

Community Development Administration

Residential Development

Design Guidelines

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Introduction

Our goal is to provide efficient, affordable housing that respects neighborhood context and provides enhancement of property values, sustainability, and quality of living.

This document is a compilation of HUD's Minimum Property Standards, the International National Building Code as adopted by the City of St. Louis, Section 106 of the National Historic Preservation Act of 1966 (revised), the Secretary of the Interior Standards for the Treatment of Historic Properties and the Community Development Administration's accepted planning and design practices.

Explanation of Review Process

Submissions for Design Review may include drawings, specifications and written descriptions. The complexity of the project will dictate the scope of the required submittal. A licensed design professional (architect or engineer) must be engaged on all projects. Other professional consultants are also required on most projects to establish, monitor, and certify historic, environmental, and/or energy conservation requirements.

Design Review follows a careful planning process to ensure that development proceeds in a manner consistent with current plans for neighborhood development.

The process of Design Review is a coordinated effort including the following:

- Community Development Administration
- Planning and Urban Design Agency
- Cultural Resources Office
- Building Division
- Land Clearance for Redevelopment Authority
- Neighborhood Organizations
- Other City agencies

Checklist of Submission Requirements

Schematic Design Review

- 2 sets for rehab and new construction projects

Site Plan

- Building footprint
- Adjacent buildings to establish a building set-back and sideyards
- Location of off-street parking

Floor Plans

- Existing conditions (structural conditions, historic materials, interior partitions, doors, mantels, etc.)
- Proposed demolition
- Proposed construction

Elevations

- Street facing exterior elevations indicating any proposed work

Design Development Review

- 2 sets for rehab and 3 for new construction

Site Plan

- Building footprint with dimensions
- Proposed and existing walks
- Adjacent buildings to establish building set-back and sideyards
- Off-street parking
- Fencing
- Landscaping
- Grading and drainage plan

Floor Plans

- Existing conditions (structural conditions, historic materials, interior partitions, doors, mantels, etc.)
- Proposed demolition (indicate by line type)
- Proposed construction (indicate by line type)
- Room titles
- Gross square footage
- Conformance with Section 106 requirements
- Coat closet
- Linen closet
- Laundry facilities

Elevations

- All exterior elevations indicating any proposed work
- Details for closed or altered door and window openings
- Gutter and downspout replacement and connection to sewer
- Window repair/replacement
- Façade materials
- Proposed work or significant existing details

Construction Document Review

- 2 sets of plans

Plot Plan

- For multi-lot developments, an overall plot plan (including lot dimensions) indicating the parcel or parcels included in the development proposal and any proposed re-subdivision of the parcels.

Site Plan

- Building footprint
- Dimension from front building line to public right-of-way
- Dimension from side building line to side property line
- Adjacent buildings on adjacent blocks to establish building set-back and sideyards
- Proposed walks and repairs to existing walks
- Off-street parking
- Grading and drainage plan conforming to MSD requirements
- Location of mechanical equipment
- Landscaping (existing and proposed)
- Required work to building utilities (water, sewer, gas, and electric)

Floor Plans

- Scale: 1/4" = 1'0"
- Existing conditions (interior partitions, doors, mantels, etc.)
- Demolition (any interior architectural elements to be removed)
- Proposed construction (indicate by line type/shading)
- Room titles (include numbered units and bedrooms)
- Room dimensions
- Gross square footage information and net interior space footage
- Electrical and lighting plan and schedule including panels, outlets and switches
- Finish schedule or description including finishes to be retained and restored
- Escape windows in sleeping rooms meeting building code
- Smoke detectors (locate by symbol)
- Carbon monoxide detectors (locate by symbol)
- Floor drain in basement with sump pits and pumps as needed

- Mechanical system and ductwork layout and sizing
- Kitchen cabinets
- Kitchen appliances
- Plumbing Fixtures
- Conformance with Section 106 requirements
- Coat closet (shelf and pole)
- Linen closet (5 shelves)
- Laundry facilities (include drain, pan and vent)
- Hand rails at stairs
- Wall insulation
- Basement insulation
- Roof/ceiling insulation

Elevations

- Scale: 1/4" = 1'0"
- Elevations of all exterior walls
- Information about work to foundations
- Information about repointing of masonry walls
- Information about repointing of chimneys and parapets
- Details for closed or altered door or window openings
- Gutter and downspout replacement and connection to sewer
- Window repair/replacement
- Door repair/replacement
- Building height and floor to floor dimensions
- Roof slopes (where applicable) and description of roofing
- Façade materials
- Proposed work or significant existing details

Details

- Scale: 3/4" = 1'0" (minimum)
- Architectural millwork (required when replicating existing)
- Deck rail details ("Soulard Rail" etc.)
- Stair details/section
- Exterior door elevations (required when replicating existing)
- Interior door elevations (required when replicating existing)
- Wall sections
- 1/4" = 1'0" scale plans of kitchens, bathroom and mechanical spaces recommended

Specifications (CSI format preferred)

General Requirements

- Compliance with applicable codes and
- Responsibilities of involved parties

Site Work

- Demolition/clearing
- Earthwork and grading
- Utilities
- Paving and walks
- Fencing

Concrete

- Footings and foundations

Masonry

- Brick and stone

Metals

- Reinforced steel
- Structural steel

Rough Carpentry

- Finish carpentry
- Casework and architectural woodwork

Thermal and moisture protection

- Building insulation
- Roofing
- Sealants

Doors and Windows

- Doors
- Windows
- Historic windows

Finishes

- General
- Gypsum board (fire ratings, moisture resistant)
- Resilient tile
- Ceramic tile
- Carpeting
- Painting

Specialties

- Bath accessories
- Mailbox/slot
- Address numbers

Equipment

- Kitchen equipment

Furnishings

- Window coverings

Mechanical

- HVAC
- Plumbing

Electrical

- General

Final Review

Submit one set of completed construction documents for final review. These plans must contain all the information specified in the Construction Document phase and any additional clarifications requested by the Design Reviewer.

Approval Sets

Submit eight sets for final approval stamp and signature. An additional set may be requested for new construction projects if substantial changes were made since the Design Development phase. Final approval sets must be sealed and signed by the design professional for Building Permit application. Five sets are returned to the developer, the balance retained for Agency files.

No changes to the approved drawings or field changes to the construction may be made without prior approval of the architect, CDA and CRO reviewers, and CDA Construction Manager. This includes any changes required by the Building Division Inspectors or any neighborhood groups.

Site Design

St. Louis neighborhoods were traditionally planned with homes close to one another, sidewalks and trees lining the streets, and garages in the rear with access from an alley. The value of the sense of community and identity that results from such planning should not be overlooked.

The general appearance of the building and site after rehabilitation or new construction should make a significant contribution to the general value and appearance of the neighborhood.

Grading

Site grading must allow drainage of surface water away from buildings and off site and minimize erosion or settlement problems that might affect the buildings or adjoining property.

Most residential sites in St. Louis are above the level of the street. This height difference should be retained by planting grass or other ground cover over the existing slope to prevent soil erosion or, when the horizontal distance does not allow for an acceptable slope, by constructing a retaining wall. When used in front yards, retaining walls should be constructed of brick, stone, or decorative pre-cast concrete. Wood timber walls are not accepted.

Landscaping

Landscaping improves the exterior appearance of any building at a reasonable cost and helps increase the value of a neighborhood by improving marketability. Well placed and considered planting can also help control heating or cooling costs by providing wind protection or shade. Native species should be used whenever possible.

Any existing mature trees should be retained and protected throughout the construction period. Care must be taken not to excavate too closely to a tree's trunk or to remove too much soil from around it. All unpaved areas of the site must be provided with appropriate soil for healthy plant growth, tilled, and sodded or seeded and straw-covered to prevent erosion.

The following, at a minimum, is required:

In the front yard of all units:

- Sod
- An ornamental tree
- Evergreen accent shrubs across the front of the building
- Street trees (at approximately 25' intervals) in the tree lawn or tree wells

In the rear yard of all units:

- Sod or seed unpaved areas
- An ornamental or shade tree

Street tree species selection and planting must be coordinated through the Forestry Division. Additional planting, including shade or ornamental trees and shrubbery should be considered for

the side and rear yards. Landscaping should also be provided to screen off street parking areas from public view.

Fences and Walls

Fences are encouraged behind the building line and along the sides and rear of the property. They may be constructed of:

- Wood
- Wrought iron
- Masonry materials
- Chain link, when not visible from the street and with a matte black finish

Wood privacy fences must be a good quality board type design; stockade style fencing is not accepted.

Fences are generally discouraged in the front yards and are prohibited by ordinance in some areas of the City. When a fence is used in the front yard, it may be no taller than 42" and, typically, constructed to replicate traditional wrought iron fence designs.

When a building is located at the corner of a block and a fence is used to enclose the back yard, the line of the fence must conform to the building line of the street. A planting strip of at least 3' should be located between the fence and the public sidewalk.

Paving Materials

Paving and other road materials must be maintained to provide a safe surface with proper drainage. Walks must provide safe, convenient access to all dwellings throughout the development and between facilities or locations.

Appropriate paving materials are brick, concrete, and stone; asphalt paving may be used on driveways and parking pads. Masonry paving materials can be very durable and easy to maintain. Bricks or stones should be tightly set in sand to allow some compaction without excessive settlement so that a tight edge is maintained and no tripping hazards are created. Permeable paving materials should be used whenever possible to reduce runoff.

Parking

Adequate parking space must be provided for residents, guests, and service vehicles. However, all planning of vehicular access must take into consideration the safe and convenient movement of pedestrians to the building. At least one off-street parking space must be provided for every living unit. Provisions for handicapped accessibility for residents and guests should be included whenever possible.

Parking and garages must be at the side or rear of the site, not at the front, and access to parking or garages must also be from the rear of the property except where the original drive entered from the front or the majority of drives occur at the front.

Where existing garages are to be retained, they must be upgraded in the same manner as the rest of the property. This may include uncovering previously boarded openings, providing a new roof, upgrading siding and installing new overhead doors.

Proposed garages should be similar in size, design and materials to the other garages in the neighborhood. Masonry veneer walls may be required where the garage is visible from the street.

Site Planning for Infill Construction

For all in-fill construction, the proposed units must be consistent with the predominant existing buildings in respect to building alignment, set-back, massing, and scale. Primary facades should face public streets and have the same set-back as existing buildings.

The distance between buildings should match the existing spacing as closely as possible, i.e., new facades should occupy 75-80% of the lot width. Many existing lot sizes in St. Louis are as narrow as 25' which may present difficulties in accommodating new construction; therefore, new lots may increase the lot width but the rhythm, proportion, and massing of the new buildings must reflect the patterns established by existing residences. This requirement must be reflected in both the planning of the site and the design of the front elevation.

New Housing Developments

Large-scale housing developments should be planned so their perimeters are compatible with the surrounding city fabric. In some cases, the new construction may simply repeat the site planning features of the surrounding neighborhoods. In other cases, this may mean that the development is physically separated from the surrounding area by an appropriately designed landscaped or walled buffer.

The site design shall include:

- Location and dimensions of paved drives, parking areas, walkways and set-backs
- Proposed landscaping features such as fencing and plantings
- Identification of streets, alleys, and right of ways

Buildings with grade-level or low windows shall be set back from parking areas and shall be arranged to prevent direct or concentrated discharge of automobile exhausts into any window.

Building Exterior

Foundations

The foundation of an existing building must be carefully inspected for signs of settlement, buckling, water infiltration, or other failure. New foundations must be designed by a qualified professional architect or engineer, in compliance with all applicable codes.

Masonry

See “Masonry Walls”

Concrete

Concrete foundation walls should be repaired by scoring and undercutting cracks or other defects, and then filling flush with an appropriate patching compound.

Crawl Spaces

A crawl space must be cleared of all vegetation and organic matter, and must be sufficiently vented to prevent the build-up of moisture.

Requirements for ventilating openings:

- 1 square foot of clear opening for every 150 square foot of crawl space
- screened or louvered to keep out debris and rodents
- placed opposite each other to allow cross ventilation
- within 3' of each corner
- open and clear of debris at all times

Slab on Grade Foundations

Concrete slabs on grade should be used only on stable, compacted soil with no organic matter.

Requirements for slabs on grade:

- carry no structural loads
- minimum 4" thick
- reinforced with steel mesh fabric which controls thermal stresses, cracking from shrinkage, and slight movement in the soil bed
- minimum 4" compacted granular fill which increases soil stability, load-bearing capacity, and resistance to water penetration
- vapor barrier between the concrete and the granular fill, except at exterior slabs
- 1/2" expansion joint where a slab abuts adjacent construction

Moisture Protection

Surface water should be drained away from a building using protective slopes: 1% minimum on paved surfaces and 3% minimum for grassy areas.

A drainage system must be installed on any project in which the foundation is excavated; ground water must be diverted to a minimum 4" drain tile at the footing, connected to the city storm water sewer. The drain tile should be set in granular fill, and the foundation walls should be sealed with a damp-proofing system appropriate to the local ground water conditions. This will usually be a liquid applied coating, but in some cases may involve a more extensive system.

Parging of existing foundations is not allowed since it could accelerate deterioration by trapping moisture inside the foundation wall.

Walls

Masonry Walls

Masonry is an important element in the City's architectural character and every effort should be made to retain original detailing. Existing masonry must be carefully inspected for signs of settlement, buckling, or cracked or defective joints, or other failure. New masonry construction must be sensitively designed to be compatible with adjacent existing structures.

Masonry walls support vertical loads and usually require lateral bracing such as floor or roof plates or tie rods. Floor and roof joists prevent load-bearing walls from collapsing inward and tie rods prevent them from buckling outward. Consideration must be given to the structural stability of a wall before any of these elements are removed.

Tie rods usually were installed during construction but sometimes were added later. The system consists of an iron rod with a turnbuckle running in the joist space between opposite walls. The ends are bolted to anchor plates which may be ornamental if on the exterior (commonly a five-pointed star). Some anchor plates are bolted or welded to straps attached directly to a beam or joist. Existing tie rods should be maintained and repaired as required. New tie rods or straps may be an effective repair for a buckling wall. Consult a qualified professional engineer before attempting any major structural repair.

Requirements for masonry construction:

- Minor cracks or loose or crumbling mortar must be re-pointed
- Loose or deteriorated stones, blocks, or bricks must be reset or replaced
- After construction or rehabilitation, all masonry walls must be free of serious defects such as leaning, buckling, sagging, cracks or holes, loose materials, or other visible flaws
- New masonry units used to patch or rebuild existing walls must be consistent with the existing in color, texture, size, and shape. Bricks should be uniform in color

- Where existing openings are to be sealed or modified, the new masonry must be recessed a minimum of 2” from the exterior face of the existing wall. A detail should be provided with the architectural plans
- Re-pointing must match existing joints in color, texture, composition, and joint profile; mortar must be softer than the masonry units to prevent cracking and spalling—no more than 20% portland cement is recommended for existing masonry
- Missing or corroded tie rods and anchor plates should be replaced
- Masonry should be cleaned with a low pressure water spray (not more than 600 psi) or by using gentle detergents and a natural bristle brush
- Never use a metal bristle brush
- Masonry must never be sandblasted
- Masonry should not be painted or parged unless necessitated by an existing condition and specifically approved by CDA

Chimneys

In addition to the above requirements, the following will apply to all chimneys:

- Flashing should be installed at all roof edges for a continuous watertight joint and crickets installed where a roof slopes downward toward a chimney (see roofing section). Step flashing should be used for all masonry flashing.
- Top of the chimney should have watertight coping
- Chimneys may be capped but may not be removed where they appear as part of the street visible façade and intact detailing must be retained or replicated
- Chimneys that are to remain in use must be cleaned by qualified professional or lined pursuant to Building Division requirements
- Height and area requirements must be verified for compliance with Building Division requirements

Moisture Protection

In all new construction, or in any case where existing frame exterior walls are opened, moisture protection must be provided by installing an appropriate sealed vapor barrier at the interior side of the wall cavity or using a spray-on insulation in the wall cavity that provides adequate sealing as well as thermal protection. Sprayed foam insulation is encouraged since it provides an effective moisture and infiltration barrier especially in rehabilitation projects.

Framed Walls

Requirements for wood framing members:

- No structural defects such as rotting, splitting, shrinkage or severe deflection
- No excessive or inappropriate drilling or notching for electrical, plumbing, or mechanical systems
- No signs of termite infestation
- No signs of fungus or mildew

Roofs and Flashing

The roof should be the first priority on any rehabilitation project. If the roofing appears to be well worn, it should be replaced. The roof should be stripped to the bare sheathing so that a thorough inspection can be made of the substrate and deteriorated or inadequate materials can be removed and replaced.

After construction or rehabilitation, the roof must have:

- No daylight penetrating the roof or roof edges, except at vents
- No new water stains on the rafters or sheathing
- No sagging, heaving, or buckling of the sheathing
- No sagging, split, or rotting rafters
- No protruding nails
- Secure flashing at all joints and protrusions
- Roof surfaces, gutters, and downspouts free of debris
- Warranty provided to buyer/owner

For all roofs and roof coverings, the construction documents shall illustrate, describe, and clearly delineate the type of roofing system, materials, fastening and flashing requirements that are to be installed.

Sloped Roofs

Existing slate, wood shingle, clay or cement tile should be retained wherever possible. Replacement materials may include any of the preceding or asphalt composition shingles or synthetic slate. Architectural grade shingles may be required in some instances.

Roll roofing is not appropriate for any street-visible surface. Sheet metal or wood shingle roofs may be appropriate in certain circumstances and in a few cases, special shapes and colors should be used to replicate historic roofing patterns.

Low Slope (Flat) Roofs

Built-up roofs must have no separations, cracks, or blisters in the roofing felt or asphalt and the edges should not be curled, cracked, or separated. Membrane roofs must have no surface defects and the seams tightly sealed.

When a low slope roof with a low parapet is replaced, the coping must be removed and the roofing material lapped over the top of the wall. Coping tiles must be firmly reset and any missing or damaged units must be replaced. Roofing material must extend at least 8" up any intersecting wall, parapet, or chimney and be tightly secured with counter-flashing or a termination bar with appropriate sealant. Low areas subject to ponding must be raised for effective drainage.

Gutters and Downspouts

Original street-visible copper or ornamental gutters, downspouts, gargoyles, or scuppers should be retained and repaired. All new downspouts must be placed in the least conspicuous location possible. Any deteriorated or leaking sections of gutters or downspouts must be repaired or replaced. Gutters, downspouts, and connections must be properly sized for the roof area and of one consistent color.

Downspouts must be connected to City sewers according to Building Division requirements. On porches and other small roofs where downspouts are not required to be connected to the City sewer, they must be fitted with an appropriate splash block.

Flashing

Flashing should be installed anywhere moisture can settle, especially at horizontal joints between dissimilar materials. Some critical areas are as follows:

- Roof valleys and changes of pitch
- Gutters or scuppers
- Intersections of roofs and walls, chimneys, or parapets
- Vents and other protrusions through a roof
- Lintels and relief angles, brick ledges, or any horizontal surface within a wall cavity
- Over the top of cornices or other protruding trim

New flashing must have a surface life at least as long as that of the remainder of the roofing or adjacent construction. Step flashing should be used in masonry walls or chimneys. Where flashing is visible from the street, it should be of an appropriate material and color. Flashing should be turned up at open ends to form a dam and should extend behind wall sheathing.

Weep holes must be provided in masonry walls at 16" on center to allow trapped moisture to escape.

All joints between dissimilar materials must be made water tight with an appropriate sealant.

Exterior Architectural Details

Original detailing must be retained or replicated on all existing porches, bay windows, or other architectural features. Wrapping or covering of wood trim may be appropriate only in certain areas not visible from the street and as accepted under preservation requirements.

Porches are often the most prominent feature of a building so they merit special consideration. Tile floors should be cleaned and repaired where possible and any cracks should be sealed. Worn floorboards that are still structurally sound can be turned over and reused. Where detailing such as moldings, columns, brackets, or festoons is missing or cannot be repaired, replacement parts should match the existing as closely as possible.

The following apply to all finish carpentry and exterior architectural details:

- New railings must be constructed according to Building Division requirements and should reflect the design of the building. Where wood railings are appropriate, they must be of a design appropriate to their use and location; in most cases, they will consist of milled 2x4 top and bottom rails with 1x2 balusters at 4" on center. Where the existing railing is lower than current building code requirements allow, a variance might be granted if the height above grade is not too great. It may be necessary to add an additional rail above the existing but it should be kept as simple as possible.
- Flat surfaces must be sloped to shed water away from the building. Porch or deck floors should have a minimum slope of 1/4" per foot
- New wood should be treated to resist rot and infestation and all street-visible surfaces must receive an opaque finish
- Wood porches or decks must be skirted with lattice or vertical wood siding

Exterior Finishes

The following apply to all exterior wood surfaces:

- Any missing or deteriorated elements must be repaired or replaced
- Knots, resinous wood, and nail holes in wood siding, millwork, and trim must be sealed with a prepared sealer or aluminum paint prior to puttying and priming
- Any nail holes or cracks in surfaces to be painted must be filled flush with putty and sanded smooth
- All surfaces must be scraped or sanded to remove loose materials and edges feathered for a smooth face. Existing paint that is not removed must provide for a smooth finish with no visible cracks or "alligatoring".
- Primer should be applied to all surfaces to be painted before or immediately after installation. Finish coats formulated to serve as primers may be used

Building Interior

Most of the planning principles outlined in this guide apply to new residential construction as well as rehabilitation projects:

- Efficient use of circulation space
- Adequate room sizes and relationships
- Light and ventilation standards
- Consideration of furniture layout
- Consideration of existing architectural features

Interior Planning

Interior Demolition

Never remove interior walls without:

- Determining the structural role of the wall in question
- Considering the proportions of the new room (the relationship of ceiling height to length and width)
- Removing and saving important architectural details before beginning demolition
- Consulting Section 106 guidelines

A detailed demolition plan and scope of work may be required on projects with more difficult or involved conditions.

Room Layout and Circulation

Consideration should be given to room placement in regard to proposed uses. Dining rooms and eating areas should be immediately adjacent to the kitchen. Bathrooms with bathing facilities should be located near bedrooms and away from living spaces. Bathrooms must not open directly into living areas such as kitchens, living or dining rooms; they should open from hallways or similar conditions where privacy will be provided.

Natural Lighting and Ventilation

Natural lighting and ventilation should be maximized on all projects. Existing window and door openings should be retained whenever possible. Living rooms, dining rooms, and bedrooms must include at least one window that can be easily opened for ventilation. At least one window is required in each room for natural illumination and ventilation. The glass area of the window must be equal to at least 8% of the floor area of the room and the window must provide an openable area equal to at least 4% of the room.

Smoke and Carbon Monoxide Detectors

Single or multiple UL listed smoke detectors shall be installed in the immediate vicinity of all bedrooms, in all bedrooms and in each story within a dwelling unit including basements. Floor levels that do not contain bedrooms shall have the detector located at the ceiling near the stairway. Smoke detector locations must be indicated on the floor plans.

Provide not less than one approved carbon monoxide detector outside the area of sleeping rooms and additional units as required by the Fire Marshall in buildings heated by a fossil fuel powered heating unit. Generally, an additional detector is required near the furnace. Locations must be indicated on the floor plans. Smoke and carbon monoxide detectors should be hard-wired with battery backup and must conform to all Building Code standards.

Interior Furnishings

Window blinds should be provided in all street-facing windows including basement openings. Blinds should be provided in all windows of rental properties.

Entrances

Vestibule or Foyer

Where possible and in all new construction projects, a separate space must be provided at the main point of entry. This area must have durable hard surface flooring and a closet for the storage of coats.

Flooring at Entrances

A hard surface flooring material (resilient, hardwood, ceramic tile, etc.) must be provided at each entrance to the house. The flooring transition should be designed to minimize its impact on the room.

Living Areas

Living Space

Dwelling units should provide space for general family living. The amount of space for food preparation, dining and other activities must be proportionate to the number of bedrooms. A dining space can be a separate room or can be combined with a living room or kitchen space. The living spaces should have plenty of natural light and be easily accessible to the entire family. An area of hard surface flooring should be provided inside the front door and a coat closet must be convenient to the main point of entry. Typically, a half-bath should be provided on the first floor. Where possible, indoor living space should be adjacent to an outdoor deck or patio.

Kitchens

In an efficient kitchen, the activity centers focused at the refrigerator, sink and range make up the three points of a work triangle and the sides of the triangle add up to no more than twenty-three feet. The smaller the triangle, the greater the efficiency; its minimum size is dictated by the need for working space—each activity center must have a minimum of counter area and storage volume.

Avoid layouts that route household traffic through the work triangle and allow at least 48” between facing base cabinets or appliances—enough space to allow one person to stand at an open cabinet, refrigerator, or oven while another person walks past.

The sink is the main activity center. Ideally, it belongs at the center of the work triangle with 4-6’ of the range and 4-7’ of the refrigerator. Locate the dishwasher within 12” of the sink for convenient loading and the simplest pattern of plumbing connections. Do not sit the dishwasher at right angles to the sink—in this arrangement, it is not possible to stand in front of the sink while the dishwasher is open. Counter space should be provided on both sides of the sink.

A double-bowl sink is required for most kitchen layouts although a single-bowl sink may be acceptable in some layouts when a dishwasher is also provided.

The range is the cooking and serving center, best located for easy access to the dining area. It is also the source of most kitchen injuries. Avoid an arrangement in which people passing through the kitchen are likely to brush against the range and never place the range within 12” of a window. Provide a minimum of 12” of counter space on each side of the range. Wall cabinets over the range should be at least 30” above the cook-top surface.

Locate a refrigerator at the end of a counter where it will not cut counter space into small, cramped work areas. The refrigerator door should swing away from the counter so the open door will not block workspace. To dissipate the heat of the condenser coils at the back of a refrigerator, allow at least 3” between the top of the unit and any overhanging cabinets and 1-2” between the side and adjoining wall.

Any of the three activity centers can be located in a kitchen island or peninsula or such space may be used entirely for work surface. A breakfast bar or serving counter may also be included in the island or peninsula. An island or peninsula provides an economic opportunity for buffering living areas from the kitchen.

Ventilation

Kitchen areas must have proper ventilation, which should include an operable window. An exhaust fan vented to the exterior is required at the range. Mechanical ventilation must not occur through street-facing exterior walls or through the roof where it will be visible from the street.

Lighting

In addition to general lighting, task lighting should be located over work areas like the sink or range and the countertops. This could include lighting that is integrated into the cabinetry.

Electrical Sources

Outlets above countertops must be spaced no more than 4’ on center, be located 6” above the countertop, and must be protected by a ground fault interrupter (GFI). Additional outlets may be required depending on the kitchen layout.

There should be two separate 20 amp circuits (minimum) for the heavy workload area in the kitchen. For appliances such as the refrigerator, dishwasher, garbage disposal, and microwave oven, separate circuits are required.

Counters

Counter top materials should be securely bonded to 5/8" plywood or equivalent material. Top material may be plastic laminate, ceramic tile, stainless steel or other suitable material. Seams in countertop materials should not be located near the dishwasher or range due to the likelihood of moisture or heat damage.

A frequent problem in reuse kitchens is the conflict between counter height and windowsill height. Existing sills are often lower than the standard countertop height. Where possible, counters should be placed on inside walls so sills are not raised. Sills may only be raised on exterior walls that are not visible from the street. Where sills are raised on masonry walls, new brick must be recessed a minimum of 2" (a detail must be provided).

Bedrooms

Every sleeping room must have at least one operable window or exterior door for emergency escape or rescue. Escape windows must have a minimum net clear opening of no less than 5.7 square feet with an opening width of at least 20" and a height of at least 24". The interior sill height of the windows must be no greater than 44" above the finished floor.

Bedrooms must have closet space equipped with a rod and shelf. Double occupancy bedroom closets must be at least 2' deep and 6' wide. Single occupancy bedroom closets must be at least 2' deep and 3' wide. A ceiling mounted light fixture should be provided in walk-in closets.

Where possible, bedrooms should be located away from living areas, noise, and other disturbing conditions on the exterior. Ceiling fans with light fixtures are recommended in all bedrooms to enhance energy efficiency and reduce air-conditioning requirements.

Bathrooms

Fixtures must be placed with special care to provide minimum clearances at the front and sides. Wherever possible, consideration should be given to access for persons with disabilities. Efficient plumbing layouts should be employed where new plumbing is installed. Water saving fixtures and fittings are required on all projects.

Floor joists under the tub have extra bracing and the best location is along a wall or in a corner. Position the tub so the plumbing wall may be accessed for repairs.

The lavatory is the most frequently used fixture. Place it well away from the tub and toilet, with space around it for towel rack, hooks, and storage shelves. In a windowed bathroom, try to give the lavatory the advantage of natural light.

Ventilation

Bathrooms must have at least one operable window or other exhaust ventilation. An exhaust fan should be located close to the shower.

Lighting

Natural illumination is desirable whenever possible. A wall switch operated ceiling or wall light fixture must be present and working in the bathroom. Consideration should be given to additional lighting requirements over the tub/shower and over the vanity counter.

Electrical Sources

Electrical switches and outlets must not be accessible from the tub or shower. Bathroom outlets must be protected by a ground fault interrupter (GFI).

Moisture Protection

Shower compartment floors and walls shall be finished with a wear-resistant and nonabsorbent surface to a height of not less than 6' above the floor. Shower and tub backing should be moisture resistant. Moisture resistant gypsum board must be provided at all plumbing walls and areas subject to moisture.

Bathroom Accessories to Include:

- Soap dish at tub or shower
- Shower curtain rod or enclosure at shower
- Toilet paper holder
- Medicine cabinet
- Mirror above vanity, proportionate to width of vanity
- One towel bar convenient to tub and lavatory
- Grab bar with blocking, recommended

ADA compliant bathroom accessories are recommended for all projects.

Closets and Storage

Coat Closet

A coat closet must be included and should be located near the main point of entry. Moisture resistant flooring should be provided at coat closets to allow for wet boots or rain gear.

Linen Closet

A linen closet must be included in every unit. The closet should be located near the bedrooms and bathing facilities. Where space permits, an additional linen closet may be included within full bathrooms.

Clothes Closets

See comments under “Bedrooms”.

General Storage

General storage (in addition to clothes, linen, and pantry closets) must be provided in the dwelling unit, in the basement, or in a garage or similar outbuilding.

All closets must provide for adequate ventilation and lighting.

Laundry Facilities

Laundry facilities must be provided for dwelling units with two or more bedrooms and may be located within the living space or in the basement.

All laundry facilities must include external ventilation for the dryer and a floor drain for the washing machine. A shelf for storing laundry supplies and linen should also be provided.

Laundry facilities located within finished spaces should be housed in a laundry room or closet and must include a safe-pan and drain for the washing machine and an external vent for the dryer. In these spaces, resilient flooring must be provided under the equipment, including adequate space in front of the washing machine to prevent cleaning supplies from splashing on carpet or similar surfaces.

Basements

Where no garage or outbuilding is provided for storage, exterior access to basements should be provided for storage of bicycles, lawnmowers, etc.

Interior access must be provided when storage, laundry facilities, or mechanical equipment is located in the basement. Basement stairs should be painted to protect against possible moisture damage.

Basements in new construction projects should anticipate possible use as living area therefore include HVAC registers and at least one egress window.

Plumbing

Provide a floor drain in the basement near laundry and mechanical equipment.

Interior Finishes

Paint

When trim moldings are used, all of the elements of door, window, and stair trim should be coordinated. All interior wood millwork and trim must be finished by painting or natural finishing.

Efforts should be made to preserve existing trim and doors. No pre-finished trim or doors are permitted (this does not include pre-primed materials).

New interior windowsills must be covered with a durable, moisture-resistant material. Gypsum board is not appropriate.

Ceramic Tile

Ceramic tile that exists as original flooring should be maintained. Repair and replace broken or cracked tiles.

Interior Concrete

If painted or stained, interior concrete floors should have at least two coats of resin-emulsion paint, solvent rubber paint, or a floor and deck enamel. If oil paint is used, the surface shall be neutralized before painting. A coat of wax shall be applied over paint, stain, or an integral finish.

Resilient Flooring

Resilient flooring includes materials like vinyl, linoleum, and cork. Resilient flooring shall be installed over a suitable underlayment.

Hardwood Flooring

Where possible, original hardwood floors should be retained and restored. Carpeting over hardwood flooring often damages the wood and adversely impacts the character of the building. Furthermore, hardwood floors offer an excellent marketing opportunity.

Stairs

If an existing staircase is in good condition, it might only need to be refurbished. On damaged staircases, rebuild any structural faults and repair ornamental details as sensitively as possible. If the floor opening is altered when building new stairs, the rise and run proportions must conform to contemporary building code.

Openings

Doors

Exterior Doors

Front doors in rehabilitated buildings should have the same dimensions as the original door, including the same height. Because the primary entry door is a critical element of a building's front façade, it is preferable to reuse the original front door or to select one of similar style. Where security is a concern, door glass may be replaced with unbreakable transparent material, such as Lexan. Transoms and transom sashes should be retained, although the sashes may be fixed in place.

Front doors in new buildings should be carefully chosen to be compatible with the building's architectural design and should reflect the design of other doors in the neighborhood.

New exterior doors may be of wood or metal and may be pre-finished; insulated doors are typically required. Doors for openings that pose a security problem, such as obscure basement doors, should be solid core wood doors or metal insulated doors of appropriate gauge without glazing.

Wood or pre-primed steel doors and door frames must be painted and must have weather-stripping installed.

Mail slots, if provided, must be weather sealed.

Deadlocks must be provided for each exterior door. All locks must be operable from the interior without the use of a key. All sliding doors must have a keyed lock.

Interior Doors

Door styles should be consistent throughout each unit. Simulated wood grain pre-finished doors or trim are not acceptable.

Closets with either hinged or bi-fold doors are acceptable. However, a swing door is recommended for ease of operation and greater durability. Louvered doors should be provided where ventilation is an issue. Wide doors (36") should be provided for bedrooms and at least one bath to allow for easy access.

Privacy locks should be installed on both master bedroom and all bathroom doors.

Windows

All operable windows should:

- Fully fit the original opening
- Open easily
- Have the window hardware and locks

- Be energy-efficient, conforming to Energy Star requirements
- Have weather-stripping installed
- Be painted or clad with a low-maintenance material
- Have insect screens

Replacement Windows

Windows are an expression of a building's architectural design so significant changes often detract from the appearance of the building. On sides of buildings visible from the street, it is recommended that replacement windows be of the same type (double hung, casement, etc.) and dimensions as the original window. Sizes of windows may be modified only on non-visible or rear facades.

Glass block is not an acceptable material for window closures.

Window Insulation

New windows may be composed of any approved material, including wood, vinyl, aluminum, and fiberglass but must meet Energy Star requirements for air infiltration, water penetration, physical loading, glazing, and thermal separation where necessary.

Replacement windows should be installed within the existing window frame behind the existing brickmold. The original brickmold, where missing or deteriorated, should be replicated and replaced where possible.

Storm windows, when installed, should be of color-clad material and should replicate the sightlines and dimensions of the prime windows.

Windows in buildings of four or more stories in height should have sashes that can be glazed from the interior.

Vents

Passive vents are required in attics or crawl spaces and mechanical vents in bathrooms and kitchens without operable windows. Original decorative vents should be retained whenever possible. New vent openings should not be located on street facades or on visible roof slopes where they will detract from the building's appearance

In attics, vents must be installed to provide cross ventilation in each separate space. Ventilation paths in the roof must be kept open so that air moves freely. Mechanical ventilation may be necessary for some roof/attic vents.

Vent pipes must be properly maintained and free of rust. All vents must have an exterior cover for weather protection and appropriate flashing must be installed to eliminate water infiltration. Where vent pipes are connected to a masonry chimney, the chimney must have all mortar joints tightly sealed.

Utilities and Energy Efficiency

Energy Efficiency

Energy conservation is required on all projects; a RESNET certified energy auditor must be engaged on all projects to review and confirm energy conservation measures and methods. All new construction and gut rehab projects must be Energy Star certified; all other projects must meet Energy Star standards to the fullest extent possible. All new glazing, doors, exterior walls, and roof must be insulated; all new equipment and devices must be high efficiency including HVAC, water heater, appliances and electrical fixtures; Energy Star certified equipment must be used wherever available.

CDA recommends that an energy auditor be engaged in the preliminary design phase to insure that Energy Star requirements are designed into the building as early as possible.

All general contractors must complete ENERGY STAR Orientation Training; all HVAC contractors must be credentialed through an EPA recognized industrial quality and oversight organization.

Accessibility and Universal Design

Provisions for accessibility by the disabled are encouraged on every project. Alterations to individual dwelling units and to common areas, such as entrances and lobbies, should, to the maximum feasible extent, be made accessible to and usable by all people. CDA reviews accessibility requirements on all projects on two major regulations: the Fair Housing Act of 1968 and Section 504 of the Rehabilitation Act of 1973.

The Fair Housing Act requires that all new construction, multi-family housing projects of four or more units make provisions for accessibility. The design and construction guidelines of the Fair Housing Act require accessible or adaptable living units on accessible routes and have requirements for specific accessible features:

- Accessible building entrance on an accessible route
- Accessible and usable public and common use areas
- Usable doors
- Accessible route into and through the covered unit
- Light switches, electrical outlets, thermostats, and other environmental controls in accessible locations
- Reinforced walls for grab bars
- Usable kitchen and bathrooms

For additional details and recommendations regarding the Fair Housing Act criteria, refer to HUD's Fair Housing Act Design Manual, August 1996.

Section 504 applies specifically to projects receiving federal funding. It requires provision of units within a multi-family housing development that are adaptable for individuals with mobility impairments and also units that are adaptable for individuals with hearing or vision impairments. Section 504 applies to rental properties of all kinds including scattered site, single-family homes but does not apply to properties that are for sale.

Substantial rehabilitation projects of 15 or more units and new construction projects of 6 or more units require the following:

- 5% of all units (with a minimum of one unit) must be accessible or adaptable for residents with mobility impairments
- an additional 2% of all units (with a minimum of one unit) must be accessible or adaptable for residents with hearing/vision impairments

The Uniform Federal Accessibility Standards is the design standard for providing physical accessibility on projects subject to Section 504 requirements.

The International Building Code (as adopted by the City of St. Louis) also has accessibility requirements for all buildings and structures, including associated sites and facilities. Requirements under the Building Code must be determined by the Building Division.

Hazardous Materials

Lead-based Paint

The majority of St. Louis housing was built before 1978, the year the use of lead-based paint was banned in residential buildings. Many buildings built before 1978 contain lead-based paint. The vast majority of buildings built before 1950 contain significant amounts of lead-based paint on both the exterior and interior. Renovation projects must anticipate work requirements and costs for the reduction of lead-based paint hazards.

All CDA funded projects must comply with the Residential Lead-Based Paint Hazard Reduction Act (Title X) and HUD's Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing. Title X requires testing and remediation in all federally funded housing projects by certified inspectors and workers. HUD's Guidelines provide detailed, comprehensive technical information on how to identify and control such lead-based paint hazards safely and efficiently.

Prior to the completion of the project Design Review, CDA will require submission of materials and information to indicate compliance with these requirements:

- Lead-based paint inspection or risk assessment data
- Complete abatement and/or interim control plan
- Missouri certification of all inspectors, supervisors, and workers
- Clearance test results upon completion of construction

The project general contractor, abatement contractor and all workers entering the building prior to clearance must have appropriate EPA approved training and certification; copies of certificates must be submitted to CDA with the abatement plan and with construction draw requests.

CDA will not review the submitted abatement plan for conformance to current approved abatement and worker protection practices but only for establishing the project scope of work, budget requirements, and architectural and historic impact.

Radon

All projects must be tested to confirm levels of radon infiltration; radon mitigation systems are required if test results exceed EPA allowable exposure levels.

Other Reviews and Permits

Other Reviews

Section 106 Review

Section 106 of the National Historic Preservation Act of 1966 (revised) requires that all federally-funded projects be evaluated for the effect of the proposed project on any historic resource. A historic resource is defined as a building, structure, object, site, or district that is either listed on the National Register of Historic Places or is eligible to be listed. This means that any rehabilitation or new construction project which is subsidized with federal funds must be reviewed under the Section 106 procedures that have been established by the Federal Advisory Council on Historic Preservation (the Advisory Council).

In an effort to expedite this review, the City of St. Louis and its Cultural Resources Office have negotiated a Programmatic Agreement with the Advisory Council, the Department of Housing and Urban Development (HUD), and the Missouri State Historic Preservation Office (MO-SHPO) to assign HUD's responsibility for Section 106 review to the City. Projects need only be submitted for State and Federal review when agreement cannot be reached between the City and the applicant or when demolition is contemplated.

The Determination of Eligibility for the National Register is made by the Section 106 Reviewer. The building and area are assessed for their possible eligibility for the National Register of Historic Places using National Register criteria. Both individual buildings and whole neighborhoods may be eligible for the National Register. While a particular building may not qualify for the Register individually, it may still be eligible as part of a district that meets the criteria.

If the property is determined eligible for the Register, the plans for the project must adhere to the Secretary of the Interior's Standards for Rehabilitation.

The Section 106 Reviewer reviews the proposed development plans for conformance with the Standards. Requests for additional information, notification of non-conformance and suggestions for more appropriate alternatives may be included in the Information Request letter.

If a project cannot comply with the Standards or involved demolition of a historic building, then it is determined to have an adverse effect on the historic resource. Once the adverse effect is identified, plans for the project, documentary photographs, and structural evaluations must be submitted to the Missouri State Historic Preservation Office in Jefferson City for review. The MO-SHPO and the City meet to discuss the project and its impact. At this point, the Advisory Council may also choose to participate in the discussion of the project.

Cultural Resources Office Review

The Cultural Resources Office was established to review for compliance with established rehabilitation and design standards all exterior work on landmarks or buildings:

- Located within a designated historic district
- Within 300 feet of a historic district or landmark
- Projects within 300 feet and visible from a public park
- Any encroachments into the public right-of-way
- Projects paid for by general revenue funds
- Demolition permit applications

Where applicable, this review is performed by the Section 106 Reviewer as part of Design Review and need not be resubmitted as part of the building permit application.

Redevelopment Area Review

To ensure compliance with the provisions of the Redevelopment Plan and Ordinance that would apply if the property is or becomes a Redevelopment Area, projects are reviewed for conformance with Land Clearance for Redevelopment Authority design requirements. This review is primarily concerned with façade, landscaping, maintenance and site conditions as specified in the Residential Design Guidelines. The Design Review Information Request letter includes the LCRA design requirements.

Permits

Building Permit

A building permit is required when any structural change or major alteration is made to an existing building or when any new construction is undertaken. Separate permits for plumbing, mechanical, and electrical may also be required.

An application for a building permit is made in person in the Building Division—Permit Section, Room 425, City Hall. The application can be made by the owner, registered design professional, or the contractor. It is the owner's responsibility to secure and post the building permit on the job site.

Generally, four sets of construction documents are required. These are necessary to enable the Building Division Plan Exam Section to determine if the new construction, addition, or alteration to existing buildings will meet all the safety requirements of the Building Code. In many instances, it will be necessary to have the project drawings prepared and sealed by an architect and/or engineer who is registered in the State of Missouri. Where required, the Cultural Resources Office review will be accomplished as part of Design Review before the plans are submitted to the Building Division.

Certain items of work (for example, general repairs to an existing building) do not require construction documents but do require a detailed work write-up explaining the scope of the project, the location of the project relative to property lines, and an explanation of the work to be done and the materials to be used.

For CDA-funded projects, four sets of plans bearing the CDA/PUDA signature stamp are submitted to the Building Division for permit application. This stamp indicates that Design Review, Redevelopment Area, Section 106, and local historic district reviews are complete. These plans should be routed through the “One Stop Shop” for expedited processing.

Occupancy Permits

Occupancy permits are required for all residential CDA projects.

At the conclusion of construction, Building Division inspectors (including mechanical, electrical, plumbing, and building inspectors) make a final inspection of the project. If the contractor has demonstrated compliance with the construction documents as submitted to the Building Division for building permit application, the inspectors sign off on the project.

The general contractor requests an occupancy permit from the Building Division, Permit Section—Occupancy Desk. A copy of the permit is then forwarded to the Housing Analyst.

This is not a General Occupancy Permit but is referred to as a “PMT,” which is an occupancy permit issued off of the building permit and is free of charge.

Metropolitan Sewer District Permit

For new construction projects or other new connections to the City sewer, a permit is required. The applicant submits a site plan (including elevation of site and slope of proposed lateral) to the St. Louis Metropolitan Sewer District—Engineering Department. After obtaining a permit, a copy shall be forwarded to the Housing Analyst.

Zoning and Subdivision Regulations

Subdivision regulations control the division of a parcel of land into individual lots so they may be sold and/or developed. They include aspects of subdivision design, including lot size and shape and street width and layout.

The City of St. Louis’ subdivision regulations are contained in Rules and Regulations of the Board of Public Service Governing the Subdivision of Land in the City of St. Louis. A copy of this document, referred to as Board Order No. 720 (amended), may be obtained at the Office of the Secretary of the Board of Public Service, Room 300, City Hall.

Glossary

Anchor plate: An iron plate, often ornamental, to which a tie rod is bolted.

Arch: A curved or pointed structural member used to span an opening.

Apron: A plain or decorated piece of interior trim located directly beneath the stool of a window.

Baluster: One of a series of short uprights supporting a rail or coping.

Balustrade: A rail or the portion of a railing consisting of the handrail, bottom rail and balusters, as along the edge of a staircase.

Baseboard: A finishing trim board that covers a plastered wall at its base where it meets the floor.

Bat insulation: Insulating material usually composed of mineral fibers made in small units for installation between studs or joists.

Bay window: A projection from a building, sometimes rising several stories, filled by one or more windows at each story.

Beam: A long horizontal structural member usually made of wood or steel that spans between columns and walls and supports the weight of the floor.

Belt course: A horizontal section or strip of wood, stone, or brick applied at the same level across the façade or all around a building.

Board and batten: A type of exterior siding composed of wide vertical boards overlaid with narrow strips at the joints.

Bow window: A curved bay window forming a segment of a circle.

Bracket: An L-shaped support, usually decorative, beneath a projecting cornice, lintel, or windowsill.

Building line: A line defined by the location of the front facades of a majority of buildings on a block not including projecting porches or bays.

Butt hinge: A hinge with one leaf attached to the edge of a door and the other to the inside of a door jamb. Usually the leaves are mortised into the door edge and jamb.

Butt joint: A joint formed when two surfaces are placed end-to-end or edge-to-edge.

Canopy: A projection over a niche or doorway, often decorative.

Capital: The upper, decorated portion of a column or pilaster.

Casement window: A single-sash window hinged on one of its vertical edges.

Casing: The decorative trim around a window or door.

Cast iron: Ornament formed by casting a hard alloy of iron. The material is harder but more brittle than wrought iron.

Chair rail: A molding placed around the room about 30" above the floor (or at chair-back height). Originally used to protect the wall from damage, now installed as a decorative feature.

Clapboard: A tapered, narrow board. In clapboard siding, overlapping boards are placed horizontally as an exterior finish on frame construction.

Caulking: Soft, expandable material used to fill spaces or cracks in window frames, fixtures, pipes, etc.

Column: A vertical shaft or pillar, usually circular in plan, that supports or appears to support a load.

Coping: A masonry or metal element installed at the top of brick or stone walls that prevents water from seeping into the walls and may also give a decorative finish

Corbel: A series of projecting bricks or courses on a masonry wall used to support a load or for decorative effect.

Corner board: A board placed at the corner of a traditional sided building into which clapboard butts.

Cornice: An ornamental projection at the top of a building or internally, the transition between wall and ceiling. Also, any continuous molded and projecting cap to a wall, window, or door opening.

Counter flashing: A piece of flashing laid over another piece of flashing.

Course: One horizontal row of masonry.

Crawl space: The shallow space between the ground surface and the first floor of a building or that between the top story ceiling and the roof.

Cricket: A built-up section of roof to direct drainage away from the intersection of two roof slopes or a slope and wall.

Dentil: One of a line of small rectangular blocks often found in the lower part of cornices or moldings, etc.

Dormer: A vertical window projecting from the slope of a roof with its own roof and walls. Used to add space, light, and air to attic rooms.

Double-hung window: A window with upper and lower sashes, each moveable by cords and weights.

Downspout: The pipe that carries water from roof gutters to the ground.

Dripline: A circle on the ground that corresponds to the outermost extent of the foliage of a tree.

Drywall: Prefabricated panels of gypsum faced on both sides with paper. More correctly referred to as gypsum board.

Eaves: The part of the roof that projects horizontally beyond the side walls of the building.

Elevation: A side of a building; a façade. Also used to denote a two-dimensional drawing of the side of a building.

Encapsulate: A coating that meets specific requirements for lead abatement by the Department of Housing and Urban Development.

Façade: The face or side of a building. In particular, the side, usually the front, that has been given heightened architectural treatment (also called the primary façade).

Faceplate: Metal plate covering that surface of the door immediately behind the door knob. Also called an escutcheon.

Finish coat: The final coat of plaster that gives a wall or ceiling a smooth surface. Also, a final coat of paint.

Finish floor: The topmost layer of wood, tile, or other decorative flooring material that is applied over the rougher sub-floor.

Flashing: Thin metal or other membrane material applied to a wall and roof junctions and angles to prevent leaks.

Footing: An enlargement at the base of a foundation or pier to transmit the load to the soil below and is generally made of concrete.

Foundation: The substructure of a building that serves to transfer the load of the structure to the ground; constructed generally of stone, brick, concrete, or concrete block.

Foyer: A small room or hall entered from the front or main door of a house, separate from the primary living spaces.

Frieze: A plain or decorated band or board on top of a wall and immediately below that cornice. A porch cornice may also carry a frieze.

Furring: Strips of wood or metal attached to wall studs or interior brick walls to form a level surface for finish materials and to create an insulating and moisture-resistant air space.

Gable: The triangular upper portion of the wall at the ends of a ridged roof.

Girder: A large horizontal beam of wood or steel that supports walls or joists.

Glazing: The act of putting glass in windows or doors; also, the glass material itself.

Gutter: A trough, usually of metal, placed at the eaves of a roof to catch water and direct it to the downspout.

Infill: A new building constructed among or between existing buildings, often on the site of a demolished structure.

Jamb: The vertical pieces of a window or door frame.

Jamb molding: Decorative finish molding around a door or window.

Joint: In masonry, the mortar-filled space between individual bricks or stones.

Joist: A horizontal beam laid parallel with other beams to support a floor or ceiling.

Knob and tube wiring: The first residential electrical system, now antiquated, consisting of two separate insulated wires installed through the use of knobs and tubes.

Lateral load: A measurement of the amount of side pressure or stress a structure can support.

Lath: Strips of wood or metal mesh that are attached to studs or joists in walls and ceilings to serve as a base for plaster.

Lintel: A horizontal, rectangular beam of wood, stone, or steel above a window or door opening that supports the weight of the wall immediately above it.

Load-bearing wall: A wall that supports the weight of a building.

Masonry: Any building or structure constructed of brick, stone, cement, concrete, or tile.

Millwork: Doors, windows, etc. made or once made by a planning mill.

Molding: Decorative strips of wood used for ornamental or finishing purposes.

Muntin: A thin strip of wood holding panes of glass within a window.

Newel: The post at the top, bottom, or landing of a staircase that supports the handrail; often called a newel post.

Parapet: The part of a wall that rises about the roof; also, a low wall or railing around a balcony.

Parging: Covering of a wall or foundation with a thick, cementitious paint or mortar.

Parting stop: Vertical strip of wood separating upper and lower sashes in a double-hung window.

Pediment: A decorative triangular form atop a structure, especially over a portico, window, or door. Derived from classical architecture.

Pier: A square pillar that supports an arch; also, the solid mass between two openings in a building.

Pilaster: A rectangular post or half post with base, shaft, and capital that is attached to a wall. It can be decorative or provide structural reinforcement.

Post: An upright support.

Primer: First coat of paint applied to a substrate.

Rafter: A roof member, often sloping, that extends from the eaves to the ridge of the roof and supports the roof materials.

Rail: The horizontal member of a door or window.

Railing: A barrier or guard that is composed of a horizontal rail supported by the vertical posts.

Ridge: The horizontal line formed when two roofs meet.

Riser: The vertical part of a step beneath the tread; the front of the step.

Sandblasting: A method of cleaning and paint removal using fine sand grains blown at high pressure against the material to be cleaned. Sandblasting is safely used only on metal. The process is highly destructive to masonry.

Sash: In a window, the frame into which panes are set.

Sealant: A waterproofing material used to fill cracks on the exterior of a building.

Service box: A metal box that houses the main electrical switch and its fuses.

Shingles: Thin, rectangular pieces of wood, asphalt, or other material used in overlapping rows as a means of covering walls or roofs.

Sill: The framing member that forms the lower side of an opening. A window sill is the lower, projecting lip on the outside face of a building.

Sistering: The attachment of a sound structural member to an existing, compromised or weakened member.

Soffit: The exposed underside of an horizontal structure such as an arch, eave, beam, or stairway.

Soldier: A brick laid on end so its faces are positioned vertically on a wall surface.

Splash board: An element installed around a sink or tub that protects the wall from water.

Stool: On the interior of a window, the shelf-like element extending across the base of a window opening.

Stretcher: A brick laid horizontally with its sides toward the face of the wall surface.

Stringcourse: A narrow, continuous horizontal band on an exterior wall, usually decorative in nature.

Stud: In wood frame structures, the vertical member used in wall and partition construction to which lath, wallboard, sheathing, or paneling is applied.

Subfloor: The rough boards nailed directly to floor joists that serve as a base for the finish flooring.

Substrate: The attachment surface below a finish material such as sheathing or sub-flooring.

Termination bar: A metal batten or strip attached through roofing material into the wall to secure a membrane material.

Tie rod: An iron rod with a turnbuckle placed between two masonry walls to prevent them from buckling outward. Often installed with an ornamental anchor plate on the exterior wall.

Topcoat: A final coating, as of paint.

Transom: A small window, usually hinged, placed above exterior or interior doors or another window.

Tread: The horizontal part of a stair step.

Valley: The depressed angle formed at the meeting point of two roof slopes.

Vapor barrier: Material used to prevent the passage of vapor or moisture and thus prevent condensation.

Varnish stain: A varnish with pigment added for coloration.

Veneer: A decorative layer of finished material such as wood, brick, or stone, applied over a substratum of other material to give the appearance of higher quality.

Vent pipe: A pipe that admits air to the interior of a structure for ventilation. Also, a small pipe that connects a plumbing fixture to the main vent stack.

Vents: Small openings that permit the movement of air in and out of a building.

Wainscoting: Decorative sheathing installed on walls between chair rail and baseboard. Often composed of paneling, tongue-and-groove, or car siding.

Wallboard: Large rigid sheets made from a variety of materials and used for sheathing interior walls and ceilings.

Weather-stripping: A thin strip of metal, felt, or wood used to cover joints between doors or window sashes and their jambs, casings, or sills to prevent penetration of outside air and moisture.

Wrought-iron: Iron that has been worked or hammered and is resistant to corrosion. Used primarily in fences, railings, and gratings.

Wythe: One brick width, as in a three-wythe brick wall.