

HP - Design Report

408 NW 30TH Street Oklahoma City, Oklahoma



SITE LOCATION



PASEO ARTS DISTRICT

JEFFERSON PARK

BUILDING SITE

EDGEMERE PARK

CONDITIONS OF THE ZONING

1. This site will be developed in accordance with the regulation of the **R-4 General Residential District, the Jefferson Park Urban Conservation District, and the HL, “Historic Landmark” District** (OKC Zoning Ordinance, 2020, as amended), except that the following restrictions will apply:

The following use(s) will be the only use(s) permitted on this site:

8250.3	Community Recreation: Property Owners Association
8200.12	Multiple-Family Residential
8200.14	Single-Family Residential
8200.15	Three – and Four- Family Residential
8200.16	Two-Family Residential

*Use Unit 8300.51.1 *Lodging Accommodations: Home Sharing*, shall be expressly prohibited within this SPUD.

2. **Maximum Building Height:**

The maximum building height shall be 30 feet (2 and ½ stories) and shall be subject to review and approval of a Certificate of Appropriateness by the Historic Preservation Commission according to the applicable Guidelines and regulations. Rooftop patios shall be prohibited.

3. **Maximum Building Size:**

The maximum building size shall be subject to review and approval of a Certificate of Appropriateness by the Historic Preservation Commission according to the applicable Guidelines and regulations.

4. **Maximum Number of Buildings:**

There shall be a maximum of three (3) buildings and a minimum of two (2) buildings within this SPUD.

5. **Density:**

There shall be a maximum of 18 dwelling units, which shall consist of a minimum of 14 one-bedroom units and a maximum of 4 two-bedroom units within this SPUD.

6. **Building Setback Lines**

West:	0 ft
East:	10 ft
South:	15 feet
North:	15 feet

7. **Sight-proof Screening:**

Sight-proof screening shall only be required to screen parking areas within this SPUD. Said sight-proof screening shall be a minimum of four feet in height. A vegetative screen on the south and west sides of the tracts shall be installed and maintained in the form of a fence with living vegetation or a landscaped buffer no less than five feet in width planted with a series of evergreen plantings that will grow to a height of at least six feet and spaced in a manner to provide an impervious visual barrier and shall be subject to review and approval of a Certificate of Appropriateness by the Historic Preservation Commission according to the applicable Guidelines and regulations..

8. **Landscaping:**

The subject parcel shall meet Oklahoma City Landscape requirements. There shall be a minimum of one tree with a minimum of 2-inches in caliper planted on 25-foot centers along the frontage of N. Hudson Ave. and NW 30th St. Trees shall meet the City of Oklahoma City’s Landscape Ordinance Streetscape Buffer requirements. Existing healthy mature trees that remain on the site may count toward the required tree count. The vegetative screening and tree requirements shall substitute for all other City of Oklahoma City Landscape Ordinance requirements. Special attention will be paid to landscaping or hardscaping at the property frontage that visually mitigates the scale between the building and the street.

9. **Signs:**

- 9.1 **Freestanding Accessory Signs**

Freestanding signs shall be prohibited.

- 9.2 **Attached Signs**

Attached signs shall be prohibited.

- 9.3 **Non-Accessory Signs**

Non-accessory signs shall be prohibited.

- 9.4 **Electronic Message Display Signs**

Electronic Message Display signs shall be prohibited.

10. **Access:**

Access will be via a two-way drive that will enter and exit from N. Hudson Avenue only. The maximum driveway width shall be 22 feet.

11. **Sidewalks:**

A minimum of a five-foot sidewalk shall be constructed on local streets, including the reconstruction of existing damaged sidewalks, subject to the policies and procedures of the Public Works Department and subject to review and approval of a Certificate of Appropriateness by the Historic Preservation Commission according to the applicable Guidelines and regulations.

II. **Other Development Regulations:**

1. **Architecture:**

The architectural design will be based on and conform with styles found in Jefferson Park and Edgemere Park and will not cause any harm to the general features that define this historic district. A significant amount of attention will be given to the frontage design of any new buildings and the relationship between the architecture and its visual context. The new construction will be compatible with the existing historic architecture and blend in with the surrounding structures. This compatibility may include taking into account the size, shape, massing, and materials used for the new construction. In the event that dormers are utilized, they shall be located on the east and west elevations only. Any new building or exterior renovations beyond ordinary maintenance and repair, as defined in the Oklahoma City Municipal Code, 2020, as amended, and balconies, if installed, shall meet the regulations outlined within the Municipal Code in reference to the Historic Landmark Overlay and shall be subject to review and approval of a Certificate of Appropriateness by the Historic Preservation Commission in accordance with applicable guidelines and regulations.

2. **Open Space:**

There shall be a minimum of 40% open space.

3. **Street Improvements:**

N/A.

4. **Site Lighting:**

The site lighting in this SPUD shall be in accordance with Chapter 59, Article XII, Section 59-12350 of the Oklahoma City Municipal Code, 2020, as amended, and shall be subject to review and approval of a Certificate of Appropriateness by the Historic Preservation Commission according to the applicable Guidelines and regulations.

5. **Dumpsters:**

Commercial dumpsters shall be permitted in accordance with Chapter 59, Article XII, Section 59-12200.4(E) of the Oklahoma City Municipal Code, 2020, as amended.

Trash collection facilities in this SPUD shall be in accordance with Chapter 49 of the Oklahoma City Municipal Code, 2020, as amended.

6. **Parking:**

The design and number of all parking facilities in this SPUD shall be in accordance with Chapter 59, Article X of the Oklahoma City Municipal Code, 2020, as amended, except that in the event the site is developed for multiple-family residential, there shall be a minimum of 30 parking spaces within this SPUD. On street parking shall not be used to satisfy parking requirements. Construction of parking spaces and associated features shall be subject to review and approval of a Certificate of Appropriateness by the Historic Preservation Commission according to the applicable Guidelines and regulations.

7. **Maintenance:**

The owner shall provide for the perpetual maintenance of common open space, recreation areas, and sidewalks privately owned and serving the project. Amenities include but are not limited to: bicycle storage racks, wood shade pergola (open air), exterior seating including benches and picnic tables, and landscaped community areas. Street furniture located within a public street right-of-way shall be available for use by the public and subject to approval of one or more revocable permits.

8. **Drainage:**

Development of this parcel will comply with Chapter 16 of the Oklahoma City Municipal Code, 2020, as amended.

9. **Other:**

If approved by the City of Oklahoma City Public Works Department, developer shall be required to work with the Public Works Department to install speed cushions on NW 30th St. Installation of said speed cushions shall not impose any cost to the neighborhood.

SCOPE OF WORK:

SITE:

The project site currently has no structures. The previous structure, a church, was demolished by the City of Oklahoma City. The site is at the corner of NW 30th Street and North Hudson Avenue. It is in the Jefferson Park Neighborhood and is directly adjacent to Edgemere Park and the Paseo Arts District.

ZONING:

Zoning was previously established by SPUD-1581, which the Oklahoma City Council approved on April 9, 2024.

PROPOSED BUILDINGS:

The drawings and design report, including visualizations and summary notes derived from the HP Guidelines, describe a (2) building multifamily development. Each building is two stories tall, with a flat roof that slopes and drains to the south. The North, East, and West elevations are primarily brick veneer on wood construction with two brick porches facing the North (one per building). The two buildings are mirrored images of one another. A central common space and courtyard are formed in the center of the site, serving a community space and a circulation and utility area. Two curved steel staircases, finished with oil-based epoxy paint and powder-coated tread pans, drop from the entry coordinator on the second floor to the ground level inside the courtyard. Units open to all sides of the development to engage the surrounding context and site. LAUD Studio of Oklahoma City has developed a landscape scheme illustrated in the associated drawings and visualizations. A colonnade composed of ¼ twisted brick columns with cast stone caps and a double wythe brick screen entablature connects the two primary masses on the site along the NW 30th Street facade. Items such as lighting, copings, brick patterns and types, window units, doors, ground treatments, fencing, etc., have been included in the documents associated with this submission.

SIDE YARDS:

Side yards are considered for tenants and pets and have been designed specifically to meet the standards set by the HP guidelines.

PARKING AREA:

SPUD-1581 stipulates a 30-space parking lot. This has been situated at the south border of the site, with care taken to screen the parking lot and add a central tree well that aligns with the axis of the central courtyard of the two primary buildings. The entire parking lot is also screened with a six-foot-tall wood horizontal slat fence that will be painted to complement the development. A sliding automatic gate and operator fabricated to match the wood fence and painted the same color are included at the east boundary of the parking. A dumpster enclosure with the same wood screening surrounding it is included at the west end of the parking lot. Landscape shrubs will line the south border of the parking lot. The driveway of the parking lot will be concrete, with most of it being split into 11-foot by 12-foot rectangular concrete pads with eight-inch gaps between them filled with gravel. This arrangement will help support the drainage of runoff water from the development and allow permeability. 33% or 10 Spaces will be covered next to the building.

VENTING AND ROOF TREATMENT:

The roof will be a flat roof with a TPO membrane. Second-floor units will all vent through the roof. 1st-floor units will vent to the south façade and partially to the interior courtyard (limited to two units). Through-wall scuppers, collection boxes, and downspouts (which drain from the roof to the parking lot to the south) are all located along the south façade of the two buildings.

BUILDING HEIGHT/FF ELEVATION:

The finish floor height will be set at approximately 1166.50, and it is not anticipated that any retaining walls or significant site re-grading will be part of the project. However, the project will require adding fill material as the site is currently depressed in the center due to the previous building excavation and demolition.

ADDITIONAL INFORMATION:

We have attempted to provide documentation sufficient for staff and the historic preservation commission to fully review the project design. Please refer to project drawings, cut sheets (products), and additional design report for more detailed information.

For new construction in a historic preservation (HP) neighborhood, the Oklahoma City Historic Preservation Standards and Guidelines emphasize several key points to ensure compatibility and maintain the historic character while allowing for modern development. Here's a summary of the relevant information:

1. General Requirements for New Construction (Chapter 4.1)

New construction must be compatible with the historic character of the surrounding area. This involves aligning the [scale, proportion, and architectural details](#) with neighboring historic buildings.

The design should not replicate historic buildings but rather complement them, ensuring that new construction is distinguishable as modern while fitting into the neighborhood context.

Materials and Texture:

Use exterior materials that reflect those typically found within the district, such as [brick, wood, or compatible alternatives](#). The goal is to maintain visual continuity with the historic environment.

Architectural Features:

New construction should include elements like [window patterns, roof shapes, and porch designs](#) that are harmonious with existing historic structures without copying them exactly.

2. Stand-Alone New Construction (Chapter 4.2)

Buildings should respect the established setbacks and lot sizes within the neighborhood to [maintain the historic rhythm and spatial layout](#).

The [orientation of new structures should be consistent with neighboring buildings](#), ensuring the façade aligns with the street to preserve the district's streetscape.

Height and Massing: New buildings must be [similar in height and mass to adjacent historic buildings](#), ensuring the new structure does not dominate or visually disrupt the historic setting.

[Rooflines should be compatible with those typical of the district](#), avoiding extreme variations that might disrupt the visual unity.

3. Exterior Materials in New Construction (Chapter 4.6)

Acceptable materials include those that match or closely resemble the textures and colors found in the neighborhood's historic structures.

The emphasis is on ensuring the new materials contribute to the overall cohesive appearance of the historic district while providing durability and energy efficiency.

4. Improving Energy Efficiency (Chapter 4.7)

The guidelines support integrating energy-efficient features such as [high-performance windows, sustainable building materials, and passive solar design techniques](#), provided these do not visually conflict with the historic character.

Features like courtyards, awnings, and roof designs that help reduce energy use and align with traditional forms are encouraged.

The guidelines emphasize the use of sustainable and low-maintenance materials that align with the district's aesthetic, ensuring the longevity and minimal environmental impact of new construction.

WINDOWS

The guidelines for windows in new construction within historic preservation districts in Oklahoma City emphasize the importance of compatibility with historic character while providing some flexibility.

Summary of Window Requirements for New Construction in HP Neighborhoods

Material Compatibility (Section 4.6.11)

New windows must be similar in material and profile to those used historically within the district.

Acceptable materials include:

- Wood
- Vinyl-clad wood
- Metal-clad wood with profiles similar to historic counterparts.

The guideline encourages that new infill construction should match the profiles of other properties within the block or district.

Prohibited Materials (Section 4.6.13)

Windows constructed entirely of aluminum or vinyl are explicitly prohibited unless historical documentation supports their use on the specific property.

Clear glass must be used; reflective, tinted, or patterned glass is generally not acceptable unless historically justified.

Thermal Pane Windows (Section 4.6.15)

Thermal or insulated glass windows are acceptable for new construction. However, divided light windows must use true divided lights, meaning the muntins must separate each pane of glass rather than relying on snap-on or sandwiched configurations.

Application of Modern Materials (General Approach)

Although the guidelines do not explicitly reference fiberglass, they provide allowances for materials that visually match and function similarly to historic options. Aluminum-clad wood, for instance, is noted as an acceptable alternative due to its durability and appearance.

Argument for Fiberglass Windows Based on Guidelines

Sustainability:

The guidelines emphasize using materials that align with sustainability efforts. Fiberglass, known for its longevity, low maintenance, and energy efficiency, aligns well with these principles, particularly when compared to prohibited materials like vinyl, which is noted as environmentally unsustainable.

Aesthetic Flexibility:

Fiberglass windows can be designed to tie together with the appearance of traditional wood windows, aligning with the guidelines' preference for visual compatibility with historic windows. By ensuring the profiles, colors, and finishes match those typical in the district, fiberglass can be argued as a compatible option.

Energy Efficiency:

Given that the guidelines permit insulated glass and emphasize energy efficiency in new construction (Section 4.7), fiberglass windows—which have excellent thermal properties—could be presented as a solution that meets both the energy performance and aesthetic requirements outlined for new projects.

Recommendation:

We believe it is appropriate to proceed with fiberglass windows

Document Compatibility:

We have provided visual indicators that the fiberglass windows visually match the profiles and detailing of historic windows in the district. Please refer to our wall sections and visual depictions of the project and windows for additional information.

Sustainability:

We believe in the environmental benefits and long-term sustainability of fiberglass, specifically noting that it is more sustainable and durable than other non-permitted materials like vinyl.

Seek Approval:

Since the guidelines do not specifically exclude fiberglass but emphasize visual and material compatibility, we are presenting these arguments to staff and to the Historic Preservation Commission

DOORS

1. Material Requirements for Doors

Primary Entrance Doors (Visible from Public Right-of-Way):

Must be wood unless documentation supports another historically appropriate material (per guidelines).

We plan to use wood doors on the first level where they are visible from the street, complying with the standard for maintaining the historic character.

Side and Back Doors (Not Visible from Public Right-of-Way):

Doors not visible from the street may use alternative materials such as composite wood, aluminum-clad wood, or fiberglass.

This provision supports our intention to use fiberglass doors where they face the parking lot at the back of the building. Fiberglass, being a modern, durable, and energy-efficient option, can be utilized without compromising historic guidelines as long as they are not street-facing.

2. Second-Level Doors (Non-Primary Elevations)

Flat Panel Metal Doors:

For second-story levels, especially when not directly visible from the primary street, metal doors are generally acceptable if they are painted to match the primary doors, ensuring aesthetic continuity.

This plan would be in line with the requirements as long as the doors maintain a cohesive visual relationship with those on the lower levels.

3. Swinging and Sliding Patio Doors (Back of New Buildings)

The guidelines permit the use of swinging (French) or sliding doors on the rear or side elevations of new buildings. These doors should complement the architectural style and match the materials used for other doors.

We do not plan to use patio doors

Summary of Compliance and Recommendations:

Our approach of using wood doors on the street-visible areas aligns well with the guidelines, which prioritize wood as the material for primary elevations to maintain historic appearance.

For the parking lot-facing areas, using fiberglass doors is acceptable since they are not visible from the public right-of-way, thus meeting the material flexibility provisions provided in the guidelines.

Using flat panel metal doors on upper levels, especially if painted to match the lower-level doors, fits within the parameters for doors on secondary elevations.

This strategic selection of door materials based on visibility and elevation ensures compliance with the guidelines while allowing for modern, durable, and energy-efficient solutions.

EXTERIOR MATERIALS

1. Brick and Masonry (Section 4.6.4 & 4.6.9)

Acceptability:

Brick is a commonly accepted and appropriate material for new construction within historic districts. It is recommended for maintaining continuity with the traditional materials used in the area.

Details and Patterns:

Masonry bonding patterns, sizes, and color should be similar to those found on other historic buildings within the district. This ensures that new construction blends with the existing architectural character.

2. Cementitious Siding (Section 4.6.6 & 3.1.34)

Appropriateness:

Cementitious siding with a smooth finish is acceptable for new construction, especially when used on secondary elevations like the south façade, which faces the parking lot. This material is considered sustainable and appropriate for areas that are not directly visible from the public right-of-way.

Compatibility:

The siding should match the size, pattern, shape, and texture of historic wood siding if it is to be used in visible areas, since the shiplap fiber cement siding is planned for the rear facade, it aligns well with these requirements.

3. Prohibited Materials (Section 4.6.7 & 3.1.32)

Inappropriate Materials:

The use of exterior insulation finish systems (EIFS), metal siding, vinyl siding, and imitative brick or stone is not permitted. These materials are discouraged because they do not align with the sustainable and historical appearance goals of the districts.

4. Metal and Steel Elements (Staircases)

Staircases and Visible Structures:

While metal and steel can be used for elements like staircases, their visibility from the street requires them to be painted or finished in a manner complementary to the building's architecture. This ensures they blend with the overall aesthetic and do not detract from the historic character (hp guidelines). We have taken care to specify and design our two primary staircases to add to the overall aesthetic of the development and highlight our community space on NW 30th Street.

5. Overall Compatibility and Sustainability Emphasis:

New construction materials must be consistent with those found in the historic district to maintain visual coherence. Sustainable options are encouraged to align with contemporary environmental goals while respecting the historic fabric.

By following these guidelines, our planned use of brick on the street and alley-facing facades, cementitious siding on the rear facade, and painted steel staircases aligns with the preservation standards, ensuring compatibility and adherence to the historic context of the district.

FENCES

Summary of Historic Preservation Guidelines on Fences:

The Oklahoma City Historic Preservation guidelines provide specific requirements for fences, emphasizing the use of appropriate materials and placement to maintain historic integrity:

Materials:

Fences should be made of wood, brick, stone, cast iron, or aluminum designed to mimic cast iron. Vinyl and other synthetic materials are not permitted, as they are deemed incompatible with historic properties.

Wood fences may be left unfinished, painted, or stained in colors suitable to the historic period of the property or district.

Height and Placement:

Back Yard and Side Yard Fences:

These are generally allowed and have more flexibility since they are less visible from the public right-of-way. They may be opaque if they are set back sufficiently from the main building line.

Street-Facing Fences:

Fences facing the street or public view must have a finished appearance and may not exceed a certain height. Side yard fences must be set back at least two feet from sidewalks, or six feet if no sidewalk is present.

Maximum Heights:

Back property lines or alleys:

Fences may be up to eight feet in height.

[We have specified a 6'-0" fence](#)

Side or front-facing fences:

These must not exceed six feet.

[We have specified a 36" metal fence on the East and a 42" wood fence on the West side yard](#)

Transparency Requirements:

For fences in side yards visible from the street, they must be at least 75% transparent unless otherwise supported by historical documentation.

[Please see product cut sheet for side yard fence facing N Hudson Ave. We meet this requirement.](#)

Purpose and Design Justification:

Fences are historically used to mark property boundaries and provide privacy. Maintaining historic materials like wood is important, as they offer a renewable and sustainable option compared to alternatives like vinyl.

PARKING LIGHTING

Parking Light Requirements for Off-Street Lot (SPUD Zoning)

According to the Oklahoma City Municipal Code (Chapter 59, Section 12350), lighting for off-street parking lots in residential areas must:

Be shielded to minimize glare and prevent light spillage onto adjacent properties.

Be directed downward with full cut-off fixtures to prevent light pollution.

Maintain a light level between 0.2 and 0.5 foot-candles at the property line to protect residential neighbors from excessive brightness.

Parking lot lighting is not always mandatory for off-street parking lots in residential districts according to Oklahoma City's municipal code. However, if lighting is installed, it must comply with specific requirements to minimize light pollution and prevent glare on neighboring properties.

Currently Parking Lot lighting is not included in the project.

PARKING GATE

Summary of Historic Preservation Guidelines on Gates at Parking Lots on Primary Facades:

For new construction involving parking areas in historic districts, the guidelines outline the following considerations for gates and parking areas visible from the primary facade:

Placement and Screening (Section 2.3):

Parking areas should generally be located at the rear of the lot and screened from adjacent properties and streets to minimize their visibility.

If parking is visible from a primary street, it must be screened using sight-proof fencing, walls, or dense landscaping that reaches at least three feet in height. This is intended to obscure the view from the street and create a cohesive appearance with the historic streetscape.

Gate Design Requirements (Chapter 2.3.19):

Gates and fences located on the primary facade must complement the architecture of the building. They should not dominate or obscure the historic character of the primary structure.

The design of gates should use materials compatible with the district, such as wood or metal that aligns with the overall historic aesthetic of the neighborhood.

Visibility and Height Restrictions:

Gates facing the primary facade or public right-of-way should be designed to minimize visibility while ensuring safety and functionality. If the gate is part of the parking area, it should align with the height restrictions applied to other front yard fences, typically not exceeding four feet in height if located on a primary street.

[Our gate is six feet in height to align with the six foot tall wood screen fencing around our parking lot](#)

Compliance with our Project:

[Our plan for a 6-foot horizontal wood privacy fence surrounding the parking area aligns with the guidelines as long as the gate and fence are complementary to the architectural character of the building and the historic district.](#)

[The gate design shall integrate materials and detailing that tie together aesthetically with the entire project, while providing the necessary screening from neighboring properties. See A303](#)

LANDSCAPE REQUIREMENTS

Summary of Landscape Requirements for New Construction in Historic Districts

The Oklahoma City Historic Preservation guidelines emphasize maintaining historic character while allowing for sustainable landscape solutions.

1. Sidewalks and Pathways (Section 2.3.9)

Sidewalks should be consistent in material and design with historic examples in the district. Concrete sidewalks must match existing textures and colors to maintain visual continuity.

2. Parking Areas and Permeable Surfaces (Section 2.3.17)

Permeable paving surfaces, such as pavers or recycled plastic grid systems, are encouraged for new parking areas that are not visible from the public right-of-way. This approach helps reduce stormwater runoff and manage drainage effectively. Concrete parking stalls, as planned for our project, should be properly graded to direct drainage away from buildings, aligning with these sustainability practices.

3. Landscaping and Vegetation (Section 2.7)

[Removal of invasive species is supported and included in our project, and planting native species is recommended for new landscaping. Native plants are drought-tolerant, require less maintenance, and are more sustainable.](#)

Shade trees, especially on southern and western elevations, are encouraged to improve energy efficiency and reduce heat gain.

4. Courtyards and Paved Areas (Section 2.5.10)

[Permeable paving systems, such as the pavers planned for our courtyard, are recommended to minimize changes in drainage patterns and prevent excessive stormwater runoff. This approach aligns with sustainability objectives in historic districts.](#)

5. Lighting (Section 2.5.39)

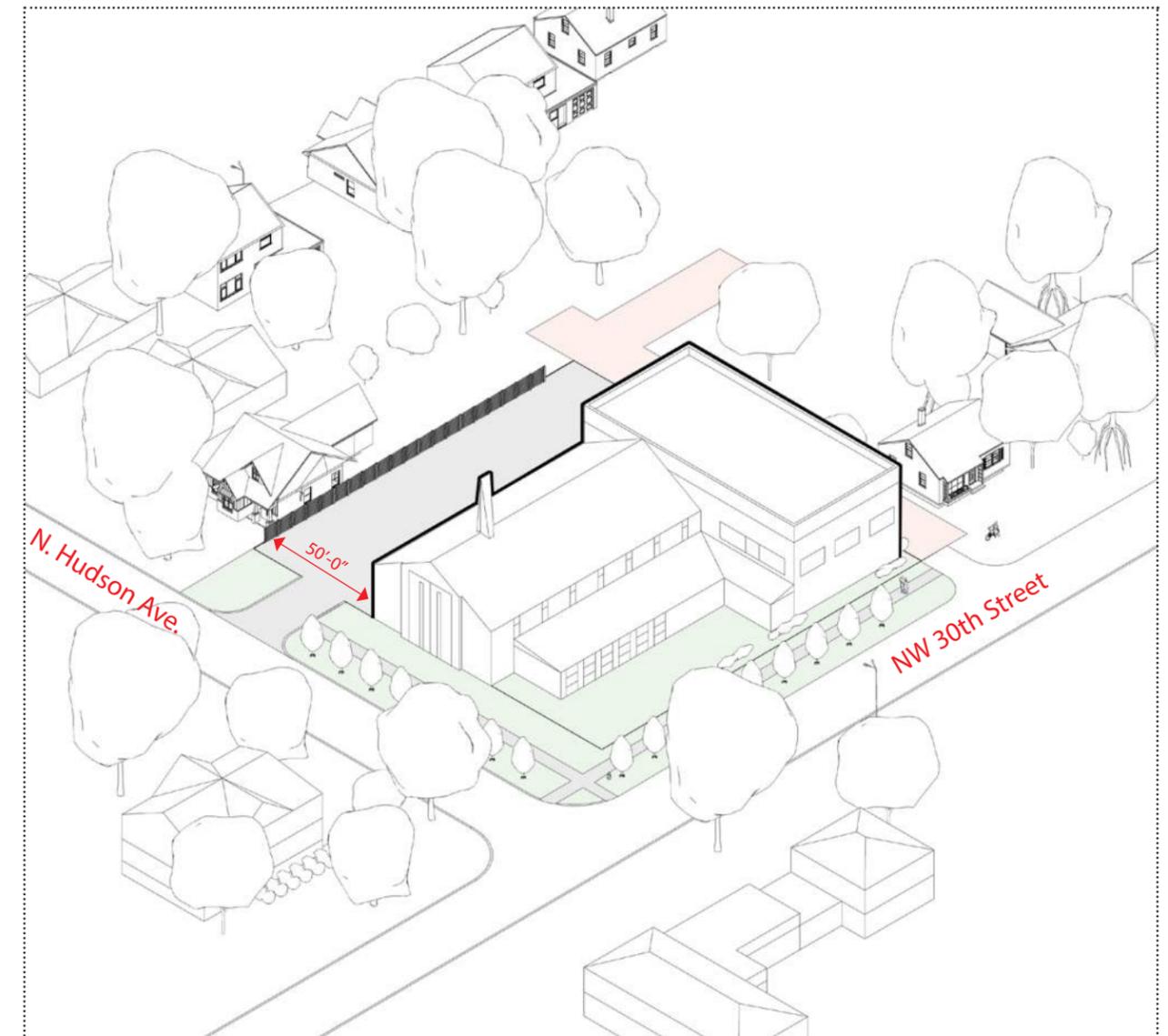
Landscape and pathway lighting must be minimal and unobtrusive. Low foot-lights or solar-powered options are preferred. Lighting should be directed downward to reduce glare and maintain the historic character of the area.

Exterior lighting at doorways and in courtyards should be shielded and installed discreetly to complement the architecture without detracting from the historic atmosphere. [Please see cut sheet for selected exterior sconce at unit entry doors.](#)

HISTORIC PROPERTY PATTERN

408 NW 30th street sits on the border between Jefferson Park and Edgemere Park, and directly east of the Paseo Arts District. A two-story church and church office building recently occupied the site until they were demolished by the City of Oklahoma City.

It can be seen in the diagrams below that the historic property pattern has little relevance to historic (or established) building setbacks, material use, detail, or massing.



HISTORIC CHURCH MASSING

Overlay of historical church massing photo onto site survey

HISTORIC BLOCK PATTERN



Flat roof, commercial, masonry, concrete, cast stone



Flat roof, commercial, masonry, concrete, cast stone



Low pitch and Flat roof, Rooftop terrace, masonry and siding, modern design



Single Family, rentals and homes, Wood siding, craftsman style bungalows



Pitched roof, Brick and stucco, Tudor style, multifamily units



Flat roof, commercial, Concrete and block

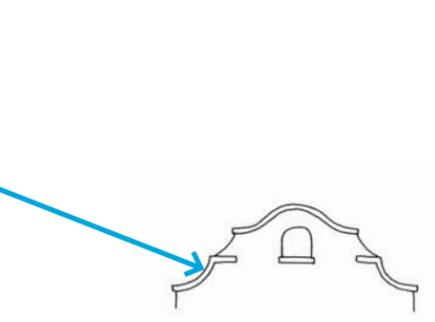
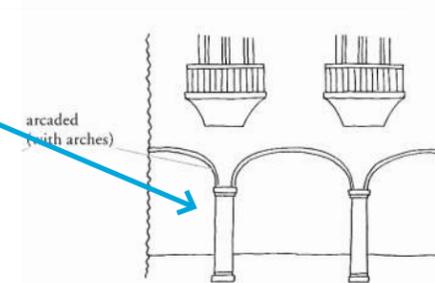
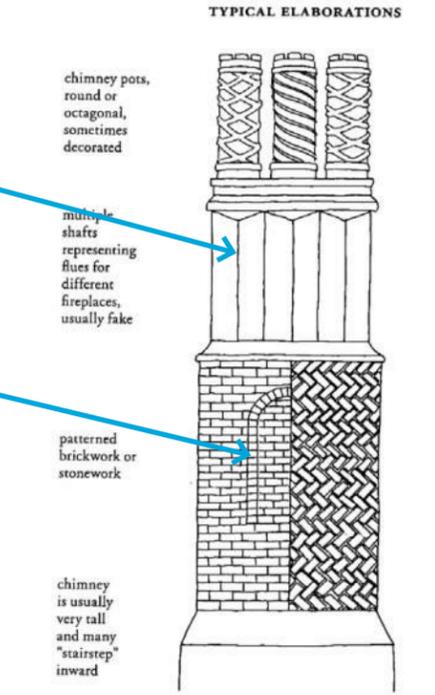


Commercial, one and two story duplexes, brick, siding, and stone mix, stylistic mix



Block Key Map

HISTORIC DISTRICT PATTERN



CONTEXT MAP:



CONTEXT AERIAL - ILLUSTRATING BUILDING MASS AND HEIGHT:

