

STATE OF MICHIGAN  
COUNTY OF MONROE  
FRENCHTOWN CHARTER TOWNSHIP

Ordinance No. 198  
Date of Adoption: September 2001

ENGINEERING DESIGN STANDARDS ORDINANCE

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 is intended to provide detailed specifications for the design and construction of subdivisions, condominiums, mobile home parks, site plans and other projects and improvements in the Township, and shall be known and may be cited as the Frenchtown Charter Township Engineering Design Standards Ordinance.

Sec. 1.2 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.

Sec. 1.3 This Ordinance shall apply to improvements where site plan review is required and in all cases of subdivision and condominium development.

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'. Twenty seven (27) copies of the site plan are to be submitted for review to the Township Building Department. In the case of construction plans, 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, City of Monroe Engineering and Wastewater Departments, Monroe County Road Commission, Monroe County Drain Commissioner, and Monroe County Central Dispatch, as appropriate. The site plans will be submitted to the local

agencies by Frenchtown Township. 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.

- (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 (2) foot 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 and condominium projects, separate plan 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 sewers shall be shown in plan and profile. Profiles of sewers shall indicate the size, invert and slope of the sewer and shall indicate the existing ground along the route of the sewer 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 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 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. Public water main and sanitary sewer plans shall be sealed by a professional engineer licensed in the State of Michigan.
- (10) Four (4) mylar copies of the Record Drawings of public water lines, sanitary sewers, roads and storm sewer systems, with certification from an appropriately licensed professional, shall be furnished to Frenchtown Township stating that all improvements are in conformance with the approved plan or with appropriate notations of changes made during construction, prior to acceptance of a subdivision or condominium. Frenchtown Township will distribute the mylar record drawings to the appropriate agencies.
- (11) One (1) mylar set of the Record Drawings of any public water lines, sanitary sewers or other publicly dedicated improvement, with certification from an appropriately licensed professional, shall be furnished to Frenchtown Township stating that all improvements are in conformance with the approved plan or with appropriate notations of changes made during construction, prior to acceptance of site plan improvements and an occupancy permit being granted.
- (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) All proposed easements shall be completed on approved forms, dedicated and recorded, after approval by the Frenchtown Township attorney, with copies delivered to the Township, in accordance with the local agency's policies, prior to a preconstruction meeting being scheduled.

### 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. 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.

### 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, 1990 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. Unless otherwise specified, all concrete pipe joints shall be rubber "O-Ring" gasket joint conforming to the requirements of ASTM C-443.
  - (b) Poly-Vinyl Chloride (PVC): All PVC gravity sewer pipe shall conform to the requirements of ASTM D-3034, Type PSM, SDR Max. 35, PVC sewer pipe and fittings. All PVC pipe shall provide an elastomeric gasket joint to prevent exfiltration or infiltration.
  - (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.
  - (d) Asbestos-Cement and Cast Iron pipe materials are not allowed.
- (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. Oversizing 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.
- (9) All homes 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.

- (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 to 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 elevations exceeding 24", 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 to 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. As constructed lead locations shall be noted on the Record Drawings.
- (22) A deflection test shall be required for all PVC and ABS 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 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 200 gallons per inch per mile per 24 hours. 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 relaid. Television inspection for all sanitary sewers eight (8) inches in diameter to and including 30 inches in diameter shall be provided on videotape (VHS 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 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.
- (27) Approved plans, signed by a professional engineer licensed in the State of Michigan, along with appropriate calculations 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. 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. Under certain circumstances, with approval of the Monroe County Drain Commissioner, where the hydraulic gradient is above the top of the casting, the design elevation of the hydraulic gradient shall be indicated (i.e. 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
- (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 grade shall be five tenths percent (0.5%).
- (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.
- (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 sewers constructed in subdivisions or condominiums, the pipe material shall be reinforced concrete pipe ASTM 76, Class IV (minimum). C-76 Class III 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) 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

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, 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. Steeper slopes may be considered on a case by case basis, subject to appropriate fencing, as determined by the Township Engineer and Planning Commission. The detention basin must be designed and constructed to drain entirely, subject to 'first flush' storm water discharge quality requirements.
- (5) The entire detention basin must have stable vegetative cover, be paved, or have some other approved method of stabilization and erosion protection.
- (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.

## 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.
- (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 full width of the roadway 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 description shall be written by a licensed engineer or surveyor in the State of Michigan and provided to the Township. The easement will then be inserted into the Township's standard dedication form and recorded.
- (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.
- (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 provided or 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 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 1000' between gate valves.
- (9) Along major roadways not encompassing residential or commercial development, hydrant spacing shall be a maximum of 600'.
- (10) In single family residential subdivisions, hydrants shall be installed along the water main at least every 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 lots with hydrants located at the back of cul-de-sacs. Water mains shall be looped, 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 plans shall indicate the finished grades of all hydrants and gate valves. The hydrant nozzles shall be designed to be set eighteen to twenty one inches above finished grade.
- (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 further, or as determined by the Township Engineer.
- (13) Water service lines cannot tie into 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, along with appropriate supporting quantities of materials, shall 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, condominiums, 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 and Other Applicable Developments. All streets within a subdivision plat or within single and two family site condominium developments, shall have roadways designed to meet Monroe County Road

Commission standards and requirements, widths and locations unless otherwise modified by this Ordinance, which shall necessarily include the traditional or standard right-of-way location for public utilities and easements and a minimum ten foot easement for private utilities adjacent to the proposed right-of-way and/or easements on each side of the street or roadway and shall also be further 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.)

Amended by Ordinance Amendment No. 198-1, January 17, 2006.

- (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) 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.
- (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 foot 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) Asphalt materials shall conform to the current MDOT specifications.

(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 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 preclude 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.

(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 mobile 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.
  - (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 wiring for telephone, electric, television, and other similar services distributed by 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.

- (2) Conduits and wiring shall be placed within private easements a minimum of ten feet in width outside the public road right-of-way.
- (3) Overhead lines may be permitted only upon written recommendation of the Engineer, Planner, Planning Commission, and approval of the Township Board at the time of tentative approval where it is determined that the overhead lines will not constitute a detriment to the health, safety, general welfare, area design and character of the development.

#### 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) 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.

#### 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 and observations 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 can 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 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 prior to fulfilling the construction obligations of the approved site plan, 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, 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. 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 XIV. Repeal.

- (1) All Ordinances in conflict with this Ordinance specifically including Ordinance No. 108, are, to the extent of such conflict, hereby repealed.

Article XV. 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 XVI. 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.