

# TOWNSHIP OF BLOOMFIELD ENGINEERING DESIGN AND STANDARDS ORDINANCE NO. 167

The Township of Bloomfield Ordains:

## ARTICLE I—

### TITLE AND PURPOSE

#### SECTION 100. TITLE:

This ordinance shall be known and may be cited as the Township of Bloomfield Engineering Design Standards.

#### SECTION 101. PURPOSE:

The purpose is to provide a reasonable and proper basis for the design and construction of subdivision and other project site improvements including sanitary sewer, storm sewer, water main and site grading.

## ARTICLE II—

### GENERAL

#### SECTION 200. GENERAL REQUIREMENTS:

A. Plans submitted shall be on 24" x 36" or 22" x 36" white prints having blue or black lines, and shall be neatly and accurately prepared. Judgment should be exercised in the design, layout, and presentation of proposed improvements.

B. For projects or subdivisions having more than one sheet of plans, a general plan having a scale of 1" = 100 feet shall be provided showing the overall project or subdivision and indicating the location of all improvements shown in the detailed plans. Street names, lot lines and lot numbers shall be shown in all plans. Easements shall have a minimum width of 12 feet. Sewers in easements shall be kept at least 2 feet away from side or rear lot lines. Superimposed on this general plan shall be 2 foot contours of the area including the area at least 100 feet outside of the subdivision.

C. 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 edge of pavement grade.

D. Elevations shall be on U. S. G. S. datum. Bench marks for the work shall be indicated on the plan.

E. Finished grades of structures shall be indicated on the plan or profile for all structures.

F. A copy of the computed plat shall be submitted.

G. All plans submitted shall bear the seal of the Registered Professional Engineer responsible for the design.

H. One mylar copy of As-Built plan of water, sanitary sewer, roads and storm sewer system and certification from a registered professional Engineer that all surface grades, roads and structures are in conformance with the approved plan shall be provided prior to acceptance of the sub-

division improvements by the Township.

I. Complete subdivision improvement plans shall be submitted prior to review and approval of any portion thereof.

## ARTICLE III—

### SANITARY SEWERS

#### SECTION 300. SUBMITTAL PROCEDURE:

For Township approval of sanitary sewer systems, the applicant shall furnish to the Township of Bloomfield, a detailed estimate of cost and three sets of the sanitary sewer plans and specifications, including the general plan, for the system on which he desires approval. The Township Engineers shall review the estimate and the plans for conformity to the standards set forth herein, and certify that they are consistent with the overall utility plans of the Township, after which they will return one of the three sets with appropriate comments. The applicant, after making any changes requested on the set of plans returned to him, shall then submit eight sets of the revised plans to the Township for final approval. The Township Engineer shall then review these revised plans for conformity to the comments mentioned heretofore, and if they have been properly made, will transmit six copies to the Oakland County Department of Public Works for their review of the connection details (to the Evergreen Sanitary System). The Department of Public Works will then transmit the plans to the Michigan State Health Department for a construction permit. An approved copy will be returned to the applicant via the Michigan State Health Department.

#### SECTION 301. DESIGN STANDARDS:

1. The following notes pertaining to the sanitary sewers shall appear on the plans.
  - a. At all connections to the Evergreen Sanitary Sewer Interceptor System shall be inserted the following note: "Obtain Oakland County Department of Public Works construction permit prior to starting construction. \$50.00 fee required for each connection."
  - b. Downspouts, weep tile, footing drains, or any conduit that carries storm or ground water shall not be allowed to discharge into this sewer.
  - c. No sewer installation or portion thereof shall have an infiltration exceeding 500 gallons per inch diameter per mile of pipe per 24 hour period.
  - d. Concrete pipe wye openings shall contain factory installed Premium Joint Material of a type suitable and approved for use with house lead joint specified.

- e. Township of Bloomfield Standard Details and specifications, heretofore adopted, are incorporated as part of these standards.
- f. Wherever existing manholes or sewer pipe are to be tapped, drill holes at 4" center to center around the periphery of opening, to create a plane of weakness joint, before breaking section out.
- g. For the purpose of testing infiltration, a contemporary 12" deep sump shall be provided in the first manhole above the connection which will be filled in, after successful completion of the infiltration test, up to the standard fillet provided for the flow channel. At all connections to the Evergreen System or extensions thereto, provide a watertight bulkhead with a 1" diameter pipe through the bulkhead for measuring infiltration immediately upstream.
- h. For any new manholes constructed over an existing Evergreen Interceptor, or trunk extension, use the Oakland County Department of Public Works wet ground manhole detail with Standard Oakland County Department of Public Works covers. Obtain details from the Oakland County Department of Public Works for these items.

- 2. Prior to starting any sanitary sewer design the applicant may make use of maps and information available at the Township offices. It shall be the responsibility of the applicant to verify utility locations provided by the Township.
- 3. The following table of minimum slopes for sanitary sewers shall be adhered to:

Size	Minimum Slope
10"	@ 0.28
12"	@ 0.22
15"	@ 0.15
18"	@ 0.12
21"	@ 0.10
24"	@ 0.08

NOTE: In the Township of Bloomfield, the minimum allowable size of a sanitary lateral is 10" diameter.

- 4. A note or detail shall show the type of bedding upon which the sewer pipe shall be installed.
- 5. The house lead from the lateral sewer to serve the building shall be a minimum of 6" in diameter within the street R.O.W. and shall be extended a minimum of ten (10) feet past the property line.
- 6. Sanitary sewer manholes shall be spaced with the following recommended maximums:
  - 10" — 300 feet
  - 12" to 21"—350 feet
  - 24" and larger—400 feet
 Manholes shall be placed in the street right-of-ways. In general, sanitary sewers will not be approved in the rear lot easement. Sanitary sewer manholes shall be of precast construction with modified grooved tongue with rubber gasket.

- 7. The sewer profile shall indicate the length of run between each manhole, the size and slope of sewer between each manhole, and the class of bedding in the event that concrete bedding is required. Top elevations of all manholes shall be indicated.
- 8. A minimum depth from top of curb (or road centerline) to the top of any sanitary sewer of 8½ feet at local control points, or a minimum of 9 feet at locations where the sewer grade is parallel to the road grade shall be provided. In all cases the sewer shall be deep enough to serve, by gravity, a standard depth basement.
- 9. Each wye or end of house connection shall have a plug with the same type of joint as the main sewer.
- 10. Allowable types of sewer pipe and joints shall be current Bloomfield Township Standards and shall be covered on the plans by note or on the profile where applicable.

#### ARTICLE IV — STORM SEWERS

##### SECTION 400. SUBMITTAL PROCEDURE:

For Township approval of storm sewer systems, the applicant shall furnish to the Township of Bloomfield, a detailed estimate of cost and three sets of storm sewer plans and specifications. Detailed storm sewer design computations and the drainage area map indicating the various areas going into the points of inlet shall be provided. The Township Engineer shall review the estimate and the plans for conformity to standards set forth herein, and certify that they are consistent with the overall utility plans of the Township, after which they will return one of the three sets with appropriate comments. The applicant, after making any changes requested on the set of plans returned to him shall then submit four sets of revised plans to the Township for final approval. The Township Engineer shall then review these revised plans for conformity to the comments mentioned heretofore, and if they have been properly made, will retain three copies for the Township's records, and return one approved copy to the applicant. The applicant shall obtain approval of the Oakland County Road Commission and the Oakland County Drain Commissioner where applicable.

##### SECTION 401. DESIGN STANDARDS:

- 1. Storm drainage systems shall be designed for a ten year storm. The rational method for arriving at storm water runoff shall be used. The formula for rainfall intensity shall be equivalent to

$$I = \frac{175}{T + 25}$$

in which T is the time of concentration. The consulting engineer shall use judgment in arriving at proper impervious factors. The consulting engineer shall submit a 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.

In general, sufficient capacity shall be provided in the storm sewer system to take fully developed (fully paved and sewered) upstream drainage into the system.

2. Where the hydraulic gradient is above the top of the sewer pipe, the design elevation of the hydraulic gradient shall be indicated.
3. Manhole spacing for storm sewers shall be as follows:

Diameter of Sewer	Absolute Maximum Manhole Spacing
10" - 15"	330'
18" - 30"	350'
36" & 42"	400'
48"	450'
54" & 60"	500'
66" and larger	600'

NOTE: Height of Lo-Hed pipe shall be used as the criteria for manhole spacing.  
Catchbasins shall not be constructed over a sewer line to replace manholes.
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. Class of bedding where concrete is required
  - d. Top elevation of all manholes  
Where possible, the slope of the sewers shall provide a minimum velocity of 2.5' per second velocity.
5. A note or detail shall show the type of bedding upon which the sewer pipe shall be installed.
6. Where possible, provide a minimum of 3 feet of cover from the top of curb (or road centerline) to the top of any storm sewer. If the depth of cover to the top of pipe is less than one foot, C-76 - C 1.4 pipe shall be used. If the cover is between one foot and three feet from top of curb to top of pipe, use C-76 - C 1.3 pipe. All catch basin leads within a street shall be C-76 - C 1.3 pipe, including the leads to the manholes.
7. In general catch basins shall be located as follows:
  - a. At the radius return of street intersections. 150 feet maximum distance along the street between a high point and a corner catch basin is allowed when drainage is required to go around the corner.
  - b. At all low points in streets.
  - c. At intermediate points along the street such that there is a maximum of 600 feet of drainage draining from a high point to a catch basin or from a previous intercepting catch basin to this catch basin.
  - d. A maximum of 900 feet of drainage is allowed from two directions.
8. Field catch basins shall be provided at all low points in ease-

ments. Locate intercepting field catch basins such that not more than 600 feet of drainage runs into any one catch basin other than a low point of catch basin. 1200 feet of drainage is allowed to run into a low point catch basin. Locate field catch basins in rear lot easement swale when such swale changes direction by more than 45°.

9. Finished easement grades shall be indicated on the plans.
10. Improved open drains may be permitted upon special circumstances in accordance with Article XIV.
11. Headwalls and inlet structures shall be placed as required.
12. Allowable types of sewer pipe and joints shall be current Bloomfield Township Standards and shall be covered on the plan by note or on the profile where applicable.
13. Lateral storm sewers shall be constructed to provide an outlet for the footing drain discharge house leads. Extensions of the storm sewer laterals to provide for footing drain discharge only shall be a minimum of 8" diameter on a minimum 0.4% grade with manholes spaced a maximum of 300 feet.
14. Wherever sufficient grade is available, the storm sewers shall be constructed at a depth adequate to allow for gravity drainage of the building footing drains. Where grade is not available to allow for gravity drainage of the footing drains, a sump and pump shall be provided with the sump pump discharge connected to the enclosed storm sewer system.
15. A minimum 4" diameter storm sewer lead shall be constructed from the lateral storm sewer to the property line to provide an outlet for the footing drain discharge. The lead shall be constructed at a minimum depth of 3 1/2 ft. on a minimum of 1.0% grade. The materials and methods of construction shall be in accordance with the current Bloomfield Township Standards.

#### ARTICLE V — WATER MAINS

##### SECTION 500. SUBMITTAL PROCEDURE:

For Township approval of water main systems, the applicant shall furnish to the Township of Bloomfield, a detailed estimate and three sets of the water main plans and specifications for the system on which he desires approval. The Township Engineer shall review the estimate and the plans for conformity to the standards set forth herein, and certify that they are consistent with the overall utility plans of the Township, after which they will return one of the three sets with appropriate comments. The applicant, after making any changes requested on the set of plans returned to him, shall then submit nine (9) sets of plans to the Township for final approval. The Township Engineer shall then review these revised plans for conformity to the comments mentioned heretofore and, if they have

been properly made, will transmit nine (9) copies to the City of Detroit for approval. After the City of Detroit approval has been obtained, they will be forwarded to the Michigan State Health Department for a construction permit.

#### SECTION 501. DESIGN STANDARDS:

1. Type of pipe and joint shall be in accordance with the current Bloomfield Township Standards.
2. All water main shall be installed with a minimum cover of 5' below finished grade. 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 a minimum length by the use of vertical 11 - 1/4° bends properly anchored.
3. In general, 8" mains will be alternated with 6" mains in streets within a subdivision system. However, water mains which are main feeders within a subdivision, shall be 8". Any 6" water mains shall not have a run longer than 1400 feet between connections to an 8" water main. Gate valves shall be located in the system such that not more than four valves need be turned off to isolate any section of water main. Moreover, sufficient valves shall be placed such that not more than thirty lots shall be serviced within such section of water main which can be so isolated. Where possible, gate valves shall be located at street intersections 5 feet from the intersecting street right-of-way line.
4. Hydrants shall be installed along the water main at least every 600 feet. In no case shall a house be more than 350 feet from a hydrant. In commercial or industrial districts, additional hydrants may be required. Hydrants shall be installed at the ends of all dead-end water mains. When near a street intersection, hydrants shall be located 15 feet from the intersecting street right-of-way. Hydrants shall be Bloomfield Township Standard.
5. The plans shall indicate the finished grades of all hydrants and gate wells.

#### ARTICLE VI —

##### GRADING

#### SECTION 600. SUBMITTAL PROCEDURE:

For Township approval of the grading plan for erosion and sediment control, the applicant shall furnish a detailed estimate and three sets of the subdivision and/or site grading plans. The Township Engineer shall review the estimate and plans for conformity to the principles set forth herein, after which they will return one of the three sets with appropriate comments. The applicant, after making any changes requested on the set of plans returned to him shall then submit four sets of revised plans to the Township for final approval. The Township Engineer shall then review these revised plans for conformity to the comments mentioned heretofore, and if they have

been properly made, will retain three copies for the Township's records, and return one approved copy to the applicant.

#### SECTION 601. DESIGN PRINCIPLES:

1. 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 should be exposed at any one time during development.
  - b. When land is exposed during development, the exposure should be kept to the shortest practical period of time.
  - c. Temporary vegetation and/or mulching should be used to protect critical areas exposed during development.
  - d. Sediment basins (debris basins, or silt traps) should be installed and maintained to remove sediment from run-off waters from land undergoing development.
  - e. Provisions should be made to effectively accommodate the increased run-off caused by changed soil and surface conditions during and after development.
  - f. The permanent final vegetation and structures should be installed as soon as practical in the development.
  - g. The development plan should be fitted to the topography and soil so as to create the least erosion potential.
  - h. Wherever feasible, natural vegetation should be retained and protected.

#### ARTICLE VII —

##### COMPLIANCE STANDARDS

The approvals required under the provisions of this Ordinance shall be obtained prior to the installation of any subdivision or project improvements within the Township, in public streets, public alleys, public rights-of-way, and public easements, and/or under the ultimate jurisdiction of the Township shall comply with all of the provisions and requirements of this or any other related ordinance.

#### ARTICLE VIII —

##### INTERPRETATION

The provisions of these regulations shall be held to be the minimum requirements adopted for the promotion and preservation of public health, safety and general welfare of the Township. These regulations are not intended to repeal, abrogate, annul or in any manner interfere with existing regulations or laws of the Township, nor conflict with any statutes of the State of Michigan or Oakland County except that these regulations shall prevail in cases where these regulations impose a greater restriction than is provided by existing statutes, laws or regulations.

#### ARTICLE IX —

##### FEEES

At time of submittal of plans.

of cost of the proposed subdivision and project improvements, the proprietor shall pay the clerk a fee for review of such equal to one (1%) per cent of the estimate of cost of the improvements.

Further, prior to the construction of subdivision and project improvements, the proprietor shall deposit with the Clerk, at least 24 hours prior to the start of construction, a percentage of the total contract price for inspection as follows:

Contract Amount	%
0 to \$5,000	7.50
\$5,000 to \$50,000	10
\$50,000 to \$100,000	8
over \$100,000	5

The actual fee for inspection, which will be supplied on a full time basis and shall be borne by the proprietor, will be on a payroll cost plus ~~10%~~ 12 1/2%

The fees and charges herein contained shall be in addition to those charged for debt service charges, connection charges and other charges or fees imposed for sanitary sewer and water supply.

**ARTICLE X —  
INSURANCE AND BONDS**

Prior to construction of subdivision and project improvements, the contractor shall procure and maintain during the life of any contract or agreement for such construction insurance protecting the Township from any claim for damages, real, personal or otherwise, in such amounts as established by resolution of the Township Board.

Prior to the acceptance of improvements, by the Township, a two-year maintenance bond in an amount set by and acceptable to the Township Board shall be posted by the proprietor.

**ARTICLE XI —  
VIOLATIONS AND PENALTIES**

Any person, persons, firm or corporation or anyone acting in behalf of said person, persons, firm, or corporation, violating any of the provisions of this Ordinance shall, upon conviction thereof, be subject to a fine of not more than One Hundred (\$100.00) Dollars and the costs of prosecution or in default of the payments thereof, by imprisonment in the County Jail for a period not to exceed ninety (90) days, or both such fine and imprisonment in the discretion of the Court. Each day that a violation is permitted to exist shall constitute a separate violation.

**ARTICLE XII —  
SEVERABILITY**

If any section, paragraph, clause, phrase or part of these Engineering Design Standards is for any reason held invalid by any court of competent jurisdiction, such decision shall

not affect the validity of the remaining provisions of these standards and the application of those provisions to any persons or circumstances shall not be affected thereby.

**ARTICLE XIII —  
REPEAL**

All ordinances and amendments thereto enacted and/or adopted by the Township Board inconsistent with the provisions of this Ordinance are hereby repealed, as of the effective date of this Ordinance. The repeal of the above Ordinance and its amendments does not affect or impair any act done, offense committed or right accruing, accrued or acquired or liability, penalty, forfeiture or punishment incurred, prior to the time enforced, prosecuted or inflicted.

**ARTICLE XIV —  
VARIANCE**

The Township Board may authorize a variance from these engineering design standards when it determines that undue hardship may result from strict compliance. In granting any variance, the Board shall prescribe other conditions that it deems necessary or desirable for the public interest. No variance shall be granted unless the Township Board finds:

A. There are special circumstances or conditions affecting the subdivision or project improvement such that a strict application of the provisions of this ordinance would deprive the applicant of reasonable use of his property.

B. That the variance is necessary for the preservation and enjoyment of the substantial property right of the applicant.

C. That the granting of the variance will not be detrimental to the public welfare or injurious to other property in the area in which said property is situated.

D. Application for any such variance shall be submitted in writing by the proprietor at the time the preliminary plans are submitted, stating fully and clearly all facts relied upon by the proprietor and shall be supplemented with maps, plans, or other additional data which may aid in the analysis of the proposed project. The plans for such development shall include such covenants, restrictions or other legal provisions necessary to guarantee the full achievement of the plan.

**ARTICLE XV —  
EFFECTIVE DATE**

This ordinance shall become effective immediately upon its publication. Made and passed by the Township Board of the Township of Bloomfield, this 19th day of January, A.D. 1968.

DELORIS V. LITTLE  
TOWNSHIP CLERK

BLOOMFIELD TOWNSHIP  
ORDINANCE NO. 242

AN ORDINANCE TO AMEND ORDINANCE NO. 167 KNOWN AS TOWNSHIP  
OF BLOOMFIELD ENGINEERING DESIGN STANDARDS FOR BLOOMFIELD TOWNSHIP

The Township of Bloomfield Ordains:

SECTION 101. That Ordinance No. 167 be and the same hereby  
is amended by the addition of a new Article thereto reading as  
follows:

ARTICLE XVI  
STREETS, ROADS AND RIGHTS-OF-WAYS, PUBLIC OR PRIVATE

SECTION 1500. GENERAL REQUIREMENTS

- A. All streets, roads and rights-of-way, public or private, including those in Cooperative, Condominium, Cluster and Multiple Developments shall conform to Part II of the current "Procedures for Plat Development and Standards and Specifications" of the Oakland County Road Commission, as set forth therein, except as they pertain to Rights-of-Way in the Cooperative, Condominium, Cluster and Multiple Developments.
- B. Article IX of Ordinance No. 167 shall apply to all those streets, roads and rights-of-way that are not under the jurisdiction of the Oakland County Road Commission.

SECTION 1501. SUBMITTAL PROCEDURE

- A. For Township approval of the paving plans, the applicant shall furnish a detailed estimate and three sets of the paving plans. The Township Engineer shall review the estimate and plans for conformity to the principles set forth herein, after which they will return one of the three sets with appropriate comments. The applicant, after making any changes requested on the set of plans returned to him shall then submit four sets of revised plans to the Township for final approval. The Township Engineer shall then review these revised plans for conformity to the comments mentioned heretofore, and if they have been properly made, will retain three copies for the Township's records, and return one approved copy to the applicant.

SECTION 1502. DESIGN STANDARDS

- A. All storm sewers, draining pavement areas, shall be designed in accordance with Article IV of this Ordinance.
- B. All pavements shall be designed according to the current standards and requirements of the Oakland County Road Commission as set forth in Section VIII of said publication. Profiles shall indicate existing ground and the proposed top of curb and/or crown of road grades.

SECTION 1502. DESIGN STANDARDS (continued)

C. Pavement widths shall be determined as follows:

1. A collector road is defined as a road carrying traffic from minor roads to major thoroughfares and shall be 33.00 feet wide as measured from back-to-back of curb.
2. A minor road is defined as a road which is used primarily for access to abutting residential properties, and shall be 27.00 feet wide as measured from back-to-back of curb.

D. All subdivisions and building complexes, private or public, having an entrance from a major thoroughfare shall be of the Boulevard type according to the current standards and requirements of the Oakland County Road Commission, Figures 7 and 8.

E. All roads and streets shall be paved according to current Oakland County Road Commission Standards and Requirements, Figures 11, 11A, 12 and 13.

F. All pavement shall have concrete curb and gutter according to the current standards and requirements of the Oakland County Road Commission, Figure 14.

G. All driveways, banners, and/or parades upon or over such roads as described in Section 1500 of this Ordinance shall conform to the current standards and requirements of the Oakland County Road Commission.

SECTION 2.01. That Article VII - Compliance Standards of Ordinance No. 167 be and the same hereby is amended to read as follows:

ARTICLE VII  
COMPLIANCE STANDARDS

The approvals required under the provisions of this Ordinance and any amendment thereto shall be obtained prior to the commencement of installation or construction of improvements in any subdivision plat, condominium project or development, cluster housing project or development, or multiple family project or development within Township of Bloomfield.

SECTION 3.01. This Ordinance shall take effect immediately upon its publication.

Made and passed by the Township Board of the Township of Bloomfield this 9th day of October A. D., 1972.

DELORIS V. LITTLE  
Township Clerk