

2. GENERAL PLAN REQUIREMENTS

2.1 Design and Drafting Standards for Engineering Plans

Plans submitted for review and approval by the Engineering Services division shall include the following minimum requirements. Any plans submitted not meeting these minimum requirements will not be reviewed further and will be returned to the design engineer for corrections.

1. All engineering plans, specifications, and calculations submitted for review and approval shall be prepared, stamped, signed, and dated by a professional engineer licensed in the State of Washington. All plans must be signed and stamped by the responsible professional engineer prior to submittal to the City.
2. Property surveys shall be performed and stamped by a professional land surveyor or professional civil engineer licensed in the State of Washington.
3. All plans and calculations shall be neat, uncluttered, legible, and in conformance with the requirements herein.
4. Where applicable (as determined by the Public Works Director), shop drawings shall be submitted for review and approval prior to plan approval. Other shop drawings may be required prior to notice to proceed.
5. Electronic plan submittal is preferred. Plans shall be submitted in PDF format. If electronic plan submittal is not possible, plans shall be 24 inches x 36 inches or 22 inches x 34 inches sheet size, with dark line on light background. The sheets shall be good quality reproducible ink on mylar or equivalent. At a minimum, the title block on the plans shall include the name of the project, name of the owner, application number, the applicant's/developer's name, address, and phone number, the name of the street to be improved, and the name, address, phone number, seal, date, and signature of the responsible professional engineer.
6. The cover sheet and all plan sheets shall include the same general title block including consecutive sheet numbers and an approval block that shall generally be located in the lower right-hand corner of each drawing.
7. City of Des Moines standard notes (provided in Appendix B), and applicable Standard Drawings, details, vicinity map, and legend of symbols shall also be included in the plan set.
8. If general notes do not adequately cover the project requirements, detailed Specifications will be required, and shall be submitted with the plans. A brief legal description of the site, in enough detail to locate the property, including lot #, 1/4 section, township, and range shall be located below the vicinity map.
9. For some projects covering a large area or containing a large number of sheets, the City may require a "Key Map" page to be included. The "Key Map" page shall show the overall general location of proposed improvements, where each page or sheet number can be found, and be at a horizontal scale of 1 inch = 100 feet.
10. North shall be shown up or to the right on the plans, and in no case will north be shown in opposing directions on the same or connecting sheets. The north arrow shall be located in the upper right corner of the plan sheet.
11. Engineer scale shall be required.

12. The scale shall be indicated directly below the north arrow and shall be only 1 inch = 20 feet, 40 feet, or 50 feet, as further described below. Any variation to the scale must be approved by the City in advance of plan submittal.
 - a. Profile drawings shall have a horizontal scale of not more than 50:1 (50 feet to one inch), and a vertical scale of not more than 10:1 (10 feet to one inch). Plan views shall be of a corresponding horizontal scale.
 - b. Channelization plans for connecting roadways may be at a 1 inch = 40 feet scale.
 - c. Channelization and Signalization plans for intersections shall be provided at a 1 inch = 20 feet scale.
 - d. Special Details shall be provided at a 1 inch=10 feet scale.
13. Minimum text height on plans will be at least 0.08 times the scale factor (i.e., 1 inch = 20-foot scale minimum text will be $20 (0.08) = 1.6$ units). Minimum nominal text size will be 1/8 inch.
14. Indicate benchmark (BM) used with number and elevation.
15. The vertical and horizontal survey controls shall meet the requirements of RCW 58.09.070.
16. Bearings on roadway centerline or utility centerline, referenced to the NAD 83(11) Washington State Plane North Zone datum as well as location, description, and elevation of the nearest benchmark. Vertical datum shall be NAVD 88.
17. Lot size(s) with perimeter distances and bearings of the site shall be shown on the plans.
18. Proposed and existing rights-of-way and easements shall be clearly identified and dimensioned. New utility easements shall have a minimum width as required by each individual utility purveyor. Typically, pipes shall be centered in the easement. Show King County recording numbers for all existing easements. All easements required from adjacent properties shall be obtained prior to plan approval by the City (see Section 5.3).
19. All existing features (pipes, curbs, power poles, etc.) are to be produced with a small pen or half tones. Proposed features will be distinguished by a larger or bolder line weight.
20. The plans shall clearly identify all existing and proposed improvements, such as the roadway, sidewalks, shoulders, utilities, drainage facilities, rockeries, retaining walls and driveways. Existing and proposed driveway cross sections are required.
21. Show all pertinent existing and finish elevations.
22. The plans must include existing and proposed monuments. The roadway centerline, easements, and other pertinent data will be referenced to existing monuments.
23. Show existing natural drainage ways such as swales, ditches, etc. Show path of flow with arrows and elevations.
24. Show lakes, rivers, streams, flood plains, wetlands, sensitive slopes, and other sensitive areas.
25. Show limits and elevations of 100-Year Flood Plain, including delineation of the floodway and flood fringe where applicable.

26. All plan sets shall include the City of Des Moines Standard Drawings that are applicable for the project. Copies of the appropriate Standard Drawings shall be located on a separate plan sheets, at a maximum of 4 per sheet. Where a particular item is called out on the plans, a note shall be included on the drawing identifying the applicable City Standard Drawing referencing the plan sheet the detail is located on and the City Standard Drawing number.
27. All other required details not standardized by the City of Des Moines shall be shown on separate detail sheet(s).
28. The Public Works Director may require additional plan elements in addition to those cited above.
29. The plans must be reviewed and approved by the City prior to beginning construction.

2.2 Roadway Plan Notes

The notes provided in Appendix B shall be provided on the plans.

See Appendix B for:

- GENERAL NOTES
- TRANSPORTATION NOTES
- STORMWATER NOTES
- EROSION AND SEDIMENTATION CONTROL NOTES

2.3 Horizontal Plans

Horizontal plans shall include the following minimum requirements:

1. Roadway and/or proposed utility alignments, reading from left to right, showing stationing of points of curvature, tangency, intersection angle points, and with ties to existing monuments, including all necessary curvature data.
2. The plans must include existing and proposed monuments. The roadway centerline, easements, and other pertinent data will be referenced to existing monuments.
3. Right-of-Way and easement lines for existing and proposed improvements, including identification of all roadways, easements (including auditors file numbers), adjacent lot and tax lot numbers, and subdivision identifications.
4. All topographic features within and adjacent to proposed improvements and within sufficient area to assess impacts of slopes, drainage, access, future extensions, availability of service connections, etc.
5. All existing and proposed public and private utilities, including water and/or sewer district(s), electric power, natural gas, telephone, cable television, and any other utilities that may affect the proposed construction.
6. Existing and proposed drainage facilities, including culverts, catch basins, ditches, etc., indicating direction of flow, size, type of pipe, invert and rim elevations.
7. Identification of adjacent roads, subdivisions, building addresses, or any other information to facilitate locations and future reference.

8. Curb return elevations shall be shown at quarter points at all intersections at a minimum (larger radii should have more points), to verify drainage and a smooth transition.

2.4 Profile Plans

Profile plans shall include the following minimum requirements:

1. Profile drawings shall be prepared with all storm drain and street design plans, and with any other plans where vertical control is deemed to be important, and necessary, as determined by the Public Works Director.
2. In general, the existing centerline profile shall be plotted, denoting grade breaks, topographic features, and any other information important to the design.
3. The finish grade of the roadway and/or the utility profile shall be shown with the same stationing as the horizontal plan.
4. Roadway profiles shall include existing and proposed centerline elevations at 50-foot stations, or less; centerline grades and vertical curves, including station and elevations at PVCs, PVI, PVT, top of crest vertical curve, bottom of sag curve, flow grade of 0.50 percent within 50 feet of the level point for a sag vertical curve. When existing or proposed roadway includes superelevation, a superelevation diagram shall be included.

2.5 Detail Plans

Detail Plans shall include the following minimum requirements:

1. Appropriate Detail Plans, necessary for a detailed and accurate representation of the proposed improvements, shall be included in the plan set. Ideally and whenever appropriate and feasible, the City of Des Moines Standard Drawings shall be included in the Plans as Detail Plans.
2. Where special construction procedures or structures are required, Special Detail Drawings are required. These details would include designs and construction methods that are not included in the City's Standards Drawings.
3. Special Detail Drawings shall contain adequate dimensions, sections, views, notes, and call outs to construct the structure, or permit preparation of detailed shop drawings by the fabricator when necessary.

2.6 Stormwater Plans

Stormwater Plans shall include the following minimum requirements:

1. Plan and profile in accordance with Section 2.4 and 2.5.
2. Storm pipe including locations, lengths, materials, slopes, depths, and sizes.
3. Manholes and catch basins including location, types, and rim and invert elevations.
4. All new and existing manholes and catch basins shall be numbered consecutively.
5. Typical ditch cross sections shall be shown on the plans.
6. Easement widths and locations.

7. Identify any possible utility conflicts.
8. Roof drains.
9. The distance from the center line of pipes to any building structure.
10. An all-weather maintenance access to all structures, ditches, ponds, etc., including typical cross section of said access road.
11. Natural Drainageways.
12. Contours at 2-foot intervals.
13. Critical areas.
14. Significant trees.

2.7 Grading, Erosion and Sedimentation Control Plans

Grading, Erosion and Sedimentation Control Plans shall follow the minimum requirements of the Construction Stormwater Pollution Prevention Plan as required by the latest version of the King County Surface Water Design Manual.

2.8 Street Light Plans

Street Light Plans shall include the following minimum requirements:

1. Street light layout plans shall be on separate drawings from the street plan/profile sheets. The final locations shall be determined by the Public Works Director after the City receives a copy of the Puget Sound Energy (PSE) layout design drawings.
2. Street light disconnects shall be located near the power transformers.
3. Street light conduit for wiring shall be located within the utility easement for power, gas, telephone, and cable TV wherever possible.
4. Refer to Section 7.11 for Illumination standards.

2.9 Channelization and Signing Plans

Channelization and Signing Plans shall include the following minimum requirements:

1. Incorporated with "Street Light Plans"
2. Lane markers: locations and types
3. Pavement markings: locations and types
4. Signs: locations, types, and mountings
5. Painted street curbs

2.10 Signalization Plans

Signalization Plans shall include the following minimum requirements:

1. Separate detailed plans required
2. Pole base locations
3. Traffic loop location
4. Conduit location
5. Details of traffic signal system to be reviewed and approved by the Public Works Director
6. Location of power source

2.11 Record Drawings

Certified Records Drawings shall be signed and sealed by a Washington State licensed professional civil engineer and shall accurately reflect all field design revisions made during the construction process. These plans shall include field-verified elevations, slopes, and dimensions for curblines, sidewalks, ramps, and other features in the right-of-way or public sidewalk easements. All required Record Drawing information shall be clearly shown on the original design drawings approved for construction by the City of Des Moines. Each sheet of the Record Drawings shall include the following statement along with the design engineer's professional stamp, signed and dated, located at the bottom right-hand corner of the sheet when possible:

"These plans are as-built, and the information shown accurately reflects existing field conditions as of this date: _____."

The as-built plans should also include all existing or abandoned utilities that were encountered during construction that were not shown on the design plans. The following required information is intended to provide a minimum guide to the engineer of record and should be used along with good engineering practices as the type of project and situation warrants.

Record Drawings shall be submitted to the City as PDF electronic files.

2.12 Waiver of Minimum Plan Requirements

The Public Works Director, in limited circumstances may waive minimum plan requirements. The Public Works Director will review the request for deviation of plan requirements based on a letter from the applicant.