

ARTICLE IX

DESIGN STANDARDS

SECTION 900 APPLICATION

The standards of design in this Article IX shall be used to judge the adequacy of subdivision and land development proposals; provided, however, that flexibility, economy and ingenuity in the layout and design of subdivisions and land developments shall be encouraged and promoted, and alterations in site requirements and other practices which are in accordance with modern and evolving principles of site planning and development shall be authorized and encouraged; furthermore, the use of renewable energy systems and energy conservation building design shall be encouraged. The Planning Commission and Hamiltonban Township Board of Supervisors are hereby authorized to solicit reviews and reports from adjacent municipalities and other governmental agencies affected by any application. No modification shall be granted by the Board which would conflict with features of any adopted long range plan of the Township or with the intent and purpose of the general principles of design and minimum requirements of this Ordinance.

SECTION 901 CONSTRUCTION OF IMPROVEMENTS

The applicant shall grade and pave the streets and install all other necessary improvements at no expense to the Township, including, where required, curbs, sidewalks, water mains, sanitary and storm sewers, erosion and sedimentation controls, water management facilities, street lights, fire hydrants, street name signs and other facilities and utilities required by the Township, in strict accordance with the requirements of this Article and the standards and specifications of the Township. Construction of all such facilities and utilities shall be subject to inspection by appropriate Township representatives during the progress of the work. The applicant shall not begin work on buildings or sell any lots in any part of the subdivision or land development until the streets in that part have the base course completed.

SECTION 902 GENERAL STANDARDS

1. Land. No land shall be subdivided or developed unless all hazards to life, health, or property shall have been eliminated or unless the plans for the subdivision or land development shall provide adequate safeguard against such hazards.
2. Development. Proposed subdivision and land development shall be coordinated with existing nearby neighborhoods so that the community as a whole may develop harmoniously; furthermore, the layout or arrangement of the subdivision or land development shall conform to the Township's and the County's Comprehensive Plan and to any regulations or maps adopted in furtherance thereof.

3. Water Supply. If water is to be provided by means other than by private wells owned and maintained by the individual owners of lots within any subdivision or development, applicants shall present evidence to the Hamiltonban Township Board of Supervisors and the Planning Commission that the subdivision or development is to be supplied by a certified public utility, a bona fide cooperative association of lot owners, or by a municipal corporation, authority, or utility. A copy of a Certificate of Public Convenience from the Pennsylvania Public Utility Commission or an application for such certificate, a cooperative agreement or a commitment or agreement to serve the area in question, whichever is appropriate, shall be acceptable evidence.

SECTION 903 BLOCKS AND LOTS

1. Blocks. Residential and commercial blocks shall be not less than five hundred (500) feet long, nor more than one thousand five hundred (1,500) feet long. Crosswalks up to twelve (12) feet wide with a paved walk of six (6) feet in width, may be required for blocks more than eight hundred (800) feet long. Blocks shall be wide enough for two (2) tiers of lots and shall meet the minimum lot depth requirements of the Township Zoning Ordinance. Blocks in commercial and industrial districts may vary from the elements of design contained in this Section if the nature of the use requires special treatment.
2. Through Lots. Double frontage lots are to be avoided and generally will not be permitted. Along limited access or arterial highways, double frontage lots, served entirely by a separate residential service or neighborhood feeder street, may be required in order to protect the character of the major street.
3. Grading. Individual lots shall be graded to sufficient elevation to secure drainage away from buildings and to prevent the collection of storm water in pools. Buildings shall not be constructed until such time as the lot is graded to the designated elevation as per the approved subdivision or land development plan. Roof drainage and sump pumps shall be discussed as part of any stormwater management plan and shall be provided for according to recommendations of the Township Engineer or such other official as may be designated by the Hamiltonban Township Board of Supervisors. Topsoil shall be preserved and redistributed as cover and shall be suitably planted with perennial grasses or ground cover.
4. Lot Size. The minimum lot size and dimensional requirements shall be as prescribed in the Township Zoning Ordinance.
5. Flag Lots. "Flag-shaped" or panhandle lots shall have a minimum of fifty (50) feet of frontage. Flag lots shall only be permitted as a modification of requirements in accordance with Section 300.3 of This Ordinance. Flag lots shall not be permitted on the turnaround portion of cul-de-sacs. The area of the panhandle or flag staff portion of the lot shall not be included in the calculation of required minimum lot area.

6. Lot Lines. Lot lines shall be approximately at right angles or radial to street lines so long as reasonably shaped lots result.
7. House Numbers. House numbers shall be assigned to each lot by the Adams County Mapping Office.
8. Percolation Tests and Soils Analysis. Percolation tests and soil analysis shall be required by the Township on each proposed lot in accordance with the Rules and Regulations of the Pennsylvania Department of Environmental Protection. From the results of these tests, the lot size shall be established large enough to provide for the specific minimum area required for the absorption field as prescribed in accordance with the requirements of the Pennsylvania Department of Environmental Protection, but in no case shall the lot size be less than as set forth in the Township Zoning Ordinance.

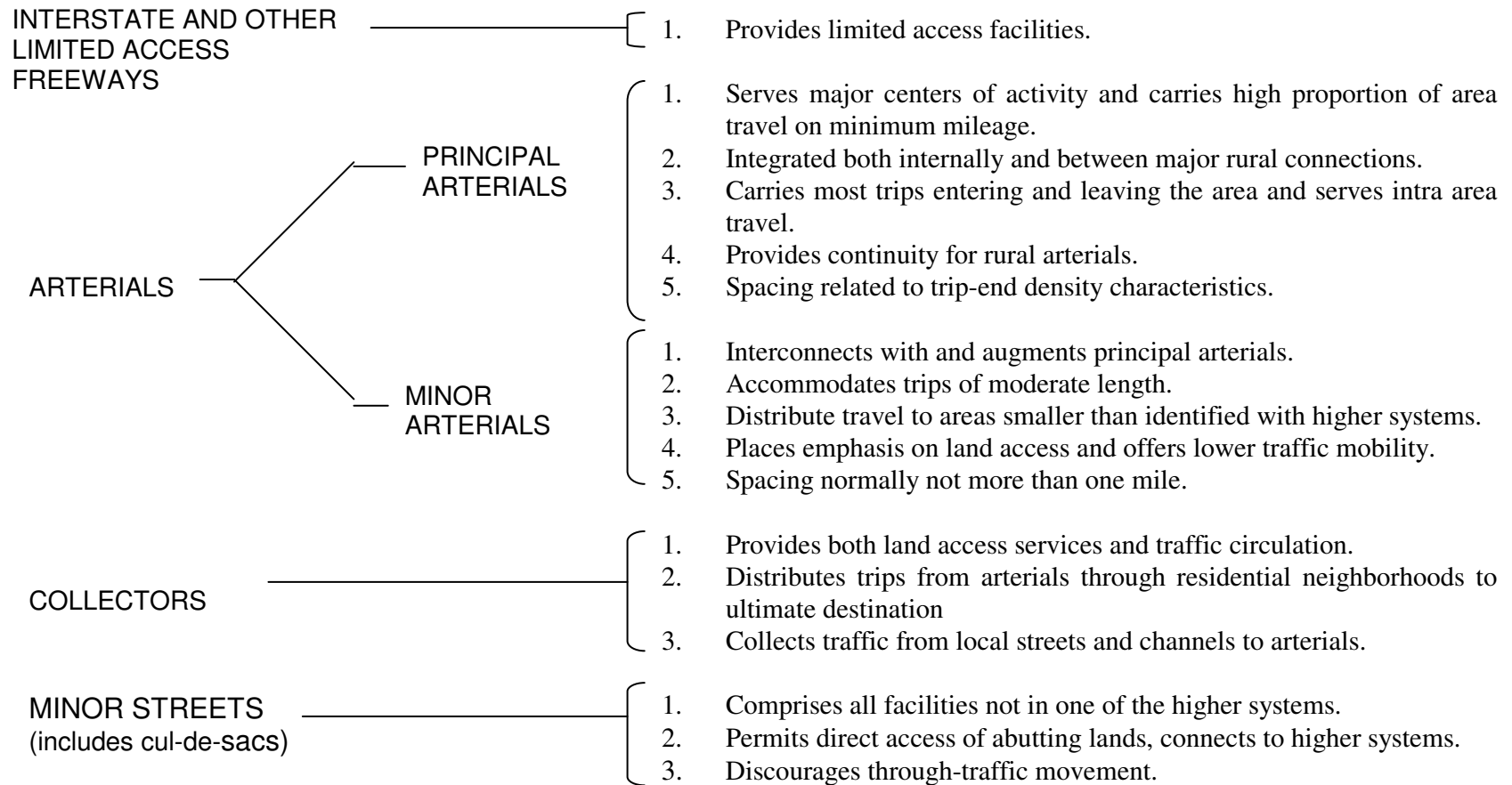
SECTION 904 STREETS, ALLEYS AND SIDEWALKS

1. Street Pattern. The proposed street pattern shall be integrated with existing and/or officially planned streets, and it shall be related to topography to produce useable lots and reasonable street grades; furthermore, streets in and bordering a subdivision or land development shall be coordinated, and shall be of such widths and grades and in such locations as deemed necessary by the Township to accommodate prospective traffic, and facilitate fire protection.
2. Roadway Classification. All roadways within Hamiltonban Township, existing and proposed, shall be classified in accordance with the following chart entitled “Roadway Classification System Characteristics.”

FIGURE 1

ROADWAY CLASSIFICATION SYSTEM CHARACTERISTICS

- The Township’s inventory of streets, roads and highways is further classified in the most recent edition of the Township Comprehensive Plan.



3. Street Width. Public streets shall be laid out according to the following minimum schedule:*

<u>Class of Street</u>	<u>Right-of-Way Width</u>	<u>Minimum Cartway Width</u>	<u>Shoulders</u>
Cul-de-sac street	50'	20'	4' each side
Turnaround of cul-de-sacs (diameter)	100'	80'	-----
Minor street	50'	20'	4'
Collector street	60'	24'	8'
Arterial street	PennDOT Standards	PennDOT Standards	PennDOT Standards
Alley and service drive	20'	20'	-----

4. Street Improvement. Minimum cartway width and shoulders for minor streets shall be improved with a prepared subgrade, eight (8) inches of 2A stone base, or other material as approved by the Township Engineer, five (5) inches of compacted bituminous binder course and one and one-half (1-1/2) inches of compacted ID-2 wearing course. For collector roads, specifications shall be the same as for minor streets, however the wearing course shall consist of three and one-half (3-1/2) inches of compacted ID-2. Arterial roads or highways shall be constructed after consultation with the Township Supervisors and the Pennsylvania Department of Transportation to determine the appropriate method of construction. Adequate surface and subsurface drainage shall be provided. All topsoil shall be removed from the area to be paved.
5. Continuations. Where reasonable and practical, new streets shall be laid out to continue existing streets at no reduction in width and at a width no less than that prescribed in Section 904.3; however, greater widths may be required in accordance with the Township Engineer's recommendations.
6. Street Names. Continuations of existing streets shall be known by the same name. Names for other streets shall not duplicate or closely resemble names for existing streets in the County. Names shall be provided for all proposed streets.
7. Access. Streets shall be laid out to make provisions for access to all lots and to adjacent undeveloped areas, and the applicant shall improve these access streets to the limits of the subdivision or land development.
- A. Easements or rights-of-way providing a means of future access to adjacent properties shall be required when deemed appropriate by the Township Supervisors. Furthermore, all such access easements or rights-of-way shall have a minimum width of fifty (50) feet and shall be so noted on the recorded plan.

- B. Shared driveways may be used to provide required vehicular access between two (2) single-family detached dwellings and a street. The use of a shared driveway shall only be approved when cross-access easements ensure common use, access, and maintenance of the shared driveway for each property owner relying upon said shared driveway. The existence of such cross-access easements shall be clearly noted on the subdivision or land development plan and shall be recorded on the deeds for all affected lots. Shared driveways shall not exceed five hundred (500) feet in length and shall be a minimum of twenty (20) feet in width.
8. Reserve Strips. Reserve strips controlling access to the subdivision or land development, or adjacent areas, are prohibited.
 9. Dead-End Streets. Dead end streets are prohibited unless constructed as cul-de-sacs not exceeding 800 feet in length, with a turn-around having a minimum of a 100 foot diameter right-of-way and a minimum of an 80 foot diameter of paving. The length of a cul-de-sac shall be measured from its centerline intersection point to the centerpoint of the turnaround.
 10. Clear Sight Distance. Clear sight distance along center lines of minor residential streets shall be maintained at not less than 150 feet; and along nonresidential and/or residential collector streets at not less than 250 feet.
 11. Directional Changes. Changes in street direction shall be made by horizontal curves with a minimum radius of 500 feet for arterial streets, 300 feet for collector streets and 200 feet for minor streets. These radii are to be measured at the centerline. Shorter radii may be permitted on recommendation of the Engineer.
 12. Grades. Street and road grades shall be determined by reference to, and in accordance with, the Pennsylvania Department of Transportation's "Rural Design Criteria" for Collectors and Local Roads, as, from time to time, amended, which Criteria are hereby incorporated herein by reference as fully as though set forth at length herein. Design Speed, Type of Road and Type of Terrain shall be determined, with respect to any particular application, by the Planning Commission and the Hamiltonban Township Board of Supervisors, in consultation with the Engineer.
 13. Vertical Curves. Changes in grade shall be joined by vertical curves, and the maximum rate of change of grade shall be five percent per hundred feet of road, provided that the clear sight distances specified above are maintained at all points; provided, however, that in the event the provisions of the present subsection conflict with the above-mentioned Pennsylvania Department of Transportation "Rural Design Criteria", such Criteria shall prevail.
 14. Crown. The slope of the crown on minor and collector streets shall be no less than one-eighth inch per foot and no more than one-third inch per foot as directed by the Engineer.

15. Side Slopes. Streets, cuts and fills shall be provided with side slopes no steeper than one foot vertical to three (3) feet horizontal. Such slopes shall be suitably planted with perennial grasses or other vegetation to prevent gulleying and erosion.
16. Materials and Construction Standards. Materials and construction standards for streets, curbs and gutters, and sidewalks, shall conform to regulations and standards of the Township as found in this Ordinance.
17. Storm Sewerage. Provisions of storm sewerage inlets, catch basins and manholes shall meet the requirements of the Township as regards both design and location. All catch basins shall be connected to a manhole.
18. Intersections. Street intersections shall be designed according to the following standards:
 - A. No more than two (2) streets shall cross at the same point. Street intersections shall be at right angles wherever possible, and intersections of less than 70 degrees (measured at the centerlines of the streets) will not be permitted.
 - B. Intersecting streets shall not enter into the same side of collector streets or arterial highways at intervals of less than 800 feet. Minor streets entering another street from opposite sides should be directly opposite each other; or if necessary, they may be separated by at least 200 feet between centerlines measured along the centerline of the cross street. Greater off-set may be required by the Township Supervisors depending on the importance of the cross street.
 - C. Maximum grade within any intersection shall not exceed five percent in any direction, and approaches to any intersection shall follow a straight course within 100 feet of the intersection; grades within 100 feet of an intersection shall not exceed ten percent.
 - D. Curb radii at intersections shall be according to the following schedule of minimum lengths; 15 feet for intersections of alleys and all streets; 20 feet for minor streets; and 30 feet for collector streets. Where streets of different categories intersect, requirements for the larger radius shall hold. At the street right-of-way line, a diagonal cut-off may be employed, provided sidewalk width and corner visibility are unimpaired.
 - E. A 75 foot clear sight triangle shall be provided, in which no building or structure, wall, fence, hedge, tree, shrub, or other growth shall be placed except for utility poles, light standards, street signs, mailboxes and fire hydrants.
19. Alleys and Service Drives. The following standards shall apply to the design and location of alleys and service drives:

- A. Alleys shall not be permitted in residential developments except by permission of the Township. No part of any dwelling, garage, or other structure may be located within the required rear yard abutting an alley.
- B. Alleys or secondary service drives serving commercial and industrial establishments are required unless other provisions for service are provided.

SECTION 905 UTILITIES AND OTHER FACILITIES

1. Installation of all sewers, water mains, street lights, manholes and other utilities, shall be in strict accordance with the engineering standards and specifications of the Township, municipal authority or other public utility concerned. Sanitary sewers shall have a minimum inside diameter of eight inches and a minimum grade of 1/2%. Manholes shall be located generally at intervals of 250 feet and in no case more than 300 feet. Manholes are also required at all points of change of course or grade line and at all points of intersection of sewer lines. Sanitary sewers shall not be used to carry storm water. When on-site facilities are necessary, their design, construction and installation shall be in accordance with the requirements of any Township ordinance or regulations governing such on-site facilities, and shall be approved by the sanitary officer or other appropriate governmental health agency.
2. If a public sanitary sewer system is available (within five hundred (500) feet of any part of the proposed subdivision, mobile home park, or land development) the subdivider or developer shall design and install a system including laterals which shall be connected to the public system and which shall serve every property within the proposed project. All plans and installations shall be subject to the approval of Hamiltonban Township Supervisors. The Board of Supervisors reserves the right to waive this requirement where owing to topographic features or character of development, such connection would be an undue hardship.
3. Where a public sanitary sewer system is not accessible but is planned for extension to the subdivision or land development or to within five hundred (500) feet of any part of the subdivision or land development the subdivider or developer shall install sewer lines, including lateral connections, to provide adequate service to each lot within the proposed project when connection with the public system is made. The sewer lines shall be capped at the limits of the subdivision, mobile home park, or land development and the laterals shall be capped at the street or sewerage right-of-way line. All plans and installations shall be subject to the approval of the Hamiltonban Township Supervisors. When capped sewers are provided, on-site disposal facilities shall also be provided. (A sewer shall be considered to be planned for extension to a given area any time after engineering and related studies have been approved by the Pennsylvania Department of Environmental Protection and other agencies preparatory to the construction of facilities within five hundred (500) feet of any part of the subdivision or land development.) In lieu of providing the required sewer facilities, the

subdivider or developer may upon approval of the Hamiltonban Township Supervisors escrow an amount of money necessary to cover the costs of providing the required sewer facilities under terms acceptable to the Board of Supervisors.

4. In any portion of the Township defined in Item 3 above where a central sewerage system is proposed, such system shall be subject to approval of the Hamiltonban Township Board of Supervisors which may establish conditions for future acceptance by the Board of such system. Such conditions may include a deferral of acceptance or a permanent refusal to accept.
5. When a proposed subdivision or land development intends to utilize a public or Township owned water supply system, the subdivider or land developer shall submit to the Township satisfactory evidence from the applicable agency approving of such utilization.
6. All private, central water supply systems shall be designed in accordance with the applicable regulations of the Department of Environmental Protection
7. Fire hydrants, when provided, shall be located so that the distance from any building frontage to a fire hydrant is not more than 600 feet measured along the curb.
8. Adequate easements or rights-of-way shall be provided for drainage and utilities. Where common utility lines are installed in or over undedicated land, a public easement six feet on each side of the line shall be required. Suitable easements may also be required along the course of streams for the future installation of sewers. Where feasible, telephone and electric lines shall be installed below ground.
9. Landmarks. Whenever possible, or whenever directed by the Township Supervisors or Planning Commission, subdividers and land developers shall preserve trees more than six (6) inches in diameter at the trunk, groves, waterways, scenic points, historic spots and other community assets and landmarks.

SECTION 906 **TRAFFIC IMPACT STUDIES**

At the time of Preliminary Plan submittal, the applicant shall provide a traffic impact study in accordance with the following requirements.

1. A traffic impact study shall be required in any instance where the estimated average daily trip generation resulting from the proposed subdivision or land development is five hundred (500) vehicles per day or more. The Township Board of Supervisors may require at its discretion a traffic impact study in other instances where conflicts are anticipated involving significant truck traffic, pedestrian traffic, documented safety concerns, inadequate existing road systems, and planned Township or State infrastructure improvements.

2. The cost of preparing the study and the cost of a review by the Township, its engineer, and its traffic engineer shall be borne by the applicant. The study shall be prepared by a qualified traffic engineer or planner. The applicant shall propose the use of a specific consultant and shall provide a list of the consultant's credentials for review by the Township. Said consultant shall be approved by the Township prior to initiation of the study.
3. The applicant and his consultant shall meet with the Township and its engineer prior to beginning the study in order to establish the study area limits. These limits shall not exceed a maximum distance of one mile from the proposed project's boundaries.
4. Joint traffic studies between different applicants are encouraged. Should a recent and relevant study be available, that information may be used when applicable as a basis for the required study upon approval by the Township. The Board of Supervisors may require that applicants provide a fee in lieu of an individual study. This fee shall be used toward the cost of Township-sponsored traffic studies in the general area of the Township where the project is located. Any such fee shall be established by Township Ordinance or Resolution and shall be refunded to the applicant if not used for the designated purpose within three (3) years of payment.
5. The scope of the study shall be coordinated by the applicant's consultant and the Township Engineer and approved by the Board of Supervisors. Said scope shall include at a minimum existing and projected traffic conditions including volumes and service levels for a.m. and p.m. peak hours; accident history; trip generation estimates; warrants for signalization, signage and other methods of traffic control; speed analysis and recommended limitations; 24-hour traffic counts and a subsequent determination of actual peak hour usage; an analysis of structural road conditions; sight distance considerations; and trip distribution analysis.
6. The study shall conclude with an executive summary of findings and a list of recommended improvements. The applicant shall respond to these findings and recommendations in writing with a proposal on programs, improvements, rights-of-way, financing or other measures he is willing to participate in to resolve any negative impacts expected to result from the project.

SECTION 907 WATER IMPACT STUDY

1. Requirement for a Water Impact Study

A groundwater availability study will be required at the time of any required Preliminary Plan submittal for all subdivision(s) and/or land development(s) of any land tract(s) in Hamiltonban Township that proposes to utilize groundwater obtained from the said tract(s), any adjoining tract(s) or from any other tract(s) within the Township. The study will be required irrespective of whether that water is being distributed as part of a public water supply or as individual well(s) on lot within the said tract(s).

2. Exclusion and Modification to a Water Impact Study

A. Exclusion

In the case of subdivision(s) or land development(s) involving less than ten (10) existing proposed or possible residential dwelling unit(s) or non-residential development(s) estimated to use less than 3,500 GPD (gallons per day) of water, the ground water availability study is not required. Studies shall also not be required when the applicant is a municipal water supplier, including but not limited to the Township and the Borough of Fairfield, and the proposal is for a new or expanded regional water source.

B. Modification

When there are fifteen (15) or more dwelling unit connections proposed as possible additions in the future to the said well/water system or when there are or is a possibility, in the future, of twenty-five (25) or more human consumers of the water from the said source, the study, regulation(s) and approval(s) shall also be within the jurisdiction of PADEP for conduct of the water impact study.

3. Conduct of a Water Impact Study

The water impact study shall be prepared, signed and sealed by a hydrologist, professional geologist or professional engineer qualified to conduct groundwater investigations in the Commonwealth of Pennsylvania. The purpose of the study will be to determine whether there is an adequate supply of groundwater for the proposed use and to estimate the impact of the additional water withdrawal(s) on existing nearby wells, underlying aquifers and streams and examine the possible connection(s) to an existing public water supply system and the capacity of that existing system to accommodate the proposed development(s). The scope of the study shall be determined upon consultation with the Township Engineer. Prior to approval, the Township shall conduct an independent, professional review of the study. The cost of the review shall be borne by the applicant.

4. Water Impact Study Requirements

The Hamiltonban Township Board of Supervisors shall only review and/or approve the groundwater impact study after the person(s) preparing the study signs the report, certifies the data and has included the following information:

- A. Calculations of the projected water needs using the criteria set forth in the following:
 1. For residential usage, the PADEP calculation of 3.5 persons per dwelling unit and an average daily usage of 100 gallons per person per day shall be utilized.
 2. For any non-residential usage, PADEP accepted estimated water usage figures shall be utilized in all computations.
 3. For any and all proposed public water system usage as described in Subsection 907.2.b, PADEP jurisdictions shall prevail.
 4. Where applicable, calculations of the projected water needs using the criteria set forth in the following references shall be used:
 - a. PUBLIC WATER SUPPLY MANUAL Bureau of Water Quality Management Publication No. 15 by the PADEP, Harrisburg, Pennsylvania, as amended.
 - b. GUIDE FOR DETERMINATION OF REQUIRED FIRE FLOW by the Insurance Services Office (ISO) as amended.
 - c. AMERICAN WATER WORKS ASSOCIATION Standards and Manuals for the American Water Works Association, Denver, Colorado, as amended.
- B. A geologic map of the area within a one (1) mile radius of the site, at a scale of not more than one (1) inch to one thousand (1,000) feet (1"=1,000').
- C. The location of all faults, lineaments and fracture traces within ¼ mile of the site.
- D. The locations of all existing and proposed wells within ¼ mile of the site, and all large withdrawal wells (over 10,000 gpd) within 1 mile of the site.
- E. The location of all existing and proposed on-lot septic systems and sewer lines within ¼ mile of the site.
- F. The location of all streams, perennial and intermittent, floodplains and wetlands, within the project's boundaries.
- G. The locations of all existing sources of pollution/ contamination within ¼ mile of the well site.
- H. A discussion of the aquifers underlying the site and their long-term drought recharge capability based on accepted published data or detailed site specific investigations.

- I. Based on the drought recharge capability of the underlying aquifer and the calculated daily groundwater withdrawals of the project, a hydrologic budget shall be calculated for the site property itself, and for the area within ¼ mile of the site.
- J. Based on the results of the hydrologic budget, a determination shall be made on whether or not the potential exists for adverse affects on the hydrologic environment caused by the project.
- K. The study shall include a brief statement of the qualifications of the person(s) preparing the study.
- L. For each well that is constructed:
 - 1. An accurate geologic log should be constructed during the drilling of the well giving a detailed description of the type and thickness of rocks encountered.
 - 2. The log should contain information on the depth and thickness of all water bearing zones encountered and the yield for each zone. Yield from the well must be measured using a quantitative method.
- M. A pumping test shall be conducted at a rate and duration to be determined by the Township or its designee. A test of greater duration may be required if a water-table or unconfined-type response (delayed drainage) is encountered during the testing period. The test shall be conducted at a constant pumping rate that should not deviate greater than +/-5% during the test. Notice of all pumping tests shall be given to the Township at least 72 hours before commencing the pumping test.
- N. In order to determine the impact of the project on existing wells, a representative sample of existing wells, evenly spaced around the pumping well, shall be monitored for changes in water level. The number and location of monitoring wells shall be subject to approval by the Township or its designee before conducting a step test. Sufficient well monitoring shall be performed to allow for the construction of hydrographs showing a continuous record of well levels before, during and after the pumping test.
- O. A means of accurately measuring the well discharge shall be provided subject to approval by the Township or its designee.
- P. Well discharge shall be directed away from the site by a method suitable to the Adams County Conservation District and to a point suitable to the Township.

- Q. Records shall be compiled in typewritten form to include the following information:
1. Name of driller and personnel conducting test.
 2. Description of test well to include horizontal and vertical dimensions, casing installed and grouting detail.
 3. List of formation samples.
 4. Static water level immediately prior to yield testing.
 5. Hydrograph of depth to water surface during test pumping and recovery period at the test well showing corresponding pump and discharge rate in gallons per minute and time readings were taken.
 6. Log of depth to water surface at existing and monitoring wells during test pumping period showing time readings were taken.
- R. A report shall accompany the test well data, which analyzes and interprets all data regarding impacts on the groundwater supply and existing wells. The credentials of the individual(s) preparing the report shall be included. Conclusions shall be drawn from the analysis with respect to:
1. Availability of sufficient water for the land development proposed;
 2. Probable effects of long-term pumping on well levels within one (1) mile of the test well.
- S. No land development/subdivision plan, requiring a “water impact study”, shall be approved by the Township if the study indicates that the proposed well/water system does not provide an adequate supply of water for the proposed development/use, considering both quality and quantity, or that the proposed well/water supply adversely affects nearby wells and streams or does not provide for adequate groundwater recharge in respects to calculated withdrawals.
- T. The submission to the Township shall include all applications, reports, or supplemental information submitted to and received from the PADEP and/or the Adams County Conservation District.

SECTION 908 PLANNING AND DESIGN STANDARDS

A. General Standards to Minimize Adverse Impacts

All subdivisions and land developments in Hamiltonban Township shall avoid or minimize adverse impacts on the Township's natural, cultural and historic resources, as defined below.

B. Groundwater Resources

Groundwater resources are to be protected for purposes of providing water supplies for its residents and businesses, and to protect the base flow of the Township's surface waters. These regulations shall be applied in conjunction with those provided for in other sections of this Ordinance, dealing with groundwater conservation and replenishment.

1. The proposed subdivision and land development of any tract shall be designed to cause the least practicable disturbance to natural infiltration and percolation of precipitation to the groundwater table, through careful planning of vegetation and land disturbance activities, and the placement of streets, buildings and other impervious surfaces in locations other than those having the greatest permeability where precipitation is most likely to infiltrate and recharge the groundwater.

C. Stream Valleys, Floodplain, Wetlands, Springs and Lowland Areas

The Township's Open Space Plan describes and maps stream valleys, floodplain, wetlands, springs and lowland areas as resources that warrant restrictive land use controls because of flooding hazards to human life and property, their ground water recharge functions, their importance to water quality and the health of aquatic communities, and their wildlife habitats. They are generally poorly suited for on-site subsurface sewage disposal systems.

1. The following activities shall be minimized:
 - a. Disturbance to streams and drainage swales.
 - b. Disturbance to year-round wetlands, areas with seasonally high water tables, and areas of surface water concentration.

D. Woodlands

Woodlands occur within the Township, often in association with stream valleys and wet areas, poor and erodible agricultural soils, and moderate to steep slopes.

1. Woodland conditions vary with respect to species composition, age, stocking, and health. They range from relatively recent post-agricultural young stands to mature mixed-age forests. Most woodlands represent one or more of the following resource values:
 - a. As soil stabilizers, particularly on moderate to steep slopes, thereby controlling erosion into nearby streams, ponds, impoundments and roads. A closely related function is their enhancement of ground water recharge.
 - b. As a means of ameliorating harsh microclimatic conditions, in both summer and winter.

- c. As a source of wood products, i.e., poles, sawtimber, veneer and firewood.
 - d. As habitat for woodland birds, mammals and other wildlife.
 - e. As recreation resources for walkers, equestrians, picnickers and other related outdoor activities.
 - f. As visual buffers between areas of development and adjacent roads and properties.
2. In designing a subdivision and land development plan for any tract, the applicant shall be guided by the following standards:
- a. Healthy woodlands exceeding one acre shall be preserved to the maximum extent possible. Proposed site improvements shall be located, designed and constructed to minimize the loss or degradation of woodland areas.
 - b. Subdivisions shall be designed to preserve woodlands along roadways, property lines, and streams. Such lines and the native vegetation associated with them shall be preserved as buffers between adjacent properties and between areas being subdivided within a property. Preservation shall include ground, shrub, understory and canopy vegetation.
 - c. Disturbance or removal of woodlands occupying environmentally sensitive areas shall be undertaken only when approved by the Board and on a limited, selective basis to minimize the adverse impacts of such actions. This shall include but not necessarily be limited to, vegetation performing important soil stabilizing functions on wet soils, stream banks and sloping lands.
 - d. No clearing or earth disturbance (except for soil analysis for proposed sewage disposal systems) shall be permitted on a site before the completion of subdivision and land development agreements. The determination of sight distance clearances along roadways shall be made graphically and not by clearing on-site prior to final plan approval.

E. Upland Rural-Agricultural Areas

These areas comprise fields, pastures, meadows, and former agricultural areas in early stages of woodlands succession. These comprise the Township's historic working landscape, dotted with historic houses, barns and other structures. They give the Township much of its rural character. They also contain the greatest concentration of prime agricultural soils. Because of their openness and high visibility, development in these areas is likely to be most readily seen and disruptive to the historic landscape. They sometimes provide habitat for wildlife, in conjunction with nearby woodlands and stream valleys.

1. Several elements of these working landscapes lend themselves to conservation. These include Class I, II and III agricultural soils and natural features which visually punctuate the landscape, such as hedgerows, tree copses, stone walls, and visually prominent places such as knolls and hilltops.
2. These areas can also accommodate development, with preferred locations being the non-Class I, II and III agricultural soils and lower topographic settings where development will be visually less obtrusive. Compact clustered residential designs are encouraged in highly visible locations where future development cannot be avoided (such as at the far edge of open fields).

F. Slopes

Moderately sloping lands (20 to 35 percent) and steeply sloping lands (over 35 percent) are prone to severe erosion if disturbed. Erosion and the resulting overland flow of soil sediments into streams, ponds and public roads, are detrimental to water quality and aquatic life, and a potential hazard to public safety. Areas of steep slope shall be preserved as required below.

1. All grading and earthmoving on slopes exceeding 20 percent shall be minimized.
2. No site disturbance shall be allowed on slopes exceeding 35 percent.
3. On slopes of 20 to 35 percent, the only permitted grading beyond the terms described above, shall be in conjunction with the siting of a single family dwelling, its access driveway and the septic system (which should typically be designed with a long, narrow drainage field following the land contours).
4. Grading or earthmoving on all sloping lands of 20% or greater shall not result in earth cuts or fills whose highest vertical dimension exceeds six feet, except where in the judgment of the Board no reasonable alternatives exist for construction of roads, drainage structures and other public improvements, in which case such vertical dimensions shall not exceed 12 feet. Roads and driveways shall follow the line of existing topography to minimize the required cut and fill. Finished slopes of all cuts and fills shall be as required to minimize disturbance of natural grades.

G. Significant Natural Areas and Features

Natural areas containing rare or endangered plants and animals, as well as other features of natural significance exist throughout the Township. Some of these have been carefully documented by the Statewide Natural Diversity Inventory and the County's Natural Areas Inventory, whereas for others, only their general locations are known. Subdivision applicants shall protect significant natural areas and features identified by the Township's Map of Potential Conservation Lands by incorporating them into any proposed open space or avoiding their disturbance in areas proposed for development.

H. Historic Structures and Sites

Many of the Township's historic structures and sites have been extensively researched and remain intact.

1. Plans requiring subdivision and land development approval shall be designed to protect existing historic resources of all classes. The protection of an existing historic resource shall include the conservation of the landscape immediately associated with and significant to that resource, to preserve its historic context. Where a plan will have an impact upon an historic resource, the developer shall mitigate that impact by modifying the design, relocating proposed lot lines, providing landscape buffers, or other approved means.
2. Municipal participation, review and approval of the applicant's interaction with the State Historical and Museum Commission with regard to the preservation of historic resources, as required for DEP approval of proposed sewage disposal systems, shall be required prior to Final Plan approval.

I. Trails

1. When a subdivision or land development proposal is traversed by or abuts an existing trail customarily used by pedestrians and/or equestrians, the applicant shall make provisions for continued recreational use of the trail.
2. The applicant may alter the course of the trail within the tract for which development is proposed under the following conditions:
 - a. The points at which the trail enters and exits the tract remain unchanged.
 - b. The proposed alteration exhibits quality trail design according to generally accepted principles of landscape architecture (For example: Bureau of State Parks publication Non-Motorized Trails).
 - c. The proposed alteration does not coincide with a paved road intended for use by motorized vehicles.
3. When trails are intended for public or private use, they shall be protected by a permanent conservation easement on the properties on which they are located. The width of the protected area in which the trail is located should be a minimum of ten feet. The language of the conservation easement shall be to the satisfaction of the Board upon recommendation of the Township Solicitor.
4. An applicant may propose and develop a new trail.
5. Trail improvements shall demonstrate adherence to principles of quality trail design.
6. Trails shall have a vertical clearance of no less than ten (10) feet.
7. Width of the trail surface may vary depending upon type of use to be accommodated, but in no case shall be less than three (3) feet or greater than six (6) feet.

8. No trail shall be designed with the intent to accommodate motorized vehicles.

J. Additional Conservation Practices For Site Preparation and Clean-Up

1. Protection of Vegetation from Mechanical Injury. Where earthwork, grading, or construction activities will take place in or adjacent to woodlands, old fields or other significant vegetation or site features, the limit of disturbance shall be delineated and vegetation protected through installation of temporary fencing or other approved measures. Such fencing shall be installed prior to commencing of and shall be maintained throughout the period of construction activity.
2. Protection of Vegetation from Grading Change. Grade changes to occur at any location of the property shall not result in an alteration to soil or drainage conditions which would adversely affect existing vegetation to be retained following site disturbance, unless adequate provisions are made to protect such vegetation and its root systems.
3. Protection of Vegetation from Excavations
 - a. When digging trenches for utility lines or similar uses, disturbances to the root zones of all woody vegetation shall be minimized.
 - b. If trenches must be excavated in the root zone, all disturbed roots shall be cut as cleanly as possible. The trench shall be backfilled as quickly as possible.
4. Protection of Topsoil
 - a. No topsoil shall be removed from the site during development and construction.
 - b. Prior to grading operations or excavation, topsoil in the area to be disturbed shall be removed and stored on site.
 - c. Topsoil removed shall be redistributed and stabilized as quickly as possible following the establishment of required grades for a project or project phase. All exposed earth surfaces shall be stabilized by hydroseeding on slopes of less than ten percent, and by sodding, hydroseeding, or rip-rap on slopes exceeding ten percent.
 - d. Grading and earthmoving operations shall be scheduled to minimize site disturbance during the period from November 1 to April 1, when revegetation of exposed ground is difficult.
 - e. A target minimum topsoil depth across the entire development of four (4) inches is desirable. Each lot within the development shall be provided with adequate topsoil for site stabilization and the establishment of a healthy lawn.