

## **PART 8 - DESIGN STANDARDS**

The purpose of these design standards is to promote revitalization, direct reinvestment, and sustain the economic vitality while being sensitive to design context and individual neighborhood character for infill, replacement, redevelopment, and new development. Therefore, the design standards incorporate flexibility into traditionally regulated areas and promote a unified streetscape to strengthen the visual and physical character of existing neighborhoods and other areas of Highspire Borough. The intent is to retain and promote the existing traditional residential and mixed use areas, businesses, and to facilitate new development that is consistent and compatible with, contributes to, and upgrades, older, established building and development patterns within Highspire Borough. As increased development interest in older, urban areas such as Highspire Borough continues, it is essential that new projects (adaptive reuse, infill, replacement, redevelopment, and new development) contribute, be respectful, and be sensitive to the distinctive neighborhood character and the established built environment and development patterns.

The intent of Part 8 is to provide clear, quantitative review standards that are easy to administer and offer certainty to developers, residents, business owners, and officials alike while maintaining a degree of design flexibility to allow and encourage creative site and building designs and encourage alternative design solutions that result in a better, distinctive product.

### **SECTION 800 GENERAL**

Use of a sketch plan per Section 403 and 501 and Appendix H (Street ROW Matrix) is strongly encouraged to be used in conjunction with the site design and layout out of plans.

#### **A. Minimum Standards and Requirements.**

1. The following standards shall apply to proposed subdivisions and/or land developments within Highspire Borough.
2. The provisions of these regulations are intended as a minimum standard for the protection of the public health, safety and general welfare. If the literal compliance with any mandatory provision of these regulations is demonstrated by the applicant to be unreasonable and to cause undue hardship because of peculiar conditions pertaining to the particular property, and if the applicant demonstrates that an alternative proposal will provide equal or better results, the Highspire Borough Council, after review and recommendation by the Highspire Borough Planning Commission, may grant a modification from such mandatory provision so that substantial justice may be done and the public interest secured while permitting the reasonable utilization of the property. However, the granting of a modification shall not have the effect of making null and void the purpose and/or intent of this Chapter.
3. Additional conditions may be applied to any application for subdivision and/or land development by Borough Council.

#### **B. Compliance with Borough Ordinances Required.**

All projects shall be designed in compliance with the Chapter 27 of the Codified Ordinances of the Borough of Highspire relating to zoning, and all other applicable ordinances, plans, studies, and local requirements. Chapter 27 of the Codified Ordinances of the Borough of Highspire

relating to zoning specifically contains standards and provisions governing lot, building, and development character, design, height, scale, setback, orientation, frontage, access, parking, loading/unloading, landscaping, and other features to ensure they are consistent and compatible with adjacent and nearby buildings/structures and development on the same shared block face (between two [2] intersecting streets) along the same side of the street.

C. Zoning Approvals Required Prior to Plan Submission.

Whenever the Chapter 27 of the Codified Ordinances of the Borough of Highspire provides that the use proposed by the applicant for subdivision or land development approval shall constitute a use by special exception or conditional use, or when a variance from the terms of the zoning ordinance is required to develop in accordance with the plan, the applicant shall obtain such special exception, variance or conditional use approval from the Highspire Borough Zoning Hearing Board or Borough Council, as applicable, prior to the submission of the preliminary plan, or final plan as applicable. The plan shall be designed and developed in accordance with any conditions which have been imposed upon the grant of such special exception, variance or conditional use by the Zoning Hearing Board or Borough Council, as applicable. The plan shall note the date of the hearing where approval was granted, along with all conditions of approval, and all such specific related section references of the zoning ordinance.

## **SECTION 801 SITE LAYOUT/DEVELOPMENT PATTERN**

A. Intent.

All new development shall generally be compatible in lot, building, and development character, design, height, scale, setback, orientation, frontage, access, parking, loading/unloading, and other features to ensure the new development is consistent and compatible with adjacent and nearby buildings/structures and development on the same shared block face (between two [2] intersecting streets) along the same side of the street and generally in the neighborhood.

The layout of principal buildings, accessory structures, lot access, and parking areas is an example of a repeated site pattern that creates a cohesive visual identity and attractive pedestrian street scene for an area. Creating a strongly defined street edge will improve the pattern of development. A sense of visual unity is created within a neighborhood or area when similar building and site features are repeated.

Building orientation strongly influences a development site's focus of activity. A building oriented at least in part to an abutting public street can create a strong presence in the public realm, and can contribute significantly to a pedestrian-friendly built environment. Building design that creates or adds to the visual interest of a streetscape and a pedestrian scale is an essential element of the Borough's community planning and implementation efforts. Building height, scale, and massing can be used to emphasize important corners, designate points of entry, and promote compatibility with surrounding uses. Planting shall be sited, massed, and scaled to maintain visibility of doors and first or ground floor windows from the street and from within the development.

B. General Arrangement.

1. Buildings and open space shall be compatible with, or complement the established and predominant proportion and building mass of adjacent and nearby buildings/structures and development. In addition to the building orientation, façade treatments, and/or other

design standards set forth in Chapter 27 of the Codified Ordinances of the Borough of Highspire relating to zoning, buildings and open space relationships shall comply with the following:

- a. Buildings shall create an inviting image, consistent front, and street edge definition, by repeating the predominant relationship of buildings-to-buildings and buildings-to-street.
- b. In order to maintain or create a sense of place and “arrival”, all developments in the mixed use zoning districts (MN/C and CBD) at the intersection of two (2) arterials, an arterial and a collector, and/or two (2) collector streets (excluding alleys) shall comply with the following site layout and building orientation standards:
  - 1) Off-street parking areas shall not be located within a one hundred fifty (150) foot radius measured from the intersection of the centerline of the two (2) streets.
  - 2) Development located within a one hundred (150) foot radius from the intersection of the centerline of the two (2) streets shall include one or more of the following focal point features which shall be visible from the intersecting streets;
    - a) A distinctive architectural or building design that does not represent standard franchise architecture;
    - b) Fountains or other water feature;
    - c) Public plazas or other open space; or
    - d) Significant landscape feature. (See Section 809.B.2.c)

C. Lot Access.

1. Lot access shall be compatible with, or complement the established and predominant methods, types, and patterns of adjacent and nearby lots and development. In addition to the lot access standards set forth in Chapter 27 of the Codified Ordinances of the Borough of Highspire relating to zoning, lot access shall comply with the following:
  - a. Connections to compatible adjacent land uses should be provided to the maximum extent feasible.
    - 1) Common or shared access to compatible land uses should be provided between adjacent parcels, lots, and/or buildings.
    - 2) Projects should not become an isolated island in the surrounding neighborhood and community. Instead, to reduce vehicle congestion and offer greater connectivity between adjacent land uses, the following standards shall apply except where prohibited for overriding public safety or other traffic related considerations:
      - a) The internal street system shall connect to the perimeter public street system to provide multiple direct connections to, and between local destinations.
      - b) The internal street system shall connect to the perimeter public street system to provide community and neighborhood connections to knit separate development together rather than forming barriers between them.
  - b. Lot access on corner lots or where more than one (1) intersecting street (including alleys) abuts the lot, a new curb cut or access shall be provided on the street

conveying the lesser amount of existing or proposed daily traffic. This specifically includes alleys.

- c. In order to maximize the efficiency of the street network, major traffic generators should be located so that their primary access is from a public street or access drive.
  - 1) If a land use is proposed at a location or density that will have a significant effect on current traffic patterns, a traffic impact study shall be required to ensure that the street network can accommodate the anticipated traffic demands and to define required street improvements.
  - 2) The number of entrances should be minimized to the extent possible in order to reduce conflicting points and facilitate traffic flow. The specific location of primary vehicle entrances is dependent on the following factors:
    - a) Access and proximity to alleys;
    - b) The location of existing or planned median breaks;
    - c) Separation distances between the entrance and major intersections, minor intersections, and adjacent entrances;
    - d) The need to provide shared access to adjacent parcels of land and lots;
    - e) The need to align with previously approved or constructed access points on the opposite side of the street;
    - f) The minimum number of entrances needed to move traffic onto and off the site safely and efficiently; and
    - g) The need to provide multiple direct connections to, and between, local destinations such as parks, schools, etc.
- d. Specific design or geometries of development streets, access drives, and driveways shall meet the intent of these design guidelines. (See Section 803)
  - 1) Configuration and design shall be appropriate given the size of the development and the capacity of the street.
  - 2) Geometries shall be dependent on a variety of factors including traffic volume, speed, and distribution. The resulting design should provide an efficient ingress and egress to the development and the following design issues should be addressed in each case:
    - a) The number of in-bound and out-bound lanes;
    - b) Lane width;
    - c) Throat length (i.e. the distance between the street and the first (1<sup>st</sup>) point at which cross traffic or left turns are permitted);
    - d) Curb radii;
    - e) The need or desirability of a raised median;
    - f) The need for a deceleration lane; and
    - g) Accommodation for pedestrian and non-motorized crossings.
- e. A clear system of driveways / access drives / streets shall be established to carry the highest volumes of traffic within the site. (See Section 803)
  - 1) Internal driveways / access drives / streets shall contain no perpendicular parking spaces that directly access them.
  - 2) Truck loading and circulation facilities shall be appropriately designed and provided for. To the greatest extent possible, these areas should be separate from customer parking and pedestrian areas.

- 3) As the size of the development and the volume of the trucks increase, internal circulation patterns should reflect an increased separation between non-truck and truck traffic.

## **SECTION 802 BLOCKS AND LOTS**

### **A. Blocks.**

1. Blocks shall be compatible with, or complement the established and predominant methods and patterns of adjacent and nearby blocks and development. Otherwise blocks should comply with the following:
  - a. Minimum block length shall be two hundred fifty (250) feet.
  - b. Maximum block length shall be one thousand two hundred (1,200) feet.
    - 1) The design of any block longer than six hundred (600) feet shall give special consideration to the requirements of fire protection, pedestrian circulation, and utility service. The Highspire Borough Council may require easements as necessary for these purposes.

### **B. Lots**

1. Lot Configuration.

Lot configuration shall be compatible with, or compliment the established and predominant lot configurations. Additionally, lot configuration shall be based upon the minimum and maximum lot area requirements, salient natural features, existing improvements, proposed improvements, and the adjacent development pattern. Lot configurations should provide for flexibility in building locations, while providing safe vehicular and pedestrian circulation.

2. Lot Frontage.

In addition to the lot frontage standards set forth in Chapter 27 of the Codified Ordinances of the Borough of Highspire relating to zoning, lot frontage shall be compatible with, or complement the established and predominant methods and patterns of adjacent and nearby lots and development.

3. Provisions for Future Subdivision.

In addition to any oversized lot standards set forth in Chapter 27 of the Codified Ordinances of the Borough of Highspire relating to zoning, lots resulting from a proposed subdivision that will be large enough to be further subdivided should be configured to facilitate such future subdivision. Adequate street right-of-way shall be provided as necessary.

4. Reverse Frontage, Through or Double Frontage Lots.

In addition to the reverse frontage lot, or through or double frontage lot standards set forth in Chapter 27 of the Codified Ordinances of the Borough of relating to zoning, reverse frontage lots, or through or double frontage lots shall be compatible with, or complement the established and predominant methods and patterns of adjacent and nearby lots and development and the following:

- a. New double frontage lots are only permitted when a reduction of access drives and driveway intersections along a street (excluding alleys) with a high volume of vehicular movements is desired or the maintenance of the integrity of a corridor is desired.

- b. New reverse frontage lots may be permitted when rear alleys are proposed to provide vehicular access to lots.
- c. New double and reverse frontage lots shall include an identification of the frontage for use as a street access.
- d. New reverse frontage lots shall have within the yard(s) that is/are adjacent to any street right-of-way, other than the street of vehicular access, an easement running the entire width of the proposed lot, across which there shall be no vehicular access.

### **SECTION 803     STREETS, ACCESS DRIVES AND DRIVEWAYS**

- A. Each street shall be designed to meet the design requirements by use of Appendix G and Appendix H. Consideration should be given to where snow placement easements will be situated on the site.

- B. Intent.

Ensure that new streets and related development patterns are consistent and compatible with established street and development pattern and support the expansion of the overall street system.

Maintaining established and predominant street and development patterns within established communities such as Highspire Borough helps to retain a visual continuity and unity to an area or a neighborhood. Projects shall repeat established patterns of vehicle circulation, when feasible, and shall provide safe, convenient, and efficient vehicular access both within a development and to the surrounding communities, neighborhoods, and areas. Circulation patterns shall be designed to limit points of access from major thoroughfares and minimize the impacts of non-residential traffic on adjacent residential properties. Joint use with adjacent landowners is encouraged and access easements to adjoining properties should be explored. Internal vehicle circulation shall provide a clear visual path to provide safe, convenient, and efficient vehicular access within and between developments.

- C. General Arrangement.

The following criteria shall be considered in the design of new streets.

- 1. The alignment of streets shall conform to most recent version of the Highspire Borough Comprehensive Plan, to any official map, and to such Borough, County and State road and highway plans as have been duly adopted.
- 2. For streets not shown on the Highspire Borough Comprehensive Plan or official map, the arrangement shall take into account existing development patterns, topography, and other site constraints when providing for the appropriate extension of existing streets.
- 3. Local streets shall be arranged so as to discourage excessive speeds when their function is to remain local.
- 4. Curvilinear streets and cul-de-sacs are generally prohibited, and should be utilized only where topography and natural features dictate them on the site, and where their use will be consistent with adjoining development patterns. Curvilinear streets shall not be used immediately adjacent to an existing grid street system without providing a transition that continues and protects the grid. New street systems shall take into consideration the

dispersal of traffic and to the ultimate functioning of the existing street system and regional transportation network.

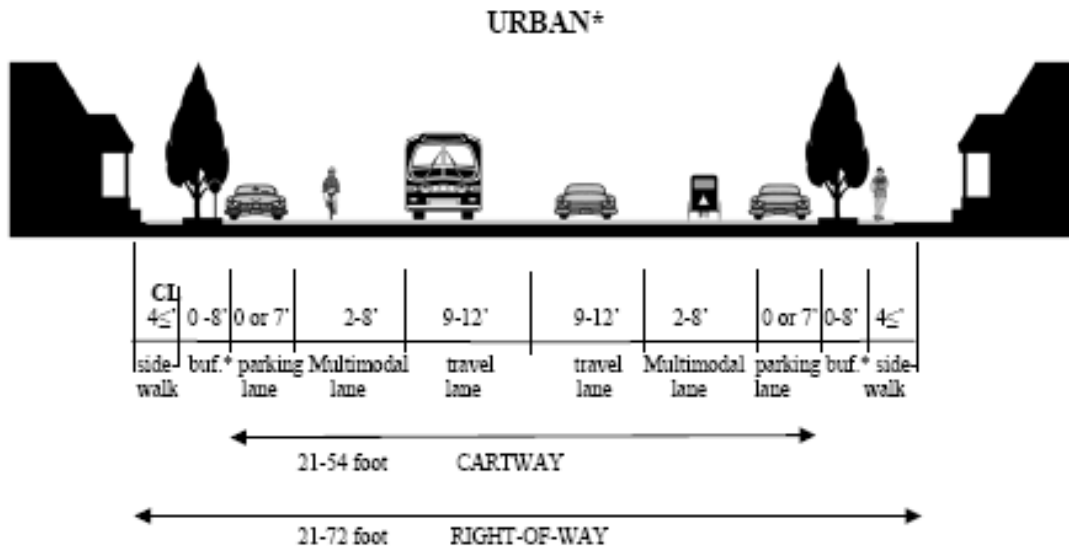
5. Streets shall be laid out to provide convenient and safe access to the property. Where appropriate, the Highspire Borough Council may require additional cartway improvements and/or right-of-way width along existing street frontages to accommodate the anticipated traffic increases and to facilitate vehicular turning movements to and from individual lots.
6. Where a development abuts an existing or proposed arterial and collector street, the Highspire Borough Council may require access management techniques such as the use of alleys, marginal access streets, reverse frontage lots, shared access drive and/or driveways, or other such treatment that will provide protection for abutting properties, reduce the number of intersections with the arterial and collector streets, and separate the local and through traffic.
7. The use of permeable pavement is encouraged on sidewalks, plazas, driveways, parking lots, and low-traffic roads and streets including alleys. Permeable pavement shall not be located in the I zoning district; on industrial sites; on any site dispensing or selling fuel / gas; sites with expansive soils or high depth to bedrock; areas draining to the permeable pavement greater than five (5) acres; and areas with the water table less than two (2) feet below the bottom of the pavement base.
8. Streets shall be designed with drainage grates that are safe for crossing by bicycles. All inlets within the street right-of-way shall be bicycle safe designs approved by PennDOT.
9. Proposed private streets (other than approved private access drives), shall not be permitted.
  - a. If approved by the Borough, all private streets shall conform to all Borough design standards, construction specifications, other applicable provisions of this Chapter and any related construction and materials specifications, relating to public streets.

D. Street Hierarchy.

1. Each proposed street shall be classified and designed to meet the standards for one of the street types by use of Appendix G. This classification should be according to the street hierarchy of the existing transportation network

E. Determination of Required New Street Design Standards.

Each street shall be designed to meet the design requirements by use of Appendix G and Appendix H. Newly created right-of-way and cartway width for each interior street classification shall be determined by the proposed use, projected ADT and the intensity of development permitted and existing along each street. Each cartway width shall be based on the travel lane, on-street parking, multi-modal lanes, and gutter width.



1. Travel Lanes.
  - a. Travel lane width requirements shall vary according to the average daily trips (ADT).

Miles Per Hour	Under 400 ADT	401 to 1500 ADT	1501 to 2000 ADT	Over 2000 ADT
15	9 ft. travel lane	10 ft. travel lane	10 ft. travel lane	11 ft. travel lane
20	9 ft. travel lane	10 ft. travel lane	11 ft. travel lane	12 ft. travel lane
25	9 ft. travel lane	10 ft. travel lane	11 ft. travel lane	12 ft. travel lane
30	9 ft. travel lane	10 ft. travel lane	11 ft. travel lane	12 ft. travel lane
35	9 ft. travel lane	10 ft. travel lane	11 ft. travel lane	12 ft. travel lane
40	9 ft. travel lane	10 ft. travel lane	11 ft. travel lane	12 ft. travel lane
45	10 ft. travel lane	11 ft. travel lane	11 ft. travel lane	12 ft. travel lane
50	10 ft. travel lane	11 ft. travel lane	11 ft. travel lane	12 ft. travel lane
55	11 ft. travel lane	11 ft. travel lane	12 ft. travel lane	12 ft. travel lane

\* derived from AASHTO as amended

2. Non-Motorized Multimodal Travel Lanes.
  - a. Non-motorized travel lanes shall be provided for all collector and arterial streets.
  - b. Non-motorized travel lane requirements shall vary according to the speed of the street.
    - 1) For a posted speed limit of twenty-six (26) to thirty-five (35) miles per hour, four (4) foot multimodal lanes shall be provided.
    - 2) For a posted speed limit of thirty-six (36) to forty-five (45) miles per hour, six (6) foot multimodal lanes shall be provided.
    - 3) For a posted speed limit of greater than forty-five (45) miles per hour, eight (8) foot multimodal lanes shall be provided.
  - c. Grates shall be bicycle safe.
3. Curbs, Gutters, and Swales
  - a. Flexibility regarding curbing (type and necessity to provide) shall be permitted as long as the existing stormwater management system can accommodate design flows from the proposed drainage system.

- b. Design of curbs, gutters, and swales should take the following into consideration:
  - 1) Stormwater management.
  - 2) Road and inlet stabilization.
  - 3) Soil and/or topography.
  - 4) Cohesive best management practice (BMP) design.
  - 5) Pedestrian/handicap safety.
- c. Otherwise, in addition to the provisions set forth in Chapter 21 of the Codified Ordinances of the Borough of Highspire relating to curbs, specifically relating to the construction and materials specifications, curbs are required for new developments and shall also comply with the following:
  - 1) Curbs shall be constructed in accordance with the specifications set forth in the Pennsylvania Department of Transportation, Publication 408 as amended, and as detailed on the Roadway Construction Standard Drawings (RC-64). All curbs shall be premolded expansion joints; saw cutting of new curbing shall not be allowed.
  - 2) Rolled curbs will not be acceptable.
  - 3) Curbs shall be constructed in accordance with the cross section details shown on approved drawings.
  - 4) Curbs shall be set and finished to the line and grade as shown on approved drawings.
  - 5) Backfill must be placed within forty-eight (48) hours after form removal and this backfill shall be compacted in place along the rear face to within six (6) inches of the top of the curb.
  - 6) When curbing is to be removed to constructed a driveway or access drive, the removal shall be done on the complete curb section. The length of curbing to be removed shall be carried to the nearest expansion joint if the joint is located more than five (5) feet from the end of the curb removal. Curb replacement shall be formed and shaped to the required driveway or access drive width. The driveway or access drive shall be depressed to a height of one and one half (1.5) inches above the finished paving grade.
  - 7) No partial breaking out of the curb shall be permitted with approval by the Borough Engineer.
4. Tree Lawn Areas: When tree lawn areas are provided, signage and shade/street trees shall generally be located within the tree lawn area of the right-of-way. Tree lawn areas should be planted with grass, ground cover, or treated with other suitable pervious material. See Section 809 for shade/street tree standards. When tree lawn areas are provided, tree lawn areas should be a minimum of four (4) feet wide with eight (8) feet preferred.
5. Rights-of-way.
  - a. Centerline of the right-of-way may not always be the centerline of the travel lanes.
  - b. Where the right-of-way width of the new street is different than the existing street, a transition area shall be provided, the design of which is subject to Highspire Borough Council approval.
  - c. The right-of-way width shall be designed to meet the design requirements by use of Appendix G. Right-of-way widths may change for each street, based on the anticipated future development.

6. Vertical Street Alignments:

- a. Vertical curves shall be used in changes in grade exceeding one (1) percent.
- b. Alignment:
  - 1) Vertical street and access drive alignments shall be measured along the centerline.
  - 2) Minimum rate of vertical curvature “K” shall be as specified below:

Initial Speed (mph)	Curvature, K <sup>1</sup> (ft/%) Crest	Curvature, K <sup>1</sup> (ft/%) Sag
15	3	10
20	7	17
25	12	26
30	19	37
35	29	49
40	44	64
45	61	79
50	84	96
55	114	115

<sup>1</sup> Rate of vertical curvature, K = length of curve (L) per percent algebraic difference (A) in the intersection grades (K=L/A)

- c. Leveling areas shall have a maximum grade of four (4) percent for a minimum length of forty (40) feet measured from the intersection of the centerlines.

7. Horizontal Street Alignments.

- a. Horizontal curves shall be used at all angle changes in excess of two (2) degrees.
- b. The design of horizontal curves shall be based on an appropriate relationship between design speed and curvature and on their joint relationships with superelevation (roadway banking). (The longer the radius of a curve, the higher the speed through that curve).
- c. Single, long radius curves shall be used rather than a series of curves with varying radii and/or a series of short curves separated by short, straight segments.
- d. Access drives intersections shall be designed to local street horizontal alignment standards.
- e. Determination of minimum horizontal centerline radius\*

Initial Speed (mph)	Centerline Radius <sup>1</sup> (feet) with No Superelevation	Centerline Radius <sup>1</sup> (feet) with 4% Superelevation (e max)
15	50	42
20	107	86
25	198	154
30	333	250
35	510	371
40	762	533
45	1,039	711
50		926

Initial Speed (mph)	Centerline Radius <sup>1</sup> (feet) with No Superelevation	Centerline Radius <sup>1</sup> (feet) with 4% Superelevation (e max)
55		1,190
* derived from AASHTO formula $R_{min} = V^2 / 15 * (0.01e + f_{max})$ <sup>1</sup> Curve radius shall be measured to the centerline of Cartways and Access Drives.		

- f. Superelevation in certain conditions may be amended when using AASHTO Exhibit 3-16 as updated.
- g. No street intersection shall be granted at an angle of less than sixty (60) degrees.
- 8. Sight Distance at Intersections.
  - a. Proper sight distance shall be provided at all new streets, access drives, and all driveway intersections in accordance with the latest edition of the Pennsylvania Department of Transportation Design Manual - Part 2, Highway Design (Publication 13), and Section 2.18.F as amended. Sufficient design and plan information shall be submitted with the plan application proving that this minimum standard will be achieved. Such design information shall be sealed by a qualified professional engineer licensed to practice in the Commonwealth of Pennsylvania to perform such design work.
    - 1) Access drive sight distance based on ten (10) foot off of edge of cartway, an eye height of three and one half (3.5) feet to an object at three and one half (3.5) foot height.
    - 2) Street sight distance based on fifteen (15) foot off of edge of cartway, an eye height of three and one half (3.5) feet to an object at three and one half (3.5) foot height.
  - b. All intersections shall be provided with appropriate stop control devices on the lesser classification street or access drive. No sight triangle easements are required when stop control devices are used.
  - c. Sight triangle easements shall include the area on each street corner that is bounded by the line which connects the sight or ‘connecting’ points located on each of the right-of-way lines of the intersecting street. The planting of trees, other plantings, signs, and structures exceeding two and one half (2.5) feet in height that would obstruct the clear sight across the area of the easements shall be prohibited.
    - 1) Arterial streets shall have a clear sight triangle side of one hundred fifty (150) feet.
    - 2) Collector streets shall have a clear sight triangle side of one hundred (100) feet.
    - 3) Local streets, roads, alleys shall have a clear sight triangle side of seventy five (75) feet.
- 9. New Street Improvements: All street paving must conform to the following specifications:
  - a. Streets must be surfaced to the grades and dimensions drawn on the plans, profiles and cross-sections submitted by the applicant, and approved by the Highspire Borough Council after consulting with the Borough Engineer. Before paving the streets surface, the applicant must install the required utilities and provide, where necessary, adequate storm water drainage for the street acceptable to the Borough Council. The pavement base, wearing surface and shoulders must be constructed according to the following specifications excepting however that for the

construction of arterial roads or highways, the developer shall consult with the Borough Engineer and be governed by the PennDOT for the method of construction to be used and the design shall conform to PennDOT Pub. 242

- 1) All new streets shall be designed the following cross-sectional specifications (all courses are compacted thicknesses).
- 2) The use of recycled materials is strongly encouraged.
- 3) Pavement - The pavement base and wearing surface must be in accordance with, and constructed in accordance with the PennDOT, Pub. 408, as revised to date. The following table will outline the alternatives available to the developer:

Flexible Pavements	Pavement Courses	Streets	
		Minor	Collector
Option No. 1	Wearing*	1 1/2"	1 1/2"
	Binder* *	0"	2"
	Base* * *	4 1/2"	4"
	Subbase* * * *	8"	8"
Option No. 2	Wearing*	1 1/2"	1 1/2"
	Binder* *	2"	2"
	Base* * *	6"	8"
	Subbase* * * *	8"	8"

**LEGEND**

- \* Wearing: Superpave Asphalt Mixture Design, HMA Wearing Course, PG 64-22, 0.0 to 0.3 million ESAL's, 9.5 mm mix, SRL L.
- \* \* Binder: Superpave Asphalt Mixture Design, HMA Binder Course, PG 64-22, 0.0 to 0.3 million ESAL's, 19.0 mm mix.
- \* \* \* Base: Superpave Asphalt Mixture Design, HMA Base Course, PG 64-22, 0.0 to 0.3 million ESAL's, 25.0 mm mix.
- \* \* \* \* CABC Crushed Aggregate Base Course

- a) For the construction of arterial roads or highways, the developer shall consult the Borough Engineer and be governed by the PennDOT Specifications for the method of construction to be used. (Pub. 408, as revised to date) and to submit pavement design calculations in accordance with PennDOT Pub. 242.
- b) The Borough Council after consulting with the Borough Engineer shall decide if a Collector or Arterial Street is required as a direct result of the construction of this development in which case the applicant is responsible for paving the additional width required and submitting pavement design calculations in accordance with PennDOT Pub. 242.

- 4) Shoulders – If curb and gutters are not provided, streets shall be provided with shoulders in accordance with the following:
  - a) All shoulders shall be constructed in accordance with PENNDOT Pub. 408, latest revision.
  - b) Minor roads shall be a Type 3 Shoulder as shown on RC-25 of the PENNDOT Standards for Roadway Construction, Pub. 72, latest revision.
  - c) Collector roads shall be a Type 1 Shoulder, Type I-I Shoulder, or a Type I-S Shoulder as shown on RC-25 of the PennDOT Standards for Roadway Construction, Pub. 72, latest revision.
  - d) Arterial roads shoulders shall be the type as determined by the Borough Council after consulting with the Borough Engineer, and PennDOT.

F. Access Drives: Access drives shall be designed to meet the following requirements:

1. Any property that utilizes an access drive shall have frontage along a public right-of-way.
2. The plan shall note that the access drive does not qualify for dedication to the Borough and that the landowner assumes all responsibility for its maintenance.
3. Access drives shall be designed for their intended function. All travel lanes shall be a minimum of eight (8) feet wide; however, sufficient design information must be submitted to indicate that the number of travel lanes and width proposed has been designed to accommodate the anticipated traffic to and from the development.
4. Parking shall be permitted when sufficient cartway width is proposed.
5. Access drives shall maintain a centerline separation distance of one hundred and twenty-five (125) feet from all other access drives and streets. Access drive intersections with other access drives within the site shall not be subject to such restrictions.
6. Proper sight distance shall be provided at access drive intersections with existing public streets according to this Chapter.

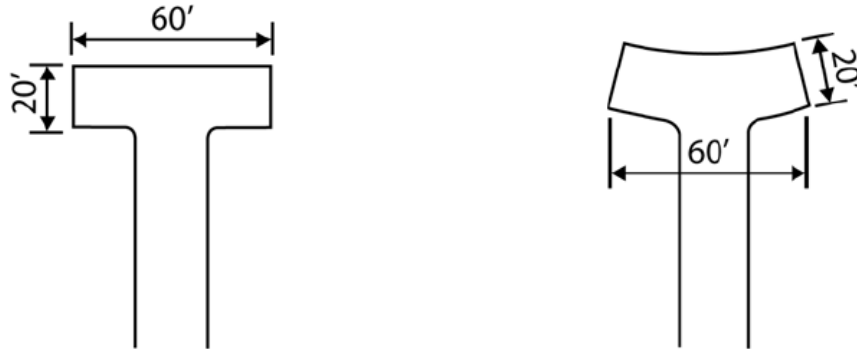
G. Driveways

In addition to all driveways complying with the standards of Chapter 27 of the Codified Ordinances of the Borough of Highspire relating to zoning, all driveways shall be paved with pervious or impervious surfaces.

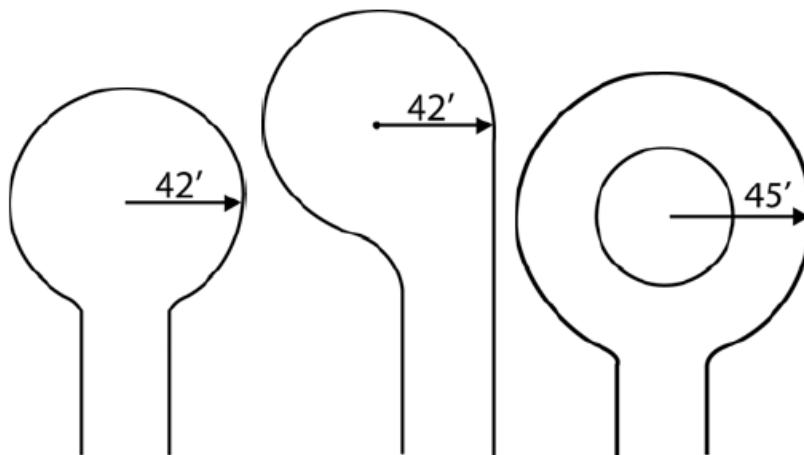
H. Single Access / Cul-de-Sac Streets

1. To the greatest extent possible, through streets shall be provided. The feasibility of a through street will be based on the physical features of the tract, parcel, or lot proposed for development and/or abutting lots, the potential for extension of the street to abutting lands based on existing development patterns, restrictions imposed by other government regulations and other recorded documentation, and the ability of the design to meet all other requirements of this Chapter. When single access / cul-de-sac streets are proposed, the application shall be accompanied by a written analysis of the merits of the design and the reasons that a through street would not be desirable.
2. Cul-de-sacs shall have a circular, “T” shaped or “hammerhead” shaped turnarounds. Turnarounds shall be constructed completely within the right-of-way.

- a. "T" shaped or hammerheads may be used if the cul-de-sac serves less than ten (10) dwelling units. Dimensions of a "T" shaped or hammerhead are sixty (60) feet by twenty (20) feet.



3. The length of a cul-de-sac street shall be measured from the centerline intersection with the through street to the center point of the turnaround.
4. The minimum length shall be two hundred fifty (250) feet. Temporary cul-de-sac streets shall not have a minimum length.
5. The maximum length shall be four hundred (400) feet.
6. Any temporary cul-de-sac street designed for access to an adjoining property or for authorized phased development and which is greater than one lot deep shall be provided with a temporary all-weather turnaround. The use of such turnaround shall be guaranteed to the public until such time as the street is extended. Sidewalks along temporary cul-de-sacs must be continued at the same time that the street is continued.
7. When connecting to an existing temporary cul-de-sac, removal of the cul-de-sac paved areas and restoration of the sidewalk and curb system within the right-of-way shall be the responsibility of the connecting developer.
8. Permanent cul-de-sacs with a circular turnaround shall be paved, have a minimum radius of forty two (42) feet without a center island and forty five (45) with a center island.



9. Unless otherwise approved by the Borough to be located in the center island, all cul-de-sac streets, whether permanently or temporarily designed as such, shall be provided with a snow removal easement with a width of twenty (20) feet located at the terminus of the

cul-de-sac street for plowed snow during the winter months. Designated snow removal areas shall not encroach upon access drives, driveways, trees, fire hydrants, water or gas shutoff valves.

I. Street Names.

1. Continuation of existing streets shall be known by the same name.
2. The proposed new street names shall be acceptable to the Borough which may include input from the Borough Post Master and the Dauphin County Emergency Management Agency/911.
3. At least two (2) street name signs shall be placed at each four (4) way street intersection and one (1) at each "T" intersection.
4. Signs shall be free of visual obstruction. The design of street name signs should be consistent, of a style appropriate to the Borough, of a uniform size and color, and erected in accordance with Borough standards.

**SECTION 804 TRAFFIC SIGNS.**

1. Design and placement of traffic signs shall follow the requirements of the Borough and PennDOT.
2. Signs shall be free of visual obstruction.

**SECTION 805 DWELLING UNIT IDENTIFICATION.**

Street numbers for all units of occupancy for buildings and properties shall be visible from the approved street frontage.

**SECTION 806 UNDERGROUND WIRING.**

1. All electric, telephone, television, and other communication facilities distribution lines servicing new developments should be provided by underground wiring within easements or dedicated public rights-of-way, installed in accordance with the prevailing standards and practices of the utility or other companies providing such services.
2. Lots which abut existing easements or public rights-of-way where overhead electric or telephone distribution supply lines and service connections have heretofore been installed may be supplied with electric and telephone service from those overhead lines, but the service connections from the utilities' overhead lines shall be installed underground.
3. Where overhead lines are permitted as the exception, the placement and alignment of poles shall be designed to lessen the visual impact of overhead lines, preferably along alleys rather than along streets. Trees shall be planted in open areas and at key locations to minimize the view of the poles and the alignments.

**SECTION 807 PEDESTRIAN ACCESS AND CIRCULATION**

A. Intent.

By creating a safe, continuous network of walkways within, and between developments, and completing partially constructed sidewalk patterns within communities and neighborhoods, pedestrians feel more inclined to safely walk, visit, or shop. Walkways should provide an

inviting and convenient option for pedestrian movement within a community and promote direct pedestrian access to neighboring residential, non-residential, and public uses.

Sidewalks and other pedestrian facilities shall be compatible with, or complement the established and predominant pedestrian circulation system and features of adjacent and nearby development.

**B. Design Guidelines.**

1. Sidewalks. In addition to the provisions set forth in Chapter 21 of the Codified Ordinances of the Borough of Highspire relating to streets/sidewalks, specifically relating to the construction and materials specifications, sidewalks are required for all new developments and shall also comply with the following:
  - a. Sidewalks shall be provided on both sides of a street.
  - b. Sidewalk widths shall be a minimum of four (4) feet.
  - c. Where possible, sidewalks should be sloped towards adjacent pervious surfaces, not adjacent impervious surfaces.
  - d. Encroachments into the sidewalk shall not result in less than a four (4) foot wide minimum clearance width from any obstacles.
  - e. Sidewalks shall not exceed a cross slope of two (2) percent.
  - f. Ramp curb cuts shall be located at all sidewalks intersecting with vehicular travel ways.
  - g. Marked crosswalks shall be provided within the vehicular travel ways intersecting with sidewalks.
2. Trails.
  - a. Trail width shall be a minimum of four (4) feet.
  - b. Easements ten (10) feet wide are required for trails. Provide a plan note indicating such easement must be five (5) foot on either side of the centerline of the trail as constructed.
  - c. Encroachments into the trail shall not result in less than a four (4) foot wide minimum clearance width from any obstacles.
  - d. Marked crosswalks shall be provided within the vehicular travel ways intersecting with trails.

**SECTION 808 PRESERVATION OF NATURAL, HISTORIC, AND CULTURAL FEATURES**

**A. Intent.**

Mature trees, topography, natural drainage ways, and historic sites are a few of the elements that contribute to the distinct character of Highspire Borough. To protect these features and resources that enhance the local character, new projects shall work within the context and integrity of this environment by preserving natural, historical, and cultural features to the maximum extent possible.

**B. Design Guidelines.**

New projects should integrate existing natural features, required open space, existing historic structures, and cultural resources located on the site into the overall design and layout of the development.

1. A site analysis shall be submitted using all applicable reports, plans, and maps to determine whether significant natural or other features exist on a site that should be protected, with priority being given to the following areas (which are not listed in order of priority or significance):
  - a. Floodplains, surface drainage swales, bodies of water;
  - b. Wetlands;
  - c. Existing significant trees;
  - d. Historical, cultural, or archeological sites or areas recognized by the Borough, state, or federal governments as significant;
  - e. Prominent topography; and
  - f. Steep slopes
2. The proposed building and impervious footprint(s) shall be clearly identified on each plan to identify potential impacts to existing trees, other natural features, historic structures, and cultural resources.

**SECTION 809 LANDSCAPING**

**A. Intent.**

Landscaping plants intercept rainfall; reduce stormwater runoff, prevent erosion, and reduce the need for detention. Landscape plants also provide shade and reduce the temperature created by additional impervious surfaces. Plants release moisture back into the environment, improve air quality, and remove contamination from the soil and water by absorbing excess nutrients, filter sediments, and break down pollutants. Planting native plants helps provide habitat, food, and protection for native species and ecosystems. Planting native species generally increases the chance for long term survivability of the plant because they are naturally adapted to local conditions. Planting non-native species and cultivars could be incorporated in designs when they provide a superior plant for spatial constraints and urban stress mitigation found in local site conditions. Existing significant trees which help contribute to the sense of place should be preserved to the maximum extent practical.

**B. Design Guidelines**

In addition to the landscaping, screening, buffering, and vegetative preservation standards set forth in Chapter 27 of the Codified Ordinances of the Borough of Highspire relating to zoning, landscaping, screening, buffering, and vegetation preservation shall comply with the following:

1. Native and Invasive Planting.
  - a. Native plant materials should be incorporated in all designs. The use of native plant material can help improve water quality, provide additional and improved wildlife habitat, and typically adapt to local conditions which then require less maintenance. Native plants must be used near greenways, urban forested areas, wetlands, and riparian areas.

- b. Except as noted above, non-native plants may be included in place of a native plant if it is not considered invasive and the plant does not introduce pests or diseases. A non-native plant may be incorporated into designs when they prove to be better suited for the urban soil, environment, or spatial constraints, urban stress mitigation, and integration into the surrounding ecosystem.
- c. The following is a list of invasive plants (trees, shrubs, grasses, flowers, and vines) which shall not be used in any planting schedule:

1) Trees:

Common Name	Botanical Name
Tree-of-heaven	Ailanthus altissima
Norway maple	*Acer platanoides
Sycamore maple	Acer pseudoplatanus
Empress tree	Paulownia tomentosa
Callery pear	*Pyrus calleryana
Siberian elm	Ulmus pumila

2) Shrubs:

Common Name	Botanical Name
Japanese barberry	*Berberis thunbergii
European barberry	Berberis vulgaris
Russian Olive	Elaeagnus angustifolia
Autumn olive	Elaeagnus umbellata
Winged Euonymus	*Euonymus alatus
Border privet	Ligustrum obtusifolium
Common Privet	Ligustrum vulgare
Tartarian honeysuckle	Lonicera tartarica
Standish honeysuckle	Lonicera standishii
Morrow's honeysuckle	Lonicera rorrowii
Amur honeysuckle	Lonicera maackii
Bell's honeysuckle	Lonicera morrowii x tatarica
Common buckthorn	Rhamnus catharticus
Glossy buckthorn	Rhamnus frangula
Wineberry	Rubus phoenicolasius
Multiflora rose	Rosa multiflora
Japanese spiraea	*Spiraeajaponica
Guelder rose	*Viburnum opulus var. opulus

3) Grasses:

Common Name	Botanical Name
Cheatgrass	Bromus tectorum
Japanesestilt grass	Microstegium vimineum
Maiden grass	*Miscanthus sinensis
Common reed	Phragmites australis
Reed canary grass	Phalaris arundinacea
Johnson grass	Sorghum halepense
Shattercane	Sorghum bicolor ssp. drummondii

4) Flowers:

Common Name	Botanical Name
Garlic mustard	Alliaria petiolata
Goutweed	Aegopodium podagraria
Bull thistle	Cirsium vulgare
Canada thistle	Cirsium arvense
Musk thistle	Carduus nutans
Jimsonweed	Datura stramonium
Goatsrue	Galega officinalis
Giant hogweed	Heracleum mantegazzianum
Dame's rocket	Hesperis matronalis
Purple Loosestrife	Lythrum salicaria, L. virgatum
Eurasian water-milfoil	Myriophyllum spicatum
Star-of-Bethlehem	Omithogallum nutans, umbellatum
Japanese knotweed	Polygonum (Falopia) cuspidatum/ Polgonum sachalinense
Wild parsnip	Pastinaca sativa
Beefsteak plant	Perilla frutescens
Lesser celandine	Ranunculus ficaria
Water chestnut	Trapa natans

5) Vines:

Common Name	Botanical Name
Fiveleaf akebia	Akebia quinata
Porcelain-befly	Ampelopsis brevipedunculata
Oriental bittersweet	Celastrus orbiculatus
Japanese honeysuckle	Lonicera japonica

Common Name	Botanical Name
Kudzu	Pueraria lobata
Mile-a-minute vine	Polygonum perfoliatum

\* Species with cultivars that are known to be non-invasive may be acceptable within a planting plan.

2. Shade Trees, Vegetation, and Landscaping.
  - a. Any existing vegetation that is in appropriate locations, of an acceptable species and quality may be used to fulfill landscaping, screening, and/or buffering requirements.
  - b. In order to aid surveillance and minimize the potential for crime, planting shall also be sited, massed, and scaled to maintain visibility of doors and first (1<sup>st</sup>) or ground floor windows from the street and from within the development to the greatest extent possible. Planting patterns shall not obstruct sight lines or create isolated areas, especially near pedestrian walking paths.
  - c. Urban open space and other public areas should also include but not be limited to at least three (3) of the following:
    - 1) Seasonal planting areas
    - 2) Large deciduous trees
    - 3) Seating
    - 4) Pedestrian scale lighting
    - 5) Gazebos or other decorative shelters
    - 6) Play Structures for children
    - 7) Natural environment areas
    - 8) Recreational amenities
    - 9) Trails
    - 10) Other features approved by the Borough Council which would implement the goals of the Highspire Borough Comprehensive Plan
  - d. All plantings shall be performed in conformance with good nursery and landscape practice. Plant materials shall conform to the standards recommended by the American Association of Nurseryman, Inc., in the American Standard of Nursery Stock, ANZIZ6O, current edition, as amended.
    - 1) Provide a landscape plan note indicating that the top of the main order root (first [1<sup>st</sup>] large set of roots that divide from the trunk) shall be planted no lower than one (1) or two (2) inches into the soil.
    - 2) Planting designs are encouraged to share planting space for optimal root growth whenever possible. Continuous planting areas rather than isolated planting boxes are generally encouraged.
    - 3) No staking and wiring of trees shall be allowed without a maintenance note for the staking and wiring to be removed within one (1) year of planting.
    - 4) All trees shall be provided by the applicant in accordance with the following standards:
      - a) The trees shall be nursery grown in a climate similar to that of the locality of the project.
      - b) All trees shall have a normal habit of growth and shall be sound, healthy, and vigorous; they shall be free from disease, insects, insect eggs, and larvae.

- c) All trees shall have a minimum diameter of two and one half (2.5) inches measured at four and one half (4.5) feet above the finished grade.
- d) Tree planting depth shall bear the same relationship to the finished grade as the top of the root ball or original grade of origin.
- 5) All required landscape plants shall be maintained and guaranteed for a length of eighteen (18) months from the date of planting, but shall be perpetually maintained in a healthy condition by the property owner. Any required planting that dies, is removed, or is severely damaged shall be replaced by the current property owner as soon as is practical considering growing seasons, within a maximum of one hundred fifty (150) days..
- 6) The plant's growth shall not interfere with the street cartway, sidewalk, signage, easements, clear sight triangles, or utility line. Within the clear sight triangle, typical branching shall not be within ten (10) feet of ground level after ten (10) years of growth.
- 7) No one species shall comprise more than thirty-three (33) percent of the entire number of shade trees in a particular development.
- 8) Additionally, shade trees within the right-of-way and/or upon public property shall:
  - a) comply with Chapter 25 of the Codified Ordinances of the Borough of Highspire relating to shade trees specifically relating to the varieties, locations, and spacing, and be subject to the approval of the Borough Environmental Advisory Board and Borough Council.
  - b) be planted along both sides of the streets (where applicable) within street rights-of-way (existing or planned to be dedicated to the Borough) abutting or located within new development.
- 9) Existing significant trees and natural features, such as drainage corridors, shall be preserved to the maximum extent practicable and incorporated into site plans and site design as major amenities.
  - a) If a significant tree is designated to be preserved but is removed or substantially damaged during the clearing, grading, or construction, the applicant or developer may be required by the Borough to replace the removed or damaged tree.

### 3. Ground Cover.

Any part of a lot which is not used for structures, loading areas, parking spaces and aisles, sidewalks and designated storage areas shall be provided with an all-season, well-maintained vegetative groundcover, and shall be landscaped with trees and shrubs.

### 4. Existing Wooded Areas.

No more than twenty five (25) percent of existing woodlands located in environmentally sensitive areas shall be destroyed or altered. If the applicant can prove that invasive species are within either of these areas, then the percent of woodlands to be removed may be increased to eradicate invasive species.

### 5. Tree Protection Zone.

- a. Prior to construction the tree protection zone shall be delineated at the dripline of the tree canopy. All trees scheduled to remain shall be marked; however, where groups of trees exist, only the trees on the edge need to be marked. A forty-eight (48) inch high snow fence or forty-eight (48) inch high construction fence mounted on steel posts located eight (8) feet on center shall be placed along the boundary of the tree protection zone.

- b. No construction, storage of material, temporary parking, pollution of soil, or regrading shall occur within the tree protection zone. When there is a group of trees, the tree protection zone shall be based on the location of the outer trees.

**SECTION 810 LIGHTING**

A. Intent.

Lighting must be scaled and laid out in a pattern that promotes safe vehicular and non-pedestrian access to and within a development while minimizing impacts on adjacent properties. Lighting in outdoor public places helps improve public safety and welfare. The control of glare from non-vehicular light sources can improve impaired safe travel. Controlling glare also helps protect neighbors and the night sky from nuisance glare and stray light from poorly aimed, placed, applied, maintained, or shielded light sources.

B. Design Guidelines.

- 1. Lighting shall have intensities and uniformity ratios in accordance with the current recommended practices of the Illuminating Engineering Society of North America (IESNA) as contained in the IESNA Lighting Handbook. Future amendments to said recommended practices shall become a part of this Chapter without further action of the Borough. Examples of intensities for typical outdoor applications, as extracted from the 8<sup>th</sup> Edition of the Lighting Handbook, are presented below:

Use	Task	Maintained Footcandles <sup>1</sup>	Uniformity Ratio <sup>2</sup> (Max.:Min.)
Streets	Local Residential	0.4 Min.	6:1
	Local Mixed Use	0.65 Min.	6:1
	Local Non-Residential	0.9 Min.	6:1
Parking: Multi-Family (and single family attached on 1 lot) Residential & Mixed Use	Low Vehicular/Pedestrian Activity	0.2 Min.	4:1
	Medium Vehicular/Pedestrian Activity	0.6 Min.	4:1
Parking: Non-Residential	High Activity (e.g., regional shopping centers/fast food restaurant facilities, major athletic/ civic/cultural events).	0.9 Min.	4:1
	Medium Activity (e.g., community shopping centers, office parks, hospitals, commuter lots, cultural/civic/recreational events).	0.6 Min.	4:1
	Low Activity (e.g., neighborhood shopping, industrial employee parking, schools, church parking).	0.2 Min.	4:1
Walkways and Bikeways		0.5 Min.	5:1
Building Entrances and Signs		4.0 Avg.	-

<sup>1</sup>. Illumination levels are maintained horizontal Footcandles on the task, e.g., pavement or area surface.

<sup>2</sup>. Uniformity ratio is a measure of the dispersion of light on an area. The ratio is measured as maximum light level to minimum light level. Example: 4:1 for the given area, the maximum level of illumination should be no less than 4 times the minimum level of illumination (0.2 x 4 = 0.8 maximum light level)

- 2. Dedicated lighting fixtures shall be of a type and design appropriate to the lighting application and aesthetically acceptable to the Borough. Dedicated and non dedicated lighting fixtures shall meet the following standards:
  - a. For lighting horizontal tasks such as roadways, sidewalks, entrance, and parking areas, fixtures shall meet IESNA fully shielded criteria (no light output emitted

- above ninety (90) degrees at any lateral angle around the fixture). Individual fixtures whose aggregate lamp output does not exceed one thousand eight hundred (1,800) lumens (typical household outdoor lighting) are exempt from this requirement.
- b. Fixtures shall be equipped with, or be modified to, incorporate light directing and/or shielding devices such as shields, visors, skirts, or hoods to redirect offending light distribution and/or reduce direct or reflected glare. Glare control shall be achieved primarily through the use of such means as cutoff fixtures, shields and baffles, and appropriate application of fixture mounting height, wattage, aiming angle and fixture placement.
  - c. The use of floodlighting, spotlighting, wall-mounted fixtures, decorative globes and spheres, and other fixtures not meeting IESNA full-cutoff criteria shall be permitted only with the approval of the Borough, based upon applicability in retaining the character of the Borough and achieving acceptable glare control.
3. All outdoor lighting shall be aimed, located, designed, fitted, and maintained so as not to present a hazard to drivers or pedestrians by impairing their ability to safely travel.
  4. Unless for safety, security, or all-night operations, lighting shall be controlled by automatic switching devices to permit extinguishing between eleven (11) p.m. and dawn.
    - a. Lighting proposed for use after eleven (11) p.m., or after the normal hours of operation, shall be reduced by an average of seventy-five (75) percent from that time until dawn, unless supporting a specific purpose.
  5. Vegetation screens shall not be employed to serve as the primary means for controlling glare.
  6. The intensity of illumination projected onto an existing residential use from an existing property boundary shall not exceed the following vertical footcandles, measured at the existing property line at a height of five (5) feet;
    - a. One-tenth (0.1) Footcandle in the residential zoning districts.
    - b. Two-tenths (0.2) Footcandles in all other zoning districts except the residential and CBD zoning districts.
    - c. Six-tenths (0.6) Footcandles in the CBD zoning district.
  7. Pole mounted fixtures shall not be mounted in excess of twenty five (25) feet high.
  8. Lighting standards in parking areas shall be placed outside paved areas or on concrete pedestals at least two and one half (2.5) feet high above the pavement, or by other approved protective means.
  9. The Borough reserves the right to conduct a post installation nighttime inspection to verify compliance with the requirements of this Chapter and, if appropriate, to require remedial action at no expense to the Borough.
  10. The Borough must accept dedication of street lighting facilities located within the right-of-way of a street to be dedicated to the Borough.
    - a. Until such time as the street lighting is dedicated, the developer of the tract (who has escrowed the street lighting) will be responsible for any and all costs associated with each streetlight. Such costs shall include, but not be limited to: administration, placement, and maintenance. Electrical charges shall be the

responsibility of the Borough at the issuance of the first (1<sup>st</sup>) building occupancy permit within the development.

- b. Streetlights not dedicated to the Borough will remain the responsibility of the developer or appropriate private entity including all costs and responsibilities for the lighting in perpetuity.

## **SECTION 811 EASEMENTS**

### **A. General.**

All easements including by way of example and not limitation; sanitary sewer facilities, stormwater drainage facilities, public or private utilities, access and/or pedestrian access shall meet the standards found in this Section.

### **B. Design Guidelines.**

1. To the fullest extent possible, easements shall be centered on property lines.
2. Nothing shall be placed, planted, set, or put within the area of an easement that would adversely affect the function of the easement.
3. Indicate on the plans all proposed and existing easements of record and indicate their location and width. All structures located within the easement shall be indicated. Note the recording information on the plan of record.
4. To the fullest extent practical, utilities and pedestrian paths should be centered within an easement. However, due to unexpected on-lot conditions, utility and pedestrian locations may be flexible within the easement.
5. All utility companies are encouraged to use common easements. Utility easements shall be based on the width required by the utility authorities but shall have a minimum width of ten (10) feet. Utility easements shall be located within the street right-of-way, preferably along alleys, or within the required building setback.
6. Where pedestrian access is provided outside of a street right-of-way, pedestrian easements shall have a minimum width of ten (10) feet.
7. The applicant shall reserve easements where stormwater management and surface water facilities exist or are proposed when located within the boundaries of the subject tract. The applicant proposing to alter existing stormwater management facilities on adjacent and/or downstream properties shall obtain a temporary construction easement or a permanent easement and maintenance responsibilities shall be established, to the extent feasible.

When the proposed stormwater management system will utilize or be integrated into an existing stormwater collection or conveyance system, the existing facilities shall be improved to the standards of this Chapter and Chapter 9 of the Codified Ordinances of the Borough of Highspire relating to grading/stormwater. The applicant shall determine the impacts of any proposed improvements of the existing system to downstream properties. If the improvements will cause adverse impacts on downstream properties, the applicant shall mitigate such impacts.

## SECTION 812 SURVEY MONUMENTS AND MARKERS

### A. Monuments Shown on Final Plan.

The location of all existing and proposed monuments, lot line markers, property corners, and drill holes shall be shown on the final plan. Those that are proposed shall be labeled as such. Drilled holes in curbing shall be referenced mathematically to a point on the right-of-way line.

### B. New Monuments.

Three (3) monuments shall be spaced around the proposed project with precise bearings and distances labeled which reference those monuments to known property corners.

1. Two (2) such monuments shall be consecutive corners along street rights-of-way and the third (3<sup>rd</sup>) may be placed either on the boundary or internal to the site.
2. Longitude and latitude coordinates of the monuments shall be shown on the recorded plan.
3. If GPS technology is used, it shall be rectified and calibrated to the State Plane Coordinate System, North American Datum (NAD) 1983.
  - a. Monuments must be readily accessible and clear of overhead obstructions.
4. A computer readable point file including property lines, corners, rights-of-way, and easements for the site shall be submitted to the Borough prior to plan recordation.

### C. Monument Materials.

Monuments shall be of concrete or stone, with a flat top having a minimum width or diameter of four (4) inches and a minimum length of thirty (30) inches. Concrete monuments shall be marked with a three-quarter (3/4) inch copper, brass dowel, or drill hole; stone or precast monuments shall be marked on the top with a drill hole.

### D. Existing and Proposed Property Line and Right-of-Way Markers.

Markers shall be set at all points where lot lines intersect curves, at all angles in property lines, at the intersection of all other property lines, and at the street right-of-way.

### E. Marker (Pin) Materials.

1. Markers shall consist of iron pipes or steel bars at least thirty (30) inches long and not less than five-eighth (5/8) of an inch in diameter.
2. Drill holes shall be drilled in concrete curbs (with or without PK nails or discs) having a minimum diameter of one-quarter (1/4) inch. The depth of the holes shall be such that a PK nail or disc, if used, can be set in as close to the surface of the curb as possible. Minimum depth without the use of PK nail or disc shall be one-half (1/2) inch. In the absence of PK nails or discs, chisel or saw marks shall be used to facilitate and identify the drill hole locations.

### F. Certification of Monuments and Markers.

1. All monuments, markers, and drilled holes shall be placed by a the qualified professional land surveyor licensed to practice in the Commonwealth of Pennsylvania so that the scored marked point, or center of the drilled hole shall coincide with the point of intersection of the lines being monumented or marked.

2. Provide a note on the plan indicating when the monuments and markers are to be set.

## **SECTION 813 SANITARY SEWAGE DISPOSAL**

### **A. Sanitary Sewage Disposal.**

1. In addition to the provisions set forth in Chapter 18 of the Codified Ordinances of the Borough of Highspire relating to sewers, the applicant shall provide the development with a complete sanitary sewage system to be connected to the existing sanitary sewerage system in accordance with any other Borough Authority and Borough specifications as well as the following:
  - a. The sanitary sewer shall be installed in the street bed or approved right-of-way.
  - b. Lateral installation shall be to the right-of-way lines of the streets, lot, parcel, or property lines or sewer easement right-of-way lines, whichever pertains to individual situations.
  - c. All termini shall be capped in a manner which will insure that all laterals and house connections shall be water tight pending connection with the public sanitary sewerage system. The system shall be designed by a qualified professional engineer licensed to practice in the Commonwealth of Pennsylvania and approved by the Borough Authority Engineer. The Borough Authority engineer shall also inspect construction of all sanitary sewers to insure that said sewers have been installed in accordance with the all Borough Authority and Borough specifications.
2. The applicant shall provide evidence of approval from the DEP prior to plan recording.
3. When connection to an existing public sewage system is proposed, the application shall include a statement from the Borough Authority that sufficient capacity to service the proposed development is available. Such notice shall be dated within twelve (12) months of the plan application. Extenders agreements shall be provided prior to dedication.
4. Approval by the Borough Authority of the sewage facilities shall be received and submitted to the Borough prior to final plan recording.

## **SECTION 814 WATER SUPPLY**

### **A. Water Supply.**

1. The applicant shall provide the development with a complete water main supply system to be connected to the existing or proposed water main supply system in accordance with Borough and private water utility service provider specifications.
2. The applicant shall provide documentation in the form of a copy of a Certificate of Public Convenience from the Pennsylvania Public Utility Commission and/or water utility service provider that the project is located in an area served by a public utility and a statement that the utility has the capacity to serve the project at this time; or a cooperative agreement or an agreement to serve the project from the water utility service provider.
3. Fire hydrants shall be provided in accordance with the following:
  - a. The location and kind of fire hydrant shall meet the specifications of the local Borough regulation.

- b. Fire hydrants shall meet the specifications of the Middle States Department Association of Fire Underwriters and the Borough Fire Department.
- c. All dwellings and buildings shall be located within six hundred (600) feet of an active fire hydrant, measured by way of accessible streets.
- d. All fittings shall be in accordance with the standards of the applicable Borough Fire Department. The large fitting shall face the street and be a minimum of sixteen (16) inches above the ground level.
- e. Fire hydrant location(s) shall be submitted prior to final plan approval.

## **SECTION 815     STORMWATER MANAGEMENT**

### **A.     Stormwater Management.**

- 1. In addition to the provisions set forth in Chapter 9 of the Codified Ordinances of the Borough of Highspire relating to grading/stormwater management and unless otherwise specified in Chapter 9 of the Codified Ordinances of the Borough of Highspire, the applicant shall also provide stormwater management facilities that:
  - a. Permit the unimpeded flow of natural watercourses;
  - b. Ensure the drainage of all low points along the line of streets and other applicable areas;
  - c. Intercept, retain, or detain surface water runoff in a manner reasonably related to the extent and grade of the area drained;
  - d. Provide positive drainage away from buildings;
  - e. Limit twenty-five (25) year storm post-development runoff to two (2) year storm pre-development volumes and velocities.
- 2. The applicant shall submit a stormwater management plan in accordance with the provisions of Chapter 9 of the Codified Ordinances of the Borough of Highspire relating to grading/stormwater management. Action on the stormwater management plan shall be made in conjunction with the development plan.
- 3. In addition to the generally accepted stormwater BMPs and concepts, additional stormwater management considerations should include the following:
  - a. The existing points of natural drainage discharge onto adjacent property shall not be altered without written approval of affected landowners.
  - b. Stormwater runoff or natural drainage water shall not be diverted so as to overload existing drainage systems, or create flooding or the need for additional drainage structures on other private properties or public lands, without approved provisions being made by the applicant for properly handling such conditions.
  - c. Facilities for storm drainage shall be designed to handle the anticipated peak discharge from the property being developed as well as to handle anticipated increase runoff that will occur when all the property at a higher elevation in the same watershed is developed.
  - d. Where a watercourse runs across or through a development, a drainage easement, which conforms with the line of such watercourse, shall be provided at such a width as well be adequate to preserve the unimpeded flow of natural drainage.

- e. All drainage structures that are located in rights-of-way of state highways shall be approved by PennDOT and a letter for approval shall be provided.
  - f. All streets shall be designed so that surface water is discharged from their rights-of-way.
  - g. Storm drainage facilities, as required, shall be placed in front of the curb or curblines when located in a street right-of-way. When located in undedicated land, such facilities shall be placed within an easement.
  - h. Street drainage shall not be permitted to cross intersections or crown of the road.
  - i. Stormwater roof drains shall not discharge water directly over a sidewalk.
  - j. Stabilized outlets shall be provided for footer drains, flood drains, and downspouts.
  - k. No person shall block, impede the flow of, alter, construct any structure, or deposit any material or thing, or commit any act which will affect normal or flood flow in any stream or watercourses without having obtained prior approval from the Borough and/or DEP or other regulatory agency, whichever is applicable.
4. Whenever the evidence available to the Borough indicates that the natural surface drainage is inadequate and/or generally accepted stormwater BMPs and concepts determined not feasible, the developer shall install a stormwater sewer system in accordance with approved plans and profiles. The system shall be designed by qualified professional engineer licensed to practice in the Commonwealth of Pennsylvania and approved by the Borough Engineer. The developer shall submit engineering calculations upon the size of conduits, culverts, and other portions of the proposed storm sewer system have been based.
- a. Pipe.
    - 1) Pipes shall be constructed in accordance with the specifications as set forth in PennDOT Publication 408, as amended.
    - 2) Pipes shall be corrugated galvanized metal pipe (CMP) helical in design unless otherwise specified.
    - 3) All pipe joints shall be connected with metal bands.
    - 4) Pipes shall be placed on class B bedding.
    - 5) Pipe gauge shall be in accordance with approved engineering calculations. Minimum pipe gauge for CMP shall be sixteen (16) gauge.
    - 6) Pipe sizes shall be in accordance with that shown on approved drawings. Minimum pipe size shall be fifteen (15) inches in diameter.
    - 7) Pipe shall be constructed and set to line and grade as shown on approved drawings.
  - b. Inlets.
    - 1) Inlets shall be constructed in accordance with the specifications as set forth in PennDOT Publication 408, as amended, and detailed in Roadway Construction Standard Drawings (RC-34).
    - 2) Inlet tops shall be precast concrete top units with a ten (10) inch hood or equivalent in order to place inlet in a two (2) inch sump conditions, and shall be compatible with type of curbing installed.
    - 3) Inlet boxes shall be precast concrete box units.
    - 4) All inlets shall have weep holes placed at the appropriate elevations to completely drain the subgrade prior to place the base course and surface course.
  - c. Manholes

RETTEW

Effective Date: November 4, 2009

Enacted: December 15, 2009

(22, PART 8)

- 1) Manholes shall be constructed in accordance with the specifications as set forth in PennDOT Publication 408, as amended, and detailed in Roadway Construction Standard Drawings (RC-39).
- 2) Manholes shall be precast concrete units.