

Whiteford Township Engineering Standards



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PURPOSE OF STANDARDS

With the intent to protect public health and safety, ensure a high standard of development, and serve as a guide for the planning of viable infrastructure improvements or remediation, the following "Whiteford Township Engineering Standards" (Standards) have been developed to provide Engineers, Consultants, Contractors and/or other interested parties with a minimum set of engineering based standards and establish uniformity in Whiteford Township's (Township) engineering requirements.

The Purpose of these Standards is to serve as a guide for the design, submittal, and review of proposed infrastructure improvements and/or land development projects, therefore enabling applicants and designers to estimate the cost of the Townships requirements early in the development process, and by providing required specifications prior to submittal of engineering plans, increase the likelihood of accurate and complete submittals, thereby minimizing the review time and cost to both the applicant and the Township.

These Standards apply to all land improvement projects including site plans, site condominiums, PUD and parallel plans, etc., as required by the Whiteford Township Zoning Ordinance (WTZO) Provide accurate on-site and off-site information for each project that will become permanent public records of the Township.

Furthermore, these Standards are not intended to replace or amend the application or enforcement of the ordinances of the Whiteford Township, Monroe County, or the State of Michigan. Best practices should be exercised in the design, layout, and presentation of all proposed improvements.

PLAN REVIEW PROCESS

The site plan review process requires a preliminary site plan to be submitted for approval. Once the preliminary site plan has been granted approval, an application for final site plan approval can be submitted. The requirements for a Site Plan Review are outlined in the WTZO, Article VII.

GENERAL REQUIREMENTS

1. All plans submitted shall be on 24" x 36" inch white prints having blue or black lines and shall be legible and accurately prepared. Plan sheets shall have a scale of not greater than 1"=20' horizontal. Profile views shall have a scale of 1" = 50' horizontal and 1"=5' vertical. Eight (8) complete sets of plans shall be submitted for review to the Township Building Department.
2. Each sheet in a set of plans shall show the name and general description of the property, date, scale, north arrow, title of each sheet, and the name, address, and telephone number of the person or firm that prepared the sheet. Each sheet in a set shall be numbered consecutively, beginning with "sheet 1" and shall have proper match lines or other keys to provide reasonable continuity and orientation. Sheets shall be ordered in the plan set to provide reasonable continuity.

3. A general area plan shall be included at 1"=100' or 1"=200' when the size of the site prohibits a single sheet. The general plan shall show existing and proposed roadways, rights-of-way, site location, dimensions, utilities, building structures, landscaping, and topography. A general plan for the site shall include contour lines of the project area, including the area at least 100 feet outside of the project area. Contour lines shall be shown at intervals as follows:
 - a. Where the general slope of the land is one percent (1%) or less, the interval shall be one foot.
 - b. Where the general slope of land is more than one percent (1%) but less than five percent (5%), the interval shall be two feet.
 - c. Where the general slope of land is five percent (5%) or greater, the interval shall be five feet.
4. A topographic survey plan sheet shall be included.
5. Elevations shall be based on NAVD 88. At least three bench marks shall be indicated on the plans for each 40 acres of the project site area.
6. Finish grade elevations planned for each structure shall be indicated on either the plan view or the profile view.
7. Street names, lot or property lines, and property identification numbers within or adjacent to the project location shall be shown on all plans.
8. Sewers within easements shall be located at least 2 feet away from parcel or lot boundary lines.
9. Location of wetlands, drainage courses, and floodplain areas shall be shown.
10. Dimensions for existing and proposed road right-of-way and/or easements, roadways, parking areas, driveways, sidewalks, and pathways shall be shown on the plans and shall be in accordance with the WTZO, Monroe County Road Commission (MCRC) Standards for Plat Development, and/or and the requirements outlined herein
11. Any underground or overhead public utilities shall be located in the road (public or private) right-of-way
12. Location, size, and type of electric, telephone, gas, and cable utilities.
13. A copy of the site boundary survey with computed control lines indicated, or a copy of the computed plat, if applicable, shall be submitted with the engineering plans.
14. 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.
15. 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.
16. If off-site easements are required to connect to public utilities, evidence that the easement has been recorded must be included in the drawings.
17. The legal description for the property shall be included. It must also be represented by bearing angles and distances in plain view, and shall have a ratio of closure no greater than 1 part in 5000.

18. Zoning information including zoning designation, land use, minimum lot area, frontage, building separation, setbacks, and maximum lot coverage and building height requirements for the site's zoning designation.
19. Property Owner and Applicant's name with address and phone numbers. If the Applicant is legally authorized to apply for site plan review, the Property Owner's signed consent must be provided.
20. Company name, address, email address, phone and fax number of the designer responsible for preparing the drawings shall be included on each sheet.
21. Copies of all permits and permit applications, obtained to date, shall be forwarded to outside regulatory agencies. The status of all necessary permits shall be included on the cover sheet.
22. 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.

STREETS, DRIVEWAYS, PARKING LOTS, AND SIDEWALKS

1. Paving for all other streets and parking lots shall conform to the specifications of the Whiteford Township of Roads or the following specifications, whichever is the more demanding requirement:
 - a. The compressive strength of concrete at 28 days after pouring shall be at least 4,000 pounds per square inch.
 - b. Asphalt pavement shall consist of 4:11 Bituminous Aggregate (260 lbs. per square yard) surfacing over an approved sub-base adequately designed for sufficient thickness (minimum of six inches) and type to be compatible with expected loading and sub-soil conditions.
 - c. Maximum allowable pavement grade shall be 7.00 percent for concrete pavement and 6.00 percent for asphalt pavement.
 - d. Minimum allowable pavement grades shall be as follows:
 - 1.) Concrete pavement gutter grades—0.30%
 - 2.) Asphalt pavement gutter grades—0.50%
 - 3.) Concrete pavement surface grade to gutter line—1.00%
 - 4.) Asphalt pavement surface grade to gutter line—2.00%
 - e. Whenever a change in the grade of 2% or more occurs, provide a vertical curve with a length determined (to the nearest 50 feet) by the following formula: $L=1/2(G1-G2)$; where L is the length in stations of 100 feet per each station and G1-G2 is the algebraic change of grade in percent.
 - f. At all intersections allow for a minimum of 1% drop in elevation around the curb return.
2. Where the Township Zoning Ordinance requires off-street parking, the design of the parking area shall conform to the requirements as follows:
 - a. All parking lot layouts shall be designed to meet the requirements of the Township Engineer and shall receive his written approval.
 - b. All parking areas (other than driving lanes in residential parking lot areas) shall be paved with either 6 inches minimum thickness concrete or six inches minimum thickness of stone

aggregate topped with 2-1/2 inches of bituminous concrete surface course. A six inch high concrete curb shall be placed around the entire perimeter (except for drive entrances) of the paved parking area. All driving lanes in residential parking lot areas (through parking bays) shall be concrete pavement—six inches minimum thickness and 24 feet minimum width.

- c. When sidewalks are provided adjacent to the parking area curbs where car overhangs occur, such walks shall be a minimum width of six feet as measured from the face of the curb
3. Minimum Right-of-Way Widths for Public Streets and Condominiums:
 - a. Major Thoroughfares: As required by the County Road Commission for county roads.
 - b. Minor Streets: Sixty six (66) feet for single family residential development and multiple occupancy developments.
 - c. Cul-de-Sac Streets: Sixty six (66) foot radius (circle one hundred thirty two (132) feet in diameter) in residential subdivisions or meeting current Monroe County Road Commission requirements.
 4. Minimum Pavement Width for All Streets. Monroe County Road Commission standards shall be applicable.
 5. Minimum Roadway Curvature. Monroe County Road Commission standards shall be applicable.
 6. 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.
 7. 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.
 8. Street Length:
 - a. Monroe County Road Commission standards shall be applicable for all public roadways.
 - b. 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.
 - c. 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.
 - d. 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.
 9. Driveways and parking Lots not located within the Road Right-of-way
 - a. Concrete materials shall conform to the current MDOT specifications for roadway pavement construction
 10. Pavement Grading
 - a. Minimum pavement slopes shall be 1.0 percent.
 - b. Maximum driveway slopes shall be 8.0 percent.
 - c. Maximum parking lot slopes shall typically be 6.0 percent, except within handicapped parking areas, where the maximum slope shall be 2.0 percent.

- d. 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.

11. Drainage of Paved Surfaces

- a. 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.
- b. The disposal of storm waters from all paved surfaces shall conform to the standards set forth in this Ordinance.
- c. The design of parking lot storm sewer facilities shall conform to the standards set forth in this Ordinance. 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.
- d. The point discharge of storm waters onto private property is not permitted unless a recorded easement is received from the affected property owners.

12. Sidewalks and Driveways

- a. Sidewalks shall have a minimum thickness of 4 inches in pedestrian only areas and a minimum of 6 inches in areas where vehicular traffic will cross the walk.
- b. The width of the walk shall be a minimum of 5 feet for public walks and a minimum of 3 feet for other than public walks and are subject to review and approval by the Township.
- c. Driveways shall be a minimum of 6 inches thick. However, where loads heavier than standard automobile loads are anticipated, the minimum thickness should be 7 inches.
- d. Construction joints with a half inch premolded expansion filler shall be placed at maximum intervals of 50 feet. Contraction joints shall be placed at maximum intervals of five feet, or equal to the width of walk, whichever is greater.
- e. Sidewalks shall be constructed along a planned longitudinal grade line. The maximum longitudinal slope shall be 6%. The transverse slope of the sidewalk shall be a minimum of 2% (1/4 inch per foot) and a maximum of 6% (3/4 of an inch per foot).
- f. Concrete for sidewalks and driveways shall have a 28 day compressive strength of at least 3,000 pounds per square inch.
- g. Where sidewalks intersect pavement at approaches, drives and parking lots, the sidewalk shall be carried through.

13. Pavement and Curb

- a. All parking lots and drives shall be paved and have curb.
- b. Parking lots and driveways shall have well-drained prepared subgrades. Minimum grade shall be 1%. Maximum grade shall be 6%. Adequate means of collecting and disposing of the drainage shall be provided.
- c. All curbing shall be Portland cement concrete in accordance with the most recent MDOT standard specifications. Asphalt curbs are not permitted.
- d. Concrete curb and gutter will be required for all public and private roadways and parking lot construction. An appropriate detail shall be provided. Underground storm sewers will be installed with all paving, which requires concrete curb and gutter. The storm water runoff from all proposed site development will be collected and conveyed by means of storm sewers to approved points of discharge.
- e. Minimum general paving slopes:

- 1.) Asphalt: 1.0%
 - 2.) Concrete: 0.5%
- f. Maximum general paving slopes:
 - g. Road/Approaches: 6.0%
 - h. Parking Lots and Sidewalks/Pathways: 4.0%

GRADING, DRAINAGE, AND EROSION CONTROL

1. Retaining Walls and Landscape Walls
 - a. 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, atypical and other conditions of the wall construction.
 - b. Walls greater than four (4) feet in height shall require an engineering analysis from a structural engineer prior to issuance of a Building Permit. In addition, a separate permit from the Building Department will be necessary for construction of this wall.
 - c. Unless adjacent to a driveway or parking lot, walls less than four (4) feet of height will be considered landscape walls and do not require an engineering analysis.
2. No filling will be allowed within the floodplain of a river, stream, creek or lake unless under the terms of a permit granted by the MDEQ.
3. No earth change activity may commence until a soil erosion control plan and application have been approved, a permit issued and the soil erosion control measures inspected and approved. All trees shown on the approved site plan as being saved shall be tagged and have a protective fence placed around them at the drip line.
4. Grading plans shall be drawn with existing and proposed contour lines at one foot intervals. Spot elevations may be provided, but shall not substitute for contour lines.
5. Grading plans shall include the finished grade elevation for proposed hydrants. Rim elevations shall be provided for each storm structure, gate valve, and sanitary manhole.
6. Grading plans shall show all the changes on the site required to convert its predevelopment state to a completed development.
7. Proposed contour lines shall connect with existing contour lines within the site unless grading easements are obtained from adjacent property owners. A clear distinction shall be made between proposed and existing contours.
8. Proposed grades shall generally not exceed a slope of 1 on 4. If a slope greater than 1 on 4 is necessary, the surface shall be planted with a ground cover that is suitable for stabilizing the slope.
9. All contour lines and spot elevations shall be based on NAVD88.
10. When applying for a building permit for a single family home in an area with an approved grading plan, the builder shall include the following on a plot plan submitted to the building department:
 - a. North arrow.

- b. Scale.
 - c. Name, address, and phone number of the applicant and the person or company who prepared the plan.
 - d. Site information for the lot or unit, including floor area ratio, lot coverage and net lot coverage.
 - e. Lot lines with dimensions and bearings.
 - f. Location and dimensions of all proposed structures and proposed setbacks from all property lines consistent with the Zoning Ordinance.
 - g. Street name and right-of-way width.
 - h. Location of existing water, sanitary and storm mains including manholes, structures, gate wells and hydrants within the vicinity of the site. Existing service lead stubs for each utility shall also be shown.
 - i. All proposed service leads for water, sanitary and storm with sizing shall be extended to the house. Proposed leads shall be differentiated by line type from existing leads.
 - j. All adjacent lots to the site shall be labeled with lot number and identified as either vacant or with an existing building. Proposed spot grades from adjacent lots under construction shall be shown consistent with the adjacent lot plot plan.
 - k. The location and elevation of regulated 100-year Floodplain boundaries.
 - l. Soil Erosion and Sedimentation Control measures.
 - m. No grading is allowed within the floodplain boundary without an MDEQ Permit.
 - n. Driveways:
 - 1.) Show location and width for proposed drive (s).
 - 2.) Number of drives shown is consistent with WCRC Permit.
 - 3.) Maximum slope of driveways shall be 6%.
 - 4.) The driveway shall not interfere with side or front yard drainage.
 - 5.) Edge of drives shall be offset a minimum of three (3) feet from side lot line.
11. Sufficient proposed grades must be indicated to ensure the following:
- a. Drainage is adequately discharged offsite with proper detention or retention.
 - b. No upstream drainage is restricted.
 - c. Paving slopes are adequate.
 - d. The site generally drains without standing water.
 - e. Site grading merges with grading on neighboring sites.
 - f. Sight lines are not obstructed.
12. No filling will be allowed within the floodplain of a river, stream, creek, or lake unless under the terms of a permit granted by the MDEQ.

UTILITIES

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.

CONSTRUCTION REQUIREMENTS

1. Payment of Fees
 - a. All fees, bonds, escrows and connection costs (e.g. benefit charges, trunk line and transmission charges, and tap fees, etc.) must be paid prior to the scheduling of a pre-construction meeting.
2. Insurance
 - a. Certificates in accordance with the General Requirements and Procedures section of this document shall be submitted to and approved by the Township prior to scheduling a preconstruction meeting.
3. Inspection
 - a. All underground utilities, private roads, bike path, sidewalks, driveway approaches, storm water facilities, soil erosion control, and any other work designated at the preconstruction meeting must be inspected by the Township Engineer. Grading may be spot checked by the Township Engineer at the Township's request. 72 hour notice is required (not including weekends or holidays) to schedule inspection prior to construction. This applies for construction start and any time work is suspended for two days or more contact the Township Engineer.
 - b. Any work installed without inspection will not be accepted by the Township and will not be allowed to connect to the system.

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. The name selected for any street must be approved by the Office of Monroe County Central Dispatch and written confirmation of this office approval must be provided to the Township Engineer.
4. 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.

REQUIREMENTS FOR RESIDENTIAL DEVELOPMENTS

1. All single family lots shall be graded for rear to front drainage. Lot grading (front to rear drainage) will be allowed only where, due to existing topography, rear to front drainage would be very difficult to achieve or not feasible. Large acreage lots will be reviewed on an individual basis.
2. Where front to rear drainage is permitted, the longitudinal slope along a rear yard drainage easement shall be not less than 1.0% or more than 3.0% Maximum distance from a high point to a drain outlet shall not exceed 250 feet or four lots, whichever is less.
3. Where front to rear drainage is used, private easements for drainage shall be dedicated and recorded. For perimeter lots, easement width shall be 12 feet minimum (or as required), and for abutting lots with a common rear yard lot line, easement width shall be at least 6 feet on each lot (or as required).
4. All grade point elevations shall be shown for each lot.
5. A maximum slope of 4 feet horizontal to 1 foot vertical shall not be exceeded for all terracing. The toe of slope shall be located outside of the rear and/or side lot line drainage easements.
6. The grading plans shall show the existing elevation topography by contour lines. Topography on abutting property within 100 feet of the site boundary shall be shown.

