



Washtenaw County, Michigan

LAND DEVELOPMENT STANDARDS

November 12, 2008

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PREAMBLE

The promulgation of land development standards is considered to be a significant responsibility of the Pittsfield Township Board. The Board believes that high uniform standards must be maintained in order to protect the citizens and businesses of the Township and to ensure that future Boards are not burdened with remedial and retroactive solutions. Quality planning and implementation are seen as priority and viable goals.

These standards have been adopted by the Pittsfield Township board and periodically revised as listed below.

Adopted November 12, 2008

by

The Board of Trustees
For
PITTSFIELD CHARTER TOWNSHIP

This compilation of the Land Development Standards is printed by authority of Pittsfield Charter Township Board of Trustees and contains those standards printed herein, compiled with all amendments up to November 12, 2008.

s/Feliziana Meyer, Clerk

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Chapter 1

PURPOSE OF STANDARDS

- 1.01 These standards are intended to:
- a. Provide a reasonable and proper basis for the design and construction of land improvements such as sanitary sewer and water facilities, drainage facilities, parking lots, landscaping and grading.
 - b. Establish uniformity in Township requirements.
 - c. Preserve natural features to the extent possible.
 - d. Describe the required information prior to submittal of plans so that the plans will be complete and in proper form when submitted, thereby reducing the Township's and developer's time and expense in the review process.
 - e. Enable designers and developers to estimate the cost of Township requirements as early in the development process as possible.
 - f. Provide accurate on-site and off-site information for each project that will become permanent public records of the Township.
- 1.02 These standards apply to all land improvements involved in site plans including site condominiums, and area plans, as required in the Pittsfield Charter Township Zoning Ordinance, and subdivision plats, as required in the Township's Subdivision Control Ordinance.
- 1.03 These standards are the minimum requirements necessary to promote the public health, safety, and welfare of the people of Pittsfield Charter Township. These standards are not intended to interfere in any manner with the application or enforcement of the laws of Pittsfield Charter Township, Washtenaw County, the State of Michigan, or the United States.

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Chapter 1 –Purpose of standards

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Chapter 2

PLAN REQUIREMENTS

2.01 General Requirements

- a. All plans for land improvements shall be prepared on standard twenty-four (24) inch by thirty-six (36) inch white prints having blue or black lines, shall be drawn to an engineering scale, and shall be neatly and accurately prepared. Where more than one sheet is required to show the entire site, match lines shall be provided.
- b. All plan sets submitted for Planning Commission review shall consist of 16 sets full size at 24-inch by 36-inch (24) inch by thirty-six (36) inch, of which 10 sets shall be folded and 6 sets shall be rolled and one electronic copy shall be in .PDF file format. Plans submitted for review to outside agencies shall be date-stamped received by Pittsfield Charter Township at the time of the plan set submittal for Planning Commission review. The applicant shall be responsible for submitting the stamped plans to the appropriate outside reviewing agency. All fees associated with outside agency reviews shall be the responsibility of the applicant and shall be paid to those agencies.
- c. All plans shall be prepared by a professional engineer registered in the State of Michigan whose seal shall be affixed to the first sheet.
- d. Each sheet in a set of plans shall show the name and general description of the property; date; scale; north arrow; title of each sheet; and the name, address, and telephone number of the person or firm that prepared the sheet. Each sheet in a set shall be numbered consecutively, beginning with “sheet 1” and shall have proper match lines or other keys to provide reasonable continuity and orientation. Sheets shall be ordered in the plan set to provide reasonable continuity.

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- e. The first sheet in each set shall be the title sheet and shall include, at a minimum:
 - 1. Site and zoning date
 - 2. Sheet index
 - 3. Revision dates
 - 4. Area map
 - 5. Tax ID number
 - 6. Project name
 - 7. Vicinity map
 - 8. The name of the project and the Township identifying number (i.e. CSPA xx-xx) shall be located in the lower right corner.
- f. The north arrow shall be displayed on the right side of the sheet and the plan shall be oriented such that north is either up or to the left.
- g. The scales throughout the set of plans shall be standard engineering scales and shall be consistent throughout. The scale shall be no greater than 1 inch = 40 feet, unless specifically requested.
- h. Combined preliminary and final site plans shall provide the information required in Sections 2.02 and 2.03, herein.
- i. If a site is to be developed in two or more phases, the preliminary site plan or preliminary plat shall show the entire property in the development, its proposed layout, and the location of each phase. A preliminary and final site plan shall not be combined for a project that has two or more phases after approval of a preliminary site plan or preliminary plat. A final site plan may be submitted for one or more of these phases. All infrastructure must be constructed per the approved final site plan.
- j. For purposes of submittals under these standards, the requirements for site condominiums will be the same as for site plan review.

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- k. All water, sanitary sewer, and storm drainage lines and appurtenances together with all streets, lot lines, and outlines of all existing and proposed buildings, shall be shown on one sheet in each final set of plans. These shall be provided at a scale of 1 inch = 100 feet for each development project, prior to the issuance of any construction permits for that project by Pittsfield Township.
- l. “Adjacent” when referring to property includes abutting property and property across the street or right-of way.
- m. “Roadway corridors” are defined as the entire area between fronting buildings on a public or private street.
- n. With each re-submittal, the preparer shall provide a written summary of revisions made to the plans on a sheet-by-sheet basis.

2.02 Information Required for Preliminary Site Plans

- a. Name of project clearly identified with indication of preliminary site plan on cover sheet with the tax ID number under the name.
- b. Legal description,; lot line dimensions and bearings; tax parcel number(s); address of site.
- c. Vicinity map.
- d. Existing topography, at one-foot contour intervals.
- e. Centerline and right-of-way dimensions, and name of each street bordering the site for all existing and proposed streets.
- f. Location of site, in relation to the nearest cross street or section corner for a metes and bounds parcel.
- g. Location and type of natural features on or adjacent to the site, such as wetlands, watercourses, 100-year floodplains, woodlands, landmark trees, steep slopes, endangered species habitat and groundwater recharge areas. Fence rows and individual trees of 6-inch or larger caliper should be shown when not located in a woodland.

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- h. Wetlands shall be delineated both in the field and on the plan in accordance with the Township’s Wetland Ordinance. The existing area must be shown for each wetland. All impacted areas and mitigation areas shall be shown with calculations provided.
- i. Soils information, location and extent of soils that are unbuildable in their natural state because of organic content or water table level, based on the Washtenaw County Soil Survey or equivalent information.
- j. Groundwater information on the site, with supporting evidence including, but not limited to, site-specific soils information.
- k. Name and address of record property owner and developer,; name and addresses of all adjacent property owners.
- l. Zoning Information:
 - 1) zoning district of site and all adjacent property;
 - 2) land use of site and all adjacent property;
 - 3) proposed use of site;
 - 4) gross and net lot area in acres and square feet, net lot area excluding all existing road right-of-way as well as that in proposed rights-of-way, required access easements and portions covered by wetlands, bodies of water (including streams, ponds, lakes), and 90% of the area of all existing drainage easements;
 - 5) ground floor and total floor area to be constructed;
 - 6) lot coverage (ground floor area divided by net lot area);
 - 7) net lot coverage (total impervious area and percentage of impervious area to total net lot area);
 - 8) floor area ratio (total floor area divided by net lot area);

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- 9) number and type of dwelling units and density, for residential projects;
 - 10) building height, in feet and number of floors;
 - 11) number of buildings;
 - 12) required yards and transition strips (also delineated on the plan);
 - 13) number of parking spaces required and provided with supporting calculations;
 - 14) size of parking spaces and parking lot aisles;
 - 15) Existing and proposed deed restrictions, if any.
- m. Location and outline of all existing development on the site, such as buildings, drives, parking areas, wells, septic tanks, drain fields, utilities, poles, ditches, underground storage tanks, etc.
 - n. Location, width, and purpose of existing easements.
 - o. Location of adjacent buildings, drives, and parking areas within 500 feet of the property line.
 - p. Location and outline of all proposed development on the site, showing overall dimensions.
 - q. Sanitary sewer service area map showing service areas on-site and upstream. Each sewer extension should have its service area shown. This map should provide contours.
 - r. Areawide storm water drainage map showing existing and proposed drainage courses and retention basins that are on-site or affect the site. This map should provide contours and drainage arrows.
 - s. Fire protection sheet which shows the following items and nothing else:
 1. Roads
 2. Parking lots

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3. Driveways
 4. Buildings
 5. Ingress points/egress points
 6. Building heights/ and uses
 7. Existing proposed watermain
 8. Existing/proposed hydrants
 9. Post indicator valves fire department connections
 10. Meter rooms
- t. A storm drainage narrative clearly and concisely describing the intended method of designing the storm drainage systems, including drainage areas, existing and proposed; detention or retention basins and discharge concepts; storm sewer and ditch design criteria; Washtenaw County Drain Commissioner development criteria; and downstream capacity limitations. The narrative should be interspersed with all the appropriate associated computations as they are developed. The narrative should be prepared on standard 8 ½-inch by 11-inch sheets dated, numbered and titled; and include the name, address and telephone number of the person or firm that prepared it. Maps of similar size portraying the concepts involved should also be included.
- u. General proposed utility layout for sanitary sewer, water and stormwater systems.
- v. Areawide map showing vicinity setting, property ownership, drainage relationship, road network and utility systems on one sheet.
- w. Phase lines, for projects to be constructed in two or more phases. In phased projects, the zoning information required in Section 2.02.1, preceding, shall be provided for each phase and for the total site.
- x. Preliminary written review and staff approval will be required from the Washtenaw County Drain Commissioner (WCDC), the Washtenaw County Road Commission (WCRC), the Michigan Department of Transportation (MDOT), the City of Ann Arbor, the Michigan Department of Environmental Quality (MDEQ) as well as any other outside agency that may have jurisdiction over a particular project. For site plans not within the jurisdiction of the WCDC, a preliminary review and technical approval of the

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stormwater management concepts shall be obtained from the WCDC for preliminary site plan approval.

- y. The Planning Commission may require a site analysis where it is necessary to evaluate the design and development potential of the site, to identify the nature and the effect of the design and development on the existing conditions for the site, and to determine the site's relation to neighboring properties as well as physical and natural features in the area. The analysis shall show a correlation of the principal characteristics of the developed site that will affect the layout and future use of the property. The site analysis will show what natural features will remain and what natural features will be removed. The analysis shall be in graphic form and may be supplemented by text.
- z. Location of trash storage areas.
- aa. Location of loading areas.
- bb. Site condominium projects shall submit a preliminary site plan containing the information required herein, to the extent applicable, in accordance with Section 56.12 of the Zoning Ordinance and shall include all land intended for the site condominium project. Where buildings or structures are not proposed at the time of review, the location and dimensions of lots, including required yards, shall be provided. Maximum lot coverage, net lot coverage and floor area ratio must be provided.
- cc. The following shall be provided with any application for site plan or conditional use permit to review compliance with access management standards. The information listed in items 1-6 below shall be required with any request for a land division:
 - 1) Existing access points within 500 feet along both sides of any adjoining roads.
 - 2) Evidence indicating that the sight distance requirements of the appropriate road agency are met.
 - 3) Dimensions between proposed and existing access points (and median cross-overs, if applicable).

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- 4) Where shared access is proposed or required, a shared access and maintenance agreement shall be submitted for approval. Once approved, this agreement shall be recorded with the Washtenaw County Register of Deeds.
 - 5) Dimensions for driveways (width, radii, throat length, length of any deceleration lanes or tapers, pavement markings and signs) and all curb radii within the site.
 - 6) The site plan shall illustrate the route and dimensioned turning movements of any expected truck traffic, tankers, delivery vehicles, waste receptacle vehicles and similar vehicles. The plan should confirm that routing the vehicles will not disrupt operations at the access points nor impede maneuvering or parking within the site.
- dd. All elevations shall be based on the North American Vertical Datum 1988 (NAVD 88) and shall be noted as such. A permanent benchmark shall be established for each project and be shown on the plans.
- ee. Commercial site shall provide access throughout the site for the WB-50 design semi-truck and the Township L-3 Fire Apparatus.
- ff. Existing improvements to remain and to be removed.
- gg. Overhead utility lines shall be identified and re-located underground.
- hh. Proposed drives or street names; right-of-way or easement width; surface type and width, including typical cross sections; surface elevations; location and type of curbs, where proposed; expansion of existing street right-of-way; length and width of turning lanes, where permitted; curve radii.
- ii. Proposed parking areas – number and size of spaces; location of each space; type of surface, including typical cross sections; aisle width; angle of spaces; location of wheel stops and/or curbs, where applicable.
- jj. Plan review escrow account must have a positive balance prior to preliminary site plan approval.

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2.03 Information Required for Final Site Plans

- a. All information required for a preliminary site plan in Section 2.02 that is applicable to the property or phase of development covered by the final site plan.
- b. Location and overall dimensions of existing structures and drives.
- c. Surface type and width of streets adjacent to site; surface elevations of existing street at the intersection of each proposed driveway or street.
- d. Two (2)-NAVD-88 based bench marks on the site.
- e. Existing utilities serving the site – location, size, inverts, fire hydrants, gatewells, manholes, and catch basins; location and elevations of ditches, culverts, and bridges adjacent to the site; location of utility poles and lines location and size of natural gas lines and appurtenances.
- f. Proposed grading plan, at 1-foot contour intervals; off-site elevations within approximately 100 feet of each property line not bordered by a public street, to assist in determining proper grading and drainage.
- g. Soil erosion and sedimentation control plans shall be included. Such plans shall be developed according to the Pittsfield Township check-list of sedimentation and soil erosion.
- h. Proposed buildings or other structures – location; addresses; dimensions; distance between, by dimension; finished floor elevations; basement floor elevations; gradeline elevations; indication if it is a walkout or a viewout; and the sill elevations if a viewout.
- i. Hydrogeological study if groundwater information warrants further investigation. To be determined by the Township Engineer.
- j. Phase I and/or Phase II environmental impact study, if site warrants. To be determined by the Township Engineer.

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- k. Proposed loading areas – location; dimensions; surface type, including typical cross sections.
- l. Proposed sidewalks and pedestrian paths - location; width; surface types, including typical cross section.
- m. Proposed open space and recreation areas – location, use, size, proposed improvements.
- n. Proposed fences or screens – location; height; type; typical details, including elevations and sections.
- o. Proposed outdoor trash storage – location; dimensions and typical details of the enclosure. Trash enclosures shall accommodate recyclables. If no outdoor trash storage is intended, the plan shall so state.
- p. Proposed central mailboxes if applicable, or if individual boxes will be used, a note so stating.
- q. Proposed identification and advertising signs – location; dimensions and area; height, illumination; typical copy.
- r. Proposed traffic control signs – location; type.
- s. Proposed landscape plan – areas of new topsoil; areas of grass or other ground cover; location, type, and size of trees and shrubs; plant list showing botanical and common names and quantities.
- t. Photometric Plan Format:
 - 1. A Site Lighting Photometric Plan shall be submitted with the review set. The drawing shall be a scaled plan (1’=10’ to 1’=50’) and shall show the layout of the entire site including:
 - a. Property Lines
 - b. Main Roadways
 - c. Driveways
 - d. Parking Areas
 - e. Sidewalks
 - f. Existing and Proposed Building Locations.

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2. The Photometric Plan shall include the following minimum information:
 - a. Location of all site lights including:
 - i. area lights
 - ii. driveway lights
 - iii. pedestrian lights
 - iv. building mounted lights
 - v. canopy lights
 - vi. sign lights
 - vii. landscape lights.
 - b. A type designation for each luminaire shown on the plan. (“A”, “B”, “C”, etc.)
 - c. A Luminaire Schedule indicating:
 - i. Type (“A”, “B”, “C”, etc.)
 - ii. Manufacturer
 - iii. Model Number
 - iv. Lamp Type
 - v. Lumen output
 - vi. Wattage
 - vii. Number of Head
 - viii. I. E. S. photometric file number used for calculations for each luminaire.
 - d. Mounting height for each luminaire.
 - e. A photometric grid indicating footcandle levels over the entire site at grade level. Grid spacing shall be 20 feet x 20 feet maximum.
 - f. Footcandle levels at all property lines.
 - g. A Photometric Summary/Statistics Table indicating:
 - i. Maximum, Minimum and Average footcandle levels
 - ii. Maximum-to Minimum and Average-to-Minimum ratios.

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- h. Limit the actual calculation zone to roadways, parking lots and pedestrian areas. Areas where light levels are less than 0.1 footcandle shall not be included in calculations.
- i. The plans shall include:
 - i. cut-sheets for proposed luminaires
 - ii. Visual files (Lithonia Lighting)
 - iii. IES photometric files for use in analyzing the lighting plan.
- j. Proposed retaining walls:
 - i. location; dimensions
 - ii. materials of wall and fill
 - iii. typical vertical sections
 - iv. design calculations for all walls exceeding 3 feet or walls adjacent to parking.
- k. Proposed water system:
 - i. location, size and material type of lines
 - ii. location of fire hydrants and valves
 - iii. profiles below their respective plan view
 - iv. location of meter room
 - v. location of irrigation meter pits, water meter schematic
 - vi. fire riser schematic
 - vii. calculations for the sizing of the domestic and fire service lead.
- l. Proposed sanitary sewer system:
 - i. location, size
 - ii. material type of lines
 - iii. inverts
 - iv. location of manholes;
 - v. profiles below their respective plan views;
 - vi. design basis.

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- m. Proposed storm drainage system:
 - i. location
 - ii. dimensions
 - iii. cross sections and calculations of storm water retention/detention areas; location
 - iv. size
 - v. calculations
 - vi. material type of storm sewers
 - vii. location and centerline elevations of swales or ditches
 - viii. inverts
 - ix. location of manholes and catch basins
 - x. direction of flow
 - xi. drainage patterns
 - xii. profiles of sewers
 - xiii. retention basins
 - xiv. culverts
 - xv. swales,
 - xvi. ditches
 - xvii. design basis.

- n. Proposed interior plumbing plans:
 - i. location
 - ii. size
 - iii. material type of lines
 - iv. floor drains
 - v. roof drains and their respective interconnectivity
 - vi. water lines
 - vii. domestic and fire
 - viii. size
 - ix. valving
 - x. backflow prevention,

- aa. Proposed electrical, telephone, cable, and gas services:
 - i. location of new utility poles, if applicable
 - ii. location of underground lines and surface equipment

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- iii. location and size of natural gas lines and appurtenances
- bb. Location of proposed wells, septic tanks, and drain fields; location of other proposed underground tanks, were applicable.
- cc. Soil erosion control plan per the current SESC checklist available on the Township website.
- dd. Evidence of approval by or letter of “no jurisdiction” by:
 - 1. Michigan Department of Environmental Quality – wetlands, lakes, streams, dams, floodplain.
 - 2. Michigan Department of Transportation.
 - 3. Washtenaw Country Road Commission.
 - 4. Washtenaw County Drain Commissioner’s office – drainage districts; development standards. For site plans not within the jurisdiction of the WCDC, a review and technical approval of the stormwater management concepts shall be obtained from the WCDC.
 - 5. Washtenaw County Environmental Health – wells, septic systems.
 - 6. City Ann Arbor.
- ee. Proposed building and address numbers – typical copy, dimensions.
- ff. Site condominium projects shall submit a final site plan containing the information required herein, to the extent applicable, for each phase of the development in accordance with Section 56.12 of the Zoning Ordinance of Pittsfield Township.
- gg. If a site plan is approved as a Drainage District, the Drainage District must be established prior to the Township Pre-Construction meeting.
- hh. Plan review escrow account must have a positive balance prior to final site plan approval.

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- ii. The Township may request, a temporary dewatering plan. Specifications must be integrated into the plans that addresses impacts on adjacent properties, wells and wetlands. The amount and location of flow at discharge point and well abandonment plan shall also be shown on the plans.
- jj. The Township may request, a hydrogeological study that investigates the fluctuation of groundwater and anticipated high groundwater elevations throughout the site.

2.04 Information Required for Preliminary Plats –Tentative Approval

The following information is required for all preliminary plats submitted for tentative approval. The required information may be combined for presentation on one or more drawings or maps. The Planning Commission may request that the information be presented on drawings or maps in addition to those submitted in the interest of clarity, speed, and efficiency in the review process.

- a. Name of proposed subdivision.
- b. Legal description of the entire site to be subdivided.
- c. Scale, date, and north arrow shall be indicated on each map or plan.
- d. Name and address of proprietor, other owners, and planner, engineer, surveyor, or designer responsible for the subdivision layout.
- e. Names of adjacent subdivisions, layout of streets (with names), right-of way widths, connections with adjoining platted streets, widths and locations of alleys, easements, and public walkways adjacent to or connecting with the proposed subdivision, layout and dimensions of lots adjacent to the proposed subdivision; and names and address of owners on record of all adjacent property.
- f. Topography, existing and proposed, at two (2) foot intervals. Proposed grading and land filling shall be indicated on the plans along with a description of measures to be used to control sedimentation and erosion. All topographic data shall relate to USGS data [NAVD 88 datum].

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- g. Plans and specifications of soil erosion and sedimentation control measures in accordance with the standards and specification of Article IV of Chapter 8 of this Code. Soil erosion and Sedimentation Control and Part 91 of the State Natural Resources and Sedimentation Act of 1994 PA 451, as mended.
- h. A site report, as described in Rule 560.402 of the Michigan Administrative Code, shall be required for subdivisions that will not be served by public water and sewer. The information listed therein and not required elsewhere in the chapter shall be submitted as part of the application for preliminary plat approval.
- i. Proposed deed restrictions or protective covenants; if none, a statement of such in writing.
- j. Layout and width of right-of-way and surfacing of all streets or public ways proposed for the subdivision.
- k. Lot layout, dimensions, setback requirements, area (in square feet or acres) and lot numbers.
- l. All parcels or lands to be dedicated or reserved for public use or for use in common by property owners in the subdivision shall be indicated on the preliminary plat, along with any conditions of such dedication or reservation.
- m. Location and size of all existing sanitary sewer, storm sewer and water supply facilities, and location of, and points of connection to, proposed lines and existing lines; elevation and grades, direction of flow, profiles; location of valves and hydrants; location of electricity, telephone, and gas supply lines; location, description and details of any on-site facilities to serve the entire subdivision.
- n. Identification, location, and nature of all uses other than single family residences to be included within the subdivision,
- o. Staging of development of the entire subdivision shall be clearly shown on the plat, and the relation of each stage to the entire plat shall be clearly indicated.
- p. Location, dimensions, and purpose of all easements shall be shown on the plat.

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- q. Location and topography of sidewalks, street lighting standards, street trees, curbs, water mains, sanitary sewers and storm drains, manholes, basins and underground conduits.
- r. Zoning status of property included in the preliminary plat and of all adjacent properties, and civil jurisdiction of such properties.
- s. Modifications requested by the Planning Commission.

2.05 Information Required for Preliminary Plat – Final Approval

The proprietor shall submit the following information to the Township to obtain final approval of the preliminary plat:

- a. A list of county and state authorities required by the Land Division Act to approve the preliminary plat, certifying that the list is complete and that each authority has approved the preliminary plat.
- b. One approved copy of the preliminary plat from each county and state authority required by the Land Division Act to approve the preliminary plat.
- c. Copy of receipt from the Township Treasurer that all fees have been paid.
- d. Certificates of approval of engineering plans from the Township Engineer of each improvement to be installed prior to approval of the final plat by the Township Board, and evidence of approval of engineering plans required by county or state agencies.

2.06 Information Required for Final Plat

- a. One reproducible copy of the final plat on dimensionally stable film, showing thereon all information required by the Subdivision Control Act, and four (4) paper prints thereof.
- b. All required signatures on the plat.
- c. List of, and the proprietor's engineer's certificates of, all improvements that were required by Pittsfield Township and were completed prior to application for final plat approval by the Township Board.

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- d. List and detail cost estimates of all improvements required by Pittsfield Township that will be completed after the Township Board approves the final plat as well as completion guarantee for the same.
- e. Ten (10) copies of a completed subdivision agreement and required deposits.

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Chapter 3

WATER MAINS

- 3.01 All water mains shall be shown in plan and profile on standard twenty-four (24) inch by thirty-six (36) inch white prints having blue or black lines, and shall be neatly and accurately prepared to an engineering scale and contain, at a minimum, the following information:
- a. Water main location and material type.
 - b. Water main size (minimum 8 inch for public water mains).
 - c. Cover (generally 5.5 feet).
 - d. Bedding (2NS sand minimum).
 - e. Compaction of trenches in roadway corridors and parking lots (Class II Granular Backfill at 95% compaction). Roadway corridors constitute front of house to front of house in residential developments.
 - f. Hydrant and post indicator valve locations (shown graphically in plan and profile). Post indicator valve shall be placed a minimum of 1.5 times the height away from the building.
 - g. Gate well and curb box locations (shown graphically in profile).
 - h. A consecutive numbering system for all hydrants and gate wells with a structure schedule.
 - i. Existing utilities which cross or parallel proposed water main with corresponding structure numbers from previously constructed projects.
 - j. Building wall, finish floor elevation, basement floor elevation (if any) and bottom of footing elevation in profile of service leads for non-residential developments.
 - k. Continuous stationing in the plan and profile.

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- 3.02 The developer shall submit fourteen (14) sets of final plans and specifications as finally approved along with the MDEQ Permit Application. He or she shall also submit a tabulation of water mains consisting of the size, location, type, and length. The Township will ensure proper submittal to the Michigan Department of Environmental Quality for their issuance of the required construction permit in conformance with Act 399, Public Acts of 1976, as amended.
- 3.03 It is recognized that water mains and appurtenances to be constructed as part of a project may often need to be oversized in order to be properly integrated into the Township's system. The Township shall not bear the cost of such oversizing. The proprietor shall bear all costs and provide associated easements.
- 3.04 Water mains are to be designed within or adjacent to the road right-of-way. Back or side lot locations are exceptions for special applications or serviceability difficulties.
- 3.05 All water mains that will service a fire hydrant or more than one building are public water mains and shall be dedicated to the Township along with the appropriate 40-foot-wide easements. Proper easement documentation and recordation will be the responsibility of the owner. Final project acceptance will not occur until all documents have been approved by the Township, executed and recorded at the County Register of Deeds.
- 3.06 Water mains shall be designed according to the Ten State Standards, Detroit Metropolitan Water Department Standards, Ypsilanti Community Utilities Authority Standards, and Pittsfield Township Utilities Department Standards. Each of the latter three agencies are required by the Michigan Department of Environmental Quality to approve the proposed design prior to requesting approval from the next higher authority.
- 3.07 In general, water mains shall be looped and have minimum sizes as follows:
- a. Low Density Residential – 8-inch.
 - b. Other Residential, Commercial and Industrial – 12-inch primary looping; 8-inch secondary.

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 Chapter 3 – Water Mains

- c. Major System Looping -12-inch, 16-inch, and larger.
 - d. Section Line Infrastructure – 16-inch and larger.
- 3.08 Water mains shall be extended to the property lines on all sides of the subject parcel. The location and phasing shall be discussed with the Township.
- 3.09 Each phase should be looped with a dual feed.
- 3.10 Valves shall be located, at a minimum, as follows:
- a. Spacing 1,000 feet maximum.
 - b. Four at every cross.
 - c. Three at every tee.
 - d. Not more than three hydrants between valves.
 - e. Not more than three commercial, industrial or multiple family residential buildings between valves.
 - f. At locations sufficient to provide the Fire Department with accessible water even if one or more valves are shut off.
 - g. At temporary dead ends (the water main pipe shall be extended one pipe length past the gate well and have a temporary hydrant).
 - h. On property/lot lines where possible.
 - i. Valves shall not be located in sidewalks or driveways.
- 3.11 Valves shall be the same size as the water main on which they are installed. Allowable valve type shall be:

Valve Size, (inches)	Valve Type
8 and smaller	resilient wedge gate valve
12	resilient wedge gate valve
16 and larger	Determined by Utilities Department

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3.12 Gate wells are required on valves 8-inch and larger. Gate wells shall be precast, eccentric, watertight and have a minimum inside diameter as follows:

Valve Size (inches)	Diameter (feet) <u>Line Valve</u>	Diameter (feet) <u>Valve w/Tee</u>
8	5	6
12	5	6
16	6	6

3.13 Clear openings in gate wells shall be a minimum of 24 inches.

3.14 Fire hydrant minimum requirements are as follows:

- a. Located such that all sides of buildings and structures will be within 300 feet of a hydrant and not closer than 50 feet. Measurements shall be made along the practical location of laying the fire hose.
- b. Located at intersections and major driveways.
- c. Hydrant leads should be 8-inch minimum. Hydrant leads may be 6-inch minimum where there is no reasonable intention for future extension and the lead is less than 10 feet from the water main.
- d. Hydrants should not be connected to water mains that have an unlooped length greater than 40 feet. This distance includes the 8-inch or 6-inch lead.
- e. EIJW 5BR250 with 24-inch barrel section hydrants shall be used. The hydrant shall have two pumper connections, one of which shall be equipped with a “Storz” adapter as specified in Chapter 18. The hydrants shall open left (counter clockwise). All hydrants shall be painted red. “Storz” fitting shall be placed on left nozzle when facing the hydrant.
- f. Hydrants shall be located from 3 feet to 10 feet from the back of a curb.

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- g. The grade of the nozzle shall be between 24 inches and 30 inches above the ground. Finished grade shall be provided on the plans
 - h. Hydrant outlets shall face the curb best approached by fire apparatus. Final approval shall be by the Fire Marshal.
 - i. For all buildings that require fire department connections for their sprinkler systems, one hydrant shall be located within 50 feet of the connection and dedicated to the building sprinkler system.
 - j. In potentially hazardous areas, concrete filled 8-inch steel ballards shall be provided for protection of the hydrants.
 - k. Access to fire hydrants shall not be obstructed by landscaping, vehicular parking, trash containers, transformers, retaining walls, snow piles, ditches or similar features.
 - l. The Township Public Safety Department shall review and approve all hydrant locations.
 - m. During the flushing of the water system during acceptance testing, the entire hydrant head shall be removed.
 - n. During phased construction, temporary hydrants may be required to assure adequate flushing.
 - o. Hydrants are required at all temporary dead ends.
- 3.15 Building sprinkler systems or other approved fire suppression systems shall be required in accordance with the current Building Code in use by Pittsfield Township.
- 3.16 Post indicator valves shall be located in all building fire service lines. They shall be at least 1.5 times the building height from the building. The domestic service shall be separately tapped and valved. Both the PIV and domestic service valve shall be located together. Three (3) feet separation shall be maintained between service lines and domestic service lines not located in paved areas.

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- 3.17 When connecting to an existing water main, a tapping sleeve and valve in a well will be required unless connection to the existing water main can be made without interrupting service on the main as determined by the Pittsfield Utilities Department.
- 3.18 No water main installation or portion thereof shall have a leakage exceeding 0.092 gallons per inch diameter of pipe per 1,000 feet of length per hour at an internal pressure of 150 psi. This test shall be conducted for a minimum of two (2) hours and shall not be conducted until 30 days have elapsed since installation.
- 3.19 All water main installations shall be disinfected in accordance with Michigan Department of Environmental Quality Standards.
- 3.20 All water main pipe shall be Class 54 ductile iron, double cement lined. All joints shall be push on for pipe appurtenances. Water main shall be polywrapped.
- 3.21 Service leads for 1-inch, 1-1/2-inch and 2-inch shall be Type K copper. Service leads for 4-inch, 6-inch and 8-inch shall be Class 54 ductile iron, double cement lined. Each dwelling unit shall be served by a separate lead.
- 3.22 Two meters are allowed for each building. One shall be dedicated to the sprinkler system. Tie rods shall be used for commercial sites.
- 3.23 A water meter and service schematic shall be shown that includes the valves, meters, backflow preventers, and piping. The meter shall be in a heated, structurally sound room fully accessible from the building exterior or public commons interior. It shall be located within 5 feet of the water service's penetration of the exterior wall.
- 3.24 The meter room must:
- a. Be only one per building.
 - b. Be fully heated.
 - c. have complete structural footings.

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- d. Be fully accessible from the building exterior or a public common interior within five (5) feet of the water service penetrations of the exterior wall.
 - e. Be full height of the ground floor level.
 - f. Have a minimum depth of 3 feet.
 - g. Contain appropriate meters, backflow preventers and control valves.
 - h. Must be fully coordinated between:
 - i. Site civil engineer.
 - ii. Building mechanical engineer.
 - iii. Building architect.
 - i. Be clearly labeled on each ground floor plan or each building type.
- 3.25 The location of Irrigation Meter Pits shall be shown.
- 3.26 In residential developments, the service leads shall be brought to the property side of the public right-of-way. Curb stops and boxes shall be located at the ROW line with tails extending past the franchised utility easement. This will eliminate construction conflicts with gas, electric, phone and cable.
- 3.27 All water mains shall be installed with blue 12 gauge single strand tracer wire.
- 3.28 No water mains or appurtenances should be constructed or allowed to remain under or within 20 feet of structural improvements.
- 3.29 Petroleum resistant gaskets shall be used in area where petroleum products have been stored or will be.
- 3.30 All construction shall be in accordance with the current “Pittsfield Township Water Main Construction and Installation” specifications.

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Land Development Standards
Chapter 3 – Water Mains

- 3.31 Shop drawings shall be submitted by the underground contractor for all water main and appurtenances that he or she will install. A minimum of six (6) copies of each shop drawing shall be submitted. Shop drawings will consist of letters of certification for all pipe, and manufacturer's standard details or cut sheets for structures and appurtenances.
- 3.32 Hard copy and electronic record "as-built" plans shall be submitted by the developer and reviewed and approved by the Township after construction is complete. These plans shall show the current location and elevations of all water mains and appurtenances per the Township's current requirements. The approved hard copy "as-built" plans shall be on reproducible mylar. The approved electronic "as-built" plans shall be in AutoCAD format.
- 3.33 Easements shall be provided to Pittsfield Township for all public water mains. These easements shall be prepared, executed and recorded by the developer prior to final acceptance of the project by Pittsfield Township. Easements shall be prepared in a form acceptable to Pittsfield Township.
- 3.34 Meter Room specifications.
- a. The meter room must:
1. Be only one per building.
 2. Be fully heated.
 3. Have complete structural footings.
 4. Be fully accessible from the building exterior or public common interior within five (5) feet of the water service penetrations of the exterior wall.
 5. Be full height of the ground floor level.
 6. Have a minimum depth of three (3) feet.
 7. Contain appropriate meters, backflow preventers and control valves.
- b. Must be fully coordinated between:
1. Site civil engineer.
 2. Building mechanical engineer.
 3. Building architect.
 4. Be clearly labeled on each ground floor plan of each building type.

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Land Development Standards
Chapter 3 – Water Mains

- 3.35 Shop drawings shall be submitted by the underground contractor for all sanitary sewers and appurtenances that he or she will install. A minimum of six (6) copies of each shop drawing shall be submitted. Shop drawings shall consist of letters of certification for all pipe, manufacturer's standard details or cut sheets for structures and appurtenances, and a manhole component part list.
- 3.36 Hard copy and electronic record "as-built" plans shall be submitted by the developer and reviewed and approved by the Township after construction is complete. These plans shall show the correct location and elevations of all sanitary sewers and appurtenances per the Township's current requirements. The approved hard copy "as-built" plans shall be on reproducible mylar. The approved electronic "as-built" plans shall be in AutoCAD format.

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Land Development Standards
Chapter 3 – Water Mains

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Chapter 4

SANITARY SEWERS

- 4.01 All water mains shall be shown in plan and profile on standard twenty-four (24) inch by thirty-six (36) inch white prints having blue or black lines, shall be neatly and accurately prepared to an engineering scale the following information:
- a. Sewer location and material type.
 - b. Sewer size (minimum 8-inch for public sanitary sewers).
 - c. Depth of invert (preferred 10 feet; minimum cover 4.5 feet).
 - d. Sewer slope.
 - e. Class and type of pipe for various depths.
 - f. Bedding (2NS sand minimum).
 - g. Compaction of trenches in roadway corridors and parking lots (Class II Granular Backfill at 95% compaction). Roadway corridor constitutes front of door to front of door in residential developments.
 - h. Building service connections – location, type, length, slope.
 - i. Manhole locations and a consecutive numbering system for all manholes.
 - j. Existing utilities which cross or parallel proposed sewer.
 - k. Building wall, finish floor elevation, basement floor elevation (if any), and bottom of footing elevation in profile of service leads.
 - l. Continuous stationing in the plan and profile, to include non-residential leads.

Pittsfield Charter Township
Land Development Standards
Chapter 4 – Sanitary Sewers

- 4.02 The developer shall submit fourteen (14) sets of plans and specifications as finally approved along with the MDEQ Permit Application. The Township will insure proper submittal to the Michigan Department of Environmental Quality (MEDEQ) for their issuance of the required construction permit in conformance with Part 41, Act 451, Public Act 1994, as amended.
- 4.03 It is recognized that sanitary sewers and appurtenances to be constructed as part of a project may often need to be oversized in order to be properly integrated into the Township system. The Township shall not bear the cost of such oversizing. The proprietor shall bear all necessary cost and provide associated easements.
- 4.04 Sanitary sewers are to be designed within or adjacent to the road right-of-way with back or side lot locations an exception for special applications or serviceability difficulties. Soil Retention's "Drivable Grass" plan table concrete systems or limestone access paths shall be provided to sewer manholes more than 20 feet from a paved surface.
- 4.05 All sanitary sewers that will service more than one building are public sewers and shall be dedicated to the Township with minimum 40-foot easements where necessary. Mobile home parks may be exempted from this requirement. Package wastewater systems will be exempted from the requirement.
- 4.06 Sanitary sewers shall be designed according to Ten State Standards.
- 4.07 Sanitary sewers shall be extended to the property lines on all sides of the subject parcel. The locations and phasing shall be worked out with the Township.
- 4.08 Both ground and invert elevations should be provided at the end of each sewer line.

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Land Development Standards
Chapter 4 – Sanitary Sewers

4.09 Minimum slopes shall be as follows:

<u>Sewer Size, Inches</u>	<u>Slope, Percent</u>
8	0.40
10	0.28
12	0.22
15	0.15
18	0.12
21	0.10
24	0.08

4.10 Service leads shall be a minimum of 6-inch and have a minimum slope of 2%. Service leads shall be SDR 26 PVC pipe.

4.11 In commercial and industrial areas, all service leads shall enter manholes. In residential area, service leads shall be connected with wyes, where practical. The leads shall not enter the manhole against the flow. They shall enter approximately 12 inches above the manhole outlet invert.

4.12 A sewer lead schedule shall be provided on the plans showing each lead with:

- a. lead elevation at main
- b. riser height at main
- c. lead length to stub
- d. lead length from stub to building
- e. slope
- f. lowest building floor elevation

4.13 Manholes shall be watertight, made of precast concrete, and have a minimum inside diameter of 48 inches. Landings are required when the depth exceeds 20 feet.

4.14 Clear openings in manholes shall be a minimum of 24 inches.

Pittsfield Charter Township
 Land Development Standards
 Chapter 4 – Sanitary Sewers

4.15 Manhole spacing shall be maximized to provide as few manholes as is practical. Maximum manhole spacing shall be as follows:

<u>Sewer Size, Inches</u>	<u>Manhole Spacing, Feet</u>
8	350
10	350
12 to 21	350
24 and larger	400

4.16 Manholes shall be located at:

- a. changes of grade or direction
- b. at change of pipe size
- c. at junctions and at the end of the line
- d. on property/lot lines where possible.
- e. In greenbelt areas and not in sidewalks or driveways.

4.17 A sanitary sewer structure schedule shall be provided on the plans showing each manhole by number that includes:

- a. casting
- b. rim elevation
- c. all invert elevations with size and direction
- d. depth

4.18 The sewer shall be deep enough to serve, by gravity, a standard depth basement.

4.19 House leads shall be 6 inches in diameter within the street right-of-way. Each dwelling unit shall be served by a separate lead.

4.20 The 0.8 diameter points shall be matched in sanitary sewer design. Where this is not possible, exterior interior drop assemblies shall be installed.

4.21 An allowance of 0.10 foot in grade shall be made for loss of head through each manhole.

4.22 Downspouts, weep tile, footing drains, sump pump discharges, or any conduits that carry storm or ground water shall not be allowed to discharge into the sanitary sewer.

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Land Development Standards
Chapter 4 – Sanitary Sewers

- 4.23 All sewers shall be televised prior to air testing. VHS or DVD recordings shall be made and given to the Township.
- 4.24 No sewer installation or portion thereof shall lose air at a rate greater than 0.003 cubic feet per minute per square foot of internal pipe surface when tested at 3.0 pounds per square inch greater than back pressure. This test shall not be conducted until 30 days have elapsed since installation.
- 4.25 Allowable types of sewer pipe are SDR 26 PVC, SDR 21 PVC or reinforced concrete with premium joints.
- 4.26 Cleanouts shall be the same size as the sewer lead, and shall be utilized at all bends and distances greater than 75 feet.
- 4.27 Monitoring manholes are required for all non-residential buildings. These manholes shall be located such that they are accessible by vehicle and approximately 20-30 feet from the building. Monitoring manholes are not required if a drop connection is used at the existing manhole. The proposed sanitary sewer will be considered a sewer lead if a drop connection is used.
- 4.28 All developers of non-residential buildings shall submit a non-domestic wastewater user survey. Forms are available from the Utilities Department.
- 4.29 The minimum horizontal separation between a sanitary sewer and any other utility shall be 10 feet. The minimum vertical distance between a sanitary sewer and another utility shall be 18 inches at crossings.
- 4.30 In residential developments, service leads shall be brought to the center of the lot so that both the sewer service and the water service can be brought to the house in a benched common trench. This location will generally result in the least disruption to the property.
- 4.31 Grease traps must be utilized for all commercial restaurant uses. A program proposal for continued maintenance and the title of the individual responsible for permanent grease trap maintenance shall be provided.
- 4.32 In residential developments, the service leads shall be brought to the property side of the franchised utility easement that is adjacent to the public right-of-way. This will eliminate construction conflicts with gas, electric, phone, and cable.

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Land Development Standards
Chapter 4 – Sanitary Sewers

- 4.33 When an existing building is connected to the sewer system, the septic tank shall be pumped and crushed or filled with earth, per County standards.
- 4.34 All construction shall be in accordance with the current “Pittsfield Water Main and Sanitary Sewer for construction and Installation” specifications.
- 4.35 No sanitary sewers or appurtenances should be constructed or allowed to remain under or within 20 feet of structural improvements.
- 4.36 Shop drawings shall be submitted by the underground contractor for all sanitary sewers and appurtenances that he or she will install. A minimum of six (6) copies of each shop drawing shall be submitted. Shop drawings will consist of letters of certification for all pipe, manufacturer’s standard details or cut sheets for structures and appurtenances, and a manhole component part list.
- 4.37 Hard copy and electronic record “as-built” plans shall be submitted by the developer and reviewed and approved by the Township after construction is complete. These plans shall show the correct location and elevations of all sanitary sewers and appurtenances per the Township’s current requirements. The approved hard copy “as-built” plans shall be on reproducible mylar. The approved electronic “as-built” plans shall be in AutoCAD format.
- 4.38 Easements shall be provided to Pittsfield Township for all public sanitary sewers. These easements shall be prepared, executed and recorded by the developer prior to final acceptance of the project by Pittsfield Township. Easements shall be prepared in a form acceptable to Pittsfield Township.

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Chapter 5

STORM DRAINAGE

- 5.01 All storm drainage systems shall be shown in plan and profile on standard twenty-four (24) inch by thirty-six (36) inch white prints having blue or black lines, and shall be neatly and accurately prepared to an engineering scale and contain, at a minimum, the following information:
- a. Sewer location and material type.
 - b. Sewer size (minimum 12-inch).
 - c. Cover (minimum of 3 feet).
 - d. Sewer slope.
 - e. Reinforced concrete pipe. (C76-Class IV).
 - f. Bedding (Class "II" minimum).
 - g. Compaction of trenches in roadway corridors and parking lots (Class II Granular Backfill at 95% compaction). Roadway corridors constitutes front of door to front of door in residential developments.
 - h. Building service connections – location, type, length, slope.
 - i. Manhole and catch basin locations, with consecutive numbering system for all structures.
 - j. Existing utilities which cross or parallel proposed storm sewers.
 - k. A continuous stationed profile of the storm sewer, through the detention basin and outlet structure, to the ultimate outlet.
 - l. Continuous stationing in the plan and profile.

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Land Development Standards
Chapter 5 – Storm Drainage Systems

- 5.02 Design calculations shall be submitted for:
- a. Storm sewers.
 - b. Drainage ditches.
 - c. Detention basins and retention ponds.
 - d. Restricted discharges.
- 5.03 The applicant shall submit evidence that the storm drainage plan has been approved by the following agencies, if they have jurisdiction:
- a. Michigan Department of Transportation (MDOT).
 - b. Michigan Department of Environmental Quality (MDEQ).
 - c. Washtenaw County Road Commission (WCRC).
 - d. Washtenaw County Drain Commissioner (WCDC).
 - e. City of Ann Arbor.
- 5.04 Storm drainage systems shall be designed in accordance with current WCDC's rules. The method for computing storm runoff shall be based on WCDC's standards.
- 5.05 Sewer slopes shall provide a flowing full velocity of 3 feet per second, minimum, and 10 feet per second, maximum.
- 5.06 All manholes shall be watertight, made of precast concrete, and have a minimum inside diameter of 48 inches. Landings are required when the depth exceeds 20 feet.
- 5.07 Clear openings in manholes shall be a minimum of 24 inches.
- 5.08 Maximum spacing between storm drainage structures shall be per current WCDC standards.

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Land Development Standards
Chapter 5 – Storm Drainage Systems

- 5.09 Storm drainage structures, other than manholes, shall meet the following minimum requirements:
- a. 24-inch diameter structures are permitted if the depth from rim to top of the bottom slab is less than 5 feet and the structure is at the head of a run. Structures with a depth greater than 5 feet shall have a minimum inside diameter of 4 feet.
 - b. Structures should be precast concrete, except where standard manufactures are unable to cast such a structure. In such case, manhole block or a combination of manhole block and precast will be used.
 - c. Clear openings in structures shall be a minimum of 24 inches.
 - d. Sumps will be used only where specifically required; such as by the WCRC, WCDC or upon discharge to a wetland.
- 5.10 Structures shall be located at:
- a. changes of grade
 - b. change in direction
 - c. change in pipe size
 - d. at junctions
 - e. at the end of the line.
- 5.11 A structure schedule shall be provided on the plans showing each manhole, catch basin and end section by number that includes:
- a. structure type
 - b. casting
 - c. inverts
 - d. rim elevation
 - e. depth
 - f. sump (Yes or No)

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Land Development Standards
Chapter 5 – Storm Drainage Systems

- 5.12 In general, street catch basins shall comply with the standards of the Washtenaw County Road Commission and shall be located as follows:
- a. At the radius return of street intersections. There should be a maximum distance of 150 feet along the street between a high point and a corner catch basin when drainage is required to go around the corner. No drainage will be permitted to enter into the intersection.
 - b. At all low points in streets.
 - c. At intermediate points along the street such that there is a maximum distance of 400 feet along the street between a high point and a catch basin or from a previous intercepting catch basin and this catch basin.
 - d. At each corner of intersections with public roads to prevent drainage from passing through the intersection.
- 5.13 Improved open drains may be permitted only if the road cross section or-proposed use so warrants.
- 5.14 Wherever sufficient grade is available, the storm sewers shall be constructed at a depth adequate to allow for gravity drainage of the building footing drains. Where grade is not available to allow for gravity drainage of the footing drains, a sump with pump shall be provided for each building with the pump discharge connected to the enclosed sewer system or directed to an on-site improved open drain.
- 5.15 Allowable sewer pipe is reinforced concrete. Allowable culvert pipe is reinforced concrete or corrugated metal pipe (CMP). Allowable underground storage pipe is reinforced concrete, HDPE, or CMP.
- 5.16 Stormwater capacity must be provided for the temporary detention of stormwater runoff from the 100-year storm event, the bankfull flood (1.5-year/24 hour storm event) and the first flush volume (the runoff from the first 0.5 inch of rain from the entire contributing watershed). The WCDC procedure using 0.15 cfs per acre should be used.

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Land Development Standards
Chapter 5 – Storm Drainage Systems

- 5.17 Means for delivery and maintenance of storm water treatment structures shall be specified.
- 5.18 Sediment forebays shall be provided at the inlet of all stormwater management facilities to provide energy dissipation and to trap and localize incoming sediments. Forebays shall be designed per the current WCDC rules.
- 5.19 Methods of providing for the stormwater detention include, but are not limited to, the following:
 - a. Deep permanent lake/retention pond.
 - b. Landscaped shallow dry detention basin.
 - c. Underground storage.
 - d. Low Impact Design (i. e. Bioswales, infiltration, etc.)
 - e. Roof storage.
 - f. Combination of the above.
- 5.20 Discharge from the developed site shall not exceed the maximum rate of discharge which occurred on the undeveloped site.
- 5.21 Deep permanent lakes/retention ponds shall:
 - a. Be at least 10 feet deep over 2/3 the surface area, or have mechanical aeration or supplemental well supply.
 - b. Have in-water slopes not steeper than 1 vertical on 5 horizontal for the first 20 feet; and 1 vertical on 3 horizontal from there to the bottom.
 - c. Not be closer than 20 feet from any structure at maximum elevation.
 - d. Have a discharge for both normal use and emergency use.
 - e. Have their retention calculated only above the outlet invert.

Pittsfield Charter Township
Land Development Standards
Chapter 5 – Storm Drainage Systems

- 5.33 No storm sewer and appurtenances shall be constructed or allowed to remain under or within 20 feet of structural improvements.
- 5.34 Shop drawings shall be submitted by the underground contractor for all storm sewers and appurtenances that he or she will install. A minimum of six (6) copies of each shop drawing shall be submitted. Shop drawings will consist of letters of certification for all pipe, manufacturer's standard details or cut sheets for generic structures and appurtenances, and manhole component parts list.
- 5.35 Hard copy and electronic record "as-built" plans shall be submitted by the developer and reviewed by the Township after construction is complete. These plans shall show the correct location and elevation of all storm sewers and appurtenances per the Township's current requirements. The approved hard copy "as-built" plans shall be on reproducible mylar. The approved electronic "as-built" plans shall be in AutoCAD format.
- 5.36 Easements shall be provided to the appropriate authority for all storm sewers, storm drains and swales. These easements shall be prepared executed and recorded by the developer prior to final acceptance within three (3) months after Township approval. Easements shall be prepared in a form acceptable to Pittsfield Township and the WCDC.

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Land Development Standards
Chapter 5 – Storm Drainage Systems

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Chapter 6

GRADING, DRAINAGE, AND EROSION CONTROL

- 6.01 The submittal of plans to satisfy this chapter may be made as a part of the submittal under other chapters of these standards. In no way do the requirements of this chapter alter the requirements of the Pittsfield Soil Erosion and Sedimentation Control Ordinance. A separate and distinct procedure is called for therein.
- 6.02 No earth change activity may commence until a soil erosion control plan and application have been approved, a permit issued and the soil erosion control measures inspected and approved. All trees shown on the approved site plan as being saved shall be tagged and have a protective fence placed around them at the outer edge drip line.
- 6.03 Grading plans shall be drawn with existing and proposed contour lines at one foot intervals. Spot elevations may be provided, but shall not substitute for contour lines.
- 6.04 A grading plan shall show all the changes on the site required to convert it in its predevelopment state to a completed development.
- 6.05 Proposed contour lines shall connect with existing contour lines within the site unless grading easements are obtained from adjacent property owners. A clear distinction shall be made between proposed and existing contours.
- 6.06 Proposed grades shall generally not exceed a slope of 1 on 4. If a slope greater than 1 on 4 is necessary, the surface shall be planted with a ground cover that is suitable for stabilizing the surface.
- 6.07 All graded areas shall be planted or otherwise protected from wind or water erosion within five (5) days after final grading. Other means of stabilization may be substituted for plantings in unique situations if approved by the engineering department or Township certified soil erosion control agent. The plantings and other means of stabilization shall be properly maintained.
- 6.08 All contour lines and spot elevations shall be based on NAVD88.
- 6.09 Every parcel shall provide positive gravity drainage.

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Land Development Standards
Chapter 6 – Grading, Drainage, & Erosion Control

- 6.10 The grade from a house to its adjacent street shall be not less than one percent (1%) and the proposed finished ground grade at the building shall not be less than twelve inches above the top of curb.
- 6.11 Roof downspout discharges and footing drain sump discharges will not be permitted to flow directly off-site without first being directed to the stormwater system.
- 6.12 Sheet flow may be permitted to go undetained into a wetland if adequate plant material exists.
- 6.13 The longitudinal grade of rear yard drainage shall not be less than two percent (2%) and the length of run shall not exceed four hundred fifty (450) feet of continuous drainage without an outlet to a street catch basin or to a rear yard inlet.
- 6.14 The finished first floor and bottom of footing elevations, if applicable, shall be provided on the grading plan. For single family homes it is understood that these elevations may vary slightly during construction based on the actual location of the house on the lot and the builder's choice of house type. However, all proposed deviations shall be approved in advance of construction.
- 6.15 When applying for a building permit for a single family home in an area with an approved grading plan, the builder shall submit the following on a plot plan:
 - a. North arrow.
 - b. Scale.
 - c. Name, address, and phone number of the applicant and the person or company who prepared the plan.
 - d. Site information for the lot or unit, including floor area ratio, lot coverage and net lot coverage.
 - e. Lot lines with dimensions and bearings.
 - f. Location and dimensions of all proposed structures and proposed setbacks from all property lines consistent with the Zoning Ordinance.
 - g. Street name and right-of-way width.

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- h. Location of existing water, sanitary and storm mains including manholes, structures, gatewells and hydrants within the vicinity of the site. Existing service lead stubs for each utility shall also be shown.
- i. All proposed service leads for water, sanitary and storm with sizing shall be extended to the house. Proposed leads shall be differentiated by line type from existing leads.
- j. All adjacent lots to the site shall be labeled with lot number and identified as either vacant or with an existing building. Proposed spot grades from adjacent lots under construction shall be shown consistent with the adjacent lot plot plan.
- k. The location and elevation of regulated 100-year Floodplain boundaries.
- l. Soil Erosion and Sedimentation Control measures.
- m. Existing and proposed elevations at the following locations as listed below in Items i.-ii. NOTE: (The elevations along lot lines shall conform to the Township approved final plan. House finish grades may also be varied from the approved plan (+/- .5 foot) as long as acceptable grades away from the house are maintained.
 - i. Each lot corner (front and rear), side lot (at 50-foot intervals), and all high points and ridge lines shown to the nearest tenth of foot. Proposed drainage arrows should be shown to designate the direction of proposed flow.
 - ii. Whenever proposed swales (side or rear yard) for lot drainage are called for on the plan, swale elevations shall be required at the high point of the swale and at 50-foot intervals along the swale. The high point of the swale shall be a minimum of 0.50 feet below the proposed finish ground elevation of the house. Proposed drainage arrows should be shown to designate the direction of proposed flow. A minimum of 2% grade shall be maintained for all swales.
- n. No grading is allowed within the floodplain boundary without an MDEQ Permit.
- o. Finish floor, finish grade and top of footing elevations shall be provided and make sense in relation to each other.

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- p. Driveways:
 - i. Show location and width for proposed drive (s).
 - ii. Number of drives shown is consistent with WCRC Permit.
 - iii. Maximum slope of driveways shall be 6%.
 - iv. The driveway shall not interfere with side or front yard drainage.
 - v. Edge of drives shall be offset a minimum of three (3) feet from side lot line.

- q. Retaining Walls:
 - i. Walls greater than four (4) feet in height shall require an engineering analysis from a structural engineer prior to issuance of a Building Permit. In addition, a separate permit from the Building Department will be necessary for construction of this wall.
 - ii. Unless adjacent to a driveway or parking lot, walls less than four (4) feet of height will be considered landscape walls and do not require an engineering analysis.
 - iii. Retaining walls (other than for decorative purposes) are generally unacceptable. Where absolutely necessary due to steep slopes, retaining walls should not exceed five (5) feet in height. Terraced retaining walls shall be separated by minimum of five (5) horizontal feet.

- r. Pathways for any parcel on a main arterial road or as shown on the site plan, sidewalks and bike paths are required as designated on Map 9 of the Comprehensive Plan.

- s. SESC Permit (necessary for lots/parcels that are within 500 feet of a lake/stream/pond or lots/parcels over one (1) acre disturbed that are outside of recent established subdivision covered under blanket SESC permit for the site) must be issued prior to issuance of Building Permit.

- t. A building permit cannot be issued until a “Ready for Use” letter has been issued for the Subdivision. The “Ready for Use” letter

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cannot be completed until all utility testing is complete, a walk-through of the site has been performed, and necessary financial guarantees posted.

- 6.16 Grading associated with detention and retention basins shall meet the following minimum requirements:
- a. No building may be closer than 20 feet from the 100-year high water elevation, measured horizontally.
 - b. In the above mentioned 20 feet, the maximum slope away from the buildings shall be 10%.
 - c. All slopes leading to the ponds shall be 1 vertical and 4 horizontal – or flatter.
 - d. Various safety features for the prevention of vehicular and pedestrian entry into detention basins and retention ponds shall be considered, where appropriate, such as:
 - Large trees
 - Boulders
 - Berms
 - Restraining fences
 - Guard rails
- 6.17 All material used for fill under structural improvements shall consist of readily compactable materials meeting the following minimum requirements:
- a. No inclusion of organic or other deleterious materials which may be subject to decay shall be permitted.
 - b. All fill shall be free of ice or snow.
 - c. No rock with a dimension greater than eight inches shall be buried within two (2) feet of finished grade or within two feet of a foundation base.
- 618 All areas of excavation and fill, exceeding two (2) feet, shall be shown on the plan.

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Chapter 7

PAVEMENT AND CURBS

- 7.01 The applicant shall submit evidence that the road paving design has been approved by the Washtenaw County Road Commission or the Michigan Department of Transportation, for projects that fall under their jurisdiction.
- 7.02 Drives, parking lots, and loading areas shall be paved in all two-family, multiple-family, commercial, office, research, and light industrial sites. Drives, parking lots, and loading areas in wholesale, warehouse, and general industrial areas shall be paved unless pavement is determined by the Township to be unsuitable for trucking or other equipment operations. In such case crushed limestone, compacted gravel, or an equal substitute may be approved.
- 7.03 Paved areas shall not be larger than necessary to handle the proposed use. Excessive paved or other hard surface areas, in the opinion of the Township Planning Commission, will not be approved.
- 7.04 Parking lots and driveways shall have well-drained prepared subgrades. Minimum grade shall be 1%. Maximum grade shall be 6%. Adequate means of collecting and disposing of the drainage shall be provided.
- 7.05 Minimum paving thickness for parking lots and driveways shall be one of the following alternates:
- a. Alternate A: 3-inch type 3C (leveling) and 13A (wearing) bituminous asphalt applied in two lifts, over 7 inches 21AA limestone 95% compacted aggregate.
 - b. Alternate B: 2-1/2-inch type 13A bituminous asphalt applied in two (2) lifts, over 4-inch type 3C asphaltic concrete base applied in two lifts.
 - c. Alternate C: 7-inch reinforced concrete – Class 35P.
- 7.06 Gravel surfaces shall be a minimum of 8 inches MDOT – 21AA limestone.

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Land Development Standards
Chapter 7 – Pavements and curbs

- 7.07 Curbs are required along pavement edges in multi-family residential, commercial and office sites. In industrial and mixed use sites, curbs are required along driveway edges, and around islands.
- 7.08 All curbing shall be Portland cement concrete in accordance with the most recent MDOT standard specifications. Asphalt curbs shall not be permitted.
- 7.09 Where drainage is intended to run along the curb, integral curb and gutter shall be used.

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Chapter 8

SIDEWALKS

- 8.01 Sidewalks shall have a minimum clear width of six (6) feet and shall be constructed of Portland Cement Concrete. When they abut perpendicular parking, sidewalks, shall have a minimum width of seven feet.
- 8.02 When sidewalks are located adjacent to a building, space shall be provided for planter boxes, landscape trees, or other landscaping. These items shall be located between the building and the sidewalk or between the sidewalk and the parking area or street. Minimum sidewalk widths shall be maintained. t
- 8.03 Sidewalks shall be at least 3.5 inches thick, except at driveways where they shall be at least 6 inches thick. They shall be laid on a 4 inch thick sand base, 6-inch 21AA base, or approved base.
- 8.04 All sidewalks shall be designed and constructed to meet current ADA standards. The ramp shall have at least the same width as its sidewalk approach. The upper and lower ends of the ramp shall have the same elevation as the adjacent sidewalk and pavement surfaces.
- 8.05 Sidewalks shall be provided where required by the Planning Commission to achieve convenient pedestrian movement about and among properties.
- 8.06 In general, sidewalks shall be located within the street rights-of-way, one foot from and parallel to the future right-of-way line. Exceptions will be made to accommodate existing conditions such as trees, utility poles and appurtenances, and distance to curbs.
- 8.07 Pedestrian paths located outside street rights-of-way may be constructed of materials other than Portland Cement Concrete, with approval of the Planning Commission.
- 8.08 No downspout or sump pump discharge drainage shall be permitted to flow over any concrete sidewalk.
- 8.09 Sidewalks and ramps shall meet all current ADA Standards. The design engineer shall certify that all sidewalk meet current ADA standards.

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Land Development Standards
Chapter 8 – Sidewalks

- 8.10 Where sidewalks intersect pavement at approaches, drives and parking lots, the sidewalk shall be carried through.

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Chapter 9

PARKING LOTS

- 9.01 All parking spaces in paved lots shall be striped.
- 9.02 In residential areas, not more than 15 spaces shall be permitted in a bay without a break. In commercial, office and industrial areas, the number of spaces in a bay shall not exceed 20. The required breaks shall be provided by landscaped islands.
- 9.03 The surface area of parking lots shall be landscaped to provide visual and climatic relief from pavement surfaces and to channelize and define logical areas for vehicular and pedestrian circulation. Each parking lot shall provide an area that is a minimum of 5 percent (5%) of the lot's paved surface area for purpose of planting shade trees and other landscape materials. Greater than 5 percent (5%) interior landscape area may be required by the Planning Commission where needed to provide visual and climatic relief.
- 9.04 Canopy trees shall be provided along the perimeter of a parking lot at a minimum rate of one (1) tree per each 40-foot of lot perimeter, but the trees need not be planted on 40-foot centers. Canopy trees shall also be provided at one tree per eight parking spaces per the requirements outlined in Section 15.13. Additional canopy trees may be required by the Planning Commission to effectively shade the parking lot or adjoining properties.
- 9.05 Trees required for shading purposes shall be canopy trees. Flowering deciduous trees and evergreen trees may also be used but shall not substitute or replace canopy trees needed for shade.
- 9.06 Islands required in parking lots shall have a minimum width of 10 feet and shall be landscaped. Surfaces of islands shall be grass, other ground cover, or low growing shrubs.
- 9.07 Lots with one-way traffic flow shall have angled spaces in the direction of flow. The direction of traffic flow shall be indicated by pavement markings and signs. Mixing of 90-degree and angled spaces in the same parking lot is generally prohibited.

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Land Development Standards
Chapter 9 – Parking Lots

- 9.08 Bike parking facilities shall be provided for all site plans.
- 9.09 Parking spaces shall be at least 10 feet by 20 feet in dimension, except where the Zoning Ordinance permits smaller spaces, except barrier free spaces, which shall be provided in accordance with the Americans with Disabilities Act design rules of the State of Michigan Bureau of Construction Codes. Parking spaces which abut 7-foot sidewalks or landscape areas should be reduced to 18 feet in length, to allow for vehicle overhang. However, the total space available for the vehicle shall not be less than 20 feet long.
- 9.10 Driveways between parking bays intended for two-way flow shall have a minimum width of 22 feet.
- 9.11 Parking spaces and driveways parallel to adjacent streets or roads shall not be permitted in required front or corner side yards or in a required transition strip. Parking spaces may be located in interior side yards and in rear yards, but shall be located at least 10 feet from an interior side or rear lot line. The 10-foot wide-strip being landscaped. Exceptions to the 10-foot setback requirement will be considered for lots of record which are too small to permit proper development of the site. In such cases a visual barrier, such as additional landscaping and/or a decorative fence wall shall be required between the parking spaces and the property line.
- 9.12 Spaces which permit vehicles to park head-on against the sides of other vehicles are prohibited. Such a change in parking direction should be separated by a landscape island, sidewalk, drive, or other physical feature.
- 9.13 Parking spaces on entrances from major roads, or service drives will not be permitted where the parking maneuvers will interfere with traffic flow.
- 9.14 Parking lot entrances frequently create the initial as well as the primary impression of the character and quality of a site. Therefore, such entry areas shall be landscaped with canopy trees and shrubs on each side in a manner consistent with the character and quality of the site.
- 9.15 The ends of parking bays which are adjacent to major drives in a parking lot shall be physically separated from the drive by landscape islands or other physical features.

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Chapter 9 – Parking Lots

- 9.16 Light poles should be located in landscape islands, medians or in margins of a parking lot. They shall not be located so as to obstruct circulation, maneuvering or parking.
- 9.17 Parking lot lights shall not exceed a height of 30 feet in and industrial areas, 25 feet in commercial or office and small commercial areas, and 20 feet in residential areas. An exception may be made for larger commercial applications.
- 9.18 The number of spaces provided on a site shall be the minimum necessary to adequately serve the use, consistent with the Zoning Ordinance requirements. In site plan review, the Planning Commission may permit a reduction in the number of spaces to be constructed, where it determines such spaces are not necessary. The remaining required spaces shall be shown on the plan as deferred for future parking. The Township reserves the right to require the construction of these deferred spaces if a parking problem occurs on the site. Such areas shall be landscaped until paved for parking use. Deferred parking areas shall be included in the available impervious surface area or net lot area.
- 9.19 In large parking lots of several hundred or more spaces, cross-parking lot drives will be required.
- 9.20 Large parking lots should be divided into smaller units by landscape areas, earth berms, elevation changes or architectural features. Major drives shall be physically separate from parking spaces.
- 9.21 Parking spaces, aisles, and drives shall not be located in required transition strips.
- 9.22 Screening may be required between parking areas and adjacent streets, sidewalks, or properties. Screening may be provided by berms, elevation changes, trees and shrubs, flowering plants, decorative fences or walls or a combination of these features. Evergreen trees and/or shrubs may be required in such areas.
- 9.23 Every effort shall be made to extend sidewalks through parking areas which are separated from drives and parking areas by curbs and landscaping. Where sidewalks cross aisles, drives or parking areas, the sidewalk shall be carried through.
- 9.24 Consideration should be given to snow storage areas, especially in smaller parking lots.

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Chapter 9 – Parking Lots

- 9.25 Walkways may be required in large parking lots. The Planning Commission may require such walkways to be physically separated from parking spaces, aisles, or drives.
- 9.26 Parking adjacent to buildings may be prohibited where it might interfere with pedestrian flow, fire or police protection.
- 9.27 Fire hydrants or post indicator valves that are located in parking lots shall be placed in landscaped islands.
- 9.28 All parking lots shall be paved according to Chapter 7. If the Planning Commission determines that the lot or portion of the lot will only have occasional use. Low-impact development techniques are encouraged.
- 9.29 All parking lot drainage shall be detained or retained in facilities approved by Pittsfield Township and Washtenaw County Drain Commissioner. Innovative approaches to the storm water management such as infiltration techniques, bioswales and porous pavement are encouraged.
- 9.30 Driveways between parking lots shall adhere to standards discussed in Chapter 10.

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Chapter 10

DRIVEWAYS

- 10.01 A driveway which intersects a paved street shall be paved for a minimum distance of 50 feet from the pavement edge of the road, even if the remainder of the drive is not to be paved. Single-family residential lots shall not be subject to this requirement.
- 10.02 Driveway slopes shall provide a smooth, uninterrupted movement of traffic from the street to the site. The slope shall be low enough to prevent undercarriage drag or vehicle bouncing, in order to permit safe entry and exit when the drive surface is wet. The minimum slope shall be 1% and the maximum slope shall be 6%.
- 10.03 Curve radii at drive intersections with streets shall be large enough to permit smooth, uninterrupted movement of traffic between the site and street.
- a. On County roads, the standards of the Washtenaw County Road Commission shall apply.
 - b. On State trunklines the standards of the Michigan Department of Transportation shall apply.
 - c. On City of Ann Arbor roads, the standards of the City of Ann Arbor standards shall apply.
 - d. On all other roads, driveway intersection radii shall generally meet County Road Commission standards unless the nature and speed of traffic on the road justify a lesser standard.
- 10.04 The angle of the driveway intersection with the street shall be 90 degrees unless a directional one-way flow of traffic is intended, in which case the angle of deflection from the street to the drive shall not be less than 45 degrees.
- 10.05 Driveways shall be designed to accommodate existing and future sidewalks. These sidewalks shall be ADA compliant.
- 10.06 Where sidewalks intersect driveways, the sidewalk shall be carried through.

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CHAPTER 10 - DRIVEWAYS

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Chapter 11

FRANCHISED UTILITIES (Electric, Telephone, Gas and Cable)

- 11.01 All procedures, design and construction of utilities shall be in conformance with the requirements of the supplying utility company.
- 11.02 Plans of all proposed utilities, whether or not in public easements, shall be submitted by the utility company to Pittsfield Township for review. Pittsfield Township will issue a construction permit to the utility company when its plans are approved.
- 11.03 All existing and proposed utility information, including lines, poles and surface equipment shall be shown on the final site plan.
- 11.04 Every effort shall be made to install all proposed utilities underground for their full length. Specific approval by the Township Board or its authorized representative shall be required for the placement of above-ground utilities and shall be based on a showing of substantial hardship or practical difficulty with underground installation. Existing overhead utilities on site shall be relocated underground.
- 11.05 Surface equipment shall be located so as not to interfere with traffic flow, parking, building access, fire hydrants, or Fire Department connections.
- 11.06 Surface transformers, pedestals and similar equipment shall be screened from view, and the screening shall be shown on the landscape plan.
- 11.07 Conditional Use Permits shall be obtained by the utility as required by the Zoning Ordinance of Pittsfield Township.
- 11.08 Electrical, telephone, gas, and cable may not share a common trench with sewer and water mains and shall maintain a minimum of 10 feet of separation from them.

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Chapter 11 – Franchised Utilities

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Chapter 12

OUTSIDE LIGHTING

- 12.01 Site lighting shall be directed away from residential properties.
- 12.02 Light poles and other luminaires shall be compatible with the residential character of the development. Light emitted in non-residential developments that are adjacent to residential developments, shall be compatible with the character of the adjacent residential areas.
- 12.03 Light poles shall be located not less than 5 feet from the edge of a drive or parking space, where feasible. Light poles located along streets shall be in accordance with Washtenaw County Road Commission, Michigan Department of Transportation, or City of Ann Arbor, as applicable.
- 12.04 Wiring for outside lighting shall be underground.
- 12.05 Light poles and other supports shall not interfere with traffic flow, access to fire hydrants or other utilities.
- 12.06 Information shall be supplied on the style, manufacturer's part number, height, direction, location, wattage, type of lamp, and intensity of outside lighting on the final site plan.
- 12.07 Minimum and maximum illumination intensity shall be provided for all lights not in the public right-of-way.
- 12.08 General Lighting Standards:
 - a. It is the intent of this Chapter to:
 - i. Provide lighting systems that are suitable for the task intended.
 - ii. Eliminate off-site glare.
 - iii. Provide even illumination for all vehicular and pedestrian areas and specify a maximum uniformity ratio.
 - iv. Comply with the International Dark-Sky Association's (DSA) goal to eliminate over-lighting by using the minimum recommended values as maximum values as stated in IESNA's RP-8 and RP-33.
 - v. Direct lights downward on the area to be illuminated.

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Chapter 12 – Outside Lighting

- vi. Conform to Illumination Engineering Society (IES) recommended practices for illumination levels. Use RP-8 for roadway and RP-33 for all others.
 - vii. Use efficient light sources such as metal-halide (MH), high-pressure sodium (HPS) or compact-fluorescent (CF).
- b. Any modifications to the approved lighting layout shall be re-submitted to the Township for approval prior to installation.
 - c. Systems shall be installed only as approved. The Township reserves the right to instruct the Contractor/Developer to remove or modify lighting systems that were not installed as approved, at no cost to the Township.
 - d. Lighting required in public street rights-of-way shall be of a design approved by DTE and have parts stocked by DTE. The Planning Commission may require the formation of a special assessment district to pay for electricity use.
 - e. All illuminated signs must be lighted internally or lighted by top-mounted lights pointed downward. No sign may be illuminated with fixtures not shielded from upward transmission of light. The maximum size of the signs and minimum distances between signs shall be approved by the Township. Sign sizing and minimum distance design basis per the current Zoning Ordinance. Off-premise signs must be turned off after 10:00 p.m. during winter and after 11:00 p.m. during summer time, and on-site signs turned off upon closing if after 10:30 p.m. Signs should be white or light colored lettering on dark backgrounds. Lights that flash, pulse, rotate, move, or simulate motion are not permitted. Billboards are included in this standard. No LED signs are permitted.
 - f. Continuous colored tube lighting (neon lighting) is, discouraged. Lighting should not remain on after the business has closed.
 - g. Federal Aviation Administration (FAA) required lighting is exempt from the standards.
 - h. The use of search lights, except by civil authorities for public safety, is prohibited.

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Chapter 12 – Outside Lighting

- i. The night-time use of white lighting or white strobe lighting for communication tower lighting is prohibited. Night-time white strobe lighting is not required by the FAA. Applicants must show proof of any such FAA requirement.
- j. The temporary use of low-wattage or low-voltage lighting for public festivals, celebrations, and the observance of holidays are exempt from regulation except where they create a hazard or nuisance from glare. Light trespass requirements remain in effect. Permits are required for commercial activities such as carnivals and are valid for up to seven (7) days. Where possible, lighting should be downward directed.
- k. Lighting at places of business or public venues, except for security, shall be turned off no later than one (1) hour after closing. The lights of vacant parking lots shall not remain lighted except for illuminating entryways by the fixtures closest to building entrances.
- l. The maximum allowable total lumens generated on each parcel are 80,000 lumens per net acre with full-cutoff (fco) lighting. Parcels less than one net acre are allowed fco lumens in a portion equal to the parcel's portion of a net acre.

12.09 Residential Street and Building Lighting

- a. Lighting shall be provided to illuminate roadway and pedestrian areas of all new residential developments except the Planning Commission may waive or modify this requirement in larger lot single family home developments. The system installed shall comply with Illumination Engineering Society (IES) recommended practices.
- b. One-hundred (100) watt (maximum) HPS lamps shall be specified.
- c. Streetlights shall be mounted on 20 foot poles.
- d. Intersections and pedestrian crosswalks shall be illuminated.
- e. Roadway illumination systems provided by Detroit Edison (DTE) shall use DTE standard high pressure sodium lamps.

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Chapter 12 – Outside Lighting

- f. Roadway illumination systems provided by Developer should be high pressure sodium lamps. Metal halide lamps are highly discouraged.
- g. Building mounted lights shall be shielded and directed downward.
- h. Light level at the property line shall be no more than 0.5 footcandles in non-residential settings and 0.1 in residential settings.
- i. Acorn-style lighting fixtures are not allowed. Nostalgia or colonial luminaires meeting IDA's Fixture Seal of Approval criteria are recommended.

12.10 Non-Residential Exterior Lighting.

- a. Roadway and Parking Areas:
 - i. Lighting shall be provided to illuminate roadway and pedestrian areas of all new developments. The system installed shall comply with IES Standards.
 - ii. Area and roadway luminaires shall have full-cutoff optics and recessed flat lenses. Drop lenses or illuminated domes are not allowed.
 - iii. Pole-mounted lights shall use up to 250 watt metal halide or high pressure sodium lamps at mounting heights of 27'-6" and below, and may use 400-watt MH or HPS lamps at 30 feet or higher mounting height. Heights above 27'-6" shall be justified by the applicant and are subject to Township acceptance.
 - iv. Low-level bollard lights, 36-inch to 48-inch high, should be used to illuminate pedestrian areas and walkways. Ground-mounted pathway lights may be used provided there is no up-light component. Step-lights with full-cutoff optics shall be used to illuminate exterior stairways.
 - v. For parking areas, minimum illumination levels should be 3 footcandles at entrances, intersections or pedestrian crosswalks with 1 footcandle on the rest of the roadways and parking surfaces. Maximum illumination level on-site shall be 10 footcandles.

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- vi. Parking areas and roadways shall have a maximum uniformity (Max-to-Min) ratio of 10:1.
- vii. Illumination levels on the property lines shall not exceed 0.5 footcandles and 0.1 footcandles if abutting residential areas.
- viii. Luminaires located in landscaped areas a minimum of 5 feet away from vehicles shall be mounted on concrete foundations that protrude 6 inches maximum above finished grade. Luminaires shall be mounted on concrete foundations that protrude 30 inches above finished pavement.
- ix. Decorative “streetscape” luminaries, 12 feet to 18 feet may be used for pedestrian and roadway illumination provided luminaries with full cutoff optics are used. The lamp must be recessed to shield the light source and prevent light above horizontal. Maximum wattage shall be 50 watts. Multiple luminaries may be mounted on a common pole.

b. Building Lighting

- i. No building-mounted or pole-mounted floodlights are allowed. Signs may be lighted with floodlights provided the light is focused downward on the sign and does not spill beyond the sign. Shields or adjustable louvers shall be required on floodlights to control beam spread.
- ii. If the exterior walls of a structure are to be illuminated, the lights must be mounted at the top of the wall and aimed downward, full cutoff wall mounts are required. Ground-mounted floodlights are not allowed for façade lighting. Maximum illumination shall be 15 footcandles at the surface.
- iii. Building perimeter wall lights shall be full-cutoff type and shall direct the light down. Minimum light level at doorways shall be 3 footcandles, maximum shall be 25 footcandles. Emergency lighting shall be provided at all exit doors.

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- iv. Flagpoles may be illuminated by uplights or floodlights as required. Beam spread shall be only as required to illuminate the flag clearly. Adjustable louvers shall be used to limit beam spread, if necessary. Traditional dawn to dusk flag displays are recommended, but if all weather flags are used, 20 watt vertically maximum directed MR16 type in ground tube luminaires may be used.
- v. Landscape lighting is allowed, provided shielding and louvers are utilized to limit lighting to objects only. Lamp wattage shall be as low as possible to illuminate the objects without causing glare on the site or neighboring property. Maximum light level at objects shall be 5 footcandles. Maximum lamp size shall be 20 watt, luminaire type MR16.
- vi. Gas station canopy lights shall be recessed with flat lenses to limit glare. Illumination levels shall comply with I. E. S. RP-33.
- vii. Luminous tube (neon) and exposed tube fluorescent lighting is prohibited as an architectural detail and in windows.
- viii. Luminaires in parking lots adjacent to residential areas shall have 20-foot maximum mounting height.
- x. Searchlights, strobes, lasers or similar high intensity light for outdoor advertisement or entertainment are prohibited, unless justified by the applicant and approved by the Township.
- xi. Lights mounted on buildings shall not be of a flashing, moving or intermittent type.
- xii. Backlighted canopies and architectural features are considered signs, and must meet all of the sign requirements of the Zoning Ordinance.

12.11 Photometric Plan Format and Requirements

- a. A Site Lighting Photometric Plan shall be included as part of final site plans and preliminary plats for final approval unless specifically waived by the Planning Commission. The drawing shall be a scaled plan (1’=10” to 1’=50”) and shall show the layout of the entire site including:
 - i. Property Lines
 - ii. Main Roadways
 - iii. Driveways
 - iv. Parking Areas
 - v. Sidewalks
 - vi. Cross walks
 - vii. Existing Building Locations
 - viii. Proposed Building Locations
 - ix. Proposed Building exits.
 - x. Green belts

- b. The Photometric plan shall include the following minimum information:
 - i. Location of all site lights including:
 - a. area lights
 - b. driveway lights
 - c. pedestrian lights
 - d. building mounted lights
 - e. canopy lights
 - f. sign lights
 - g. landscape lights
 - h. existing lights within 30 feet of property lines

 - ii. A type designation for each Luminaire shall be shown on the plan. (“A”, “B”, “C:”, etc.)

 - iii. A Luminaire Schedule indicating Type (“A”, “B”, “C:”, etc.), Manufacturer, Model Number, Finish, Lamp Type, Lumen output, Light Loss factor, Wattage, Number of heads, the IES photometric file number used for calculations for each luminaire.

 - iv. Mounting height to top of each luminaire, including pole base height where applicable.

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- v. A photometric grid indicating footcandle levels over the entire site at grade level. Grad spacing shall be 20 feet x 20 feet maximum. Isofootcandle lines shall be excluded.
- vi. Footcandle levels at all property lines.
- vii. Provide a Photometric Summary and Statistics Table. Indicate Maximum, Minimum and Average footcandle levels, Maximum-to-Minimum and Average-to Minimum ratios.
- viii. Provide two calculation area summaries:
 - a. parking lots
 - b. property lines
- ix. Submittal shall include cut-sheets for proposed luminaires, poles, pole bases (in the plan set), electronic AutoCAD Site Plan file and IES photometric files for use in analyzing the lighting plan.
- x. 0% uplight shall apply to all fixtures, except as noted.

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Chapter 13

OUTSIDE WASTE STORAGE

- 13.01 Waste storage includes containers for trash, recycling, and grease.
- 13.02 Waste storage shall be provided ~~+~~ within a building or in containers located in enclosures outside the building. Outside waste containers shall not be permitted unless located within enclosures. If storage is inside a building, waste shall be handled and stored in compliance with all applicable codes. All residential buildings of more than two (2) dwelling units shall provide dumpster enclosures.
- 13.03 Enclosures shall be at least five (5) feet high, but shall not be less than the height of the containers located therein. The enclosure shall accommodate forms of waste.
- 13.04 Enclosures shall be constructed of the same material used in outside faces of the principal buildings on the site, such as wood or masonry materials. Wire fencing or fencing with plastic, aluminum, or other filler strips shall not be used as enclosure walls or gates.
- 13.05 The base of the enclosure shall be concrete a minimum of six (6) inches thick.
- 13.06 Enclosures shall not be located in any yard required adjacent to a public or private street or in a required transition strip. If located in a required side or rear yard, the enclosure shall be at least 10 feet from property line.
- 13.07 Enclosures shall be located so as not to be a nuisance to users of adjacent streets, sidewalks, residential uses, or buildings, or be a fire hazard to any buildings.
- 13.08 Enclosures shall be designed for safe and convenient access for both the user and the waste hauling company. The door shall be oriented in such a way that a waste hauling vehicle can make all necessary maneuvers to access the dumpsters.

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- 13.09 Tree and shrub screening may be required around the enclosure to screen the enclosure from view and to provide shade in order to reduce odors during summer months.
- 13.10 Enclosures shall not be placed in any location that will interfere:
- a. with the use of any parking space
 - b. with vehicular or pedestrian traffic flow
 - c. with public safety access to a building
 - d. access to a fire hydrant.
- 13.11 This chapter shall not apply to a single-family lot.

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Chapter 14

TRAFFIC & TRAFFIC CONTROL DEVICES

- 14.01 The locations and types of traffic control devices shall be shown on the final site plans and preliminary plats for final approval.
- 14.02 All required traffic control devices shall be installed at the developer's expense.
- 14.03 All required traffic control devices shall meet the specifications of, and shall be installed in accordance with, the Michigan Manual of Uniform Traffic Control Devices.
- 14.04 Traffic control devices may be required on private property that is open to the general public for travel, in accordance with the Pittsfield Township Traffic Ordinance.
- 14.05 Code enforcement of these devices shall be coordinated with the Public Safety Department. The Township may require that the proprietor enter into an agreement with the Township to enforce the Uniform Traffic Code on the property. All required traffic control devices and street name signs shall be installed prior to any building permit being issued on single family developments and before any Certificate of Occupancy is issued on all other types of developments.
- 14.06 Required traffic impact studies shall include:
- a. Illustrations and a narrative that describes the characteristics of the site and adjacent roadway system (right-of-way, functional classification, lane configuration, speed limits, any sight distances limitations, current traffic conflicts, etc.) This description should include surrounding land uses, expected development in the vicinity which could influence future traffic conditions, special site features and a description of any committed roadway improvements. The study should define and justify the study area selected for analysis.
 - b. For a rezoning, a description of the potential uses that would be allowed, compared to that allowed under current zoning. For a site plan review, mobile home park, condominium project, a subdivision tentative preliminary plat, or specified Conditional Land Use; a description of factors such as the number and types of

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dwelling units, the gross and usable floor area, the number of employees and shift change factors. Intended phasing or future expansion should also be noted.

- c. Existing traffic conditions including existing peak hour traffic volumes (and daily volumes if applicable) on street(s) adjacent to the site. Existing counts and levels of service for intersections in the vicinity that are expected to be impacted, as identified by the Planning Commission or its staff consultants, shall be provided for projects requiring a Traffic Impact Statement. Traffic count data shall be collected using accepted practices and shall not be over two (2) years old.
- d. The existing right-of-way and any planned or desired expansion of the right-of-way requested by the applicable road agency.
- e. The traffic study shall include traffic generated by other projects in the vicinity which have been approved or are under construction.
- f. For any project with a completion date beyond one (1) year at the time of the traffic study, the analysis shall also include a scenario analyzing forecast traffic at date of completion along the adjacent street network using a forecast based on a network traffic assignment model (if available), historic annual percentage increases and/or future development in the area which has been approved.
- g. Forecasted trip generation of the proposed use for the a.m. (if applicable) and p.m. peak hour and average day. The forecast shall be based on the data and procedures outlined in the most recent edition of Trip Generation published by the Institute of Transportation Engineers (ITE). The applicant may use other commonly accepted sources of data o/c supplement the standard data-with data from at least three (3) similar projects in southeast Michigan.
- h. A rezoning traffic impact study should contrast the traffic impacts of typical uses permitted in the requested zoning district with uses permitted in the current zoning district. The determination of typical uses shall be made by the Planning Commission with input from Township staff and consultants.

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- i. Any trip reduction for pass-by trips, transit ridesharing, other modes, internal capture rates, etc., shall be based both on ITE findings and documented survey results acceptable to the Township and applicable road agency. The Planning Commission may elect to reduce the trip reduction rates used.
- j. For projects intended to be developed in phases, trip generation by phase shall be described.
- k. Trip Distribution: The projected traffic generated shall be distributed (inbound vs. outbound, left turn vs. right turn) onto the existing street network to project turning movements at site access points, and nearby intersections where required. Projected turning movements shall be illustrated in the report. A description of the application of standard engineering procedures for determining the distribution should be provided (trip distribution model, market studies, counts at existing driveways, etc.).
- l. Level of service or “capacity” analysis at the proposed access points using the procedures outlined in the most recent edition of the Highway Capacity Manual published by the Transportation Research Board. Gap studies for unsignalized intersections shall be provided where applicable.
- m. The report shall include a map and description of the location and design of proposed access (driveways or new street intersections) including: any sight distance limitations, distances from adjacent driveways and impacted intersections, potential for shared access facilities data to demonstrate that the number of driveways proposed is the fewest necessary, support that the access points will provide safe and efficient traffic operation and be in accordance with the standards of the Washtenaw County Road Commission. Comments shall also be provided on internal circulation design such as the adequacy of queuing (stacking) at site access points and other features which may affect traffic operations and safety.
- n. The study shall outline mitigation measures and demonstrate any changes to the level of service achieved by these measures. Any alternatives of suggested phasing of improvements shall be described. The mitigation measures may include items such as roadway widening, need for bypass lanes or deceleration tapers/lanes, changes to signalization, use of access management techniques or a reduction in the proposed intensity of use.

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Proposed mitigation measures shall be approved by the Washtenaw Country Road Commission and Michigan Department of Transportation, as applicable. The responsibility and timing of roadway improvements shall be described.

- o. Qualifications of Preparer: The person responsible for the preparation of the study shall have a degree or specific professional training in the preparation of traffic impact studies. The preparer shall have at least three (3) years of recent experience in the preparation of traffic impact studies, provide evidence of ongoing experience and familiarity with the Highway Capacity Manual and other traffic operation evaluation techniques and be a member of one or more professional planning related organizations. Any study involving roadway or traffic signal design work shall be prepared by a registered engineer (P. E.) with specific training in traffic engineering.

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Chapter 15

LANDSCAPING

- 15.01 Landscaping shall be provided as a part of site plan or subdivision design. Landscaping is the organization of outdoor space and shall be treated as a design element as important as building placement and vehicular circulation. The landscape plan shall be designed to achieve the following purposes:
- a. To integrate the various elements of the site.
 - b. To preserve and enhance the identity of the site.
 - c. To improve and enhance the character of the site; to screen or filter views, where necessary; to help unify the various parts of the site; to blend in harmonious land uses; and to buffer incompatible uses.
 - d. To define and articulate outdoor and architectural space.
 - e. To control soil erosion; to moderate harsh or unpleasant sounds; to remove air pollutants; control glare and reflection; and to slow the effects of erosive winds or water and promote storm water retention, thereby helping to prevent flooding; and to block, divert, or channel winds.
 - f. To moderate the effects of climate and to create a more desirable microclimate.
 - g. To preserve and enhance existing or create natural environmental systems including woodlands, wetlands and prairies.
 - h. To provide habitat for local animal species.
 - i. Landscaping may include plant materials, such as trees, shrubs, ground covers, perennial and annual plants, landscape elements, such as rocks, water features, fences, walls, paving materials, and site lighting; and site furnishings such as benches, drinking fountains, trash receptacles, and planters.

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15.02 All parts of a site that will not be covered by buildings or other structures, streets, driveways, parking lots, or other paved areas, or planting beds, shall be stabilized with grass or ground covers. Margins between sidewalks and streets, islands in parking lots, medians in boulevard, streets or driveways, and similar areas shall be landscaped. The surfaces of islands and medians shall be stabilized with grass, ground covers, low growing shrubs. Mulch should not be used. Natural low maintenance materials are encouraged, such as native grasses and wild flowers.

15.03 Each landscape area within a parking area or parking lot shall be adequately planted and maintained and shall be located in such a manner as to promote the following:

- a. Provide shade.
- b. Divide and break-up the expanse of pavement.
- c. Define parking areas.
- d. Designate areas for vehicular circulation.
- e. Separate parking lots from streets and off-street parking.
 - i.. At least one canopy tree shall be provided for each 8 parking spaces or a fraction thereof in all commercial, industrial, office, warehouse and residential developments.
 - ii. The Planning Commission may require more or larger landscaped areas, or more plant materials, or any combination thereof, than required in this section, if, as a result of the Commission's findings, the nature or concept of the proposed development, relation to existing natural features, or relation to neighboring properties indicate a need for such additional landscaping.

15.04 Landscape plans shall be prepared, signed and sealed, by a registered landscape architect and shall provide the following information:

- a. Existing and proposed topography, by contours, correlated with the grading plan.

Location, type, size, and condition of existing plant materials to be saved, moved, or removed; proposed means of protecting existing plant materials during construction.

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- c. Location of proposed plant materials; a planting list of proposed materials, showing sizes, height, quantity, botanical and common names, spacing, and root type (bare root or balled and burlapped).
- d. Location of all proposed improvements, as shown on the site plan.
- e. Sections, elevations, plans, and details of landscape elements, such as berms, walls, ponds, retaining walls, and tree wells.
- f. Proposed planting dates.
- g. Irrigation system plan for watering and draining landscape areas.
- h. Planting and staking details, in text or graphic form, explaining the method of installation, and any special planting requirements.

15.05 Plant materials shall be installed in sound, professional manner, and according to the following planting procedures:

- 1. If the site is clay or topsoil is removed from the site, a minimum of 8” of quality topsoil will be placed in areas where landscaping materials are to be planted.
- 2. Deciduous and evergreen trees, balled and wrapped:
 - a. Dig planting holes two to three times as wide as the root ball. Score sides of planting hole.
 - b. Use tree wrap only if necessary. Tree wrap is to remain on trees one year or less.
 - c. Use tree stakes only if necessary. Flexible tie material is preferred. Tree staking is to remain on trees one year or less. All ties, stakes, wire and rubber hose are to be removed. Only stake trees with large crowns, or those situated on windy sites or where people may push them over. Allow trees a slight amount of flex rather than holding them rigidly in place.

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- d. Remove all burlap or other wrapping, ropes (whether jute or nylon), pins and wire baskets from top 1/3 of root ball.
 - e. Backfill with existing unamended soil.
 - f. Backfill half the soil, then water thoroughly to settle out air pockets. Finish backfilling, then water again. Do not cover the top of the root ball with soil. Avoid tamping.
 - g. Root flare shall be visible after back fill.
 - h. Keep mulch at least 6” away from the trunk of the tree.
 - i. Mulch should be tapered in depth. 1” deep at 6” away from the trunk to a maximum of 4” deep at the saucer, if a 4” saucer is going to be used. Two (2) to three (3) inches of mulch is preferred.
 - j. Mulch shall not touch the tree trunks or the lower branches of the evergreen trees.
 - k. Compaction of soil in landscape area shall be avoided especially around newly planted trees.
3. Shrubs:
- a. Dig planting holes two to three times as wide as the root ball. Score sides of planting hole.
 - b. If balled and wrapped; remove all burlap, plastic or other wrapping, ropes (whether jute or nylon), pins and wire baskets from top 1/3 of root ball.
 - c. Remove all plastic pots.
 - d. For plants in fiber pots, remove the pot entirely, if possible, without damaging the roots. If pots are left in place to avoid root damage, break away the top of pot to below grade at proper planting depth and score the sides vertically in a minimum of four places. Fiber pots shall not be exposed above grade. If pots are molded pulp pots, plants shall be removed from the pot prior to planting.
 - e. Backfill with existing un amended soil.

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- f. Backfill half the soil, then water thoroughly to settle out air pockets. Finish backfilling, then water again.
 - g. Do not cover the top of the root ball with soil. Avoid tamping.
 - h. Keep mulch at least 6” away from the trunk of the shrub.
 - i. Mulch should be tapered in depth. 1” deep at 6“away from the trunk to 2” at the saucer
 - j. Neither soil nor mulch shall touch the lower branches.
4. Perennials:
- a. For plants in fiber pots, remove the pot entirely, if possible, without damaging the roots. If pots are left in place to avoid root damage, break away the top of pot to below grade at proper planting depth and score the sides vertically in a minimum of four places. If pots are molded pulp pots, plants shall be removed from the pot prior to planting. Fiber pots shall not be exposed above grade.
5. All plants:
- a. If roots are circling around the root ball exterior, cut through the roots in a few places.
 - b. Remove tags and labels.
6. Irrigation and Watering:
- a. Drip irrigation shall be used in foundation plantings and perennial beds.
 - b. If possible, overhead watering shall not be directed on to the branches of evergreens, shrubs, or deciduous trees. This practice promotes fungal diseases.

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- c. Watering: Land Development Standards require regular watering until plant materials are established. In most cases this period is longer than one year and can be as long as three to five years. Typical lawn irrigation provides too much or not enough water for trees. These points should be kept in mind while plants are establishing:
 - i. Frequently watered trees and shrubs establish more quickly than those receiving infrequent water.
 - ii. Trees and shrubs should be regularly watered throughout the entire first year, including fall after leaf drop. Discontinue watering when the ground is frozen.
 - iii. In general, newly-planted trees and shrubs may need supplemental irrigation as frequently as twice a week. But do not overwater!
 - iv. Water with a tree gator, soaker type irrigation, soaker hose or slowly running hose until the soil is moist to at least a 3” depth.
 - v. Note that clay soils can hold too much water resulting in tree failure. Shady areas may not dry out as fast as sunny areas. Soil should be checked for moisture prior to watering.
 - vi. Frequency of watering can be reduced and the area to be watered enlarged as the root system becomes established. One gallon of water per square foot of soil surface area within and just beyond the root-zone is a good, but generalized recommendation.
 - vii. Even after trees are seemingly established, they need to be monitored during extremely hot dry weather and watered if necessary.

All plant materials shall be maintained in a healthy and growing state. All landscape elements such as, but not limited to, fences, screens, walls, or lighting shall be kept in good repair. If an approved species is no longer acceptable due to such things as infestation or disease, a suitable similar species shall be used as replacement. All landscaped areas shall be maintained by pruning, trimming, weeding, clearing of undergrowth, fertilizing, and watering at intervals necessary to promote optimum growth and health.

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Plant materials that are unsightly, dead, dying, or that become unhealthy because of damage, neglect, drainage problems, disease, insect infestation, or other causes shall be replaced within one year, or the next planting period, whichever occurs first. Replacement materials shall meet all standards of the original installation. All landscaped areas shall be provided with a readily available and acceptable water supply. Newly planted materials shall be regularly watered until established.

Plant materials may need to be replaced to maintain conformance with a site plan.

The property owner, tenant, and their agent, if any, and any homeowners' or condominium association, if any, shall be jointly and severally responsible for maintenance of landscaped areas.

15.06 Plant materials shall meet the following standards.

- a. Plant and grass materials shall be acceptable varieties and species, hardy in Washtenaw County, and shall conform to the current minimum standards of the American Association of Nurserymen, and shall have passed any inspections required under State or federal regulations.
- b. No plant materials used to satisfy these standards shall be comprised of non-living materials such as petrochemical or plastic plants.
- c. Canopy (deciduous) trees shall be species having an average mature crown spread greater than 15 feet and a mature height of 40 feet or more in Washtenaw County and having trunks that can be maintained with over 5 feet clear stem if conditions or visibility require, except, however, at street intersections, where at least 8 feet stem clearance is required. Deciduous tree species shall be a minimum of ten (10) feet overall height and a minimum caliper of two (2) inches measured twelve (12) inches above the ball, immediately after planting. Required street trees in residential developments shall be a minimum of ten (10) feet overall height and two (2) inches caliper.
- d. Evergreen trees shall be a minimum of 6 feet high with a minimum spread of 3 feet and a burlapped ball size at least ten times the caliper immediately after planting.

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- e. Evergreen and deciduous shrubs shall be a minimum of 2 feet high, measured immediately after planting, or 2 feet in spread if the plants are low evergreens.
- f. Ground covers shall be planted in such manner as to present a finished appearance and reasonably complete coverage after one complete growing season, at a rate of at least three plants per square foot.
- g. Lawn grass shall be planted in species normally grown as permanent lawns or natural prairies in Washtenaw County. Grass may be plugged, sprigged, seeded, or sodded, except that rolled sod, erosion-reducing net, or suitable mulch shall be used in swales or other areas subject to erosion reducing net blanket, or suitable mulch shall be used in swales or other areas subject to erosion and shall be staked where necessary for stabilization. When complete sodding or seeding is not used, nursegrass seed shall be sown and mulched for immediate protection until permanent coverage is achieved. Grass sod and seed shall be free of weeds and noxious pests or diseases.
- h. All plant materials shall be disease and pest-free at the time of planting, and shall not be of a species that is known to carry or be a host to destructive pathogens or pests.

(See Section 15.15 for additional standards for plant materials.)

15.07 Landscape elements shall meet the following standards.

- a. Berms shall be constructed with slopes no greater than one (1) foot vertical for each 4 feet, with at least a 2-foot wide generally flat top. Adequate protection against erosion shall be provided. Berms shall be designed and constructed to appear as natural features in the landscape in the vicinity. Uniform heights and shapes should be avoided. If a slope is greater than 1 on 4 is necessary, the surface shall be planted with a ground cover that is suitable for stabilizing the surface. Irrigation systems may be required on berms to ensure the survival of plants on the berm.

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- b. Mulching material for planted trees, shrubs and vines shall be a maximum of 4-inch deep shredded hardwood bark. Decorative materials, such as, woodchips or mulch within planting beds and other areas shall be placed on a permeable landscape fabric that allows passage of water and air to the soil below. Polyethylene or plastic films shall not be used for this purpose.
 - c. Walls shall be constructed of stone, brick, or similar materials. Fences for landscaping purposes shall be constructed of wood. Chain link or other metal fences shall not be used for landscaping purposes. Walls and landscape fences shall be correlated with buildings, in terms of design and materials, and with the character of the site.
 - d. Paving materials shall be installed in a manner that will either contrast with or complement the other landscape elements and plant materials.
- 15.08 Topsoil removed during construction shall be stockpiled in an appropriate manner to prevent erosion, and shall be redistributed on regraded surfaces to be landscaped, to provide a minimum of 4 inches of even cover. The topsoil shall then be permanently stabilized by grass, ground cover, or other plantings.
- 15.09 All stumps and other tree parts, litter, brush, weeds, excess or scrap construction materials, or other debris shall be removed from the site and deposited according to law. No tree stumps, or portions thereof, or tree limbs shall be buried on the site. Dead or dying trees, standing or fallen, shall be removed from the site, unless part of an existing natural wetland that is to remain, or part of an approved wetland mitigation plan. If trees and limbs are reduced to chips, they may be used on the site as a mulch, only if the plants were free of disease prior to removal.
- 15.10 Healthy plant materials existing on a site prior to its development shall be incorporated into the landscape plan if such materials meet the standards of Pittsfield Township. The Planning Commission may require that such existing materials be inspected by the Townships staff or design consultants, before accepting them as part of the landscape plan. The Planning Commission may require the saving of significant existing plant materials based upon their determination that a reasonable layout is possible incorporating those materials. Significant materials shall be defined as those not readily replaceable by virtue of their size, species, variety, shape, or location and may include significant wildlife habitats. For existing plant materials to be saved, the Planning Commission may

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require that approval of the Township’s staff or design consultants be obtained before any site plan or plat is approved, and before any limb removal, root pruning, or other work is done.

Plant materials to be saved shall be protected from construction activities. Fencing or other barriers shall be placed no closer to the tree or shrub than its dripline. Areas to be protected shall be staked. Barriers shall not be supported by the trees or shrubs they are protecting, and shall be of a durable material that will provide the intended protection until construction is completed. No vehicle or other construction equipment, and no soil deposits or any material may be parked or stored within the driplines of such trees or shrubs.

If any plant material to be saved is cut down, destroyed, or damaged, or excavated behind the dripline, the contractor or property owner shall replace them or provide a performance guarantee of an equivalent amount plus 10 percent (10%) administrative fee for alter replacement. Equivalent amounts shall be determined from the Michigan State Tree Evaluation Chart or other recognized publication. The performance guarantee may be used by Pittsfield Township to replace such materials.

- 15.11 Recommended planting dates are March 1 to May 15 for all materials, and October 15 to December 15, weather permitting, for deciduous materials. Plantings outside these dates shall have prior approval of the Township’s staff or design consultants, and might require special treatment, such as extra watering or mulching, to increase survival potential. If plantings are not installed prior to issuance of temporary certificates of occupancy, performance guarantees will be required, as provided in the zoning and subdivision ordinances and these standards.
- 15.12 Landscaping operations shall not damage any utility or interrupt any utility service, and shall not damage or litter adjacent property, public streets, or sidewalks. All debris shall be promptly removed from the site as required by law. Trees shall maintain a minimum of 10 horizontal feet from all water, sanitary and storm structures.
- 15.13 Trees or shrubs shall not be planted in any way that will interfere with or cause damage to utility lines, public streets, or other public facilities. Species of trees whose roots are known to cause damage to streets, sidewalks, utility lines, or other public facilities; are brittle; are particularly susceptible to insect damage of disease; or are short-lived should not be used in any required landscaped area.

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- 15.14 A mixture of plant materials (evergreen and deciduous trees and shrubs) is recommended as a protective measure against insect and disease infestation. A limited mixture of hardy species is recommended rather than a large quantity of different species to produce a more aesthetic, cohesive design and avoid a disorderly appearing arrangements.
- 15.15 A diversity of species must be used. One species may not exceed 20% of the total canopy trees, ornamental trees, coniferous trees or shrubs.

The following list illustrates plant and landscape materials that are acceptable for use in Pittsfield Township.

Species Type (Common Name)	Minimum Size Allowable
a. Evergreen Trees	
Arborvitae	6 foot height
Cedar	6 foot height
Douglas Fir	6 foot height
Fir	6 foot height
Hemlock	6 foot height
Pine	6 foot height
Spruce	6 foot height

When used for screening purposes, evergreen trees shall not be spaced more than fifteen (15) feet on center. Plantings in two or more rows, on staggered centers, may be required for adequate screening.

b. Narrow Evergreen Trees	
Arborvitae	5 foot height
Red Cedar	5 foot height
Juniper (selected varieties)	5 foot height

When used for screening purposes, narrow evergreen trees shall not be spaced more than five (5) feet on center. Plantings in two or more rows, on staggered centers, may be required for adequate screening.

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c. Large Deciduous Trees (See Note 3)
 (use for required canopy trees)

Beech	2 inch caliper
Birch	2 inch caliper
Ginkgo (male only)	2 inch caliper
Linden	2 inch caliper
Maple, except Norway	2 inch caliper
Oak	2 inch caliper
Sycamore	2 inch caliper

When used for screening purposes, large deciduous trees shall be planted not more than twenty-five (25) feet on center. Plantings in two or more rows, on staggered centers, may be required for adequate screening

d. Small Deciduous Trees (ornamental)

Flowering Cherry*	2 inch caliper
Flowering Crabapple (disease resistant varieties)	2 inch caliper
Flowering Dogwood*	2 inch caliper
Flowering Plum or Pear*	2 inch caliper
Hawthorn (thornless)	2 inch caliper
Hornbeam	2 inch caliper
Magnolia	2 inch caliper
Redbud	2 inch caliper

When used for screening purposes, small deciduous trees shall not be planted more than twelve (12) feet on center. Plantings in two or more rows, on staggered centers, may be required for adequate screening.

*Specimen trees best suited to selected soils and sheltered areas.
Not recommended as street trees.

e. Large Evergreen Shrubs

Hicks Yew	2-3 foot height
Irish Yew	2-3 foot height
Mugo Pine	24 inch spread
Pfitzer Juniper	24 inch spread
Savin Juniper	24 inch spread
Spreading Yew	24 inch spread

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h. Small Deciduous Shrubs

Cotoneaster (Rock-spray, Cranberry)	24-30 inch height
Fragrant Sumac	24-30 inch height
Japanese Quince	24-30 inch height
Potentilla	24-30 inch height
Regal Privet	24-30 inch height

At time of planting, small deciduous shrubs shall not be less the 24-30 inches in spread if they have a spreading form or 24 inches in height if they have an upright form.

i. Ground Cover

Periwinkle varieties	2 inches peat pot @ 3 plants/sft
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Ground cover may be planted bare root by flats at appropriate planting time or in 2-gallon containers.

j. Vines

Baltic Ivy	2 peat pot @ 1 plants/5 sft
Euonymous varieties	2-gallon container @ 1 plants/5 sft
Wisteria	2-gallon container @ 1 plants/5 sft

Vines may be planted in intervals of four (4) feet on center for wall surfaces or to obtain 80% opacity within three (3) years of planting.

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Notes:

- 1) Caliper readings on main stem twelve (12) inches above ground on trees only.
- 2) Where plants are placed in two (2) or more rows, plantings may be staggered in rows.
- 3) Trees not to be used:
 - Ash
 - Box Elder
 - Catalpa
 - Elm
 - Horse Chestnut (nut bearing)
 - Jack Pine
 - Norway Maple
 - Poplar
 - Silver Maple
 - Tree of Heaven
 - Willow

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Chapter 16

CONSTRUCTION AND OCCUPANCY

- 16.01 No building construction permits(s) shall be issued for any project or development until the following minimum standards are met:
- a. All public and private roadways, including curb and gutter where applicable, shall be complete through the compacted aggregate base.
 - b. All site grading and balancing shall be complete and certified by the developer's engineer to be in compliance with the approved site plan. In addition, the Township may verify compliance with the approved grading plan.
 - c. All facilities for the direction and retention of stormwater shall be substantially complete. Site grading shall be generally complete.
 - d. The installation of all franchised utilities shall be substantially complete.
 - e. All underground utilities shall have passed their certified acceptance tests and the water system shall be operational.
 - f. Each individual lot or building site shall have a sign clearly showing the lot number and address of the lot or building site.
- 16.02 The granting of Certificates of Occupancy for new structures, additions, alterations, or changes in use shall be guided by this chapter's standards.
- 16.03 Certificates of Occupancy shall be granted by the Building Official.
- 16.04 Where the occupancy of a new or altered structure, or a structure that has experienced a change in use, is subject to compliance with a site plan or conditional use permit approved by the Township Planning Commission or is subject to a subdivision plat or PUD area plan approved by the Township Board of Trustees, occupancy shall not be permitted until all improvements required and indicated by such approvals are complete and all conditions thereof have been met or until a completion guarantee sufficient to cover all incomplete improvements has been provided to the Township. Only a temporary Certificate of Occupancy shall be granted prior to the completion of all required improvements or prior to

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compliance with applicable conditions and all fees associated with such approvals shall have been paid in full and all associated accounts shall have a positive balance in accordance with current Township fee schedules.

16.05 Occupancy shall not be permitted until the following minimum standards for completeness and safety are achieved:

- a. In residential projects, drives, and parking areas other than those on individual lots shall be completed, at a minimum, through the permanent compacted aggregated base.
- b. In nonresidential and in multi-family residential developments with common drives and parking areas the following shall apply. Projects, drives, and parking areas shall be completed, at a minimum through the basic course of asphalt. Where pavement markings and traffic control devices are required to direct the general public about the site, they shall also be completed prior to occupancy.
- c. Final mechanical, plumbing, electrical, building, site, utility and fire safety inspections shall have been approved on, at least, a temporary basis by the applicable inspectors for the structure for which occupancy is requested.
- d. The structure shall bear a permanent address visible from the street.
- e. A Township installed water meter or Department approved installation must be complete.
- f. All water, sewer and storm water systems must be complete and approved by the Township Engineer and Utilities Department. Any outstanding USW fees must be paid in full.
- g. As-built drawings and easements for roads and utilities must be submitted by the developers.
- h. Where applicable, approval of individual wells and septic facilities shall be obtained from the Washtenaw County Environmental Health.

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- i. Commercial food service facilities shall be approved by the Washtenaw County Environment Health.

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Chapter 17

ADDRESSES, STREET AND PROJECT NAMES

- 17.01 All addresses, street names and project or development names shall be assigned and/or selected in accordance with the following criteria and subject to approval by the Planning Department (herein-after “Department”).
- 17.02 The Department shall have the sole responsibility and authority for assignment of addresses in Pittsfield Charter Township. The Department may send a request to USPS and Public Safety for comment.
- 17.03 All addresses shall be assigned by the Department as provided for in the Property Identification Ordinance of Pittsfield Charter Township and shall be designed, installed and displayed as set forth therein. In projects with multiple phases, addresses will be assigned as each phase is approved. The address shall be displayed on every lot, parcel or site prior to the commencement of any development and continuously thereafter.
- 17.04 Addresses will be assigned only on public or approved private roads. Addresses will not be assigned on private driveways or other private access roads unless, in the opinion of the Department, it is required due to high density or other unusual circumstances. In the event that addressing is required on a private road, or private drive or access road, the developer shall install and maintain approved road name signs which comply with the standards of the Washtenaw County Road Commission for road identification signs. Structures with frontage on more than one road will be addressed based on the road frontage the front or main entrance faces regardless of the location of vehicular entrances.
- 17.05 In single and multiple-family residential projects an individual address will be assigned to every structure or unit which has an individual tax parcel ID number.

In non-residential projects each building will be assigned an address, where a non-residential building has more than one tenant either additional addresses or individual unit numbers may be assigned at the discretion of the department.

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- 17.06 Subdivision and project names shall be selected by the developer and submitted to the Department and other reviewing agencies for approval. There shall be no duplicate or similar sounding names with any project in this or any bordering community.
- 17.07 Street names shall be selected by the developer and submitted to the Department and other reviewing agencies for approval. Names shall be reviewed during review of the area plan, preliminary site plan or tentative version of the preliminary plat. There shall be no duplication, names in any postal zip code serving or adjacent to Pittsfield Township. This currently includes the 48103, 48104, 48105, 48108, 48176 and 48197 zip code areas. Similar sounding names shall also be prohibited. (Examples are names like “Stonebridge” and “Stoneridge”). Street names using the suffix “Court” must be a unique name or be accessed from a street having the same name. Suffixes such as “Road”, “Avenue”, “Street” and “Drive” shall be considered the same and shall not be used to differentiate among duplicative or similar sounding names.

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Chapter 18

FIRE PROTECTION AND PREVENTION

18.01 Access

In addition to the standards in Section 18.04 the following shall apply:

- a. All roads, lanes or drives required for emergency access shall be posted as required by NFIP 1141, Sections 3-1.8 & 3-2.3 with the following exceptions:
 - i. Entryways and main drives shall be posted with signs reading “No Standing – Fire Lane”.
 - ii. Main drives adjacent and parallel to structures shall be posted with signs reading “No Standing – Fire Lane” or “No Parking – Fire Lane” on the side adjacent to the building and the opposite side shall be posted with signs reading “No Stopping – Standing – Parking – Fire Lane”. Parking shall be prohibited on one side of all main driveways.
 - iii. Paved areas on the sides and rear of buildings which are less than thirty (30) feet wide shall be posted “No Parking – Fire Lane”.
 - iv. Signs shall be installed with their faces perpendicular to the roadway, six feet, eight inches (6’ 8”) high, facing the direction of travel, and shall be located so that at least one sign is clearly readable from any location on the posted road, lane or drive.
- b. Landscaping or other obstructions shall not be placed around any structure, hydrant, Fire Department Connection (FDC) Post Indicator Valve (PIV) or other emergency equipment in a manner so as to impair or impede the visibility of, or accessibility to said equipment for emergency operations.
- c. A 10% maximum slope shall be maintained within twenty (20) feet of the building. (i. e. 2 feet in 20 feet).

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- d. Provide a minimum of three sided access for buildings of irregular shape. Determination of compliance shall be determined by the Fire Marshal to all non-single family residential buildings.
- e. Grass pavers generally are not permitted for access unless, in the opinion of the Planning Commission their use is prudent and feasible.
- f. Building overhangs or extensions must provide 12 feet of clearance in order to prevent a fire apparatus obstruction.
- g. Fire lanes shall be a minimum of 22-feet wide.
- h. In multi-family residential buildings in which there are units with no front vehicular access to driveways, access ways must be extended along both sides of the building extending 35 feet beyond the furthest structural component of the building, including porch overhang.
- i. Site plans shall provide more than one (1) point of access to the site. Access points must be approved by the Fire Marshal.
- j. Emergency access routes must be capable of handling the weight of the fire apparatus and must be twenty two (22) feet wide. The surface shall be approved by the Fire Marshal. All emergency access routes must be approved by the Fire Marshal.
- k. Emergency only access roads must be clearly marked by signage stating, “Emergency Access Only” at entrance points and “No Parking, Fire Lane” every 75 feet along the road as designated by the Fire Marshal or his/her designee. Entrance points must discourage non-emergency traffic while not impeding emergency apparatus.
- l. Emergency access roads are preferred to encircle the structure(s). Dead-end emergency access roads must provide a cul-de-sac or hammer head type turn-a-round approved by the Fire Marshal. The Fire Marshal may exempt the turn a around depending on circumstances (i. e. length).

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- m. Ingress/egress gates, barricades or obstructions must provide approved Fire Department “Knox Boxes/Knox Locks” for entry.

18.02 Alarm systems

- a. Alarm systems must be installed according to NFPA 72.

18.03 Annunciator Panels

- a. The Annunciator Panel for the alarm/suppression systems must be located just inside of the main entrance and visible from the main entrance. Zone locations with legends must be available and placed inside of the Knox Box, or in the annunciation panel, at the discretion of the Fire Marshal.

18.04 Applicable Codes

Fire protection and prevention for sites and structures shall be designed, constructed and maintained in accordance with the provisions of the BOCA National Fire Prevention Code, as adopted, the Fire Prevention Standards of the National Fire Prevention Association (NFPA), as adopted by reference, the Building Code of Pittsfield Charter Township, these Land Development Standards and other applicable ordinances.

18.05 Dry or Wet Hydrants

- a. Hydrant placement shall be measured as “hose-laying distance” from fire apparatus. Hose-laying distance is the distance the fire apparatus travels along approved access routes between hydrants or from a hydrant to the structure.
- b. No commercial, industrial, or multiple residential area shall be more than 300 feet from a hydrant or approved water supply. Adequate water supply shall be determined by NFPA 1142 or the Authority Having Jurisdiction (AHJ).
- c. In single-family residential areas consisting of five (5) or more homes, an adequate water supply must be considered and recommended by the AHJ and approved by the Township Board.
- d. Dry hydrants shall be at least three (3) feet, but no further than six (6) feet from the back of the curb or road edge. Height of hook-up point shall be 24-30 inches.

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- e. Hydrant location shall be determined by the Fire Marshal, Township Engineer and Utilities Director. Hydrants should not be located in the collapse zone of a building.
- f. Hydrants shall be protected by curbs, bollards, guard rail, or other acceptable methods if determined to be in a hazardous location.
- g. Additional hydrants may be required depending on the type of hazard or use to protect the structure and/or contents.
- h. Hydrants must meet Pittsfield Charter Township Fire and Utility Department specifications. A “4 inch Storz” steamer is required.
- i. Site plans shall note water sources including all dimensions of ponds, rivers, and accessibility, which a minimum of 2 feet below the 50 year drought level, as determined by a registered Engineer.
- j. Dry hydrants, underground water storage tanks or static water supplies must be in compliance with all applicable referenced codes in the Pittsfield Charter Township Fire Department.
- k. Hydrants and Fire Department Connections (FDC) shall be unobstructed from posts, fences, vehicles, plantings, trash storage or other materials. A clear space of three (3)-feet shall be maintained unless otherwise approved by the Fire Marshal. Hydrants shall have a minimum of 15 feet clear area in the direction of the nozzles.

18.06 Fire Department Connections

- a. Fire Department Connections (FDC) shall be located in a location approved by the Fire Department. The FDC must be visible from the street.

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- b. Fire Department Connections shall be located so that firefighters and fire apparatus can make immediate access. Obstructions such as fences, bushes, trees, walls, electrical transformers, dumpsters, vehicles, gas meters, or other similar objects shall not be permitted for new or existing installations. There shall be 15 feet of clearance around FDCs.
- c. Buildings with multiple FDC's that have separate sprinkle suppression systems or zones must have strobe/horn warning devices located above them at the roof line indicating which system has triggered an alarm.
- d. Fire Department connections, where provided, shall be a four (4) inch "Storz" connector and shall be installed as specified in Section 3.14 of these Standards and shall be within fifty (50) feet of a public fire hydrant. Said connector shall be a "Hydra-Storz Adapter" manufactured by Hydra-Shield Manufacturing Inc., 3249 West Story Road, Irving, Texas 70583, or an approved equivalent. The Fire Department connection shall be a minimum of 15 horizontal feet from any gas or electric service and clearly visible from the adjacent roadway or driveway. A sign shall be placed overhead of the connection station "FDC" with a red arrow pointing downward in a size and location acceptable to the Fire Marshal.
- e. All fire hydrants shall have two pumper connections, one of which shall be equipped with a "Storz" adapter as specified above. All hydrants shall be painted red.
- f. All structures, except one and two family dwellings built under use group R-3, shall be equipped with a "Knox Box" key storage unit. The location and number of the key storage units shall be determined by the Pittsfield Township Fire Marshal.
- g. Trash and debris at construction sites shall be disposed of in an environmentally sound manner.

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18.07 Knox Box/Locks

- a. The Knox Box must be located and visible while standing outside the main entrance of the building. All specific information is available from the Fire Department. A Knox Box content, including “As Built Prints” shall be available at the first operational inspection. “Knox Locks” may be used to secure access gates when approved by the Fire Marshal.
- b. Knox Box Contents:
 - i. “As Built” fire protection plans.
 - ii. Access keys, Fobs, Cards, etc.
 - iii. Emergency contact information.
 - iv. Elevator & Firemen Keys.
 - v. Liquid run-off information.
 - vi. Hazardous materials information.
 - vii. Firefighter Right-Know.
 - viii. Tunnel Information.
 - ix. Stairwell locations.
 - x. Shelter locations.
 - xi. Company Emergency Action Plans.
- c. The main office of each building shall have the following:
 - i. “As Built” fire protection plans.
 - ii. Access keys, Fobs, Cards, etc.
 - iii. Emergency contact information.
 - iv. Elevator & Firemen Keys.
 - v. Liquid run off information.
 - vi. Hazardous materials information.
 - vii. Firefighter Right-Know.
 - viii. Tunnel Information.
 - ix. Stairwell locations.

18.08 Radio Coverage In Building

- a. In some large buildings, radio communications are inadequate due to the construction materials or design of the building. Therefore, on new buildings or major renovations radio repeaters/amplifiers may be requested.

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18.9 Signage

- a. Location of “Fire Lane-No Parking”, “Fire Lane-No Standing”, “Emergency Access Only”, “Authorized Parking Only”, type signs shall be designated by the Fire Marshal or his designee. They shall be spaced 75 feet apart.
- b. Fire Department road/parking type signage shall be 12” by 18” and meet the adopted International Fire Code and National Fire Protection Association Life Safety Codes.
- c. Curb, asphalt or cement painting may be required in fire lanes or authorized parking areas. (red or yellow paint)
- d. Fire Department Connections shall be marked with signage approved by the Fire Marshal or his designee.
- e. Red signs with white lettering shall be placed on fire suppression access doors. (3/4” minimum letters)
- f. Signage shall be provided to mechanical, electrical, elevator, and HVAC rooms.
- g. Exit routing signs shall be placed throughout the building and approved by the Fire Marshal and Building Official in accordance with applicable codes NFPA 101.

18.10 Stand Pipes

Stand pipe hose connections are required in buildings with extensive corridors or long travel distances. These hose connections are required in single-story buildings as well as in multi-story buildings. Single-story hose connections shall be located towards the center of the building as to accommodate shorter hose lays for fire fighting. Multi-story buildings shall have hose connections located in stairwells to accommodate shorter hose lays in upper levels of buildings. The hose connections shall be 2 ½” diameter with 2 ½” to 1 ½” reducer caps provided. The Fire Marshal shall determine exact location and number of standpipe hose connections.

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18.11 Site Plans

- a. Fire Department site plans must show an overall exterior foot print of the building and grounds that include: roads, parking areas, ingress/egress (building & property), hydrants, water mains, post indicator valves (PIV), Fire Department Connections, gas, electric, hazardous storage, water supplies, etc. Site plans shall show interior layouts that include: ingress/egress, fire suppression equipment, mechanical rooms, electrical rooms, roof access, attic access, hazardous material rooms, Annunciator panels, Knox Box, elevators, standpipes, hose outlets, etc.

18.12. Location Evacuation Plan shall be placed throughout the building to assist with ingress/egress (“You Are Here” type signage).

18.13 Sprinkler Systems:

- a. All buildings are required to have fire suppression systems installed per NFPA 13.

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Chapter 19

PROTECTION AND MITIGATION OF NATURAL FEATURES

- 19.01 The preservation and enhancement of natural features is essential to maintaining Pittsfield Township's character, ecological diversity and stability, economic well being, educational opportunities and quality of life. The purpose of this chapter is to assist petitioners, reviewers, decision-makers, and the general public in understanding how natural features may be identified, evaluated, protected, and mitigated in the development of a site under the review of the Township. "Natural features" are defined to include:
- a. wetlands
 - b. watercourses
 - c. floodplains
 - d. woodlands and heritage trees
 - e. steep slope
 - f. threatened or endangered species habitats
 - g. ground water recharge areas.
- 19.02 Federal, state and local governments have laws, rules and regulations governing natural features, and often require licenses, permits or approvals for development in or affecting these natural features. Licenses, permits or approvals required by and obtained from Pittsfield Township shall not relieve a person of the need to obtain applicable licenses, permits or approvals from other applicable jurisdictions; nor shall the issuance of licenses, permits or approvals from another applicable jurisdiction relieve a person of the need to obtain licenses, permits of approvals required by Pittsfield Township.
- 19.03 When natural features exist on a site propose to be developed, the petitioner will be required to do the following:
- a. Natural Features Determination:

The petitioner of a proposed development project requiring Township review is responsible for determining whether natural features exist on the site and in proximity to the site. This determination may be made by outside professional consultants

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retained by the petitioner. Township staff and Planning Commission will confirm these determinations during the review process. This determination shall be part of the preliminary site plan or preliminary plat (tentative approval) process.

b. Preparation of Required Plans:

The Land Development Standards specify that the information that must be shown on plans submitted for Township review. Prior to submitting a plan, the petitioner should meet with Township staff to review the proposed site layout and consider suggestions for complying with Township requirements. In addition, petitioners may wish to consult with experts regarding the type, extent, quality, management needs of natural features, and the impacts of various design approaches on these features.

c. Plan Submission:

Once the petitioner submits the required plans and supporting information and pays the necessary fees, the proposal will be scheduled for Planning Commission review. When at least one natural feature is determined to exist, a Natural Features Impact Statement must be provided as part of the preliminary site plan or preliminary plat (tentative approval) process.

The statement shall contain the following information:

i. The site inventory map:

This map shall clearly show the locations and types of existing natural features both on-site and those within 100 feet beyond the property lines. The drawing shall delineate edges of woodlands and wetlands, show buffer areas, watercourse stream banks, ordinary pond and high water marks of water features, floodways, floodplains, areas of hydric soils, highly permeable soils, groundwater recharge areas and steep slopes. Heritage trees on the site shall be identified and labeled on the plan or plat drawings and in an accompanying table showing corresponding species and size data for individual trees. The inventory shall contain a written description of the quality, character and health of the natural features.

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- ii. A natural features protection plan:

This plan shall delineate natural features that are to be excluded from development and natural features that are to be retained as part of the development of the site. It may be necessary that the plan also provide information not only protecting natural features during development, but information concerning measures to be taken to sustain the natural features.

19.04 Natural Feature Protection and Mitigation Guidelines

The following sections discuss each of the seven (7) natural features in detail. Each feature is discussed with respect to protection and restoration strategies and guidelines for mitigation, if “as is” preservation of natural features is not required and mitigation is permitted.

- a. Wetland:

As defined by Part 303, Wetlands Protection of the Natural Resources and Environmental Protection Act, 1994 PA 451 as amended (Act 451), stating that a wetland is “land characterized by the presence of water at frequency and duration sufficient to support, and that under normal circumstances does support, wetland vegetation or aquatic life and is commonly referred to a bog, swamp or marsh.” Hydric soils are also used in the determination of wetlands on a site.

Pittsfield Township will follow the rules and guidelines of the Michigan Department of Environmental Quality (MDEQ) for determination of regulated wetlands. Wetlands that do not meet the criteria of determination by the MDEQ, but are determined by the Planning Commission to be supporting or interconnected with other natural features, will be regarded the same as regulated wetlands. In general, the type of wetlands that would be categorized as such would be those areas located in or near woodlands, or providing connections between woodlands.

1. Protection and Restoration Strategies

- a. A permanent buffer strip, vegetated with natural plant species, will be maintained or restored within a setback of 25 feet from a designated edge or boundary of a wetland area.

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- b. Those wetlands of special significance, such as forested wetlands and wetlands along watercourses with native plant associations still intact or regenerating, shall be given considerable weight as to the benefit gained by the Township if protected from development and/or the affects of development. There, the Township may consider additional review and protection when presented with the encroachment into this type of wetland or proximity thereof.

- c. Wetlands may be used as storm water retention ponds. However, when natural wetlands are used in this way they will be protected from damaging modifications and adverse changes in runoff quality and quantity associated with land developments. Direct discharge or untreated storm water into a wetland is prohibited. All runoff from the development will be pre-treated by sedimentation traps and/or basins to remove sedimentation and other pollutants prior to discharge into a wetland. Such treatment facilities will be constructed as early as possible. Site drainage patterns will not be altered in any way that will modify existing water levels. A qualified professional with specific wetland experience must oversee wetland construction, re-construction or modification. Utilizing the wetlands in this manner must be approved by MDEQ and follow the current rules of the Washtenaw Country Drain Commissioner (WCDC).

- d. Disturbed wetlands, such as those wetlands converted to farmland (often identified by the presence of hydric soils), present genuine opportunity to restore some of the capacity and function and diversity of species that once occurred. Restoring, maintaining and enhancing the biological and hydrological value and function of these wetlands is a primary concern. For use of these wetlands as stormwater retention facilities see subsection “c”, of this section.

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- e. Wetlands will be protected during construction by appropriate soil erosion and sediment control measures.
- f. All activity in, or discharge, into regulated wetlands must be approved by MDEQ.

2. Mitigation:

Mitigation is not a substitute for making all prudent attempts to avoid wetland impacts. Where wetland losses are unavoidable, mitigation plans shall be considered only if the following criteria are met:

- a. The mitigation plan provides for substantial replacement of the predominant value of the wetland to be lost.
- b. Mitigation shall be provided on-site where practical and beneficial to the wetland resources.
- c. Only if on-site mitigation is not practical and/or beneficial, then mitigation in the immediate vicinity, within the same watershed of the permitted activity, may be considered. When considered elsewhere the mitigation must meet the same general conditions of predominant value and be beneficial.
- d. Mitigation shall be minimum ratio of 1.5 new acres to 1 lost acre.
- e. All mitigation plans must meet all standards and requirements and be approved by the MDEQ.

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b. Watercourses

Watercourses are to be defined as any natural or artificial stream, river, creek, ditch, channel, canal, waterway, gully or ravine in which water flows in a definite direction or course, either continuously or intermittently, and has a defined bed and banks.

i. Protection and Restoration Strategies

a. Efforts shall be made to preserve watercourses in a natural state and to avoid stormwater and sedimentation that may damage the watercourse. Controlling storm water in watersheds will ensure that watercourses are not damaged and eroded during storm events. Development alternatives shall be explored that will reduce the adverse impacts of both storm water and sedimentation.

b. The following watercourses shall be preserved in any development proposal:

- (1) Watercourses with natural areas around them, such as wetlands or woodlands,
- (2) Watercourses integrated into steep terrain, and
- (3) Watercourses still flowing in natural channels.

When the watercourses listed above are located on a project site, efforts must be made during the design phase to ensure that these watercourses and adjacent natural buffer areas (riparian zones) are protected.

c. A permanent buffer strip, vegetated with natural plant species, shall be maintained and/or restored within a twenty-five (25) feet setback from the designated edge of any watercourse.

d. Building, grading, or other construction activity requiring Township building permits, shall be set back at least one hundred (100) feet from the designated edge of any watercourse. This does not include such activities that, upon Township approval, can be incorporated into the natural, or riparian area. This would include, for example,

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a vegetated (natural or landscaped) detention basin or a designated residential area.

The setback is provided to ensure that on-site runoff into watercourses is filtered naturally and to maintain a corridor for wildlife along stream ways. The setback, however, may vary depending on site-specific characteristics such as soil types, slopes, vegetation and the size and hydrology of the watercourse. Alternative methods of protection must be described and justified in the natural features protection plan.

When watercourses are crossed, effort must be made to ensure that the crossing occurs at the location where there will be the least physical, scenic, and biological impact upon the watercourse and its surrounding natural features. Crossing location shall be kept to the minimum necessary to provide access and must be permitted by the MDEQ.

- e. Urbanized above-ground watercourses are those that no longer have much of a natural character, but which nonetheless have not been placed in a storm drain beneath the ground. Even though these watercourses may or may not have similar characteristics or associated natural features surrounding them as do other watercourses, they are nonetheless connected in some manner to the overall system of watercourses. Effort to control erosion, sedimentation and contamination problems is required. Whenever possible, development projects shall incorporate restoration of these watercourses and any associated natural features in order to provide connections and corridors between features.
- f. Underground (piped) watercourses are directly related to major storm drains, and are often quite easy to find either by following valleys or by observing where flooding occurs after storm events. The potential for flooding is a major concern and development projects must be designed to minimize the potential for flooding. This includes the potential for increased flow to the watercourse, which may increase erosion and result in physical alteration of the watercourse (refer to the current rules of the Washtenaw Country Drain Commissioner). The planning phase of the project shall recognize that these watercourses are

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connected to surface drains. Therefore, storm water and peak flow rates in the watercourse must be addressed.

- g. All watercourses are important to protect. Tolerance for soil erosion on any construction site in or near any watercourse is low. Specialized and effective soil erosion and flood protection techniques must be devised and implemented during and after construction.
- h. Every development project shall evaluate the potential damage to nearby watercourses during the design, construction, and implementation phases to minimize problems associated with surplus storm water, sedimentation, and contamination.

c. Floodplains

Floodplains are defined as areas (adjoining watercourses, ponds, lakes or other water features) which have a one percent (1%) chance of flood occurrence in any given year.

1. Protection and Restoration Strategies

- a. Floodplains are vital open spaces that protect downstream properties from flood damage and control soil erosion and contamination of the watercourse. All buildings must be built above the 100-year floodplain elevation and there shall be no loss of flood capacity due to filling or grading of the site. Proper soil erosion and stormwater control measures shall prevent unfiltered runoff into the floodplain.
- b. There shall be no disturbance to surface and subsurface hydrological regimes. In cases where riparian habitats exist, but are being invaded by non-native species, every reasonable effort shall be taken to restore the habitat as part of a development proposal.
- c. Forested floodplains dominated by exotics, including black alder, willows, and poplars, and floodplain meadows dominated by cattails or purple loosestrife may not be viewed as having an

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important biological value as would an area dominated by native species. However, even though of a lesser biological value on the whole, the vegetative cover is still vital to the continued function and capacity of the floodplain and should be left undisturbed. Whenever possible, these areas shall be left undisturbed. In some cases, restoration of these areas that are dominated by exotics with native plants could be useful in enhancing the function, appearance, and biological value of the floodplain.

d. Woodlands

A woodland is defined as one-quarter acre or more of contiguously wooded land where the largest trees measure at least 6-inches in diameter at breast height (DBH). DBH is defined as the diameter of a tree measured four feet above the existing grade. The acreage is to be measured from the dripline to dripline of trees on the perimeter. Contiguous shall be defined as the majority of the one-quarter acre being under the vegetation dripline. A grove, forming one canopy, of at least 10 trees with a DBH of 10 inches or more is also a woodland. Lands that contained woodlands that have had trees removed up to three years prior to a site plan being submitted to the Township shall also be considered woodlands for mitigation purposes outlined in this Chapter. The Planning Commission may decide to estimate the number and size of trees over six (6) inches in diameter that existed before the removal of the woodland by the use of photographs, air photography or by counting remaining stumps. The Planning Commission may accept a study performed by a certified arborist or landscape architect as the determination of the number and size of the trees on the site at the time of woodland removal. This estimated woodland shall be treated the same as any existing woodland in terms of mitigation. If the species of the former trees can not be determined, it will be assumed that the species are either Oak, Hickory or Maple.

Individual trees of importance can also qualify as natural features. These are considered heritage trees by the Township and include trees that are distinctive because of their age, size, type and historical significance. In general, any tree with a DBH of 24-inch or larger can be categorized as a heritage tree. Below is a list of specific trees that are defined and categorized as heritage trees upon attaining a certain DBH size and therefore of special value to the Township. Trees that would qualify as heritage trees and were removed from the site up to

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three years prior to the submittal of a site plan shall be considered existing heritage trees for mitigation purposes.

Heritage Tree List

Common Name	Scientific name	DBH
Ash	Fraxinum spp. (not cultivars)	18 inches
Basswood	Tilia spp.	18 inches
Beech	Fagus spp.	18 inches
Buckeye (Horse chestnut)	Aesculus spp.	18 inches
Cedar of Lebanon	Cedrus spp.	18 inches
Cherry, Black	Prunus serotina	18 inches
Elm	Ulmus spp. (except pumila)	18 inches
Fir	Abies spp.	18 inches
Fir, Douglas	Pseudotsuga menziesii	18 inches
Kentucky Coffee Tree	Gymnocladus dioicus	18 inches
Maple, Sugar	Acer saoccharinum	18 inches
Pine	Pinus spp.	18 inches
Spruce	Picea spp.	18 inches
Sycamore: London Plane	Platanus spp.	18 inches
Tuliptree	Liriodendron tulipifera	18 inches
Walnut, Black	Juglans nigra	18 inches
Hickory	Carya spp.	16 inches
Honey Locust	Gledistraitsia triacanthos	16 inches
Maple	Acer spp. (unless otherwise noted)	16 inches
Oak	Quercus spp.	16 inches
Arbor Vitae	Thuja occidentalis	12 inches
Bald Cypress	Taxodium distichum	12 inches
Birch	Betula spp.	12 inches
Black Tupelo	Nyssa sylvatica	12 inches
Cherry, Flowering	Prunus spp.	12 inches
Crabapple (cultivar)	Malus spp.	12 inches
Dawn Redwood	etasequoia glyptostroboides	12 inches
Eastern Hemlock	Tsuga Canadensis	12 inches
Ginkgo	Ginkgo biloba	12 inches
Hackberry	Celtis occidentalis	12 inches
Hawthorn	Crataegus spp.	12 inches
Larch/Tamarack	Lrix spp.	12 inches
Pear	Pyrus spp.	12 inches
Persimmon	Diospyros virginiana	12 inches
Populus	Populus (except deltoides, alba)	12 inches

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Sassafras	Sassafras albidum	12 inches
Sweetgum	Liquidambar styraciflua	12 inches
Yellow Wood	Cladrastis Lutea	12 inches
Cedar	Juniperus spp. & upright cultivara	8 inches
Eastern Redbud	Cercis Canadensis	8 inches
Dogwood, Flowering	Cornus florida	8 inches
Hornbeam, Blue Beech	Carpinus spp.	8 inches
Ironwood	Ostrya virginiana	8 inches
Maple, Mountain/Striped	Acer spifatum/pensylvanicum	8 inches
Paw paw	Asimina triloba	8 inches
American Chestnut	Castanea dentata	6 inches
Butternut	Juglans cinerea	6 inches

1. Protection and Restoration Strategies

- a. Woodlands, particularly those that still have a wide diversity of native species, are important to protect from development. Many of these woodland areas have been and are being rapidly invaded by exotic species. Protection as well as recognition of the need for active care to sustain woodlands is to be part of the natural features protection plan.
- b. Individual heritage trees that are to be retained on the site may play an important part in the visual resources of a site or a development. Therefore, these features are to be part of the natural features protection plan and incorporated into the landscape plan as a valuable and integral part of the site.
- c. To the fullest extent possible, effort shall be made to preserve and protect all remaining woodlands and individual heritage trees, particularly those that are or contain native species.
- d. The most effective way to save trees is by planning ahead for their protection. Four steps will help accomplish this:
 - (1) Delineate areas of protected woodlands or individual heritage trees and stay away from them. This includes defining construction limits, erecting and honoring barrier fencing and avoiding

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extraneous effects (most often caused by grading) on the root zones of the trees.

- (2) Design the site to minimize grading/soil disturbance in the vicinity of retained trees. Site design should begin with recognizing the limiting factors on-site, and this includes the location of woodlands and heritage trees.
 - (3) Provide for adequate and effective storm water management to prevent a change in moisture levels and soil depth in woodlands and around heritage trees.
 - (4) Design landscape installations to complement and honor retained trees. This includes irrigation, complementary species and harmonious appearance.
- e. The Critical Root Zone (CRZ) is defined as the circular area surrounding a tree that is considered to contain tree roots within 18 inches of the ground surface. Tree roots are very vulnerable to disturbance. Trees generally do not have taproots, but have a flat mat of roots extending within several inches to several feet from the surface of the ground and out a distance at least the diameter of the vegetative dripline of the tree. The most important roots are the fibrous ones, on the outermost ends of the root branches. In general, the radius of the CRZ is, in feet, the same numerical value as the tree's DBH in inches. For example, the CRZ of a 12-inch DBH tree has a radius of 12 feet. Grading changes shall neither increase nor decrease moisture conditions in the CRZ.
- f. All construction activity, including grading changes in the area that affect soil moisture and drainage patterns, shall be excluded from the CRZ of heritage trees and the CRZ for trees located along the woodland perimeter. Proposed exceptions must be described and justified in the natural features protection plan. The applicant must explain why the exception is a necessity for the development of the site.
- g. A number of construction techniques help save trees by protecting the CRZ in the development disturbance area

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and at the boundaries of woodlands. These include protective and barrier fencing at the CRZ to prevent compacting of soils by heavy equipment and vehicular traffic, placing gravity utilities under pavement and avoiding placement under trees; and tunneling utilities under trees and the CRZ instead of trenching. The use of fill within this zone is especially discouraged. If fill is proposed it shall be fully described and justified in the natural features protection plan.

- h. Where development is near or within woodlands and the woodlands are not completely removed, those area excluded from development shall be clearly marked and/or fenced during the process. Grading, roads, walkways, utility lines, and all other aspects of soil disturbance shall be minimized to the fullest extent sound design and public safety will allow.
- i. Clearing for buildings shall be strictly minimized to the least area needed to work around buildings particularly if woodlands or heritage trees are present. Excavated spoils from basements and other needed grading shall not be located in the woodland area or around heritage trees. Very careful handling of trees near the building envelope shall be undertaken to the fullest extent possible.
- j. Cultivated woodlands are directly derived from people's planting activities to enhance landscapes, including in and around buildings. Woodlands and individual trees resulting from these activities often have considerable importance to the community. Those cultivated woodlands that, either by their size or by their connections to other natural features, have become important contributors to local ecosystems or become valuable scenic resources shall be preserved.
- k. Generally speaking, an occasional large native tree or heritage tree is found among exotic trees and shrubs. This is often found in agricultural areas where single or small groups of trees have been retained in the fields, eventually forming islands of woodlands. These fields are targeted for development, the presence of the woodlands should be taken into account and incorporated as part of the development. In some cases and where appropriate, such

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woodlands provide an opportunity for restoration to native species.

1. Any protected woodlands or heritage trees that are determined by a certified arborist to be dead, dying or severely damaged due to on-site construction activity within 3 years after issuance of a certificate of occupancy or final permit approval for development authorized by an approved site plan or plat shall be replaced by the applicant. The applicant or property owner shall provide a combination of trees native to Michigan equal in the aggregate to 100 percent of the DBH of the tree that is lost. In the case of heritage trees, the natural features protection plan shall also include a description of a proposed amount and type of security to be posted. The security shall be in the form of cash, surety bond or letter of credit, and the Planning Commission will approve the amount. The applicant shall provide the security to the Township prior to issuance of a certificate of occupancy by the Zoning Administrator.
 - m. For each heritage tree that is removed without the approval of the Pittsfield Charter Township Planning Commission, the applicant or the property owner shall provide a replacement tree or a combination of trees of a species native to Michigan equal to a minimum of 200 percent of the original DBH. Replacement trees shall be installed by the applicant prior to issuance of a certificate of occupancy by the Zoning Administrator.
2. Mitigation
 - a. In general, woodlands should not be removed from new developments. When woodlands are to be removed as agreed to by the Planning Commission, the removal shall be mitigated by the installation of replacement trees for woodland trees 6 inches or larger in diameter or by the creation of an area planted with comparable trees. The creation of this area must be agreed to by the Planning Commission. Heritage trees shall not be removed for development, except under the most extreme circumstances. Site design shall consider any heritage tree on a site an important design element. Removal shall be explained in the natural features plan and shall occur rarely

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and considered only after alternatives are studied and found not to be feasible.

- b. Replacement of woodland trees and heritage trees shall include the most appropriate, non-invasive species as part of the project design. Replacement requirements include using species native to Michigan and include using a diversity of species and sizes (but not below the minimum sizes listed below). For woodlands, replacement trees shall be provided to equal a minimum of 50 percent of the original DBH removed. For each heritage tree that is removed (including those located within woodlands to be removed), replacement trees shall be provided to equal a minimum of 100 percent of the original DBH removed.
- c. Replacement trees shall be non-sterile varieties. The minimum size of a deciduous replacement tree shall be 2.5-inch caliper. The minimum size of an evergreen replacement tree shall be 6 feet in height. If more than 10 trees are required, a mixture of 3 or more species must be used. Replacement trees required for mitigation purposes should ordinarily not be counted toward trees required for landscape purposes. Replacement trees must be species native to Washtenaw Country. The Township may accept smaller trees if they are part of a woodland restoration plan.
- d. Where woodlands must be partly destroyed by development, the balance of the remaining woodland shall be actively managed to sustain the woodland in its current capacity. This includes the vitally important task of controlling invasive exotic species.
- e. Care shall be taken during the development process to conserve topsoil that is disturbed on site, and to install plant materials into optimum conditions. Compacted soils placed by heavy machines are not suitable for successful establishment of many types of plants. Retained topsoil may be used in new planting zones to great benefit.

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- f. Replacement trees need a chance to become as great as the trees they replace. Genuine concern for soils and cultural needs of new plants shall be a part of the design process. Many species of trees will never thrive in compacted fill soils, or in conditions not suitable for their optimum growth. Recognition and observance of these realities is critical to successful replacement.
 - g. All required replacement trees shall be planted on the property on which the trees they are to replace were removed, unless sufficient area is not available on the property for all the required trees. If sufficient area is not available, the replacement trees that cannot be planted on-site may be planted off-site within Pittsfield Township on privately or publicly owned property, provided the location and planting plan are approved by the Township Planning Commission. Written approval of the owner of the property on which the trees are to be planted shall be submitted to the Township before the Planning Commission may approve the location and the planting plan. After Planning Commission approval of the site plan, the applicant shall submit evidence to the Township of a recorded easement for the proposed off-site planting on privately owned property before planting may begin. The easement may not be modified in any manner unless prior approval is obtained from the Planning Commission.
 - h. Replacement trees using caliper measurements must be provided at 140% of the DBH required.
- e. Steep Slopes:
- Steep slopes in Pittsfield Township are defined as a naturally occurring landform with a twelve (12) percent or greater slope, which shall be considered a vertical change in elevation of six (6) feet over a horizontal distance of 50 feet.
- 1. Protection and Restoration Strategies
 - a. Areas of steep slopes (more than 12%) shall be protected to reduce erosion potential, maintain slope and stability, control amounts and velocities of surface water runoff, and protect and aesthetic

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resource. In general, slopes greater than 25% should be excluded from development. Slopes shall be considered in terms of soil types as well as steepness. Special care must be taken where highly erodible soils are present.

- b. Development that is permitted on steep slopes shall maintain or enhance the natural contours, vegetation, and drainage patterns to assure the stability of the slope. The existing landform shall be a major factor in the land-use and site-planning processes. The primary objective shall be preservation of natural contours rather than alteration by mass grading.
 - c. Slopes of 40 percent or greater shall be protected as key scenic assets. Where these slopes are visible from locations people frequent off the site, development can have dramatic impact upon the visual character. Such impacts (from buildings above the canopy of trees, for example) shall be carefully considered.
 - d. A primary goal in protecting steep slopes is to prevent erosion and subsequent damage to natural features on and off the site. The use of retaining walls can reduce the amount of grading necessary, but are not encouraged. Underground utilities shall not be located in steep slopes and certainly shall not run lengthwise along them. Drainage shall be directed to inlet structures and not be permitted to flow down slopes during and after construction.
- f. Endangered Species Habitats
- i. Protection and Restoration Strategies
 - a. The Michigan Department of Natural Resources (MDNR) regulates the protection of endangered species and their habitats, in cooperation with the U. S. fish and Wildlife Service. The Township will work in coordination with state and federal regulating agencies to identify the best protection approach, based on the specific characteristics of

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the species involved. These species and their habitats shall be excluded from development and protected from the impact of development.

- b. For those plant species which are not protected, but are highly desirable and within the road and sidewalk easements of newly approved developments, the petitioner might consider a cooperative partnership with a volunteer organization and the guidance of the Township whereby transplantation of these species could occur in an orderly fashion.

- g. **Groundwater Recharge**

The Pittsfield Charter Township Comprehensive Plan has mapped groundwater recharge areas. Using data from the Washtenaw Country Soil Survey and from well logs, it can be determined where water flows quickly through soil, where there is a high degree of highly permeable sand and gravel particles in the ground, and where the water table is high. In these areas, the risk of groundwater contamination is high. Areas not mapped, but that may also serve as recharge areas, are those with highly permeable geology (sand and/or gravel) or soils, but that do not exhibit a high water table. These higher elevation areas also provide recharge water to groundwater. The Township may ask for investigation and mapping of areas with highly permeable soils and geology.

1. **Protection and Restoration Strategies**

- a. Development shall be located away from groundwater recharge areas as mapped by the Huron River Watershed Council or otherwise identified. Where development occurs, impervious surfaces shall be limited to the greatest extent possible. Land grading shall be controlled to retain the water holding characteristics of the land. Vegetation essential to the water holding characteristics shall be preserved, or where necessary, enhanced as part of a development program. The balance and integrity of the hydrological system shall be maintained in a proposed development.

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- b. Recharge areas shall be protected from pollution by regulating the uses permitted within these areas and by controlling the quality of surface water runoff from tributary areas. Areas classified in the county soil surveys as having soils with water tables at or near the surface shall also be protected from pollutant entry because of the ease with which pollutants on such soils can enter the underground water system.

- c. Proper Storage of hazardous substances will be paramount to protecting groundwater and the environment. Developments storing or handling hazardous substances shall abide by the following groundwater protection standards:
 - 1. Hazardous substance storage areas must be designed to prevent spills and discharges to the air, surface of the ground, groundwater, lakes, streams, rivers or wetlands.
 - 2. Secondary containment for above ground areas where hazardous substances are stored or used shall be provided. Secondary containment shall be sufficient to store the substance for maximum anticipated time necessary for the recovery of any released substance.
 - 3. General-purpose floor drains shall be allowed only if they are authorized to be connected to a public sewer system, an onsite holding tank, or a system authorized through a state groundwater discharge permit.
 - 4. State and federal agency requirements for storage, spill prevention, records keeping, emergency response, transport and disposal of hazardous substances shall be met. No discharge shall be allowed without required permits and approvals.

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Chapter 20

ACCESS MANAGEMENT STANDARDS

- 20.01 Numerous published studies and reports document the relationship between systems and traffic operations and safety. Those reports and experiences of other communities demonstrate standards on the number and placement of access points (driveways and side street intersections) that can preserve the capacity of the roadway and reduce the potential for crashes. The standards herein are based on recommendations published by various national and Michigan agencies; in addition, specific recommendations for the U. S. 12 corridor are provided in the U. S. 12 Corridor section of the Pittsfield Township Comprehensive Plan.
- 20.02 The standards herein apply in addition to, and simultaneously with, the other applicable Township standards and regulations.
- 20.03 The number of access points shall be the fewest needed to allow motorist reasonable access to the site.
- 20.04 Comply with any specific access recommendations in the U. S. 12 sub-area of the Comprehensive Plan.
- 20.05 Access spacing from intersections and other driveways shall meet the standards of the Pittsfield Zoning Ordinance and the guidelines or published regulations of the applicable road agency (Michigan Department of Transportation (MDOT) and/or Washtenaw County Road Commission (WCRC).
- 20.06 Provide shared access with adjacent existing and future uses. Provide necessary written shared access and maintenance agreements to be recorded with the County.
- 20.07 A traffic impact study shall be required for any land use that would be expected to generate 100 or more vehicle trips during any peak hour, or 1000 or more vehicle trips daily, or where modifications from the generally applicable access spacing standards are requested. The traffic impact study shall be prepared by a firm or individual that is a member of the Institute of Transportation Engineers with demonstrated experience in production of such studies. The methodology and analysis of the study shall be in accordance with accepted principles as described in the

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handbook “Evaluating Traffic Impact Studies, a Recommended practice of Michigan,” developed by MDOT and WCRC. The Township may require calculations and or micro-scale modeling to illustrate future operations at the access points and nearby intersections and/or to evaluate various access alternatives.

- 20.08 Review coordination. The applicant shall provide correspondence that the proposal has been submitted to MDOT and/or WCRC for their information. Any correspondence from MDOT and WCRC shall be considered during the site plan review process. The Township may request attendance at coordination meetings with representatives of the applicable road agency. An access permit shall not be requested from the road agency until a land division or site plan is approved by the Township. The approval of a land division or site plan does not negate the responsibility of an applicant to subsequently secure access permits from the road agency.

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