



DESIGN GUIDELINES

Section 1.1: Phasing and Context

Sites should be developed within the context of surrounding development, subdivisions, or planned subdivisions of land.

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- 1.1.1 Piecemeal subdivision and development without an overall plan is prohibited and will not be considered.
- 1.1.2 Where a parcel is split apart or is part of a larger development, the Development Authority reserves the right to review the proposal within the context of the larger scheme or concept plan.

Section 1.2: Site Development

Care should be taken during the construction phase of development so as not to disturb the natural systems in the Technology Corridor.

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- 1.2.1 Grading and site preparation should be kept to a minimum during the development process.
- 1.2.2 All grading should complement natural land forms.
- 1.2.3 Except for purposes of surveying and core drilling to gather geologic and soil data, and to allow for minimum road access, property in the Technology Overlay shall not be disturbed prior to the issuance of a Certificate of Appropriateness (for grading or building) and any other permit that may be required by the city or the county regarding the disturbance and/or restoration of land. Land disturbance shall include any grading or vegetation removal. Additional guidance for land disturbance is found in Section 1.12 and reflected in any policies adopted by the city and county for hillside and ridgetop protection areas.

1.2.4 For new construction, the following maximum slopes for land disturbance shall apply:

Table 1: Maximum Slope for Land Disturbance	
LAND USE	SLOPE
Office ¹	25%
Medium Density Residential ²	25%
Business Park	10%
Industrial • Manufacturing & Warehousing	10%
Mixed-Use ³	10%
Retail ⁴	10%
All Other Uses ⁵	15%

¹ Includes business and professional offices; medical and dental offices and clinics; financial, real estate and insurance offices; office parks; and multi-tenant office buildings

² The TTCDA Comprehensive Development Plan (adopted January 2009) includes a category for office/medium density residential development. At some point in the future, high density residential development may also be depicted in the plan. At that point, high density residential uses will be reflected in this table and elsewhere in the Design Guidelines.

³ Includes developments that are a combination of retail commercial, various forms of residential, and office; with the potential for a vertical mix of uses (for example, a restaurant at ground level and offices above)

⁴ Includes retail establishments; restaurants; shopping centers; hotels and motels; and supermarkets

⁵ As allowed by the Knoxville and Knox County zoning ordinances

Section 1.3: Development Intensity
Development intensity is controlled by Ground Area Coverage, Floor Area Ratio, and Impervious Area Ratio restrictions. Ground Area Coverage (GAC) is determined by dividing the area of a lot covered by a building by the gross area of that lot. Floor Area Ratio (FAR) is determined by dividing the gross floor area of buildings on a lot by the gross area of that lot. Impervious Area Ratio (IAR) is determined by dividing the gross area of all impervious surfaces by the gross area of the lot. Impervious surfaces are those which do not absorb rain and generally include all buildings, roads, parking lots, sidewalks and any area paved in concrete or asphalt.

The intent of establishing maximum coverage is to ensure that building and parking spaces share ground space with the appropriate amount of open green areas. The implementation of these regulations will contribute to the achievement of a campus-like environment within the Tennessee Technology Corridor.

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- 1.3.1 Ground Area Coverage (GAC) shall not exceed 25%.
- 1.3.2 Floor Area Ratio (FAR) shall not exceed 30% except where a proposed building includes an under-building parking structure, in which case the floor area ratio may not exceed 40%.
- 1.3.3 Impervious Area Ratio (IAR) shall not exceed 70%.
- 1.3.4 Except in hillside and ridgetop protection areas, the maximum allowable height of a structure is set at ninety (90) feet, measured from the finished grade.

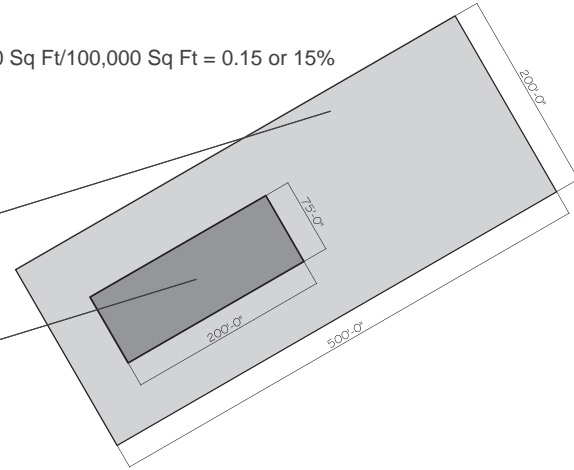
Figure 1: Calculating Development Intensity Example

Ground Area Coverage (GAC)

$GAC = \text{Building Footprint Area} / \text{Gross Lot Area} = 15,000 \text{ Sq Ft} / 100,000 \text{ Sq Ft} = 0.15 \text{ or } 15\%$

Gross Lot Area = 100,000 Sq Ft

Building Footprint Area = 15,000 Sq Ft

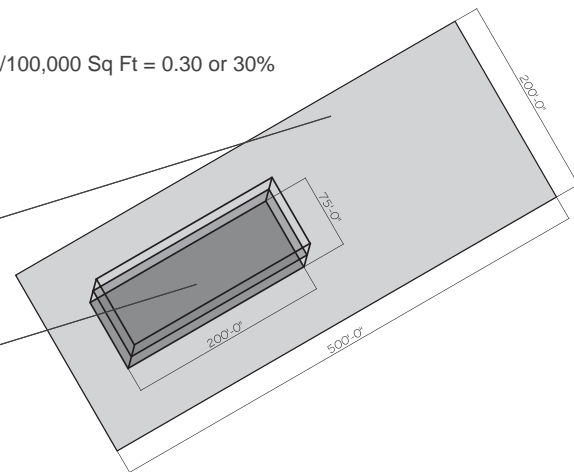


Floor Area Ratio (FAR)

$FAR = \text{Gross Floor Area} / \text{Gross Lot Area} = 30,000 \text{ Sq Ft} / 100,000 \text{ Sq Ft} = 0.30 \text{ or } 30\%$

Gross Lot Area = 100,000 Sq Ft

Gross Floor Area of a Two (2) Story Building with a Footprint of 15,000 Sq Ft = $15,000 \text{ Sq Ft} \times 2$ = 30,000 Sq Ft



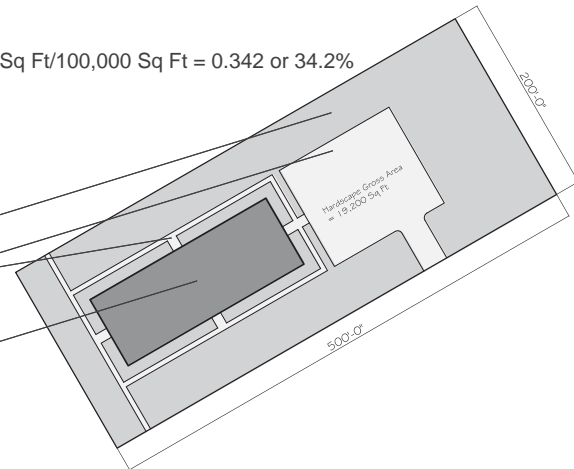
Impervious Area Ratio (IAR)

$IAR = \text{Gross Impervious Area} / \text{Gross Lot Area} = 34,200 \text{ Sq Ft} / 100,000 \text{ Sq Ft} = 0.342 \text{ or } 34.2\%$

Gross Lot Area = 100,000 Sq Ft

Hardscape Gross Area = 19,200 Sq Ft

Building Gross Area = 15,000 Sq Ft



Section 1.4: Setbacks

The open space system is complemented by the use of building setbacks and how buildings are placed on a site. The setbacks allowed by these Design Guidelines offer two approaches for site development.

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1.4.1 For individual properties within the Technology Overlay Zone, the following building setbacks will be required, based on the number of stories of the proposed building. The consideration of waivers to these required minimum setbacks may be appropriate to promote setback continuity in the older, more established development areas of the Technology Overlay Zone. Waivers also would be appropriate on sites where there is a need to protect hillsides and ridgetops.

Yard Location	Minimum Setback
Front — 1-Story Building	20 Feet / 60 Feet*
Front — 2-Story Building	25 Feet / 70 Feet*
Front — 3-Story Building	30 Feet / 80 Feet*
Side	20 Feet
Rear	20 Feet
Abutting Residential Zone	100 Feet

**with parking in front yard*

- 1.4.2** In order to maintain continuity of an established building setback along a street, no front setback shall deviate by more than 5 feet from the established minimum building setback for the street face. Waivers to this requirement, however, may be considered in areas where existing setbacks were not approved under the TTCDA review process.
- 1.4.3** To encourage the design and construction of unified developments, with interrelated land uses, open space and vehicular and pedestrian connections, applicants may establish their own building setbacks, with the approval of the TTCDA Board, if such standards are based on a master site plan for the property. Once the setbacks have been approved, setback waivers, or variances, shall not be allowed. Setbacks for buildings higher than three stories shall be established through this process.
- 1.4.4** In unified developments, common open space shall be no less than 10% of the area of the site.

Section 1.5: Open Space

A natural open space system is evident within the technology corridor consisting of features identified with development limitations. These features generally consist of ridges, streams, floodplains, sinkholes, and steep slopes. Development should be avoided in these locations. The intent is to retain these natural systems as conservation zones, capitalizing on their aesthetic as well as functional value.

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- 1.5.1 Construction is prohibited in floodplains and within 50 feet of sinkholes.
- 1.5.2 Natural drainage corridors should be preserved to reduce infrastructure costs and conserve the natural systems in place.
- 1.5.3 Construction which impairs scenic views or reduces the visual quality of the corridor is discouraged.
- 1.5.4 Conservation of slopes shall be maintained based on the degree and severity of the slope. For specific requirements in areas identified as hillside and ridgetop protection areas (slopes greater than 15%), see Section 1.12.
- 1.5.5 Open space areas in new developments should include the following, as appropriate, to supplement the natural systems that are maintained:
 - A. New landscaping should be used in addition to any preserved vegetation to buffer residential uses from new non-residential development. (See appendices for landscaping standards.)
 - B. Landscaping and existing vegetation should be used to provide transitions between different intensities of non-residential uses.
 - C. Open space continuity should be maintained through the use of sidewalks and pathways within and between developments.

Section 1.6: Circulation

The flow of traffic at or near a site is related to the activity patterns of land use proposed for the site. Circulation systems, in this context, refer to vehicle and pedestrian passages within and surrounding the site. The circulation system of local streets, sidewalks and pathways should be planned to accommodate the patterns of activity within a site. The intent should be to maintain the natural edges of existing roadways and, where new internal streets are required, to work with the physiography of the land.

GUIDELINES

- 1.6.1 The interior circulation system of a site (roads and sidewalks) should reflect the change in scale between arterial highways, collector roads and local road networks.
- 1.6.2 Internal streets should be planned to assure connectivity and to maintain smooth traffic flow.
- 1.6.3 Internal access streets shall have a minimum paved width of 22 - 24 feet measured from curb to curb, unless otherwise stipulated in these regulations or as required by the city and county engineering departments.
- 1.6.4 Sidewalks and landscaping should be used along collector and arterial streets to separate pedestrians and vehicles.
- 1.6.5 A sidewalk should be provided along all streets. On local streets a sidewalk on one side may be appropriate.
- 1.6.6 Sidewalks and pathways should have a minimum width of five feet and should connect adjacent streets, sidewalks and buildings.
- 1.6.7 Bicycle or pedestrian trails should be used to provide connections between sites and for recreational purposes.

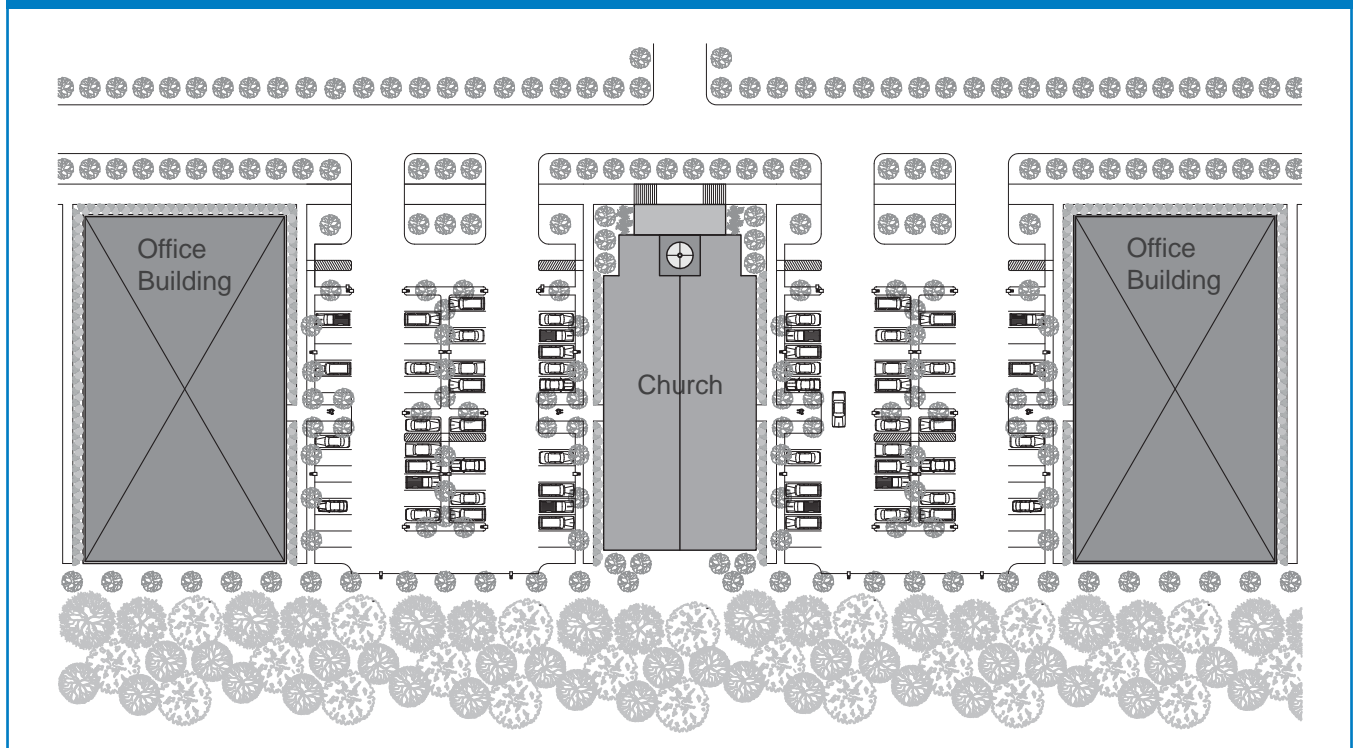
Section 1.7: Parking

Parking lot design is an important factor in creating a quality setting within the Technology Corridor. Careful attention must be paid to site design in order to ensure that parking lots do not detract from the views of neighboring properties or the public right-of-way. Parking should be integrated with the building and landscaping plan.

GUIDELINES

- 1.7.1 Parking must meet the standards of the Knoxville or Knox County zoning ordinances for their respective zones, unless the requirements of these Design Guidelines are more restrictive.
- 1.7.2 The configuration of the parking lot should respond to site conditions and topography.
- 1.7.3 Shared parking arrangements are encouraged and may be requested by an applicant, or required by the Board, to reduce the need for off-street surface parking. Developments with mixed-uses are typical examples of situations where shared parking provisions can be approved. One such example would be a church next to an office where parking spaces could be shared because of different hours of operation. (See Figure 2: Shared Surface Parking Example below.)
- 1.7.4 Shared parking and on-street parallel parking bays should be used where possible to minimize land and soil disturbance, reduce impervious surface coverage, and achieve excellence of design and aesthetic sensitivity.

Figure 2: Shared Surface Parking Example



1.7.5 Minimum and maximum parking space requirements for all properties in the Technology Overlay Zone are as follows:

Table 3: Off-Street Parking Space Requirements*

Land Use	Minimum Number of Spaces Required	Maximum Number of Spaces Allowed
Restaurant	7.5 per 1000 sq. ft. of Gross Floor Area	15 per 1000 sq. ft. of Gross Floor Area
Office	3 per 1000 sq. ft. of Gross Floor Area	4.5 per 1000 sq. ft. of Gross Floor Area
Retail Establishments	3 per 1000 sq. ft. of Gross Floor Area	4.5 per 1000 sq. ft. of Gross Floor Area
Office Park, Multi-tenant Office Building	2 per 1000 sq. ft. of Gross Floor Area	3.5 per 1000 sq. ft. of Gross Floor Area
Shopping Center	2 per 1000 sq. ft. of Gross Floor Area	3.5 per 1000 sq. ft. of Gross Floor Area
Research & Development Facility, Laboratory	2 per 1000 sq. ft. of Gross Floor Area	3.5 per 1000 sq. ft. of Gross Floor Area
All Other Non-Residential Uses	2 per 1000 sq. ft. of Gross Floor Area	3.5 per 1000 sq. ft. of Gross Floor Area
Medium Density Residential	1.5 per dwelling unit for the first 20 units, plus 1.5 additional per dwelling unit for each two (or more) bedroom unit in excess of 20, plus 1 additional per dwelling unit for each one bedroom unit in excess of 20	175% of the minimum number of spaces required
Warehousing, with Office Space	1 per 1000 sq. ft. of Gross Floor Area	1.5 per 1000 sq. ft. of Gross Floor Area
Industrial and Manufacturing	1 per 1000 sq. ft. of Gross Floor Area	1.5 per 1000 sq. ft. of Gross Floor Area
Hotel, Motel	1 per Room or Suite	1.5 per Room or Suite
Church or similar place of worship	1 per 4 seats in Main Worship Area	1 per 3 seats in Main Worship Area

* On-street parking spaces may be used to reduce either the minimum number required or the maximum number allowed for off-street parking spaces.

Table 4:
Off-Street Parking Stall
Minimum Size Requirements

Parking Angle	Stall Depth in Feet			Width in Feet	
	to Wall	to Curb	to Interlock	Stall	Aisle
45°	16.5	15	14.5	9	15 ¹
60°	18	16.5	16.5	9	18 ¹
75°	18.5	17.5	17.5	9	22 ¹ / 26 ²
90°	17.5	15.5	17.5	9	26 ¹ / 26 ²
Parallel	22.5	20.5	22.5	9	15 Minimum 20 Maximum ¹ 25 Minimum 30 Maximum ²

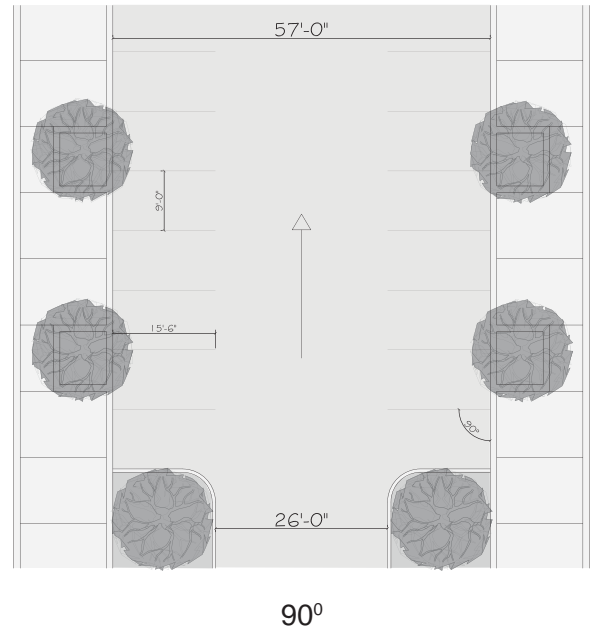
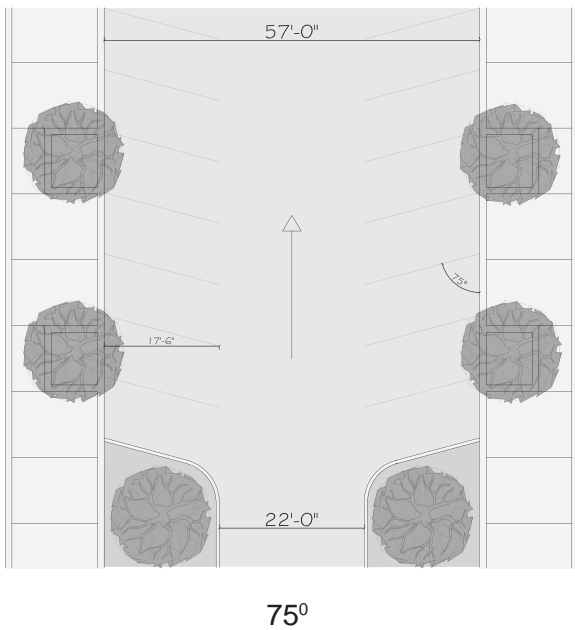
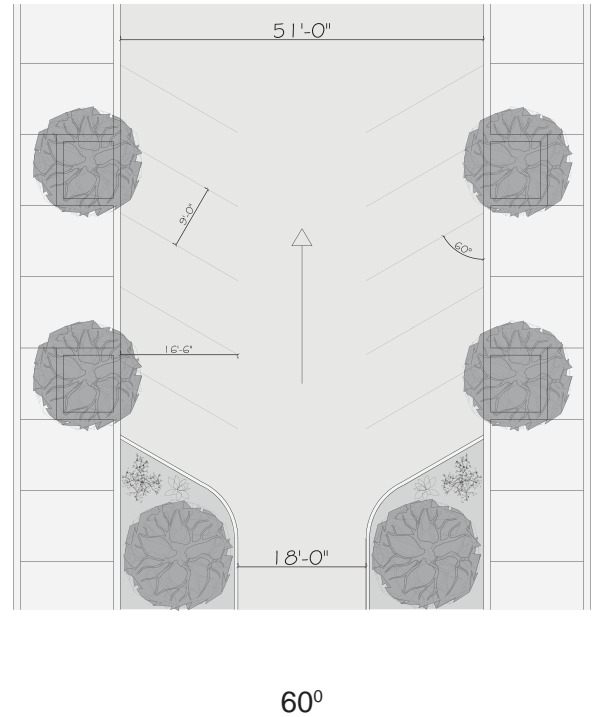
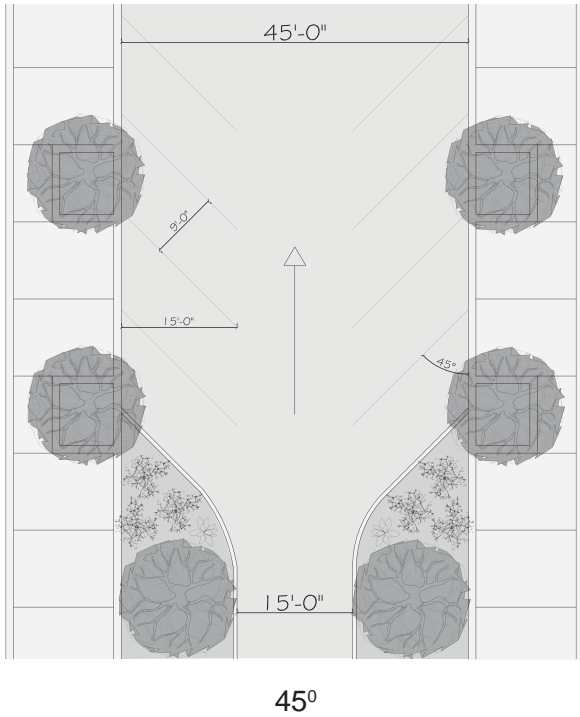
NOTE: Stall depths measured perpendicular to aisle.
Stall depths and aisle widths for parking angles other than those indicated shall be consistent with the above values and are subject to the approval of the respective city and county engineering departments, where applicable.

¹ One-way traffic

² Two-way traffic

- 1.7.6 The size of required off-street parking spaces and areas shall be as follows:
- 1.7.7 Thirty percent (30%) of the parking spaces may be designated for compact cars. The minimum size of a compact car space shall be 8 ft. by 16 ft.
- 1.7.8 Parking areas shall be landscaped according to Section 3.4 requirements.
- 1.7.9 Surface parking areas should be located to the side or to the rear of buildings. If parking is requested to be located in front of a building, the parking shall be separated from the front property line by a 20 ft. landscape buffer.
- 1.7.10 Parking, above the maximum number of spaces allowed (see Table 3), may be permitted if the parking surface is pervious, or structured parking is used.

Figure 3: Parking Lot Layout Based on Angle of Parking Examples



Section 1.8: Lighting

As the lighting function changes from roadway orientation to a parking or pedestrian orientation, the consistency in style and design should be maintained. Street lights are recommended along the internal road systems, parking lots, and building access points.



An example of cut-off fixtures on light poles that meet the requirements of the Design Guidelines

GUIDELINES

- 1.8.1 Any lighting used for exterior illumination shall be directed away from adjoining properties.
- 1.8.2 Glare, whether direct or indirect, such as from flood lights, shall not be visible at any property line.
- 1.8.3 All light fixtures, including wall-mounted fixtures, are to be either full cut-off luminaires, or directionally shielded fixtures.
- 1.8.4 Exterior light sources may be high pressure sodium, metal halide, or LED. Low pressure sodium and mercury vapor lights are prohibited.
- 1.8.5 Intensity of lighting shall not exceed the following maximum requirements:
 - A. Building entrances = 5.0 foot candles
 - B. Parking lots = 2.5 foot candles
 - C. Paths and sidewalks = 1.0 foot candles
 - D. Streets & driveways within developments = 0.5 foot candles
 - E. Within 20 ft. adjacent to residential zones = 0.2 foot candles
 - F. Within 20 ft. adjacent to all other zones = 0.5 foot candles
 - G. Convenience store gas canopies = 10.0 foot candles
- 1.8.6 Light poles and wall-mounted fixtures are not to exceed a 30-ft. height limit. More specifically, the following are maximum height requirements for light poles:
 - A. Along roadways and parking lots 22 – 30 ft.
 - B. Along sidewalks 12 – 15 ft.
 - C. Within 20 feet of a residential zone 22 ft. maximum
- 1.8.7 Light poles are to be a neutral, preferably dark color.

Figure 4: Lighting Direction and Glare Examples

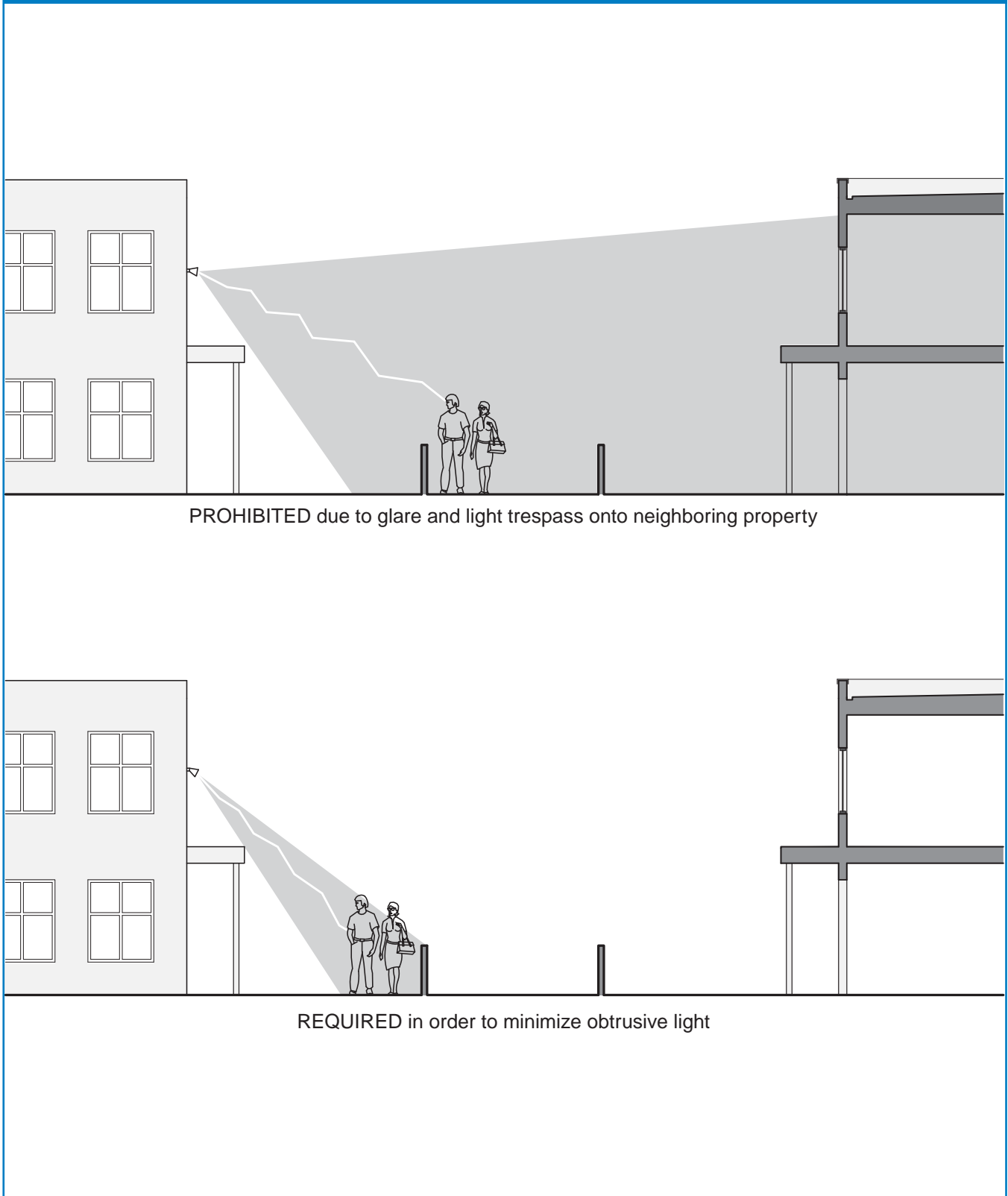
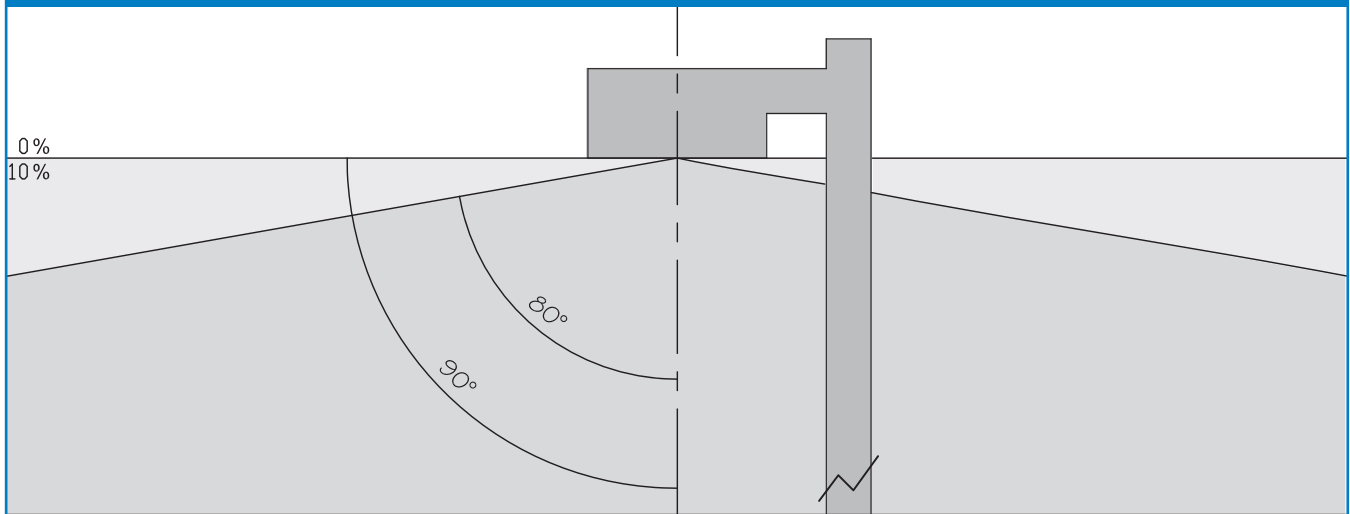
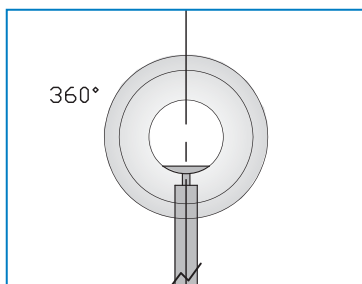


Figure 5: Full-Cutoff Lighting Fixture Example

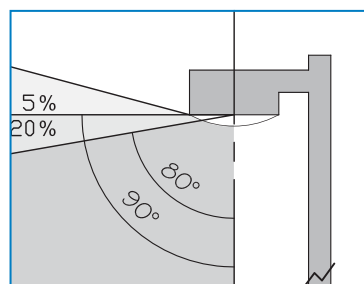


A Full-Cutoff fixture is defined by a minimum of 90% of the total lamp lumens within the 80° zone, a minimum of 10% of the total lamp lumens within the 90° zone, and no light above 90°.

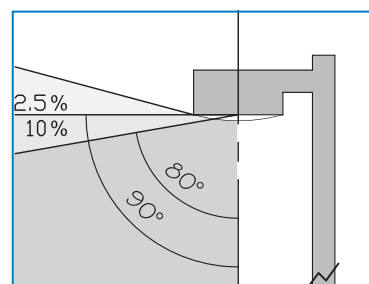
Figure 6: Prohibited Lighting Fixture Examples



Non-Cutoff

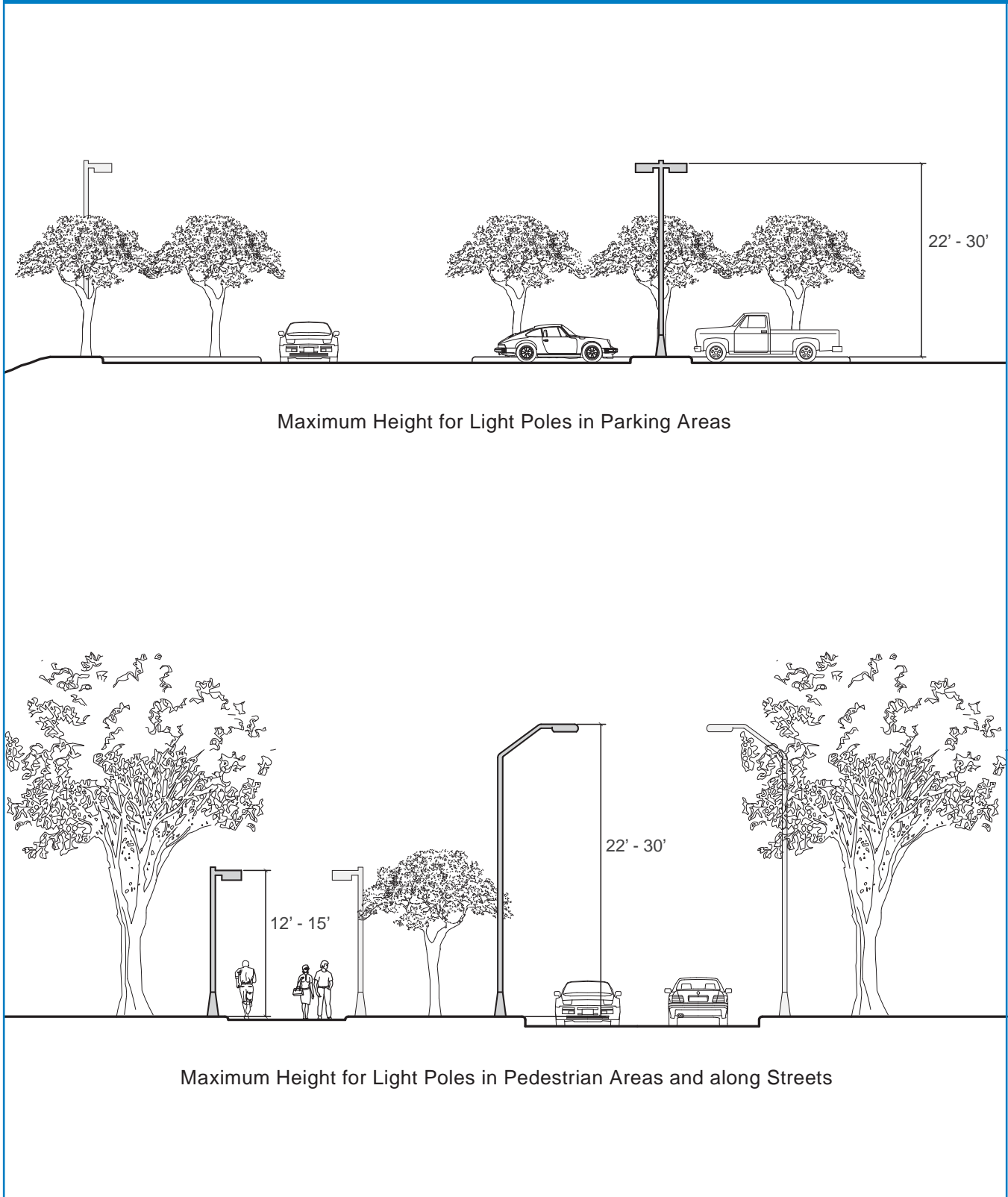


Semi-Cutoff



Cutoff

Figure 7: Maximum Height for Light Poles Examples



Section 1.9: Utilities

The utility network of the Technology Corridor is a vital element in the marketability of the area. To ensure quality of development and the preservation of the natural character of the Corridor, the following guidelines apply:

GUIDELINES

- 1.9.1 All electrical service and telephone lines shall be placed underground.
- 1.9.2 Any utility equipment shall be of neutral color and completely screened with landscaping and/or architectural materials that complement the nearby buildings.



Underground utilities help to preserve the Technology Corridor's natural appearance.

Section 1.10: Stormwater Management

The open space system of the Technology Corridor offers a unique opportunity to introduce a natural stormwater management component to the development. The floodplains of rivers and the conveyance zones of permanent streams serve as a continuous network serving stormwater runoff, providing a basic framework for a management system. The natural drainage systems are to be kept free of development throughout the Technology Corridor in order to avoid bottlenecks on individual sites. Any plan proposal where drainage is a key component shall be prepared in accordance with the city and county stormwater regulations, as appropriate.

GUIDELINES

- 1.10.1 Natural drainage corridors should be preserved.
- 1.10.2 The rate of discharge must correspond to the rate in evidence prior to site development.
- 1.10.3 All plans for drainage and stormwater runoff shall comply with applicable city and county stormwater regulations.

Section 1.11: Road Access to State Route 162 - Pellissippi Parkway

In addition to the access controls stipulated by the Tennessee Department of Transportation, access to properties fronting on the Pellissippi Parkway shall be from an existing roadway or from a new public or private road constructed according to the officially adopted Tennessee Technology Corridor Comprehensive Development Plan. No new median cuts shall be provided to the Pellissippi Parkway.