

**FRENCHTOWN CHARTER TOWNSHIP
ENGINEERING DESIGN STANDARDS ORDINANCE
Ord. No. 210; Date of Adoption: June 24, 2008**

THE TOWNSHIP BOARD OF THE TOWNSHIP OF FRENCHTOWN HEREBY ORDAINS:

ENGINEERING DESIGN STANDARDS

ARTICLE I. INTENT, PURPOSE, SHORT TITLE AND INTERPRETATION

Sec. 1.1 This Ordinance shall be known and cited as the Frenchtown Charter Township Engineering Design Standards Ordinance.

Sec. 1.2 This Ordinance shall apply to and is intended to provide detailed specifications for the design and construction of subdivisions, condominiums, manufactured home parks, commercial and industrial site plans and other projects and improvements in the Township.

Sec. 1.3 The provisions of this Ordinance shall be held to be the minimum requirements adopted for the promotion and preservation of the public health, safety and general welfare of the Township. These regulations are not intended to repeal, abrogate, annul, conflict or in any manner interfere with existing regulations or laws except that these regulations shall prevail in cases where they impose a greater restriction than is provided by other regulations or law. These regulations are subject to periodic review and revision as deemed necessary to remain current with standards set forth by the various review agencies.

ARTICLE II. PLAN FORMAT

Sec. 2.1 General Requirements

- (1) Plans submitted shall be on 24 inch by 36 inch white prints having blue or black lines, and shall be neatly and accurately prepared. The plan sheets shall have a maximum horizontal scale of 1" = 50' for developments which are 3 acres or greater in size, and a maximum scale of 1" = 30' for developments less than 3 acres in size. The maximum vertical scale for profile views is to be 1" = 5'. Fifteen (15) copies of the site plan are to be submitted for review to the Township Building Department. For construction plan reviews, three (3) sets of plans are to be submitted to the Township along with a detailed estimate of cost for the proposed improvements. Review and approval of the plans shall be required by the Township Engineer, Township Planning Consultant, Township Fire Department, Frenchtown Water Department, City of Monroe Engineering Department as oversight agency for the Wastewater system, Monroe County Road Commission, Monroe County Drain Commissioner, and Monroe County Central Dispatch, as appropriate. The site plans shall be submitted to the local agencies by the applicant or the applicant's representative. In addition, depending on the type and location of the proposed development, transmittal of plans may be required to other governmental authorities who

may have jurisdiction, such as, but not limited to the Environmental Health Division of the Monroe County Health Department, the Michigan Department of Environmental Quality and the Michigan Department of Transportation.

IT IS ESSENTIAL THAT THE APPLICANT PROVIDE A COMPLETE SUBMITTAL PACKAGE INCLUDING ALL REQUIRED APPLICATION FEES, OTHERWISE, REVIEWS WILL BE DELAYED.

- (2) For projects or subdivisions having more than one sheet of plans, a general plan having a scale of 1" = 100' shall be provided, showing the overall project or subdivision and indicating the location of all improvements shown in the detailed plans. Superimposed on this general plan shall be two foot (2') contours of the area, including the area at least 100 feet outside of the proposed development. Street names, lot lines and lot numbers shall be shown on all plans.
- (3) For subdivisions, condominium, and other major projects, separate plan and profile sheets are required for:
 - (a) storm sewers and roadway design
 - (b) public water system design
 - (c) sanitary sewer system design
 - (d) soil erosion and sedimentation control plan

This provision may be modified by the Township Engineer depending on the size and complexity of the development. All utility crossings are to be shown in plan and profile on each plan sheet.

- (4) For site plans, separate sheets are required (as a minimum) for:
 - (a) general plan of site and geometrics
 - (b) underground utility improvements
 - (c) site grading and storm water detention
 - (d) landscape and lighting plans
 - (e) soil erosion and sedimentation control plan
- (5) All sewer and water mains shall be shown in plan and profile. Profiles of sewers and water mains shall indicate the size, invert and slope of the sewer and shall indicate the existing ground along the route of the sewer and water main and the proposed or existing top of the curb or pavement grade. The profile shall also show the location of compacted sand backfill or control density fill, as required, when the sewer and/or water line is within the one foot horizontal to one foot vertical (1:1) zone of influence from the edge of pavement or back of curb, as appropriate, subject to additional requirements by the local agencies.
- (6) Elevations shall be on U.S.G.S. datum. A minimum of two (2) permanent bench marks for the work shall be indicated on the plans. These shall be located on the site such that construction activities shall not destroy the designated site bench marks.
- (7) Proposed grades for all structures and castings shall be indicated on the plan and/or

profile sheets.

- (8) A copy of the computed plat or site legal description shall be submitted. The legal description shall be included on the site plan and/or construction drawings.
- (9) All plans submitted shall bear the signature and seal of the professional engineer or architect responsible for the design, who shall be licensed in the State of Michigan. All roadway, storm sewer, public water main and sanitary sewer plans shall be sealed by a professional engineer licensed in the State of Michigan.
- (10) All record drawings of public water mains, sanitary sewers, roadways and storm sewers shall be prepared by the Township Engineer from the field inspection records of the Township Engineer. The record drawings prepared by the Township Engineer shall also include portions of P.U.D. and Condominium projects that are noted to be private, but are required to be designed and installed to public agency standards as required by Township Ordinance, such as roadways and storm sewer systems. The project developer's design engineer shall submit to the Township Engineer digital plan files of the plans approved by all agencies in MicroStation and/or AutoCAD format prior to the preconstruction meeting. The design consultant shall contact the Township Engineer prior to submitting the digital files to confirm the specific format version required for the digital files. The Township Engineer will prepare the record drawings of the noted public improvements and will distribute sets of record drawings to the appropriate agencies. The preparation of record drawings shall include the securing and documenting of public utility improvements through use of GPS State Plane Coordinates.
- (11) Record Drawings will be distributed by the Township Engineer to the public agencies having roads or utilities (water, storm and sanitary sewers) within the project. The Township Engineer will also distribute digital files of the record drawings to the Township Building Department for their records and GIS applications.
- (12) Complete plans shall be submitted prior to review and approval of any portion of a development, unless the Township Engineer determines that a phased review would be appropriate, in which case each phase must be capable of standing alone as an independent development (coupled with other phases previously constructed).
- (13) All utility easements shall be shown on the plans. All utility easements shall be a minimum of ten (10) feet in width unless a wider easement is specified. A five (5) foot exclusive water main easement is required adjacent to the public right-of-way for newly proposed subdivision streets. Water main easements shall be a minimum of fifteen (15) feet in width when not abutting or included within a public road right-of-way. Sanitary sewer easements shall be a minimum of twenty (20) feet in width when not abutting or included within a public road right-of-way.
- (14) All utilities located within or along the public right-of-way shall be in the corridors currently established and on file with the Township and/or the local reviewing agencies.
- (15) The legal descriptions, documentation as to ownership and drawing plan of any easement being dedicated to the Township shall be provided to the Township Attorney who will prepare the easement on the required Township easement forms. The Township Attorney

shall schedule to have the granting parties sign, notarize and obtain Township approval of the easement documents. Upon having all required signatures placed on the easement agreement forms and Township approval, the Township Attorney shall have the easements recorded, placed on file and copies distributed to all appropriate parties. Unless approved otherwise by the Township Attorney, the granting and recording of all easement agreements must be completed before scheduling a preconstruction meeting. All Attorney, recording and legal fees of the Township, relating to the project, shall be paid by the developer. These fees shall be a part of the escrow account established by the Building Department as stipulated in Article XI, item 2 of these standards.

ARTICLE III. SANITARY SEWERS

Sec. 3.1 General Requirements

- (1) Public Sanitary Sewer Accessible. Where a public sanitary sewer is reasonably accessible, each lot within the developed area shall be provided a connection thereto. In the case of condominium developments, each condominium living unit shall be provided a separate sanitary sewer service line to the main line sewer. All connections shall be subject to approval of the Township Engineer.
- (2) Public Sanitary Sewer Inaccessible. In the event a public sanitary sewer is not accessible to the development, the developer shall pay the cost of extending the sanitary sewer lines from the area to be developed to the nearest public sanitary sewer trunk line. In addition, the developer shall install the public sanitary sewer facilities within the developed area in accordance with the current Township standards and specifications.
- (3) Sanitary sewers shall be extended across the full width of the roadway frontage of the property under consideration for development.
- (4) Public sanitary sewers shall be dedicated to the Township. Where public sanitary sewers are located outside public road right of way, a 20 foot wide easement shall be dedicated to the Township and shall be generally centered over the sanitary sewer. The easement shall be provided and dedicated in accordance with Article II, Plan Format, Section 2.1 General Requirements, and Item 15 of these standards.

Sec. 3.2 Design Standards.

- (1) The Great Lakes-Upper Mississippi River Board of State Public Health and Environmental Managers Recommended Standards for Wastewater Facilities, Current Edition, (aka ‘Ten State Standards’) are hereby incorporated into these standards by reference.
- (2) City of Monroe Standard Details and Specifications heretofore adopted, are incorporated as part of these standards and shall be included with the plans, as appropriate.
- (3) Prior to starting any sanitary sewer design the applicant may make use of maps and information available at the Township and City offices. It shall be the responsibility of

the applicant to verify utility locations provided by the local agencies.

- (4) Allowable types of sewer pipe and joints
- (a) **Reinforced Concrete Pipe:** Reinforced concrete sewer pipe shall conform to ASTM C-76; Elliptical reinforced concrete pipe shall conform to ASTM C-507. Unless otherwise specified, all concrete pipe joints shall be rubber “O-Ring” gasket joint conforming to the requirements of ASTM C-443. The project design engineer shall establish and note on the plans the class of concrete pipe. The class of concrete pipe shall be adequate to withstand trench width, depth of pipe, trench loads and trench bedding and backfill.
 - (b) **Polyvinyl Chloride (PVC) Sewer Pipe:** All 4" thru 15" PVC gravity sewer pipe shall conform to the requirements of ASTM D-3034, Type PSM, SDR Max 35, PVC sewer pipe and fittings. All 18" thru 27" PVC gravity sewer pipe shall conform to the requirements of ASTM F-679. The term PSM is not an abbreviation, but rather an arbitrary designation for products having certain dimensions. All PVC pipe shall provide an elastomeric gasket joint to prevent exfiltration or infiltration and shall conform to the requirements of ASTM D-3212. The critical sealing dimensions of the bell, spigot, and gasket shall be in accordance with the manufacturer's standard dimensions and tolerances. The elastomeric compound shall comply in all respects with the physical requirements specified in ASTM D-1869, C-361 and C-443. The pipe bell shall consist of an integral wall section with a solid cross section elastomeric gasket factory assembled, securely locked in place to prevent displacement. The gasket shall be the only element depended upon to make the joint flexible and watertight.
 - (c) **Vitrified Clay pipe** may be allowed under certain industrial conditions, subject to the approval of Frenchtown Charter Township and the City of Monroe, for the particular application. Vitrified clay sewer pipe when approved for installation shall conform to the standards of ASTM C-700 extra strength pipe. Compression joints for vitrified clay pipe and fittings shall conform to ASTM C-425.
 - (d) **Asbestos-Cement and Cast Iron pipe materials** are not allowed.
 - (e) **Acrylonitrile-Butadiene-Styrene Sewer Pipe:** 8" thru 15" (A.B.S. Truss Sewer Pipe). When A.B.S. Truss Pipe is specified for installation, the pipe shall conform to the specifications of ASTM D-2680.
 - (f) **Force Main Pipe:** Sanitary Sewer Force main pipe shall be 350psi cement lined ductile iron pipe. It is also acceptable to use AWWA C-900 CL 150 PVC water main pipe for sanitary sewer force main pipe. Wherever sanitary sewer force mains deflect under other utility lines, stream crossings or be installed in casing pipes, the force main pipe material shall be ductile iron restrained joint pipe. The force main shall be installed equal to water main pipe and be furnished with thrust blocks as required for water mains. Force mains shall be tested at 150psi for two hours and must meet the pressure and leakage requirements of AWWA

C-600.

- (5) The following table of minimum slopes for sanitary sewers shall be adhered to in order to maintain a minimum velocity of two (2) feet per second.

| <u>Size</u> | <u>Minimum Slope</u> |
|-------------|----------------------|
| 8" | 0.40% |
| 10" | 0.28% |
| 12" | 0.22% |
| 15" | 0.15% |
| 18" | 0.12% |
| 21" | 0.10% |
| 24" | 0.08% |

NOTE: The minimum allowable size of a public sanitary sewer main is 8" diameter. Over sizing of the sanitary sewer lines to allow for flatter slopes without justification of the size based upon flow demand will not be approved.

- (6) Provisions for high velocity and steep slope protection shall be in accordance with the 'Ten State Standards'.
- (7) The pipe bedding and backfill shall conform to the current 'Standard Details and Specifications' published by the City of Monroe.
- (8) The sewer profile shall indicate the length of run between each manhole, the size and slope of sewer between each manhole and the appropriate trench detail. Casting elevations for all manholes and/or cleanouts shall be indicated on the plans. For any sanitary sewer lead proposed on a specific plan and profile sheet, the lot or living unit number the lead will service, the lead station based upon the closest downstream manhole being 0+00, main line sewer invert at the tee, tee invert at the main, length of lead, riser inverts and lengths, slope of lead and the end of lead invert must be noted on the sheet preferably in tabular form.
- (9) All buildings shall require suspended plumbing entering a minimum of 12" above the basement floor. No gravity service will be allowed to basements and shall be so noted on the plans. Ejector type pumps for basement service will be permitted, subject to installation of appropriate backflow prevention devices.
- (10) Sanitary sewers shall be installed with a minimum cover of four (4) feet. Consideration may be given, under special circumstances, for completion of short runs of sewer where the sanitary sewer is shallower than four (4) feet, but greater than three (3) feet, subject to special provisions for the sewer backfill.
- (11) Separation distances from sanitary sewers to public water mains shall conform with the 'Ten State Standards'.

- (12) Sewer connections for lateral sewers must be made along the sewer lines and not at manholes. Taps at manholes will not be permitted, unless approved by the City of Monroe and Frenchtown Township, demonstrating that such a tap is required.
- (13) All building leads and risers shall be minimum six (6) inch diameter. A minimum slope of 1.00% is required on six (6) inch diameter sanitary leads. Sewer pipe wye or tee openings shall contain factory installed premium joint material of the type identical to that of the building lead pipe used. Service leads shall be installed with a minimum cover of forty-two (42") inches.
- (14) Cleanouts along sanitary sewer leads are required at a maximum spacing of 100 feet and at bends, in accordance with the Frenchtown Township Plumbing Code.
- (15) In new subdivisions sanitary service leads are to be extended a minimum of ten (10) feet beyond the right-of-way, or a minimum of five (5') feet beyond the outside limit of any utility easement.
- (16) All new manholes shall have flexible, water-tight seals where pipes pass through walls. Manholes shall be of precast sections with modified grooved tongue and rubber gasket type joints. Precast manhole cone sections shall be City of Monroe eccentric cone type.
- (17) Wherever existing manholes are to be tapped for sewer extensions the manholes shall be field cored with installation of a 'Kor-N-Seal' boot connection. Whenever house lead connections are made to a sewer main, a saddle connection is to be provided in accordance with the requirements of the City of Monroe.
- (18) Manholes shall be placed within the road right-of-way. In general, sanitary sewers will not be approved in a rear lot easement.
- (19) Manholes shall be placed at each change in grade, alignment, pipe size and at the end of each line with the maximum manhole spacing not exceeding 400 feet.
- (20) All connections to manholes on the Frenchtown Sanitary Sewer System, or extensions thereto, which result in a difference in invert elevation of 24" or greater, will require a drop connection. Only outside drop connections will be approved, unless ground conditions result in an interior drop being approved by both Frenchtown Township and City of Monroe.
- (21) The following notes pertaining to the sanitary sewers shall appear on the plans, together with notes as currently required by Frenchtown Township and the City of Monroe for construction approval:
 - (a) At all connections to the sanitary sewer interceptor system, there shall be inserted the following note: "Obtain City of Monroe Sanitary Sewer Service Connection Permit prior to starting construction." A copy of the permit application can be obtained from the City of Monroe Engineering Office.

- (b) Downspouts, weep tiles, footing drains, or any conduit that carries storm or groundwater shall not be allowed to discharge into the sanitary sewer.
 - (c) Building leads shall be furnished with removable air-tight and water-tight caps and shall be marked with a 2" x 4" stake located between the end of the lead and within 1 foot of the ground surface. The stake shall be painted brown in accordance with the Miss Dig Michigan Utility Color Code. As constructed lead locations shall be noted on the Record Drawings.
- (22) A deflection test shall be required for all flexible sewer pipe 8" in diameter or larger and shall be performed not less than thirty (30) days after placement of all sewer trench backfill in accordance with standards and requirements of the City of Monroe.
- (23) Testing of sanitary sewers and existing stubs by infiltration/exfiltration or air testing is required. Infiltration for any section of sewers between manholes for PVC and ABS pipe shall not exceed 50 gallons per inch of pipe diameter per mile per 24 hours. For manholes and the other allowable pipe materials, infiltration shall not exceed 100 gallons per inch diameter per mile per 24 hours. Alternate manhole vacuum testing shall meet the requirement of no loss during a one minute test at 5 inches of Hg. Provisions and methods for testing of the ground water elevation and situations where air testing is not permitted, shall be in accordance with City of Monroe Sanitary Sewer Details and requirements.
- (24) All sanitary sewers shall be television inspected with test results approved by the Township Engineer and the City of Monroe prior to placing the sewer into service. All courses not true to line or grade shall be re-laid. Television inspection for all sanitary sewers eight (8) inches in diameter to and including 30 inches in diameter shall be provided on videotape (Digital DVD format) by the contractor. The television inspection requirement does not apply to service leads.
- (25) A "Basis of Design" for the sanitary sewer shall accompany the plans when submitted for review. It must demonstrate that the proposed sanitary sewer has the capacity to carry the peak design flow. A Michigan Department of Environmental Quality (MDEQ) application (Form PR 4600) must accompany the plans when submitting for a construction permit.
- (26) In special instances where a sewage lift (pump) station is required, and allowed by the City of Monroe and Frenchtown Township, the design shall conform with the current standards and requirements of the City of Monroe. The City has available information regarding pump station requirements for use by the developer's engineer in preparing the plans. The MDEQ Sewage Pumping Stations design check list shall be completed and accompany the plans when submitted for construction permit. Prior to installation of any pump station, shop drawings of all manufacturer materials being installed shall be submitted to the Frenchtown Township Engineer and City of Monroe Waste Water Department for review and approval.
- (27) Approved plans, signed by a professional engineer licensed in the State of Michigan,

along with appropriate calculations, check lists, and application forms shall be forwarded to the Michigan Department of Environmental Quality by the City of Monroe for the construction permit.

ARTICLE IV. STORM SEWERS

Sec. 4.1 General Requirements

- (1) **Public Storm Sewer Accessible.** Where a public storm sewer is reasonably accessible, each lot within the developed area shall be provided a connection thereto. In the case of condominium developments, each condominium living unit shall be provided a separate storm sewer service line to the main line sewer. All connections shall be subject to the approval of the Township Engineer.
- (2) **Public Storm Sewer Inaccessible.** In the event a public storm sewer is not accessible to the development, the developer shall pay the cost of extending the storm sewer lines from the area to be developed to the nearest public storm drainage outlet with capacity to accept said drainage, be it either an enclosed storm sewer or open water course.

Sec. 4.2 Design Standards

- (1) Storm drainage systems shall be designed for a ten (10) year storm event, flowing full. The Rational Method for determining storm water runoff and pipe capacity shall be used. Rainfall intensities to be utilized shall be in accordance with current Monroe County agency standards.

The consulting engineer shall use judgment in arriving at proper times of concentration and impervious factors. The consulting engineer shall submit a drainage area map outlining the various areas, including offsite upstream areas, which drain to the points of inlet used for design, together with the storm sewer design computations.

Sufficient capacity shall be provided in the storm sewer system to take existing runoff from upstream acreage with provision of extra pipe capacity or an overland flow route to accommodate storm events exceeding the design capacity of the sewer system.

- (2) The 25 year hydraulic grade line shall be below the casting elevations, in accordance with requirements of the Monroe County Drain Commissioner. The hydraulic gradient **shall be shown in profile.**
- (3) Maximum manhole spacing for storm sewers shall be as follows:

| <u>Diameter of Sewer</u> | <u>Maximum Manhole Spacing</u> |
|--------------------------|--------------------------------|
| 12"-48" | 300' |
| 54" and larger | 400' |

NOTE: The vertical interior dimension of an elliptical pipe shall be used as the criteria for manhole spacing. Catch basins located in curb lines shall typically not be used in lieu of manholes on the main line sewer.

- (4) The following information shall be indicated on the storm sewer profile:
 - (a) Length of run between manholes
 - (b) Size and slope of sewer between manholes
 - (c) Trench detail for the sewer line
 - (d) Top elevation of all manholes
 - (e) Pipe material
 - (f) Inverts and compass direction of the pipe invert connection into and out of manholes
 - (g) Hydraulic Gradient Line
 - (h) Storm sewer service lead information to be provided on the plan and profile include: applicable unit/lot number the lead services, station of the lead, main line invert at the wye, wye invert, length of lead, lead slope, inverts of risers, length of risers, end of lead invert.
- (5) Plan details shall show the type of bedding and backfill for the sewer pipe as appropriate and shall conform with Monroe County Drain Commissioner requirements.
- (6) Where possible, provide a minimum of three (3) feet of cover from the top of curb (or road centerline) to the top of any storm sewer.
- (7) Catch basins shall be located as follows, subject only to deviations granted by the Monroe County Road Commission or the Monroe County Drain Commissioner, based upon jurisdictional authority, and substantiated by justification that an alternate location is necessary.
 - (a) At the radius return of street intersections. The maximum distance along the street between a high point and a corner catch basin, when drainage is required to go around the corner, is to be in accordance with current requirements of the Monroe County Road Commission.
 - (b) At all low points in streets.
 - (c) At intermediate points along the street such that the maximum spacing is in accordance with current requirements of the Monroe County Road Commission.
- (8) Spread and depth calculations may be required to verify adequacy of catch basin inlet grates and determine spacing of structures.
- (9) As a minimum, underdrains shall be stubbed out of each catch basin a distance of 10 feet in each direction along the roadway, as per the Monroe County Road Commission typical section for subdivisions. The underdrain connection will be made to the back of the catch basin or to the junction manhole behind the curb.

- (10) Storm Sewer and underdrain connections to catch basins, inlets and manholes within the influence of the roadway shall be made with a flexible connection 'Kor-N-Seal' boot or approved equal. All work shall be done in accordance with MCDC requirements.
- (11) Field catch basins shall be provided at all low points in surface drainage easements. Locate field catch basins such that adequate coverage is provided in accordance with the Monroe County Drain Commissioner's requirements. Locate field catch basins in rear lot, surface drainage easements where the swale changes direction by more than 45 degrees.
- (12) Rear yard swales shall be provided to pick up storm water drainage along the rear property lines of a proposed development. The minimum rear yard swale grade shall be one percent (1.0%). Similarly, side lot lines shall be graded to direct drainage to the rear lot and front rights of way. The minimum side lot grade shall be one percent (1.0%).
- (13) The standard spacing for rear yard swale catch basins shall be in accordance with the requirements of the Monroe County Drain Commissioner, which is typically at a maximum of every third lot line.
 - (a) Storm sewer pipe typically shall not be installed paralleling rear lot lines of Subdivisions and Condominium projects (public or private).
- (14) Finished easement grades shall be indicated on the plans.
- (15) Improved open drains may be permitted upon special circumstances in accordance with requirements of the Monroe County Drain Commissioner or Monroe County Road Commission, depending on which agency has jurisdictional authority.
 - (a) A permit must be obtained from the Monroe County Drain Commissioner for all connections to County Drains. Plans shall conform to all current requirements for state law pertaining to flood plain determination, stream crossing requirements and other statutes relating to waterways. A Michigan Department of Environmental Quality permit shall be obtained, as required, for all storm sewers discharging into existing streams.
 - (b) Properly sized culverts are required at all public roads crossing an open drain. The size shall be approved by the Michigan Department of Environmental Quality and/or the Monroe County Drain Commissioners office, as appropriate. Culverts shall have a minimum length for the future road grade width (as determined by the Monroe County Road Commission), plus 4 times the difference in elevation between the top of curb or shoulder and the invert of the culvert. End treatments and slope protection requirements will be determined on an individual basis under review by the Monroe County Road Commission. These requirements shall also apply to private roadways, subject to review and approval by the Township Engineer in lieu of the Road Commission.
 - (c) The drain bottom and slopes shall have proper turf establishment, either by

sodding or seeding, in accordance with Monroe County Drain Commissioner requirements. Appropriate escrows will be retained by the Township until adequate turf growth is established. The Monroe County Drain Commissioner may impose additional requirements and/or financial guarantees as a provision of the Soil Erosion and Sedimentation Control Permit.

- (16) Storm sewer pipe material requirements are as follows:
- (a) For public storm sewers constructed in subdivisions or condominiums, the pipe material shall be reinforced concrete pipe ASTM C76. The project design engineer shall establish and note on the plans the class of concrete pipe. The class of concrete pipe shall be adequate to withstand trench width, depth of pipe, trench loads and trench bedding and backfill. Reinforced concrete pipe and solid-wall PVC SDR 35, ASTM D3034 may be used when located outside paved areas or public rights-of-way and deemed structurally sufficient by the project design engineer. Allowable types of sewer pipe and joints shall be in accordance with current Monroe County Drain Commissioner Standards and shall be covered on the plan by note, where applicable.
 - (b) Smooth Lined Corrugated Polyethylene Pipe (CPE) may be used for storm sewer installation off public road right-of-way as part of commercial site developments. The use of this pipe will be limited to private storm sewer systems only. CPE pipe shall meet AASHTO M294, Type S. Pipe couplings shall be gasketed, premium joint fittings in accordance with current MDOT specifications. Trench details shall be required on the site plan and trench backfill compliance will be monitored closely during construction.
 - (c) Driveway culverts within the public road right-of-way shall conform with current standards and requirements set forth by the Monroe County Road Commission or the Michigan Department of Transportation, as appropriate.
- (17) The minimum storm sewer size shall be 12" diameter subject to the provisions for storm sewer leads below.
- (18) Storm sewer leads shall be constructed in new residential developments to provide an outlet for the foundation drain tile discharge. The lead shall be six (6) inch diameter pipe, constructed at a minimum depth of 3-1/2 feet and at a minimum grade of 1.0%.
- (19) Drainage design for site plans for commercial and industrial sites shall include, in addition to the above requirements, the following information:
- (a) size of driveway culvert and storm sewers (diameter and length)
 - (b) type of sewers and culverts (material)
 - (c) type of culvert end treatment
 - (d) length and grade of sewers and culverts
 - (e) direction of surface water flow by the use of flow arrows

- (f) method of surface water disposal on all pavement areas
 - (g) location of drainage structures and sewers
 - (h) drainage structure details and any other applicable details
 - (i) delineation of areas contributing surface waters to each structure or storm water outlet point including computed drainage areas
 - (j) elevation contour for the storm water detention ponding around each structure
 - (k) As-built GPS State Plane coordinates for any storm sewer outlet into any County Drain .
- (20) Alternative storm drainage design using applications of Storm Water Best Management Practices and or other innovative design concepts to control runoff and water quality will be considered on a case by case basis. Said alternative design proposals shall be supported by detailed design specifications, plan details and calculations to justify the intended purpose of the proposed drainage system. No alternative storm drainage system will be permitted unless specifically approved by the Township Engineer and, where required, MCDC and/or other County and State agencies.

ARTICLE V. STORM WATER DETENTION

Sec. 5.1 Storm Water Detention

- (1) Any new development or addition(s) to an existing development must detain the increased runoff onsite unless otherwise directed by the Township Engineer, the Monroe County Drain Commissioner and/or the Monroe County Road Commission. Acceptable means of detention can be achieved through temporary ponding of water in parking areas or a separate detention basin.
- (2) The Stormwater Detention Basin Design forms and methodology, as available from the Monroe County Drain Commissioner's office and/or the Monroe County Road Commission, shall be utilized in determining volume of detention required. Currently, there are two (2) methods utilized for determining the required volume for storm water detention based upon site area of five (5) acres or less and for sites greater than five (5) acres. The consulting engineer shall be responsible for determining which form is appropriate and discussing the requirements for site detention with the appropriate agencies. Forms and methodology from other jurisdictions are not allowed for use. Greater detention volumes may be required as determined by the Township Engineer, Monroe County Drain Commissioner and/or the Monroe County Road Commission to be that size necessary to promote and preserve the public health, safety, and general welfare of the Township. The available capacity of the downstream storm sewer system, ditch section, or receiving body of water, whichever the case may be, and the first /flush discharge shall be taken into consideration in determining the required volume.
- (3) Restrictor lines from the detention basins to the receiving stream or storm sewer shall be through appropriately sized and graded storm sewer pipes. **Size reducing plates are not permitted. The placement of sleeves into larger pipe sizes for restriction of flow is also not permitted.**

- (4) Open detention basins shall have side slopes typically no steeper than 6 horizontal to 1 vertical from top of bank to toe of slope for all “drain dry” basins. Steeper slopes may be considered on a case by case basis, subject to appropriate fencing or other criteria as determined by the Township Engineer and Planning Commission. Detention basins designed to have a permanent water surface elevation shall have side slopes no steeper than 6 horizontal to 1 vertical from the top bank of the pond to a point three (3) feet below the normal water surface elevation. The pond side slope from three (3) feet below the normal water surface elevation to the bottom of the pond shall not be steeper than 3 horizontal to 1 vertical. The detention basin must be designed and constructed to drain entirely or have a permanent water surface that shall provide for the required detention volume, subject to 'first flush' storm water discharge volumes, and meet water quality requirements. Soil borings shall be provided in the immediate area of a proposed “wet” pond detention basin with geotechnical data indicating the elevation of the existing water table and to support the design for the normal water surface elevation.
- (5) The entire detention basin must have stable vegetative cover, be paved, or have some other approved method of stabilization and erosion protection. Detention basins designed to have a permanent water surface elevation shall have a decorative planting strip along the pond perimeter, as approved by the Planning Commission, to delineate the normal water surface location. The proposed plantings shall be capable of withstanding occasional inundation from the water elevation fluctuations in the detention basin. The developer shall provide aeration devices on any detention pond that is designed to have a permanent water surface elevation or provide adequate written justification to establish a basis for not furnishing the aeration device.
- (6) A minimum of six (6) inches of freeboard must be maintained with a positive, non-erodible overflow capable of handling the capacity of a 25 year storm, or larger storm event if determined to be necessary by the Township Engineer or Monroe County Drain Commissioner for subdivisions. For sites less than or equal to two (2) acres, the detention basin(s) will typically not be required to design for a six (6) inch freeboard. Said overflow shall not discharge onto private property owned by another property owner.
- (7) Detention basins shall be graded to provide positive drainage to the storm water outlet. For paved swales in basins, the minimum grade shall be 0.28%.
- (8) The maintenance and ownership of detention basins shall be in accordance with the current requirements of the Monroe County Drain Commissioner, the Monroe County Road Commission and Frenchtown Township, as appropriate, for the particular type of site being developed. Appropriate provisions for maintenance shall be included in deeds, restrictions and covenants for the land being developed.
- (9) Wherever a corrugated flexible storm sewer flow restrictor pipe is to be installed within a detention system, the flexible pipe shall be installed inside of a PVC solid wall pipe sleeve. The PVC pipe used as the sleeve shall meet the storm sewer pipe material

requirements.

- (10) Upon completion of the detention pond system construction, the developer's design engineer shall perform a survey of the completed pond and certify to the Township Engineer and Monroe County Drain Commissioner that the required detention volumes have been provided in accordance with the approved plans and provide GPS State Plane Coordinates for any storm system outlet to a County Drain.

ARTICLE VI. WATER SUPPLY

Sec. 6.1 General Requirements

- (1) **Public Water System Accessible.** Where a public water system is accessible, provisions shall be made by the developer to supply each lot in the development with water from the public water system by means of a water supply system, which meets current Township specifications. In the case of condominium developments, each condominium living unit shall be provided a separate water service line to the water main. All connections shall be subject to the approval of the Township Engineer and Township Water Department.
- (2) **Public Water System Inaccessible.** Where a public water supply is not accessible by reason of absence of trunk mains, the developer shall either bear the cost of installation of a new trunk main from the source of water supply to the development or install wells of sufficient capacity to supply each unit within the development in accordance with current Township and State specifications and requirements.
- (3) Water mains shall be extended across the entire frontage of the property under consideration for development.

Sec. 6.2 Design Standards

- (1) Water main shall be designed and installed in accordance with the Frenchtown Charter Township Watermain Construction Specifications Ordinance No. 183, as amended. Copies of the Construction Specifications and the Standard Watermain Detail and Note sheets can be obtained from the Township Building Department.
- (2) Public water lines shall be dedicated to the Township. Where public water mains are located outside public road right-of-way, a 15 foot wide easement shall be dedicated to the Township, generally centered on the water line alignment. The easement shall be provided and dedicated in accordance with Article II, Plan Format, Section 2.1 General Requirements, and Item 15 of these specifications.
- (3) All water mains shall be installed with a minimum cover of five (5) feet below finished grade when in earth excavation and four and one-half (4½) feet when rock is encountered. Where water mains must dip to pass under a storm sewer or sanitary sewer, the sections which are deeper than normal shall be kept to minimum length by use of

vertical bends properly anchored.

The following information shall be indicated on the water main profile:

- (a) Length of run between each fittings (i.e. bends, valves and tees)
 - (b) Trench detail and pipe material for the water line
 - (c) Finish grades of fire hydrants and gate valve boxes.
 - (d) Pipe invert elevations at all changes in vertical alignment, vertical bends, tees and valves
- (4) Water mains shall be a minimum of eight (8) inch diameter. Where larger sizes are required, based upon required flow or to provide continuity for the Township water system, the water main size shall be increased. The cost of the larger size water main, when required, shall be borne by the subject development.
 - (5) Where fire suppression systems are required in a building, the minimum size for the water supply line shall be eight (8) inches in diameter.
 - (6) Short extensions of six (6) inch diameter water main, 10 feet or less in length, may be approved for connection with fire hydrants and where no further extension is anticipated.
 - (7) Gate valves shall be located in the system such that not more than three (3) valves need be closed to isolate any section of the water main. Valves shall be placed such that not more than 30 residential lots are serviced within a segment of water main, which can be isolated.
 - (8) There shall be a maximum spacing of 800' between gate valves. Valve spacing greater than 800 feet may be permitted depending upon the nature and circumstances affecting the section of water main and is approved by the Township Engineer and Township Water Department.
 - (9) Along major roadways not encompassing residential or commercial development, hydrant spacing shall be a maximum of 600'. Hydrant spacing greater than 600 feet may be permitted depending upon the nature and circumstances affecting the section of water main, adequate flushing can be provided and is approved by the Township Engineer and Township Water Department.
 - (10) In single family residential subdivisions, hydrants shall be installed along the water main at a maximum spacing of 300 feet. In commercial or industrial districts, additional hydrants may be required based upon the application of reasonable engineering principles and/or fire suppression or fire fighting considerations. Hydrants shall be installed at the ends of all dead-end water mains. Temporary blowoffs will be permitted where the main is to be extended in a future phase of development. Water mains shall be extended through with hydrants located at the back of cul-de-sacs. Water mains shall be looped wherever practical and or as required by the Township Engineer, Township Water Department and Township Fire Department; except in the case of cul-de-sacs, or when

extending a single fire hydrant onto a commercial site. The location of hydrants shall be reviewed and approved by the Frenchtown Fire Department.

- (11) The hydrant nozzles shall be designed to be set at least eighteen inches and not greater than twenty-four inches above finished grade. The hydrant shall be installed and set to place the break-way flange 1 ¾" to 3" above the finish grade or as specified by the hydrant manufacturer.
- (12) In new residential developments, all water services shall be installed at the time of the construction of the main line, after all testing of the water main is approved. The service lines shall be Type 'K' copper and tapped to the main. The curb stop shall be installed at the end of the service line which shall be either at the property line or the utility easement line, whichever is closer to the water main, or as determined by the Township Engineer and / or Township Water Department.
- (13) Water service lines cannot tie into 6" fire hydrant branch lines or fire suppression system lines past the end of the public water line when servicing a new development.
- (14) Connection to existing water mains shall be made only after successful pressure tests and chlorination, in accordance with Township Ordinance No.183.
- (15) Approved plans, signed by a professional engineer licensed in the State of Michigan, completed Michigan Department of Environmental Quality Act 399 permit application along with appropriate supporting quantities of materials, will be forwarded to the Michigan Department of Environmental Quality by the Township Engineer for the construction permit.

ARTICLE VII. GRADING, SOIL EROSION, AND SEDIMENT CONTROL

Sec. 7.1 Design Standards

- (1) Submittal plans must be in conformance with current requirements of the Monroe County Drain Commissioner's Office and provisions of the State of Michigan "Soil Erosion and Sedimentation Control Act," Part 91 of Public Acts 451 of 1994, as amended. Permits shall be obtained from the Monroe County Drain Commissioner's office prior to scheduling a preconstruction meeting.
- (2) In order to provide effective erosion and sediment control, practical combinations of the following technical principles shall be applied to the erosion control aspects of the grading plan.
 - (a) The smallest practical area of land shall be exposed at any one time during development.
 - (b) When land is exposed during development, the exposure shall be kept to the

shortest period of time.

- (c) Temporary vegetation and/or mulching shall be used to protect critical areas exposed during development. The construction plans shall specify such treatment.
- (d) Sediment basins (debris basins, or silt traps) shall be installed and maintained to remove sediment from run-off waters from land undergoing development. The plans submitted shall specify such treatment.
- (e) Provisions shall be made to effectively accommodate the increased runoff caused by changed soil and surface conditions during and after development. The plans submitted shall specify such treatment.
- (f) The permanent final vegetation and structures shall be installed as soon as practical in the development. The plans submitted shall specify such treatment.
- (g) The development plan should be fitted to the topography and soil so as to create the least soil erosion potential.
- (h) Wherever feasible, natural vegetation should be retained and protected.

Sec. 7.2 Retaining Walls and Landscape Walls

- (1) When it is determined that retaining walls will be necessary to provide proper grading of a development or other improvement, the applicant shall furnish design drawings for such walls as part of the submittal procedure. These drawings shall be sealed and prepared by the developer's engineer, and shall be complete design drawings showing the wall construction in the plan and elevation views. Sectional views and details shall be provided to indicate typical, a-typical and other conditions of the wall construction.

ARTICLE VIII. STREETS, DRIVEWAYS, PARKING LOTS, AND SIDEWALKS

Sec. 8.1 Design Principles

- (1) General. Subdivisions and condominiums consisting of lots for single and two family unit lots, private roadways and site plans shall conform with the requirements and objective of these design principles and standards, the standards and requirements of the Monroe County Road Commission and/or the Michigan Department of Transportation, and all applicable Ordinances and laws.

Sec. 8.2 Design Standards

- (1) Street Layout, Location and Design in a Subdivision Plat, Condominiums, and Other Applicable Developments. All streets within a subdivision plat or within a project site

not part of a subdivision plat shall meet Monroe County Road Commission requirements, unless modified by this Ordinance, and shall be subject to the following standards: (Note that any reference to the Monroe County Road Commission in this section shall also be considered as reference to the Michigan Department of Transportation, as applicable to state highways versus county roads.)

- (a) Layout. Street layout shall provide for the continuation of existing major or collector streets in surrounding areas, or conform to a plan for neighborhood development approved by the Planning Commission.
- (b) Road names shall be reviewed and approved by the Monroe County Central Dispatch office.
- (c) Future connections. Certain proposed streets, as designated by the Planning Commission, shall be extended to the boundary line of the parcel to provide future connection(s) with adjoining unplatted land.
- (d) Grades. Proposed streets shall be so arranged in relation to existing topography as to produce desirable lots and streets of reasonable gradient. Monroe County Road Commission standards shall be applicable.
- (e) Service Entrances and Emergency Access Drives. Service entrances and drives may be permitted to provide secondary access for service and safety vehicles, provided that appropriate signage and gating limiting usage shall be established as required by the Planning Commission. Restricted access may be required by the Monroe County Road Commission.
- (f) Jogs. Street jogs shall conform with the requirements of the Monroe County Road Commission.
- (g) Minimum Right-of-Way Widths for Public Streets and Condominiums.
 - (1) Major Thoroughfares: As required by the County Road Commission for county roads.
 - (2) Reference Township Zoning Ordinance No. 200, Section 4.33, as amended, for street setback requirements (future right-of-way).
 - (3) Minor Streets: Sixty (60) feet for single family residential development and multiple occupancy developments.
 - (4) Cul-de-Sac Streets: Sixty five (65) foot radius (circle one hundred thirty (130) feet in diameter) in residential subdivisions or meeting current Monroe County Road Commission requirements.
- (h) Minimum Pavement Width for All Streets. Monroe County Road Commission

standards shall be applicable.

- (i) Minimum Roadway Curvature. Monroe County Road Commission standards shall be applicable.
- (j) Typical Pavement Design Section(s). Monroe County Road Commission standards and requirements shall be applicable. Pavement design(s) shall be submitted with the construction plans, which substantiate the proposed pavement design thickness.
- (k) Curb and/or Curb & Gutter. Curb and/or curb & gutter shall be in accordance with the standards and requirements of the Monroe County Road Commission.
- (l) Street Length.
 - (1) Monroe County Road Commission standards shall be applicable for all public roadways.
 - (2) Where private roadways are permitted (ie. condominiums) the maximum length of a cul-de-sac shall be 1,000 feet. The length of cul-de-sacs shall be measured from the intersection of street centerlines to the extreme depth of the turning circle pavement.
- (m) Acceleration, Deceleration and Passing Lanes. Acceleration, deceleration and passing lanes for driveway approaches and proposed roadways entering onto a public roadway shall be required as determined based upon the following considerations:
 - (1) Traffic volumes, accident data, horizontal and vertical alignment, site distance conditions of the public roadway upon which a driveway or proposed roadway is entering, and anticipated future community growth.
 - (2) A traffic study may be required, to be performed by the developer's engineer, to determine proper access and to comprehensively assess traffic implications for the proposed development.
 - (3) Other unique site conditions, such as land use, and other natural conditions.
 - (4) Where required by the Monroe County Road Commission or Michigan Department of Transportation, depending upon which agency has legal jurisdiction over the respective roadway, acceleration, deceleration or passing lanes shall be designed and constructed in accordance with the standards of that agency. With respect to such road improvements, the Township Engineer may make a recommendation to the agency having legal jurisdiction.

- (2) Driveway Approaches and Sidewalks located within State or County Road Rights-of-Way.
 - (a) For areas outside platted subdivisions, construction of a new or reconstructed driveway or roadway connecting to an existing County or State roadway, or a new sidewalk within the right-of-way, shall be allowed only after an approved permit has been obtained from the agency having jurisdiction over the roadway.
 - (b) All driveway approaches entering onto a public roadway, or sidewalks within the right-of-way, under the jurisdiction of the Monroe County Road Commission (MCRC) shall be constructed in accordance with the current MCRC rules in effect.
 - (c) All driveway approaches entering onto a public roadway under the jurisdiction of the Michigan Department of Transportation (MDOT) shall be constructed in accordance with the current MDOT rules in effect.
- (3) Number of Access Drives. Unless it is determined upon review of this and other Ordinance provisions that traffic safety dictates to the contrary:
 - (a) Property shall be developed to minimize the number of points of ingress and egress to and from a public highway.
 - (b) The use of common access drives between and among two or more users is encouraged.
 - (c) Driveway access shall embrace the concepts and provisions of the MDOT Access Management Plan.
- (4) Driveways and Parking Lots not located within the Road Right-of-Way.
 - (a) All site plans proposing the construction of driveways and off street parking areas, shall provide, as a minimum, the following dimensions and features:
 - (1) Complete parking space, loading space, driveway layouts and dimensions of pavement areas
 - (2) Typical dimensions and angles of parking spaces and driveway aisles between parking areas
 - (3) Radii of driveway returns and all other points of curvature
 - (4) Existing and proposed parking lot and driveway grades and elevations, including grade breaks, and drainage overflow points for parking lots

- (5) Typical pavement section(s) for driveways and parking lot including subbase, base, and surfacing material types and thicknesses
- (6) Existing and proposed elevations shall be shown on the plan at:
 - (a) all radii points and intermediate points so as to determine grading of curbs
 - (b) points along all interior curbing at 25' intervals
 - (c) finish grade at the corners of all buildings
 - (d) 50 feet intervals (maximum) along the line of surface flow including all grade breaks
- (7) Existing and proposed elevation contours at two (2) foot intervals shall be provided, if reasonably required by the Township Engineers for review purposes.

(b) Design Standards

- (1) Commercial driveways and Parking Lot Surfacing requirements. The entire parking area, including parking spaces, loading spaces, and driveways, are required to be hard surfaced. These areas shall be provided with asphalt or concrete surfacing in accordance with one of the following minimum specifications:
 - (a) Bituminous Surface Options
 - (1) A minimum three inch (3") thickness of bituminous pavement placed in two courses over eight (8) inches of MDOT 21A aggregate base course placed in two courses.
 - (2) A minimum six (6) inch thickness of full depth bituminous pavement over a compacted and stable subgrade. A minimum two (2) course thickness must be utilized when placing the six inch bituminous pavement.
 - (3) For parking lot aisles that will be subject to higher volumes of traffic or heavy trucks, a minimum four (4") inch thickness of bituminous pavement placed in two courses over eight (8") inches of MDOT 21 A aggregate base course placed in two courses. Pavement sections thicker than four (4") of bituminous pavement may be warranted if parking lot and / or driveway pavements will be subject to construction traffic that will be experienced in a future project development phase.

- (4) Hot Mix Asphalt materials shall conform to the current MDOT specifications.
 - (5) Alternate pavement sections using innovative designs, e.g., permeable pavement sections, will be considered on a case by case basis. Said pavement sections shall be supported by detailed design specifications, plan details and calculations to justify the intended purpose of the pavement section. No alternative pavement sections will be permitted unless specifically approved by the Township Engineer and where required, approved by the MCRC, MDOT, and / or other County and State agencies.
- (b) Concrete Pavement Surface Option
- (1) A six inch (6") thickness of concrete pavement shall be placed over a compacted and stable subgrade where there is typically automobile and light truck traffic.
 - (2) An eight inch (8") thickness of concrete pavement shall be placed over a compacted and stable subgrade where there is anticipated heavy or regular truck traffic.
 - (3) Concrete materials shall conform to current MDOT specifications for roadway pavement construction.
 - (4) Special Design Considerations. Pavement structure designs utilizing a heavier pavement section for higher load-bearing capacities shall be utilized in developments where increased axle loading and/or traffic volumes are anticipated. All pavement designs shall be subject to the review and approval of the Township Engineer.
- (c) Subgrade Requirements. All pavement surfaces must be supported upon a prepared subgrade that has been compacted to at least 95 percent of maximum unit weight in accordance with MDOT standards. When unstable subgrade materials, i.e., peat, muck, marl, wet clays, etc., are encountered, excavation and removal of such unstable materials and replacement to plan subgrade with approved materials compacted in place shall be required. Approved materials shall include slag, crushed stone, gravel, coarse sand, or other materials approved by the Township Engineer. Should it be found that the excavation, removal and replacement of unstable subgrade material is impractical due to excessive depths, alternate pavement structure designs must be

submitted to and approved by the Township Engineer prior to pavement installation. The Township reserves the right to require the installation of geotextile wrapped underdrains, edge drains, or bank drains at locations where the subgrade indicates the presence of free water.

(d) Pavement Layout and Schematics

- (1) Conformance to Zoning Ordinance. Parking spaces, driveways, and loading zones shall conform in size and configuration to the requirements of the Frenchtown Township Zoning Ordinance.
- (2) Minimum Driveway Widths. Driveway widths onto public highways shall conform to current standards of the Monroe County Road Commission or Michigan Department of Transportation, as applicable.

(e) Pavement Grading and Drainage Requirements

- (1) Minimum pavement slopes shall be 1.0 percent.
- (2) Maximum driveway slopes shall be 8.0 percent.
- (3) Maximum parking lot slopes shall typically be 6.0 percent, except within handicapped parking areas, where the maximum slope shall be 2.0 percent.
- (4) Minimum slope along the gutter line of a curbed approach shall be 0.4%, with consideration given to a minimum of 0.28% under a demonstrated hardship situation.

(f) Drainage

- (1) All paved areas shall be graded to dispose of all surface waters accumulated in the parking area in a manner which will prevent unrestricted drainage of water onto adjacent property or toward buildings.
- (2) The disposal of storm waters from all paved surfaces shall conform to the standards set forth in this Ordinance.

- (3) The design of parking lot storm sewer facilities shall conform to the standards set forth in this Ordinance.
- (4) The disposal of storm waters to a roadside ditch shall receive the approval of the agency having jurisdiction over the roadway prior to site plan approval. The discharge of surface waters to a recognized County Drain shall receive the approval of the Monroe County Drain Commissioner's office prior to the site plan approval.
- (5) The point discharge of storm waters onto private property is not permitted unless a recorded easement is received from the affected property owners.
- (6) Parking lots that will be used as part of a detention storm system shall be designed to restrict the amount of ponding water that will be experienced in the lot to not exceed seven inches (7") above the rim of the lowest drain structure rim elevation.

(g) Dumpster Enclosures

- (1) Dumpster enclosure areas, including the area in front of the enclosure a minimum of ten (10) feet wide by ten (10) feet in length shall be concrete pavement, a minimum of eight (8) inches in thickness.

(5) Sidewalk Specifications

- (a) Concrete sidewalks shall be constructed along both sides of every street within a plat where stipulated by the Frenchtown Township Subdivision Control Ordinance.
- (b) Concrete sidewalks shall be constructed in condominiums and manufactured home parks.
- (c) Sidewalks shall be constructed so as to provide for the required ramps for aid to the disabled at all street intersections and at access entrances to all parks and recreational sites in accordance with ADA requirements.
- (d) Where required, a four (4) inch thickness of concrete pavement, five (5) feet in width, shall be placed with a granular subbase, as necessary, to provide leveling. Where the sidewalk crosses an existing or future driveway or access to a site, the concrete sidewalk thickness shall be six (6) inches.

- (e) The typical cross slope for the sidewalk shall be 0.02 ft/ft.
 - (f) A deviation from these requirements with regard to location, width, and material may be granted by the Planning Commission at the time of site plan approval or in the case of a subdivision plat, upon application to and approval by the Township Board, following recommendation from the Planning Commission.
- (6) Snow Storage
- (a) Site plans shall clearly define areas designated for snow storage. These areas shall typically not include designated parking areas or areas defined for other uses on the site plan. The areas shall be clearly accessible for normal snow removal equipment and shall not impair the ability of storm water runoff to drain properly.
- (7) Monroe County Road Commission and Michigan Department of Transportation Standards.

This Ordinance is not intended to supersede Monroe County Road Commission or the Michigan Department of Transportation standards, and such standards shall be met, where applicable.

ARTICLE IX. REQUIREMENTS FOR UNDERGROUND UTILITIES

Sec. 9.1 General Requirements

- (1) The developer shall make arrangements for all natural gas lines, wiring for telephone, electric, television, and other similar services distributed by pipe line, wire or cable to be placed underground entirely throughout a developed area except along adjacent major thoroughfares where existing overhead utilities are located; including provisions for public street lighting which are in accordance with the specifications of the electrical service provider and the requirements of the Frenchtown Charter Township Zoning Ordinance and any other applicable Ordinances.
- (2) Pipe lines, conduits and wiring shall be placed within private easements typically a minimum of ten feet in width outside the public road right-of-way. Easements shall be shown on the Plans throughout the subdivision, condominium, or other development to demonstrate accessibility and compatibility with other utilities, roadways and buildings.
- (3) Electrical distribution and service lines shall be provided in accordance with Section 4.39 of the Frenchtown Charter Township Zoning Ordinance No. 200.
- (4) Outdoor lighting shall be provided in accordance with Section 4.38 of the Frenchtown Charter Township Zoning Ordinance No. 200.

ARTICLE X. STREET NAME AND TRAFFIC CONTROL SIGNS

- (1) For public roadways in platted subdivisions, the cost of installation of street name signs and traffic control signs shall be paid by the developer to the Monroe County Road Commission in accordance with the current fees established by that agency. The Road Commission will install the street name signs after such fees are paid.
- (2) In private developments and for private roadways, the installation of the street name and traffic control signs shall be the responsibility of the developer, subject to the provisions for signs at intersections below. All signs shall be fabricated and installed in accordance with the criteria set forth in the Michigan Manual of Uniform Traffic Control Devices (MMUTCD).
- (3) Installation of street name signs at the intersection of the public highways shall be subject to the current policies of the Monroe County Road Commission or the Michigan Department of Transportation, as appropriate.
- (4) Proposed street names shall be in accordance with Frenchtown Charter Township Subdivision Control Ordinance No. 197, Section 9, Paragraph 11. The name selected for any street must also be approved by the Office of Monroe County Central Dispatch and written confirmation of this office approval must be provided to the Township Engineer.
- (5) As a means to assure that all street name signs and traffic control signs are installed by the developer as required by this Article, in accordance with current standards of the MCRC, an escrow account shall be established with the Building Department to cover the cost of furnishing and installing the required signs. Upon confirmation from the MCRC that the signs are installed and meet current standards, the escrowed funds shall be refunded to the developer.

ARTICLE XI. CONSTRUCTION OBSERVATION

- (1) All required improvements will be observed by the Township Engineer and/or their designated Resident Project Representative for compliance with the plans and specifications.
- (2) The cost of all reviews, observations, testing, providing approved plans in digital format, preparation and distribution of as-built plans and all associated Township legal fees shall be paid by the developer. An escrow account, as set forth by the Township, shall be established with the Building Department to cover these costs.
- (3) The developer shall notify the Township Engineer a minimum of three (3) working days prior the start of construction activities.

- (4) No construction activities shall commence until a preconstruction meeting, coordinated through the Township Building Department, has been held and all requirements for plan approvals, bonds and insurances have been met.

ARTICLE XII. INSURANCE AND BONDS

- (1) Insurance. Prior to construction of a subdivision, condominiums or other project improvement, the proprietor or contractor shall procure and maintain during the life of any Contract or Agreement for such construction, insurance protecting the Township and its officers and employees from any claim or damages, real, personal or otherwise, of such amounts as established by Frenchtown Charter Township Contractors Insurance Requirements Ordinance, as amended.
- (2) Maintenance Bond. All public improvements constructed on subdivision, condominium or a commercial/industrial site shall require a maintenance bond furnished by the contractor for a period of two (2) years from the date of acceptance. The amount of the maintenance bond shall be 25% of the original Irrevocable Letter of Credit amount for the project.
- (3) Temporary Occupancy Bond. If temporary occupancy is requested and approved by the Township prior to fulfilling the construction obligations of the approved development, the owner shall deposit, with the Township, a sufficient amount of money, either by cash bond or Irrevocable Letter of Credit, to cover the full cost of completing all work remaining.
- (4) Sidewalk Bond. For new subdivisions and condominiums, a sidewalk bond is required from the owner, where sidewalks are a part of the subdivision approval. The bond amount will be based upon the width and number of the lots and is intended to cover the full cost of installing the sidewalks. The bond will run for a period of two (2) years from the date of final plat approval. The bond shall be in the form of cash or Irrevocable Letter of Credit, as approved by the Township. Should all lots not be developed at the end of the two (2) year period, it shall be the owners obligation to complete the installation of all remaining sections of sidewalk within the plat.

ARTICLE XIII. VARIANCE PROCEDURE

- (1) Upon a request from a property owner or his / her authorized representative, the Township Planning Commission may recommend a variance, modification or waiver of the provisions of this Ordinance upon a finding that an undue hardship may result from strict compliance with specific provisions or requirements of this Ordinance because of unusual topography, other physical conditions of the property, or other such conditions which are not self-inflicted, or that these conditions would result in inhibiting achievement of the objectives of this Ordinance or that the application of a specific provision or requirement is impracticable based on the specific circumstances or that Property Owner has presented a proven new innovative or alternative method of meeting

the spirit and intent of the requirements of the Ordinance other than the requirements provided herein. The Planning Commission shall recommend only those variances that it deems necessary to, or desirable for the public interest. In making its findings, the Planning Commission shall take into account the nature of the proposed use of land and the existing use of land in the vicinity, the number of persons to reside or work in the proposed development, and the probable effect of the proposed improvements upon traffic conditions in the vicinity.

- (2) The Applicant shall state the reasons in writing as to the specific provision or requirements involved and shall submit them to the Planning Commission before consideration of a request for variance by the Planning Commission.
- (3) No variance shall be recommended by the Planning Commission unless the Planning Commission finds that a request meets all of the following requirements:
 - (a) That the condition or situation as to the specific piece of Property or the intended use of the Property for which the variance is sought is not of so general or recurrent nature as to make it more reasonable and practical to amend this Ordinance.
 - (b) That the granting of the specified variance will not be detrimental to the public welfare or injurious to other property in the area in which said property is situated.
 - (c) That upon information and belief, such variance will not violate the provisions of any law of the State of Michigan.
 - (d) That such variance will not have the effect of nullifying the intent and purpose of this Ordinance and the Master Land Use Plan of this Township.
 - (e) That such variance request has been supported or supported with conditions in writing by the Township Engineer.
- (4) The Planning Commission shall include in its recommendation to the Township Board its specific finding as to the requested revisions and shall also record its reasons and action in its minutes.
- (5) The Township Board shall consider the matter and either grant, grant with conditions, or deny the request for a variance. The Board shall set forth the basis for its decision in its motion. The decision of the Township Board shall be final.
- (6) The variance shall be valid for a period of one year from the date of approval or for the period during which there is an approved site plan or plat for the development, whichever is greater.

ARTICLE XIV. VIOLATIONS & PENALTY

- (1) Any person or persons, firm or corporation who shall violate any of the provisions of this Ordinance shall, upon conviction thereof before a court of competent jurisdiction, be guilty of a misdemeanor and subject to a fine of not more than Five Hundred Dollars (\$500.00) plus the costs of prosecution or to imprisonment in the County Jail for a period not to exceed ninety (90) days, or to both such fine and imprisonment. Each day such violation continues shall be deemed a separate offense. The imposition of sentence shall not exempt the offender from compliance with the requirements of this Ordinance.

ARTICLE XV. REPEAL

- (1) Ordinance No. 198 and any amendments thereto and all Ordinances in conflict with this Ordinance are to the extent of such conflict hereby repealed as of the Effective Date of this Ordinance.

ARTICLE XVI. SEVERABILITY

- (1) This Ordinance and the various parts, sentences, paragraphs, sections, subsections, phrases and clauses thereof are declared to be severable and if any of them are adjudged unconstitutional or invalid, it is hereby provided that the remainder of the Ordinance shall not be affected.

ARTICLE XVII. EFFECTIVE DATE

- (1) This Ordinance shall become effective thirty (30) days after adoption and publication in a newspaper having general circulation in the Charter Township of Frenchtown, Monroe County, Michigan.

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