROW are the property of the City of Lawrence. Bricks not used for sidewalk installation should not be thrown away or discarded. The City Engineer, or designee, may store and maintain bricks for future projects at such person's discretion.

Historically, Bluestone, Flagstone, or other types of natural stone slabs have also been used as pavers in the ROW as sidewalk. Those materials are not appropriate for an accessible public sidewalk and should only be used on private property. Where such material is used as a sidewalk in the public ROW, it shall be removed and replaced with brick or concrete sidewalks meeting PROWAG Standards. Owners of property adjacent to such natural stone pavers are encouraged to use the historic materials for residential walkways and hardscaping on their respective properties.

Subgrade consists of either sand, gravel, clay, silt, or some combination thereof. Sand and gravel are the preferred materials in order to resist shrinkage and swelling associated with frost-thaw cycles. Clays and silts will require adequate protection against shrinkage and swelling and against frost heave. That may require the use of additional aggregate subbase layers.

Concrete sidewalks may contain ornamental bricks as decoration within their design, so long as the pathway remains smooth and meets PROWAG Standards. Concrete sidewalks shall otherwise be constructed of Portland cement concrete designed to meet MSO Design Standards and Specifications.

## 6.3 Installation

Brick sidewalks shall be constructed in accordance with Chapter 16 of City Code, as amended, and Section 1900 of MSO Design Standards, with the additional provisions listed below:

All brick sidewalks should have a combined thickness of AB-3 base, setting bed, and brick pavers to support pedestrian traffic. Sidewalks shall be at least 48 inches in width, or as specified at Section 20-1105 of the City Code, as amended.

The following standards are for a brick sidewalk system laid on a sand setting bed with a crushed limestone aggregate rock base (AB-3).

- Subgrade shall be uniform material compacted to a minimum 95% standard Proctor density. For clay or silt subgrades, an additional aggregate subbase should be added.
- The base shall consist of crushed limestone aggregate (AB-3) composed of rocks up to 1.5 inches in size and no smaller than lime dust. The base shall be compacted to a minimum thickness of 4 inches using mechanical tamping or vibration.
- Setting Bed made of sand with thickness of 0.5 inch to 1 inch after compaction. The setting bed sand should be clean, naturally-occurring material meeting ASTM C33 standards. Sand rich in silica-based minerals is desirable.
- Brick pavers can be made of different designs, patterns, and thicknesses. Individual bricks shall be free of defects and flush at the finished surface of the sidewalk to create a uniform surface, not varying more than 1/8 inch. Bricks without a smooth finish may not be appropriate for use in public sidewalk installation.
- Edge restraints are critical in a pavement with a sand setting bed to enable consistent interlock and to resist horizontal loads transferred from pavers. Vertical bricks, sometimes referred to as soldier bricks, are the preferred application of edge restraint; limestone, cement, or metal edge restraint may also be used. See Exhibit B in Section 6.4 of this policy for a visual representation.

Additional details for installation are included in the Brick Street and Sidewalk Standard Detail Sheet and Specifications and MSO Design Standards and Specifications.

The service of a properly qualified and experienced pavement designer should be sought in regard to the preparation of the subgrade and installation to meet accessibility standards.

#### 6.4 **Design**

Many different brick patterns can meet PROWAG standards. Any pattern of brick sidewalk may be used when installation standards are met. Where an existing brick sidewalk is present, best efforts should be taken to reconstruct the sidewalk, using the pattern previously established.

Common patterns of brick sidewalk design include but are not limited to herringbone, stacked, basketweave, *etc.* Patterns that result in joint lines parallel to the direction of travel generate the fewest vibrations. See Exhibit A for examples of brick layout patterns.

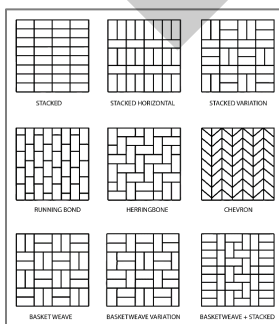


Exhibit A

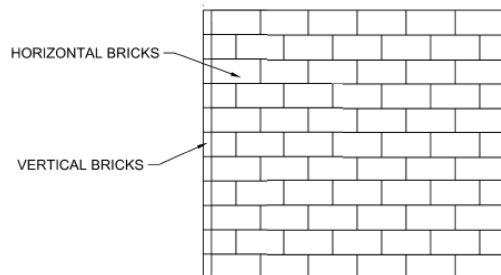


Exhibit B

## **6.5 Maintenance**

Property owners are responsible for maintaining and keeping the sidewalk adjacent to their property in good condition. Brick sidewalks should be maintained on a regular basis to keep the sidewalk in good condition.

Sidewalks should be free of debris, vegetative overgrowth, and protrusions. Vegetation can be removed from brick sidewalks manually, with a pressure washer, or by applying various solutions intended to deter plant growth. Special attention should be paid to avoid causing harm to street trees when removing vegetation from sidewalks.

Sand may be applied to brick sidewalks on a regular basis to stabilize joints between brick pavers, especially after storm events where existing sand may have been lost. Best practice is to use a mix of fine and larger sand particles in order to accommodate gaps of varying sizes between bricks. Polymeric sand can be applied to stabilize brick sidewalks, but special attention should be paid to follow manufacturer's instructions for application. Coarse particles that do not fall into joints should be brushed off the pavement surface to ensure that the sidewalk is clear of tripping hazards.

Brick sidewalks may settle over time, causing gapping or tripping hazards. Those issues are most commonly caused by improper installation and maintenance. To mitigate those issues, property owners should lift and reset any bricks causing a hazard and apply a base of fine sand prior to relaying bricks. Note, however, that resetting individual bricks is a temporary solution and that the entire sidewalk may need to be reinstalled with a proper base to meet PROWAG Standards.

## **6.6 Enforcement**

If a brick sidewalk is found not to meet PROWAG Standards, then it shall be brought into compliance with PROWAG Standards pursuant to this policy. When a brick sidewalk is not in compliance with safety standards, as determined by the City Engineer, or designee, then the City will notify the property owner of the noncompliance and provide to the owner a copy of this policy. The notification of noncompliance will provide details and process on how the property may be brought into compliance.

When a property is located within the area identified on the Brick Sidewalk Policy Applicability Map, then the property owner may choose whether or not to install a concrete sidewalk or a brick sidewalk in accordance with the standards established by this policy. Properties located in historic districts should make every effort to install compliant brick sidewalks to retain the historic character of area.

Properties located outside of the area identified on the Brick Sidewalk Policy Applicability Map shall install sidewalks in accordance with Chapter 16 of City Code, as amended.

## **6.7 Cost**

This policy will utilize cost partnering consistent with the ADA Transition Plan/ Sidewalk Improvement Program, including Income-Based Assistance and Cost Sharing based on material costs.

The City Engineer shall have discretion to vary from these standards in the event that a funding source explicitly excludes the additional cost associated with brick sidewalk installation.

## 7.0 **Brick Streets**

Existing exposed brick streets must be properly maintained by the City to meet acceptable safety standards. Wherever exposed brick streets remain in good condition, they should be preserved. However, when brick streets have fallen into disrepair and do not meet safety standards, then they should be restored or repaired as resources and funding are available.

## 7.1 **Location Criteria**

Existing exposed brick streets are identified on the Exposed Brick Street Inventory Map. Preservation of exposed brick streets is expressed through two designations of priority: Primary Preservation and Secondary Preservation.

**Primary Preservation:** Exposed brick streets with primary preservation status ***shall*** remain brick and may not be covered with asphalt. All future repairs and maintenance shall be reconstructed with brick and like materials pursuant to MSO Design Standards and Specifications.

**Secondary Preservation:** Exposed brick streets with secondary preservation status should remain brick, but may be redeveloped with City standard materials should the bricks need to be salvaged for another project, or if the safety of the street is deemed unacceptable by the City Engineer. Future repairs and maintenance may be completed using bricks or City standard materials pursuant to MSO Design Standards and Specifications.

Adopted neighborhood plans should identify which local covered brick streets are desired to be restored. As funding becomes available, those streets may be included in future capital improvement projects. Priority will be given to local covered brick streets inside of Historic Districts. Restoration of covered brick streets is not permitted for Collector streets, Arterial streets, or streets identified by the Lawrence Bike Plan as existing or future bikeways. Other conditions, including but not limited to slope, stormwater concerns, presence of underground utilities, or structural integrity, may determine the feasibility of restoration.

No public street that historically has not been a brick street shall be substantially designed with brick.

## 7.2 **Materials**

Bricks used for streets must meet appropriate density and size standards identified by the City Engineer.

Salvaged historic bricks are the preferred material for brick street restoration. Historic bricks may be salvaged from streets, alleys, or alley aprons without primary preservation status or sourced from City storage facilities. When historic bricks are unavailable other like materials may be used, but should resemble historic bricks to the greatest extent possible.

## 7.3 **Installation**

All exposed brick streets shall have a combined thickness of base, sand setting bed, and brick pavers to support vehicular traffic. Streets shall be designed and constructed per Section 1900 of MSO Design Standards and Specifications.

#### 7.4 Design

All brick streets shall be designed and constructed with the following patterns:

- Local street blocks in Running Bond Pattern.
- Local Street intersections in Herringbone Pattern.
- Collector or Arterial Street intersections built with City standard materials.

For examples of the Running Bond Pattern and Herringbone Pattern, please refer to Exhibit C, below.

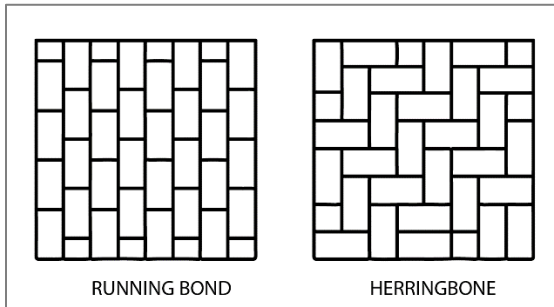


Exhibit C

These design standards may be adjusted at the discretion of the City Engineer, or designee, given site-specific considerations.

#### 7.5 Maintenance

All streets shall be maintained in a safe and orderly manner. In an effort to preserve the character of brick streets, proper maintenance is required as described below.

Should stone curbs be disturbed during maintenance, additional standards, as set forth in Section 7.7 of this policy, shall apply.

A ROW permit is required for all construction within the public ROW. Additional information on ROW Permit can be found in Administrative Policy No. 125 or by contacting the ROW Program Administrator with the additional provisions listed below:

##### Exposed Brick Streets

Exposed brick streets shall be preventatively maintained through the use of specialized equipment in winter conditions for snow removal including rubber edged snowplows.

Prior to any maintenance work in the ROW on an exposed brick public street, the Preservation Prioritization for Exposed Brick Streets Map shall be reviewed to determine the level of preservation associated with the street segment in question.

Streets with **Primary Preservation** status shall remain brick and may not be covered with asphalt or redeveloped with materials other than brick pavers. Maintenance on such streets, including utility cuts, capital improvement projects, and regular maintenance shall prioritize the preservation of historic brick pavers and replace the materials in-kind to the greatest extent feasible. Where historic bricks are found to be in poor condition, additional bricks may be sourced from City storage facilities, or salvaged from streets without primary preservation status, including alleys and alley aprons. When historic bricks are unavailable, bricks of like kind and color shall be used.

Streets with **Secondary Preservation** status should remain brick, however they may be maintained with City standard materials to prioritize brick streets with Primary Preservation Status or if the safety of the street is deemed unacceptable by the City Engineer.

#### Covered Brick Streets

Prior to any work in the ROW on a public street believed to have a base of historic bricks, adopted neighborhood plans shall be reviewed to determine if the particular street segment is included as a street with desire for brick restoration. Covered brick streets shall be maintained with asphalt until they are included in an approved Street Maintenance Plan that includes restoring the brick surface.

Conditions including streets classified as collector streets, arterial streets, or streets identified by the Lawrence Bike Plan as existing or future bikeways are not permitted to be restored as exposed brick streets. Those conditions are shown on the Brick Street Existing Condition Map. Additionally, other conditions including but not limited to slope, stormwater concerns, presence of underground utilities, or structural integrity may determine the feasibility of brick street restoration.

If a street has been identified by a neighborhood adopted plan as having a neighborhood desire for brick street restoration and is not included in the conditions above, then additional standards apply to ensure that the the brick street base is protected. These additional protections vary, depending on the level of work being undertaken:

- **Utility Cuts** – The responsible party will temporarily remove and handle bricks with care in order to minimize damage and loss of historic reusable materials. All discovered bricks shall be returned to their found location at the completion of the work being done. MSO Design Standards and Specifications shall be used for patching standards.
- **Capital Improvement Projects** – The City shall review the feasibility of restoring the street to exposed brick. A determination of feasibility may include available funding, level of reconstruction, asset management plans, expected timeline, future maintenance, *etc.* A final determination will be shared with the appropriate neighborhood group prior to construction.
- **Regular Maintenance** – Covered brick streets shall be maintained with asphalt until they are included in an approved Street Maintenance Plan that includes restoring the brick surface. Milling associated with regular maintenance should not unduly disturb the historic brick base. If site-specific conditions are found to conflict with these standards, then the City Engineer, or designee, may determine that another method of maintenance is required in order to protect the historic brick street base.

If a street has not been identified by a neighborhood adopted plan as having neighborhood desire for brick restoration or fails to meet one of the above-stated conditions, then City standard materials may be used for utility cuts, capital improvement projects, and regular maintenance pursuant to the MSO Design Standards and Specifications. Every effort shall be made to salvage and preserve historic bricks from such sites. Recovered bricks must be delivered to the City for storage and maintained for future projects at its discretion. Additional specifications for safe handling of bricks and stone may be included in agreements with the City, including but not limited to: ROW permits, project design specifications, and project manuals.



Should bricks be discovered during maintenance on a street not previously identified on the Brick Street Existing Condition Map, then work shall halt until a determination has been made by the City Engineer, or designee, as to the appropriate response.

Temporary patches of alternative material, lasting no longer than 24 months, may be used on brick streets under the following conditions:

- There are not enough bricks to fill the cut.
- An emergency situation has occurred.
- Additional cuts are expected within the temporary period, upon completion of which, all interruptions in the brick surface will be restored to brick.

The City Engineer, or designee, shall have the discretion to temporarily deviate from these standards to protect public safety or in emergent situations. If the street is inside the boundaries of an Historic District, then the Historic Resources Administrator or Historic Resources Commission will be consulted.

## **7.6 Evaluation**

Brick streets require manual evaluation on a regular cycle and the data collected will be incorporated into the City's pavement management modeling software to assist it in making street maintenance planning decisions and to identify budget needs to reach goals to achieve the lowest cost of ownership.

## **7.7 Accessories**

### Driveways

Driveways shall follow City standards outlined in Chapter 16 of City Code, as amended. Should exposed brick streets with secondary preservation status be redeveloped with City standard materials, then the residential driveway aprons abutting the reconstruction will be improved within the ROW.

Should a driveway cross a brick sidewalk, then the sidewalk must have a concrete base.

### Alleys

Exposed brick alleys and the alley approaches are included in the Preservation Prioritization for Exposed Brick Streets Map and their preservation status is listed. Alleys with a brick base may be redeveloped with City standard materials and the bricks salvaged and stored for future projects.

Due to the utilitarian nature of alleys for the use of public utilities and services, alleys and alley aprons shall not be reconstructed in brick, nor patched with brick materials.

Alley aprons (also referred to as alley approaches) must meet PROWAG Standards to facilitate pedestrian movement across these areas. Historic stone curbs may not be appropriate for these locations.

### Stone curbs

Stone curbs, frequently made of limestone, are subject to unique wear and tear associated with vehicle parking, street structural edge support, stormwater control, pedestrian traffic,

and maintaining the boundary of a street. Stone curbs shall not be utilized in high traffic areas such as street intersections, curb ramps, and alley approaches.

Where utility cuts and regular maintenance includes an area with a stone curb, the curb shall be removed, and its condition evaluated. Should the stone curb be in good condition, it shall be returned to the found location at the completion of the work being done. Should the curb be in poor condition, the curb shall be removed and reconstructed using precast concrete block made to match the height, color and character of adjacent stone curb.

Where stone curbs are removed, they shall be handled with care to minimize damage and loss of historic materials. No metal tools, equipment, or implements shall be used to pry, loosen, move or lift the stone curbs unless the attachments are protected to prevent damaging the stone. All removable marks of any kind imposed on the curb stone shall be removed by soft cloth, nylon brush, and water. All earth shall be hand-water-washed from the curb stone. Additional specifications for safe handling of stone may be included in agreements with the City including but not limited to: ROW Permits, project design specifications, and project manuals.

For Capital Improvement Projects where major road reconstruction is occurring, stone curbs are recommended on exposed brick streets with existing stone curbs. Installation of stone curbs is not permitted on covered brick streets without desire for restoration, or on streets made with City standard material outside of Historic Districts. Additional recommendations on the type of curb utilized for Capital Improvement Projects can be found in the following table:

	Exposed Brick Street			Covered Brick Street		City Standard Street (concrete or asphalt)	
	Primary w/ existing stone curb	Primary w/o existing stone curb	Secondary w/o stone curb	Desire for Restoration	No Desire / Exempt	Historic District	Outside of Historic District
Limestone Curb	R	P	P	P	NP	P	NP
Concrete Curb	P	R	R	R	R	R	R

P = Permitted

NP = Not Permitted

R= Recommended

The recommendation above should be used as guidance during CIP project development; however, these recommendations are dependent on adequate stock of stone curbing in good condition at City storage facilities.

Where bricks are salvaged, stone curbs may also be salvaged for use on exposed brick streets with primary preservation status.

#### Crosswalks

Where a crosswalk provides access by sidewalks, curb ramps that meet PROWAG Standards must be provided at both ends of the crosswalk. The crosswalk width should be 10 feet wide and shall not be less than 6 feet.

On an exposed brick street, the installation of varying-colored bricks or natural stone may be used to enhance the aesthetics and visibility of the crosswalks. Alternative designs or treatments to crosswalks may be considered by the City Engineer.

#### Curb Ramps

All ramps must be constructed to current PROWAG standards with Portland cement concrete. MSO Design Standards and Specifications provides additional detail. Bricks shall not be included in designated curb ramp areas maintained by the City.

#### Intersections

Where a local brick street intersects with another local street, the intersection shall be designed in a brick herringbone pattern meeting the MSO Design Standards and Specifications. Use of concrete headers where two brick patterns meet is recommended. Limestone curbs are not recommended for use in intersection curbing.

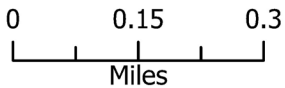
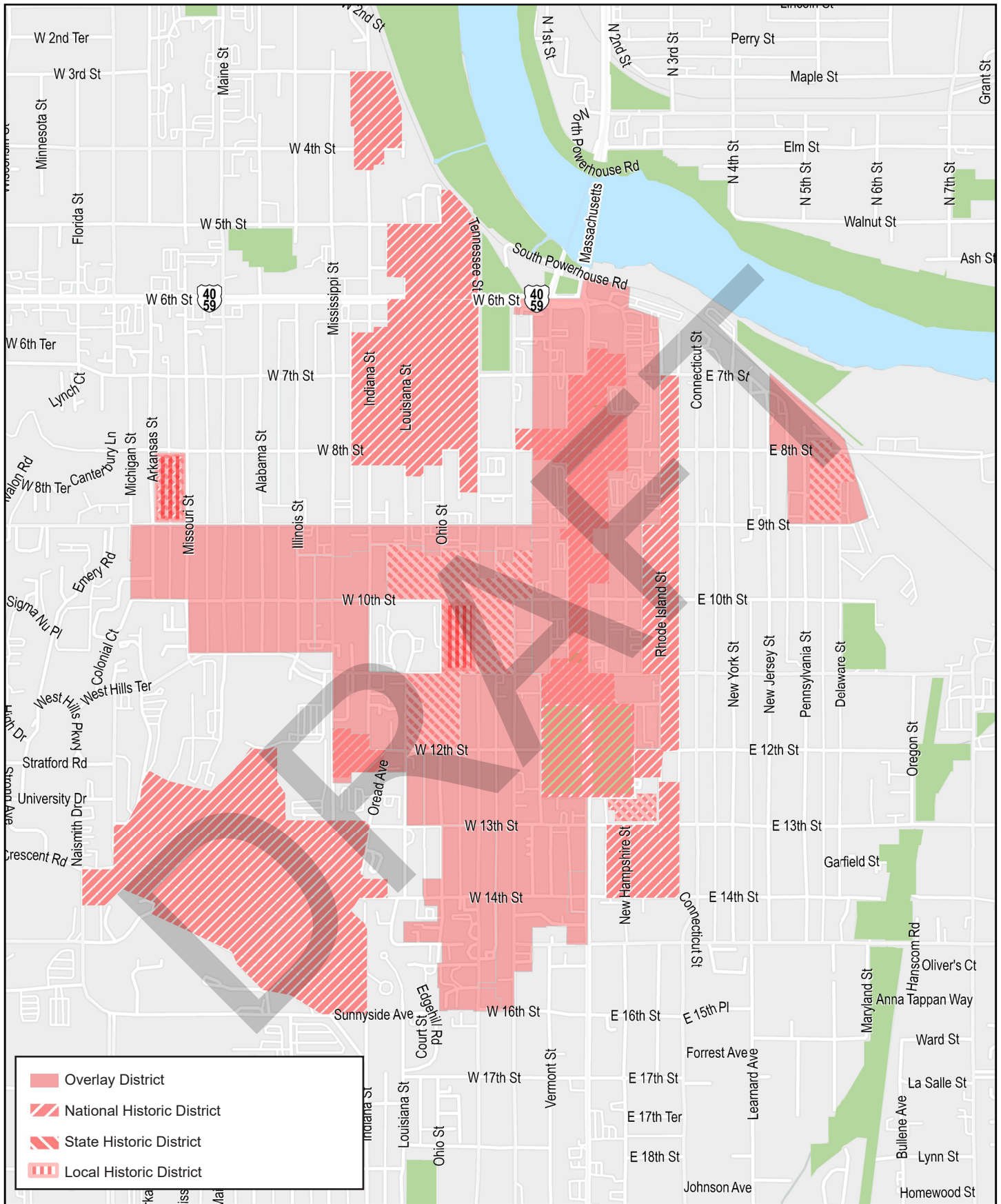
Where a Collector street intersects with a brick street, the intersection shall be designed with City standard materials.

#### Utilities

Utility Manholes and valves shall be adjusted in accordance with street repair standard details found in the MSO Design standards and Specifications

### **8.0 Associated Documents**

- Brick Sidewalk Policy Applicability Map
- Brick Street and Sidewalk Standard Detail Sheet and Specifications
- Brick Street Existing Condition Map
- Preservation Prioritization for Exposed Brick Streets Map



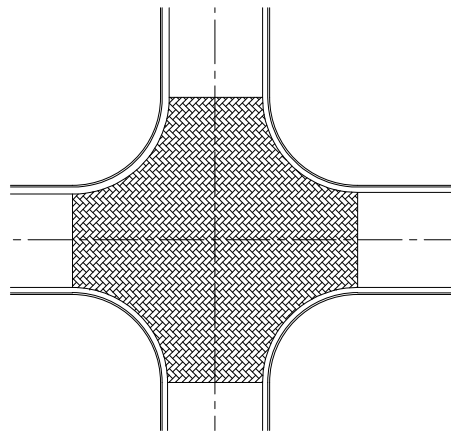
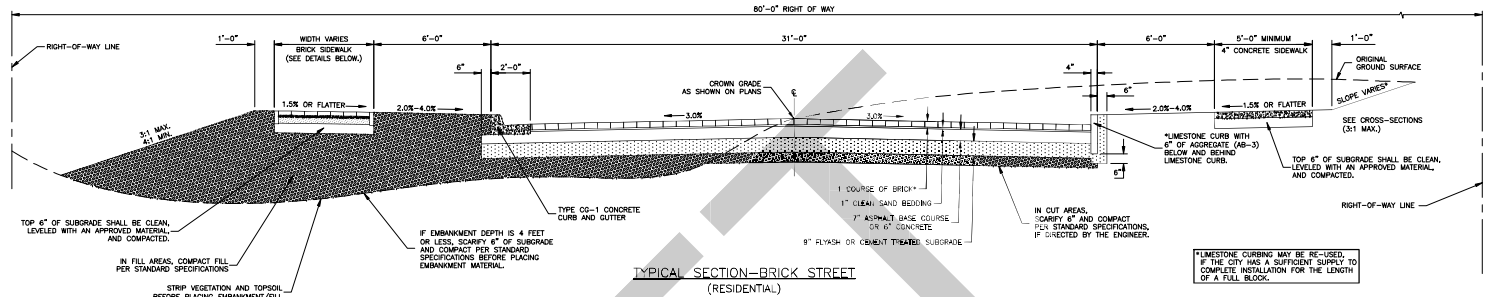
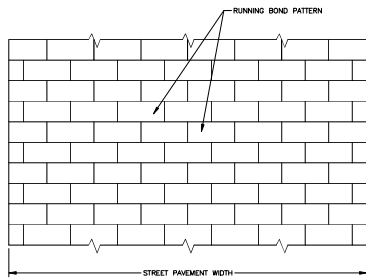
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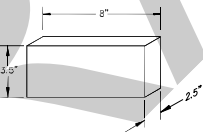
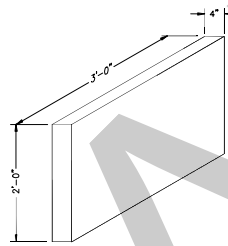
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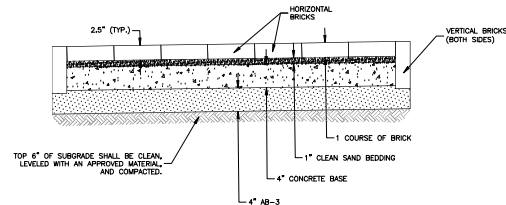
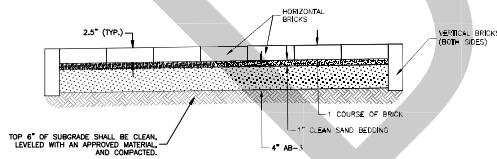
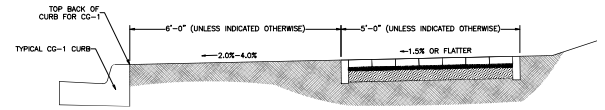
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\*HERRINGBONE PATTERN FOR BRICK STREET INTERSECTIONS (\*BRICKS ARE NOT TO SCALE)



BRICK STREET DETAILS



NOTE: RECONSTRUCTED BRICK SIDEWALK SHALL BE INSTALLED IN PRE-EXISTING PATTERN.

BRICK SIDEWALK DETAILS

2024 EDITION SHEET \_\_\_\_\_ OF \_\_\_\_\_

DATE	BY	REVISION
06-11-24	LJM	NEW DETAIL



STANDARD DETAILS FOR BRICK STREETS AND SIDEWALKS

DAVID P. CRONIN CITY ENGINEER CRAIG S. OWENS CITY MANAGER

## SECTION 1900 – BRICK SIDEWALKS AND BRICK STREETS

- 1901 SCOPE. This section covers construction of brick sidewalks and brick streets.
- 1902 GENERAL. All construction covered in this section shall conform to the requirements of Section 2000 *Concrete*. All forms shall be in good condition with not more than one fourth (1/4) inch variation in horizontal and vertical alignment for each ten (10) feet in length.
- 1903 GRADING AND SUBGRADE PREPARATION. All grading and preparation shall be done in conformance with Sections 1100 *Grading* and 1200 *Subgrade Preparation*.
- 1904 BRICK SIDEWALKS
- A. Materials.
1. Aggregate Base (AB-3) shall meet KDOT material requirements.
  2. Jointing and bedding sand. Sand should be clean, naturally occurring material with angular and subangular shaped particles, with a maximum size of about 3/16" inch. Jointing sand and bedding sand shall comply with ASTM C33.
  3. Brick Pavers. Pavers shall be free from excessive chips, cracks, voids, discoloration or other defects that might be visible.
- B. Removal of Existing Brick Pavement
1. Existing brick pavers shall be removed in a manner that preserves the brick.
  2. Brick pavers that are not suitable for re-use in streets shall be salvaged by contractor and delivered to street division of Municipal Services and Operations Department.
- A. Aggregate Base (AB-3) Installation
1. The base shall consist of crushed limestone aggregate (AB-3) composed of rocks up to 1.5 inches in size and no smaller than lime dust. The base shall be compacted to a minimum thickness of 4 in. using mechanical tamping or vibration.
- B. Bedding Sand Installation
1. Spread bedding sand evenly over Aggregate Base (AB-3) and screed to a a minimum 0.75 inch to maximum 1" inch thickness after compaction.

2. Do not spread bedding sand beyond area to be covered by bricks the same day. Prior to re-commencement of work remove, replace and re-screed bedding sand not covered with bricks the previous work day.
3. Do not disturb screeded sand. Re-screed disturbed bedding sand.

C. Brick Placing Requirements

1. Bricks should be installed in pattern consistent with historical pattern. Common patterns include but are not limited to herringbone, stacked, running bond, and basketweave.
2. Vertical bricks shall be used for edge restraint. Limestone, concrete, metal edges, or other approved equal may be used if approved by City Engineer.
3. Lay full bricks first.
4. Provide 1/16 inch to 3/16 inch wide joints between bricks.
5. Use a square to measure right angles every 5 feet (15 rows) along centerline to ensure straight rows.
6. Height difference between adjacent bricks shall not exceed 1/8 inch.
7. Fill gaps adjacent to edge restraint with cut bricks.
  - a. Cut bricks as edges with a double blade paver splitter or wet cut masonry saw. Hammer cutting is not acceptable.
  - b. Cut bricks shall be no smaller than 1 inch along the length of a paver.
8. Do not permit traffic, including construction equipment, on bricks before initial compaction and joint filling. Disturbed areas of bricks should be taken up, the sand re-screeded and bricks re-laid.
9. Vibrate bricks into sand using a high frequency/low-amplitude plate compactor capable of 3000 to 5000 lbf at 75 to 100 Hz frequency. Protect bricks from chipping during compaction by using a plate compactor with a rubber mat, rubber rollers or other approved materials placed over bricks. Do not compact within 6 feet of unrestrained edges. Remove cracked or damaged bricks and replace with new units.
10. After bricks are fully settled and free from movement simultaneously spread, sweep and compact dry jointing sand into joints until they are completely filled and sand no longer falls into joints.
11. Protect areas not covered with cut and compacted bricks with waterproof covering overnight.

12. Discontinue laying operations, align and compact bricks prior to work suspension when weather conditions are such that pavement performance may be compromised.
13. On laying operations recommencement, verify acceptable setting bed condition before further bricks are laid. If water has entered bedding sand, remove bricks and saturated bedding sand, install unsaturated sand, replace and compact bricks.
14. Sweep excess sand from pavement when installation is complete.

## 1905 BRICK STREETS

### A. Materials.

1. Concrete or Asphalt Base. All work shall be done in conformance with Sections 1300 *Asphaltic Concrete Pavement* and 1400 *Concrete Pavement*.
2. Jointing and bedding sand. Sand should be clean, naturally occurring material with angular and subangular shaped particles, with a maximum size of about 3/16" inch. Jointing sand and bedding sand shall comply with ASTM C33.
3. Brick Pavers. Pavers shall be free from excessive chips, cracks, voids, discoloration or other defects that might be visible.

### B. Removal of Existing Brick Pavement

1. Existing brick pavers shall be removed in a manner that preserves the brick.
2. Brick pavers that are not suitable for re-use in streets shall be salvaged by contractor and delivered to street division of Municipal Services and Operations Department.

### C. Bedding Sand Installation

1. Spread bedding sand evenly over concrete or asphalt base and screed to a minimum 0.75 inch to maximum 1" inch thickness after compaction.
2. Do not spread bedding sand beyond area to be covered by bricks the same day. Prior to re-commencement of work remove, replace and re-screed bedding sand not covered with bricks the previous workday.
3. Do not disturb screeded sand. Re-screed disturbed bedding sand.

### D. Brick Placing Requirements

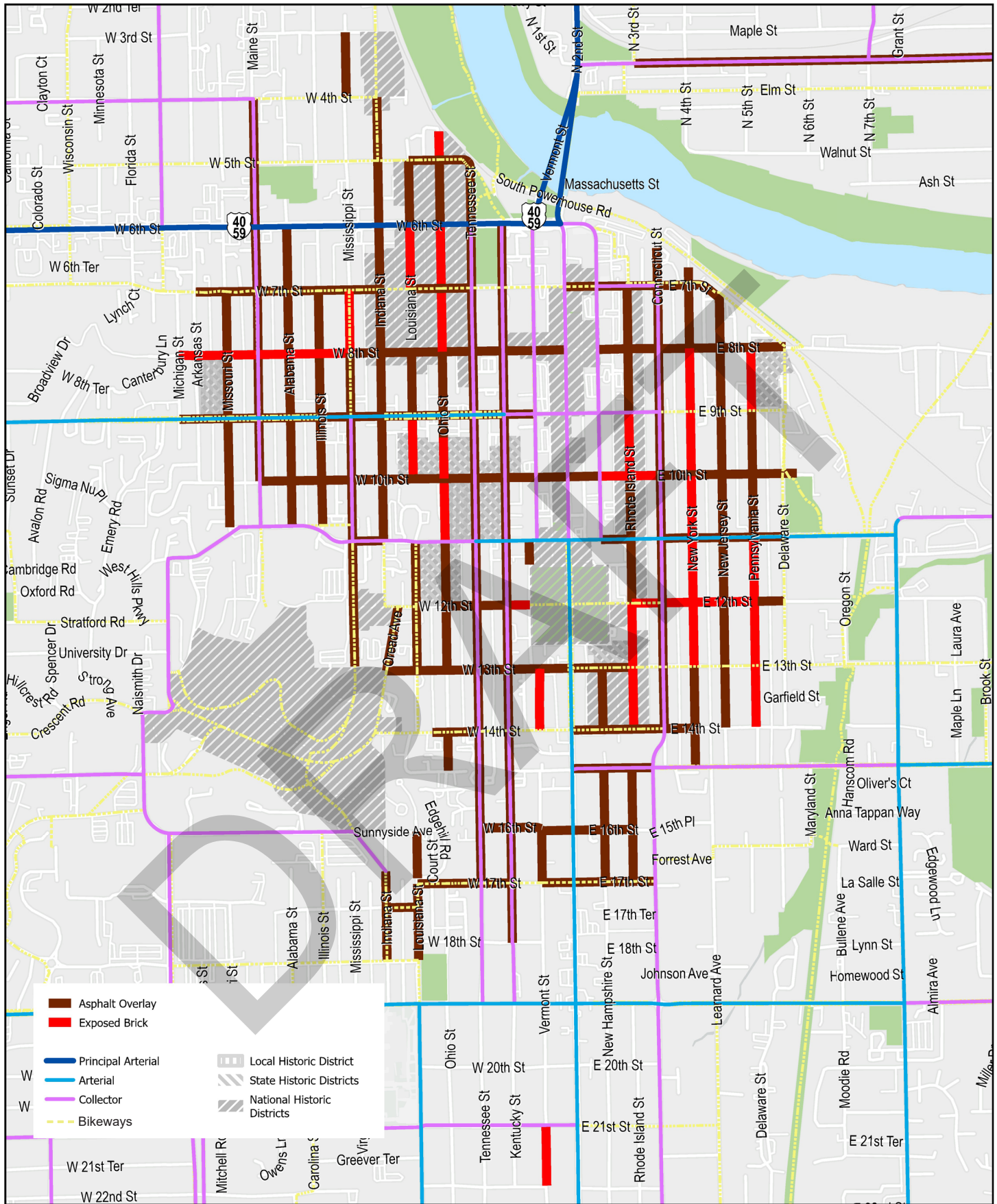


1. Brick pavers shall be placed in running bond pattern between intersections and herringbone pattern in intersections. No expansion joint is required.
2. Lay full bricks first.
3. Provide 1/16 inch to 3/16 in wide joints between bricks.
4. Use a square to measure right angles every 5 feet (15 rows) along centerline to ensure straight rows.
5. Height difference between adjacent bricks shall not exceed 1/8 inch.
6. Fill gaps at paved area edges with cut bricks.
  - a. Cut bricks as edges with a double blade paver splitter or wet cut masonry saw. Hammer cutting is not acceptable.
  - b. Cut bricks shall be no smaller than 1 inch along the length of a paver.
7. Do not permit traffic, including construction equipment, on bricks before initial compaction and joint filling. Disturbed areas of bricks should be taken up, the sand re-screeded and bricks re-laid.
8. Vibrate bricks into sand using a high frequency/low-amplitude plate compactor capable of 3000 to 5000 lbf at 75 to 100 Hz frequency. Protect bricks from chipping during compaction by using a plate compactor with a rubber mat, rubber rollers or other approved materials placed over bricks. Do not compact within 6 feet of unrestrained edges. Remove cracked or damaged bricks and replace with new units.
9. After bricks are fully settled and free from movement simultaneously spread, sweep and compact dry jointing sand into joints until they are completely filled and sand no longer falls into joints.
10. Protect areas not covered with cut and compacted bricks with waterproof covering overnight.
11. Discontinue laying operations, align and compact bricks prior to work suspension when weather conditions are such that pavement performance may be compromised.
12. On laying operations recommencement, verify acceptable setting bed condition before further bricks are laid. If water has entered bedding sand, remove bricks and saturated bedding sand, install unsaturated sand, replace and compact bricks.
13. Sweep excess sand from pavement when installation is complete.

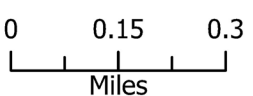
## **MEASUREMENT AND PAYMENT (To be added to General Technical Provisions)**

Measurement and payment shall be by the units and at the unit prices listed in the Itemized Proposal and as clarified below. All other work indicated or detailed in the specifications and not specifically set forth in the Itemized Proposal (Bid Schedule) as a pay item shall be considered a subsidiary obligation of the contractor, and all costs in connection therewith shall be included in the prices named in the proposal.

1. The contract unit price for "Brick Pavement (Removal)" shall include the removal of the existing brick and delivery to city storage area just south of 18th and Wakarusa Drive.
2. The contract unit price of "Brick Pavement (Installation)" shall include all installation required to lay surface brick course.



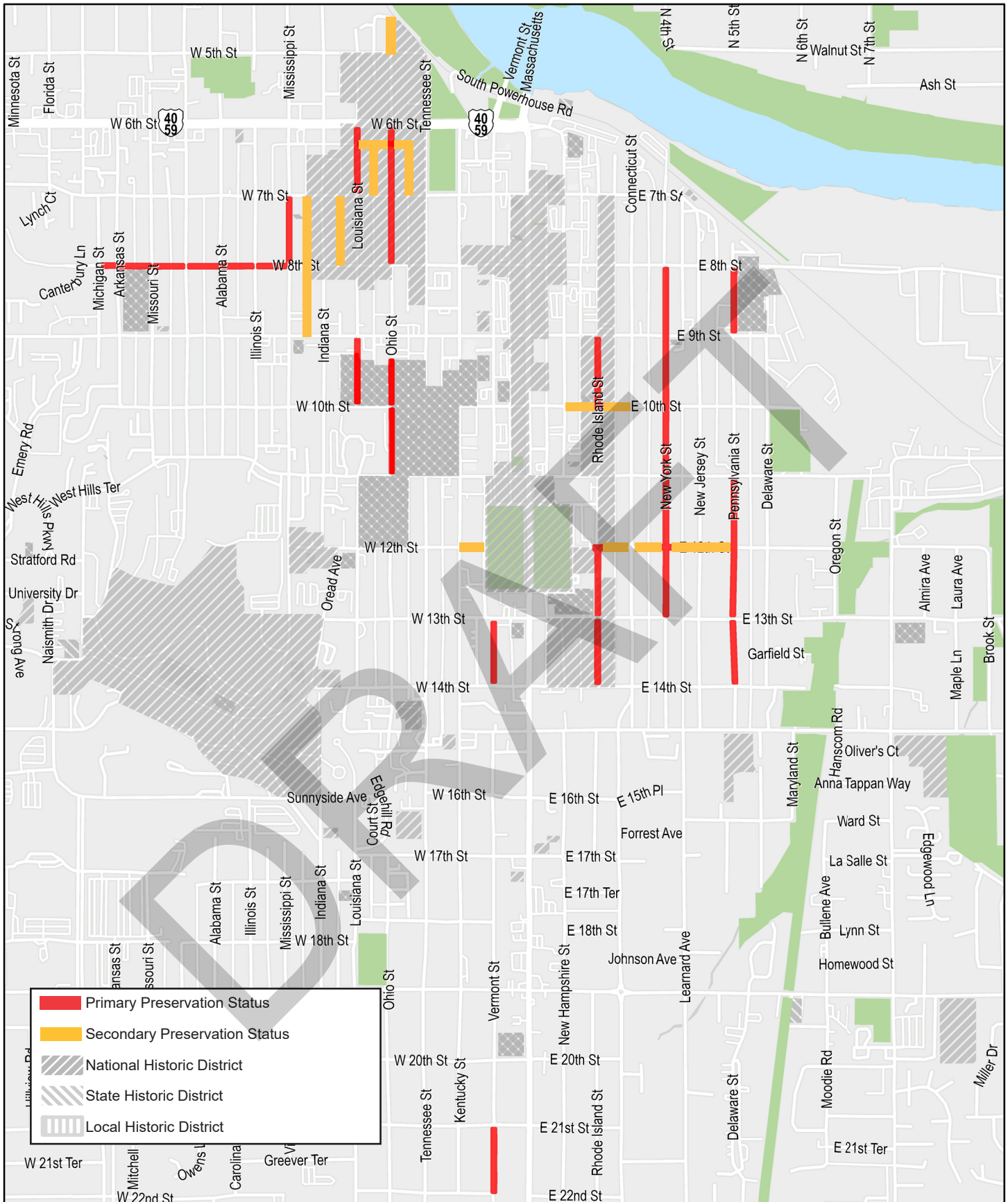
- Asphalt Overlay
- Exposed Brick
- Principal Arterial
- Arterial
- Collector
- Bikeways
- Local Historic District
- State Historic Districts
- National Historic Districts



Date: 6/10/24  
 Source Source: Historic Registries, Functional Classification (2023) and Lawrence Bikes Plan  
 Produced by: City of Lawrence MSO Department

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Date: 6/10/24  
 Source Source: Historic Registries, City of Lawrence  
 Produced by: City of Lawrence MSO Department

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