PLAN SHEET FORMAT REQUIREMENTS

for

CITY OF LAKE ELMO

This document outlines the required plan format and minimum acceptable plan sheet requirements for each development project within the City of Lake Elmo. The minimum requirements shall be met for all projects before approval may be granted by the City Engineer.

Plan submittals will not be considered received until all plan formats have been submitted to the City. All submittals and resubmittals shall include full size plans (22" x 34"), half size plans (11" x 17") and electronic plan files in PDF format.

GENERAL REQUIREMENTS:

1. Plan sheet size shall be 22" x 34" and 11" x 17".
2. All Plans shall be submitted in electronic PDF format.
3. All electronic CAD/GIS files, when required, must be accompanied by a "layer description list" that clearly identifies the elements of each layer or level.

CONSTRUCTION PLANS: The following plan sheets shall be bound together in one plan set and distributed to the City in the number and plan size as required.

I. Title Sheet
   - A. Location Map with Section, Range and Township provided.
   - B. Sheet Index.
   - C. Plan Date with all Revision Dates.
   - D. Preparer's Name and Contact Information.
   - E. Owner's Name and Contact Information.

II. Legend and Typical Sections
   - A. Plan Legend for all Applicable Symbols.
   - B. City of Lake Elmo Typical Sections as Applicable to the Project.
   - C. Additional Typical Sections as Deemed Appropriate by the Design Engineer.

III. Standard Details and Storm Sewer Construction Chart
   - A. City of Lake Elmo Standard Details as Applicable to the Project.
   - B. Additional Standard Details as Deemed Appropriate by the Design Engineer.
   - C. Storm Sewer Construction Chart.

IV. Grading, Drainage, and Erosion Control Plans
   - A. North Arrow (Up or to the right on all sheets).
   - B. Scale: 1"=50' horizontal.
   - C. Maximum plan sheet size 22" x 34".
   - D. Building pads with garage floor elevation, low floor elevation, low opening elevation and building type.
   - E. All proposed lot corner elevations.

F. Wetland delineations and wetland buffers, creeks, streams, lakes & other water bodies.
G. Existing and proposed normal water level (NWL) and high water level (100-year HWL) for all water bodies within and adjacent to the property, including proposed high water level (100-year HWL) for infiltration basins.
H. Proposed high water level (100-year HWL) contour for all storm water ponds and infiltration basins.
I. All emergency overflow elevations, placed in **BOLD** on the plans.
J. All erosion control measures, permanent and temporary.
K. Grading and erosion control City standard plan notes.
L. Tree protection fencing.
M. Spot elevations for significant trees to be saved.
N. Retaining Walls (wall heights and elevations).
O. Existing storm sewer, drainage and culvert structures to a distance of 150 feet beyond plat boundary with pipe material, size and inverts.
P. Topographical features to a distance of 150 feet beyond plat boundary (fences, trails, sidewalks, streets, driveways, etc.)
Q. Property, right-of-way and easement lines.
R. Existing street and driveway widths with type of surface identified.

V. <u>Sanitary Sewer and Watermain Plan Sheets:</u>

A. Plan and Profiles for Sanitary Sewer and Watermain shall be placed on the same sheet(s).
B. The following information shall be shown:
    1. North Arrow (Up or to the right on all sheets).
    2. Scale: 1”=50’ horizontal and 1”=10’ or 1”=5’ vertical (Maximum sheet size 22” x 34”)
    3. Street names & right-of-way lines.
    4. Lot and block numbers.
    5. Location of all existing utilities with pipe material and size.
    6. Existing and proposed easements.
    7. Size of mains.
    8. Material and Class of pipe.
    9. Length of mains and each sanitary sewer pipe segment.
    10. Size and type of manholes.
    11. Proposed grade of each sanitary sewer pipe segment.
    12. Elevation of inverts of all sanitary sewer lines, at MH and at stub ends.
    13. Arrows indicating the direction of flow on the sanitary sewer plan views.
    14. Number each sanitary sewer structure on both plan and profile views.
    15. Stationing of sanitary sewer structures on profile view.
    16. Proposed main line pipe crossings on the profile views.
    17. Proposed storm sewer shown in plan and profile views (background view).
    18. Service locations and wye stationing on the plan view (from the main line to the utility easement line).
    19. Proposed invert elevations at the utility easement line. Risers must be listed for each lot if needed.
    20. Elevation of the top of the water service stop box at the utility easement line.
    21. Hydrant, valve and fitting locations on the plan view (gate valve or butterfly valve noted as applicable).

22. Proposed and existing pump or lift stations.
23. Proposed and existing Well Pumphouses.
24. Existing grade profile over main line pipe.
25. Finished grade profile over main line pipe.
26. Centerline stationing at 100 foot minimum intervals.
27. Sanitary Sewer City Standard Plan Notes.
28. Watermain City Standard Plan Notes.

VI. Street and Storm Sewer Plan Sheets:

A. Plan and Profile shall be shown on the same sheet.

B. The following information shall be shown:

1. North Arrow (Up or to the right on all sheets).
2. Scale: 1”=50’ horizontal and 1”=10’ or 1”=5’ vertical (Maximum sheet size 22” x 34”)
3. Street names.
4. Lot and block numbers.
5. Existing and proposed easements/right-of-ways.
6. Show concrete walks and bituminous paths.
7. Sizes of storm sewer pipe.
8. Material and Class of storm sewer pipe.
9. Length of each storm sewer pipe segment.
10. Proposed grades of each storm sewer pipe segment.
11. Proposed drainage swale locations, elevations, and grades.
12. Elevations on all inverts and castings of all storm sewer structures.
13. Arrows indicating the direction of flow on the storm sewer plan views.
14. Number of each storm sewer structure on both plan and profile views.
15. Proposed watermain and sanitary sewer shown in plan and profile views.
16. Proposed pipe crossings on the storm sewer profile views.
17. Existing grade profile over storm sewer pipe.
18. Finished grade profile over storm sewer pipe.
19. Finished centerline street elevations every 50 feet minimum.
20. Centerline stationing.
21. Street grades on profile.
22. Vertical curve data on profile.
23. Horizontal alignment and curve data on plan view.
24. Top of curb elevations at the beginning, mid-point and end of all radii and at all intersections where drainage is a concern, at maximum or at minimum grades.
25. Drainage flow arrows at street intersections.
26. Finished profile for centerline of trails (plan and profiles for trails may be on separate sheets from street and storm sewer plans).
27. Storm Sewer City Standard Plan Notes.
28. Sidewalk and Trail City Standard Plan Notes.

C. Draintile Information to be Shown:

1. Size, type and location of pipe on plan view.
2. Locations of service wyes and clean-outs.
3. Arrows indicating the direction of flow on the draintile.

VII. Cross Sections

A. Cross sections shall be provided for all street reconstruction work, turn lanes, or when interfacing new streets along existing streets and roadways.
B. Cross sections shall be provided for all trails, except when the trail is placed in the boulevard in accordance with a typical standard street section.
C. At a minimum, each cross section shall show the following:
    1. Finished ground to the match points of existing grade.
    2. Existing ground.
    3. Right-of-way and easement locations.
    4. Centerline of proposed improvement.
    5. Full depth proposed section.
    6. Label all slopes proposed at maximum grades.
D. When provided, cross sections shall be shown a minimum of every fifty (50) feet, at all low points, critical drainage locations, driveways, and at intersections.

VIII. Street Signage, Lighting, and Pavement Marking Plan

A. Signing, Pavement Markings, and Lighting City Standard Plan Notes.

IX. Landscape Plan Sheets

A. Irrigation Systems.
B. Include tree removals, planting schedule, and tree replacement plan.
C. Include City Standard Landscaping Plan Notes.

RECORD DRAWINGS: Record drawings must be completed and submitted to the City Engineer to assist the City in the review, verification and acceptance of the work completed. The submittal information outlined below is considered the minimum documentation requirements. The City Engineer may request additional information specific to the improvements as deemed reasonably necessary to verify the work conforms to the approved grading and construction plans.

I. Submittal Requirements:
   A. As-built Construction Plans shall be certified by the engineer and prepared in accordance with the Plan Sheet Format Requirements.
   B. All changes from the final construction plans should be indicated on the as-built Construction Record Drawings. All changes shall be lined out and corrections shall be shown in ***bold italics***.
   C. Each Record Drawing shall list Contractor's name, Developer Engineer's name, City Project Number, Construction Completion Date, and Record Plan Drawing Number (provided by City).
   D. Final record drawings shall be submitted as one (1) set of full size plans (22" x 34"), two 11" x 17" paper copies, and submitted in electronic form (on DISC) with DWG files and PDF files that are printable to scale on 11"x17".
   E. As-built surveyed information shall tie out to benchmarks as indicated on the plans.
   F. GIS shape files must be provided to include all as-built public infrastructure data.

II. Certified Record "As-built" Grading Plan shall include:
   A. Location and as-built elevations at all lot corners.
   B. Location and as-built elevations along all swales, berms, slopes and ditches.
   C. Location and as-built elevations at all emergency overflow (EOF) points.
   D. All finished grades for pond cross sections.
   E. Location and as-built elevations at high water levels (HWL) for ponds and low points.
   F. Location and as-built for all storm sewer structures including inverts and overflows.
   G. Location and as-built elevations at all retaining walls, including top and bottom of wall at maximum wall height locations.
   H. Location and as-built elevations for any private wells or wastewater systems.
   I. Location and as-built elevations for other features critical to drainage performance.
   J. Contours for all HWL, wetland, and other water bodies, buffers and setbacks.
   K. Property lines and easements.
   L. Location of all existing utilities.
   M. As-built grading plan must conform to the approved final grading plan. As-built elevation shots not within +/- 0.2 feet of proposed elevations are subject to rejection and re-work at the discretion of the City Engineer.

III. Certified Record "As-built" Construction Plans shall include:
   A. As-built surveyed elevations for sanitary and storm sewer manhole and catch basin casting/inlet tops and inverts, flared end section inverts, and any other structure elevations shown on the as-bid drawings. Actual elevations must be recorded to the nearest 0.01 foot, and the actual pipe grades recorded to the nearest .01%.
   B. Sanitary and storm sewer lines field measured from center of casting to center of casting or from center of casting to end of flared end. Record lengths to nearest 0.5 foot.
   C. All changes from planned pipe, structure, or hydrant locations.

D. Measured distances from center of casting to end of stubs for sanitary and storm sewer.
E. Ties from ends of watermain stubs to permanent structures.
F. Ties for draintile cleanouts to permanent structures.
G. Service ties for the curb box for each lot. Including pipe quantity, size and type on plans.
H. All sewer services with stationing from downstream manhole to wye location. Pipe quantity, type and invert elevation at utility easement line shall be shown.
I. Location of watermain fittings (i.e. bends, tees, etc.).
J. Top nut of hydrant elevations.
K. All pipe insulation.
L. As-built surveyed elevations for top of curb in sufficient quantity to verify street grades.
M. All lot address numbers shown on both utility and street record plans.

IV. Private Water/Wastewater Facilities: Record drawings shall be provided in the format consistent with the requirements for public infrastructure as prescribed herein:
A. Tie information for all underground structures.
B. Location and as-built elevations for any system structures, pipes, pipe slopes, pipe lengths, valves, clean-outs, and other facilities.
C. Property lines and easements for the facilities.
D. Detail on the plans any revisions or deviations from the approved design.
E. Operation & Maintenance manual including:
    1. Operational performance characteristics for all pumps.
    2. All electrical and control information including electrical console schematics.
    3. All mechanical information, parts data, and operational instructions.
    4. Facility Operation instructions and procedures.
    5. Emergency mitigation measures.
    6. Chemical treatment schedules.
    7. Permit documentation and reporting requirements.

V. Public Infrastructure Inventory Requirements: Final quantity tabulations shall be submitted for the following information:
A. Sanitary Sewer Pipe, by footage and pipe size.
B. Watermain, by footage and pipe size.
C. Number of Hydrants, Gate and Butterfly Valves, Manholes, Catch Basins, and Lift Stations.
D. Number of Sanitary Sewer Services, by pipe size.
E. Number of Water Services, by pipe size.
F. Number of Drain Tile Services, by pipe size.
G. Storm Sewer Pipe, by footage and pipe size.
H. Number of Pollution Control Structures (Sumps, Grit Chambers, Pond Skimmers), by type.
I. Number of Ponds and Sedimentation Basins, by type. Each listed with water surface area and volume at NWL and HWL.
J. Number of Storm Sewer Outlet Structures, by size.
K. Number of Alternative Stormwater Drainage Facilities (BMP's), by type of BMP.
L. Public Streets by lineal footage and square yard.
M. Private Streets by lineal footage and square yard.
N. Sidewalks by lineal footage and square yard.
O. Trails by lineal footage and square yard.