

CITY OF MUSKEGO
DRAFTING STANDARDS

GENERAL - These standards apply to all plans.

1. Plans must be prepared on sheets measuring 36 inch across and 22 inch to 24 inch high unless otherwise specified under plan preparation standards.
2. Title blocks conforming to the City Standards must be located in the lower right hand corner, without profile background and readable from the right hand side of the sheet. Location of ends of improvement must be given by distance and direction from the nearest cross street.
3. Seal and signature of the professional engineer who prepared the plans must be affixed immediately adjacent to the title block on the final submittal.
4. Plan view must be located above the profile view on plan-profile drawings and the two views must be in alignment vertically whenever possible.
5. No drafting must be done on the side of which the profile lines are printed.
6. Elevations must be based on U.S.G.S. Datum. The benchmarks used on the project must be indicated on the cover sheet and on each sheet where they appear when requested by the City.
7. Scale of the plans must be 1 inch = 40 feet, horizontal and 1 inch = 5 feet, or 1 inch = 4 feet, vertical, excepting details which must be 1 inch = 20 feet or larger. Scale of details must be clearly noted.
8. Date of drawing and date of last revision must be shown.
9. Lot, block and easement lines must be shown.
10. Lot and block numbers, and subdivision name or key numbers of unplatted lands must be shown.
11. Street names must be shown.
12. North direction must be to the top or to the right of the sheet and indicated by an arrow and the letter "N".
13. Street centerline must be indicated.
14. Stationing must be from left to right.
15. When plans are continued on an additional sheet, plan view must overlap by a minimum of one hundred (100) feet.

CITY OF MUSKEGO
STANDARD CROSS SECTIONS

Please note that the dimensions shown are minimum standard designs and the City will review alternative designs.

In addition, the following design standards are to be used as guidelines.

Per applicable State Statutes and Standard Specifications for Sewer and Water in Wisconsin, except as follows:

1. Water Main

- a. Generally on the east or north of the sanitary sewer. Not less than 10 feet from the sanitary sewer.
- b. All valves must be butterfly valves except on tapping tees and must be a minimum 2 feet clear of the front flange or the back of the curb.
- c. A main valve must be installed on all branch lines (i.e.: 3 valves at all tees, 4 valves at all crosses).
- d. All hydrant tees must be anchor tees or the hydrant valves must be rodded to the tee.
- e. Hydrants must be located at 3 feet from the right of way line (rural), 4 feet behind back of curb (urban).
- f. Hydrants must be set near property lines, but not more than 400 feet apart along the main line.
- g. Valve manholes within the pavement must have the rim grade set at the bituminous base course pavement grade.
- h. Water services must be shown not less than 3 feet to the left of sanitary sewer lateral when facing the parcel from the street.

2. Sanitary Sewer, Force Main and Pressure Sewer

- a. Generally within 5 feet of the centerline of the street.
- b. Preferred to have no angle points in easements. A paved access drive may be required to access manhole(s) in easement if an angle point is necessary as determined by City.
- c. Manhole rims must be set to finish pavement grade.

3. Storm Sewer

- a. Generally on the west and south sides. Mainline sewer must be not less than 5 feet and no greater than 10 feet behind the back of curb (urban).
- b. Inlet spacing generally not to exceed 300 feet or as measured from a high point unless an exception is granted by the City.
- c. All dead low points shall have double inlets.
- d. Small diameter, 6 inch, PVC, sump pump discharge line to be installed along all lots not directly fronting on storm sewer. The locations of this discharge line is to be uniform throughout the development, but must comply with the DNR required 8 feet separation from the water main. Clean outs must be installed at all bends and at maximum 200 feet spacing. See standard detail.
- e. Storm laterals must be 8 feet to the right of the sanitary sewer when facing the parcel from the street.

4. Street Construction

- a. The crushed aggregate base must extend a minimum of 6 inches behind the curb and must be a minimum 6 inches thick at the back of curb.
- b. Concrete curb and gutter must be as per the Standard detail.
- c. The 4 inch bituminous base course must be installed in two - 2 inch thick courses with an approved tack coat between course.
- d. Snow plow wedges must be installed around all manholes. The wedges must not be less than 20 feet in diameter and must meet with the approval of the Superintendent of Public Works. See Standard detail.

5. Backfill

- a. All trenches in the proposed road section or within 5 feet of back of curb must be backfilled with 3/4 inch Crushed Road Gravel State Gradation No. 2. Gravel backfill limits must be shown on the plans.

6. The Standard Specifications for Sewer and Water Construction in Wisconsin, latest edition must be used, except for details as modified by the City.

CITY OF MUSKEGO
MASTER GRADING PLAN
PREPARATION STANDARDS

GENERAL

1. All master grading plan sheets must be bound in a set.
2. The name(s) of the person who prepared the plans must be shown.
3. Scale of the plans must be either 1 inch = 100 feet or larger standard scale.
4. A legend indicating grading line types must be shown.

PLAN

The information under this heading must be shown within the development and within 200 feet of the boundaries of the development

5. Existing 2 foot contour lines must be shown as light dashed line and labeled at least once per contour with its elevation.
6. Proposed 2 foot contour lines where different from existing, must be shown as a heavy dashed line also labeled with the proposed elevation.
7. The ten (10) foot interval contour, whether existing or proposed, must be drawn with a heavier line so as to be readily discernible.
8. Yard grades must be indicated at the building setback line for all lots.
9. Proposed finished elevations to 0.1 of a foot at all lot corners and at a point along a lot line (rear and side) between proposed houses must be shown.
10. Location and elevations of storm drainage facilities, either existing or proposed, which will affect or will be affected by the proposed site grading plan.
11. Off-site grading necessary for, or related to, proposed grading, including existing and proposed elevations must be shown.
12. Any other information pertinent to grading, such as wetland limits, 100 year flood plain, 2 foot contour above 100 year flood plain, etc. must be shown and labeled.

CITY OF MUSKEGO
SANITARY SEWER, FORCE MAIN, PRESSURE SEWER, AND WATER MAIN
CONSTRUCTION PLAN PREPARATION STANDARDS

GENERAL

1. Sanitary sewer, force main, pressure sewer, and water main must be shown on the same sheets and bound in one set.
2. A project specific combined sanitary sewer and water main system plan must be submitted. The plan shall include manholes, hydrants, and valves, laterals and numbering system identifying each of the above.
3. Locations within street must conform to the City Standard Cross-section and must be dimensioned on the plan view.
4. Minimum depth for water main must be 6 feet to inside crown of pipe finished grade.
5. Water appurtenance locations must be as follows:
 - a. Hydrants
 1. Centerline must be four (4) feet from the back of the curb.
 2. Centerline must be three (3) feet from street right of way line when a rural cross-section is used.
 3. At intersections 5 feet from adjoining street line extended away from intersection (usually 35 feet from the centerline of the intersecting road), but not less than 10 feet from a storm inlet.
 4. At end of cul de sac at a lot line.
 5. Mid-block locations at a lot line extended.
 6. No more than 400 feet apart along the main line.
 7. Valve stem extenders must be shown (see standard detail).
 8. Location boxes for detector wire must be shown at every hydrant.
 - b. Valves
 1. At intersections 20 feet from adjoining street line extended away from intersection (usually 50 feet from the centerline of the intersecting road).
 2. On hydrant branches immediately next to the tee.
 3. On all branch lines at intersections.
 4. No more than 800 feet apart. (residential, 500 feet for all others)
 5. Valve stem extenders must be shown (see standard detail).
 - c. Air vents - (size to be reviewed by City) at temporary ends of water main or at high points in line when no hydrant is present.

PLAN VIEW

Sanitary Sewer, Force Main, Pressure Sewer, and Water Main

6. Pipe diameter, manhole or fitting center-to-center length and lateral spacing must be dimensioned.
7. Manholes, hydrants and valves must be numbered. Locator boxes must be shown at a maximum of 1000 foot spacing or as directed by the Utility Superintendent.

Other Improvements

8. Existing and/or proposed underground improvements must be indicated in accordance with the City's Standard Legend and the size labeled.
9. Existing surface improvements must be indicated with solid light lines and labeled.

PROFILE VIEW

Sanitary Sewer, Force Main, Pressure Sewer, and Water Main

10. Draw pipe as two lines indicating crown and flow line of pipe.
11. Flow line elevations must be shown at manholes, fittings, and breaks in grade. Elevations must be based upon USGS datum.
12. Grades must be indicated in percentage to the nearest 0.01.
13. Manhole or fitting center-to-center length, and riser height must be dimensioned.
14. Pipe material, strength and diameter must be labeled.
15. Elevations of manhole rim must be indicated.
16. Areas of gravel or slurry backfill must be dimensioned and labeled.
17. Manholes, hydrants and valves must be numbered to correspond with plan view.
18. Minimum grade of 8 inch diameter sewers must be designed at 0.44%.
19. A minimum of 0.10 foot drop must be designed into all manholes. All manholes with greater than 30° deflection must have a minimum of 0.25 foot drop.
20. Locator boxes for force mains or pressure sewers must be shown at a maximum 1000 foot spacing or as directed by the Utility Superintendent.

Other Improvements

21. Proposed street centerline grade must be shown.
22. Crossings with existing or proposed underground improvements must be shown with the name, diameter, elevation and station indicated.

Existing Features

23. Existing street centerline grade must be drawn.
24. Existing and proposed grades over proposed utility must be shown.
25. Elevations of existing basement floors of buildings to be served must be shown.

CITY OF MUSKEGO
STORM SEWER, CULVERTS, DITCHES AND PAVING
CONSTRUCTION PLAN AND PREPARATION STANDARDS

GENERAL

1. Project specific system plan must be submitted. Manholes, inlets, and cleanouts must be shown and numbered.
2. Storm sewer, ditch grades and paving must be shown on the same sheets and bound in one set.
3. Pavement width and location must conform to the City Standard Cross-section and must be shown and dimensioned on the plan view.
4. Cross-sections must be shown at specified intervals when required by the City.
5. Elevations must refer to:
 - a. Ditch lines - flow line or invert.
 - b. Storm sewer, culvert and sump lines - flow line or invert of pipe.
 - c. Paving - finished grade.
 - d. Curb and gutter - top of curb.
 - e. Inlets - grate elevation at the flow line
6. Inlets at intersections must be 3 feet from the end of the radius.
7. Storm Sewer Sizing Computations
 - a. All storm sewer piping shall be sized to convey the 25yr storm (per CH. 34) without surcharging. Overland flow paths shall be designed to direct all flows greater than the 25yr event directly to retention areas without trespass onto private property.

PLAN VIEW

Storm Sewer and Culverts

7. Pipe diameter, slope and manhole center-to-center length must be dimensioned. Pipe material, type, and class must be shown.
8. Concrete cradles must be drawn and dimensioned where needed.
9. Manholes and inlets must be shown in accordance with the City Standards.
10. Manholes, inlets and cleanouts must be numbered.
11. Sump pump discharge lines must be located 4 feet behind curb.

12. Sump pump discharge line cleanouts as per standard detail must be located at all bends greater than 45° and maximum 200 feet spacing.

Paving

13. Stations must be indicated by tick marks along the centerline and every even numbered station must be labeled.
14. Corner radii must be dimensioned to the back of curb.
15. Flange lines and back-of-curb lines must be drawn.
16. Top of curb elevations must be indicated at all curved curb and gutter sections, cul de sacs, and warped pavement sections from beginning to end and not farther apart than 25 feet.
17. Locations and curb types must be shown and dimensioned on the plans.

Ditches

18. All ditch must have grades 1% or greater.
19. Ditch grades of 5% or greater must have alternative measures of erosion control as approved by the City.

Other Improvements

20. Existing and/or proposed underground improvements must be indicated in accordance with the City Standards and the size labeled.
21. Existing surface improvements must be shown in accordance with City Standard Legend and the type labeled.

PROFILE VIEW

Storm Sewer, Culverts, Ditches

22. Draw pipe as two lines indicating crown and flow line of pipe.
23. Flow line elevations must be shown at manholes, inlets, sump line connections and terminations.
24. Grades must be indicated in percentage 0.01 of a foot.
25. Manhole center-to-center length must be dimensioned. Inlet leads must be a minimum of 12 inch diameter.
26. Sewer or culvert pipe type, strength and diameter must be indicated.

27. Elevations of manhole rim and inlet flow line must be indicated.
28. Areas of gravel and slurry backfill must be dimensioned and labeled.
29. Sump pump discharge lines must be at 48 inch minimum depth unless otherwise approved by the City.
30. All manholes, inlets and cleanouts, outfalls and inlet pipelines must have a number to correspond to the plan view.

Ditches

31. Rural Section, if approved by City.
 1. Ditch grades (profiles) must be shown.
 2. Ditch invert elevations, grades and station at grade breaks must be shown when ditch does not match standard cross section.
32. Minimum diameter of cross culverts must be 18 inch diameter or arch equivalent.
33. Driveway culverts must be a minimum of 15 inch diameter or arch equivalent unless otherwise approved by the City.

Paving

34. All stations must coincide with accented vertical lines.
35. Proposed finished centerline grade must be drawn as a heavy line.
36. Elevations and stations must be given at intersections, street lines extended, at radius points, at 1/4 points along horizontal curves, and the low or high point of the vertical curves.
37. Street widths must be as specified by City Standard.

Other Improvements

38. Storm sewer, culvert, and sump line crossings with existing or proposed underground improvements must be shown with the name, diameter, elevations and station indicated.

Existing Features

39. Grade profiles must be shown at centerline. Additional grade profiles must be shown as requested by the City.