



CITY OF KENT DEVELOPMENT ASSISTANCE BROCHURE

6-8

STREET IMPROVEMENT PLANS

The City of Kent has determined that the preparation of Street Improvement Plans shall follow certain engineering and drafting standards. The City of Kent Department of Public Works has prepared this *City Of Kent Development Assistance Brochure* (hereinafter *DAB*) to provide the Applicant with the minimum requirements for Street Improvement Plans. See [Section 2.6.1](#) of the [City of Kent Construction Standards](#) for additional information about Final Engineering Plans.

A complete set of Street Improvement Plans will include the following plans at a minimum: Horizontal Street Plans; Profile Plans; Channelization and Traffic Sign Plans; Street Lighting Plans, and Street Tree Plans. Some of these plans may be combined with other plans providing the resulting plans are not too cluttered or busy. Some individual design elements, like Street Trees and Street Lights for example, may be required on more than one set of plans.

The City has determined that Street Improvement Plans shall be on 22 inch x 34 inch size paper (preferred because half-size prints can be made on 11 ½ inch by 17 inch paper), or on 24 inch x 36 inch size paper (maximum). These plans shall contain the following information at a minimum:

1. Street Improvement Plans shall be provided on separate plan sheets which do not contain the on-site improvements for a private development, and shall be submitted with the first submittal of civil engineering plans for private developments.
2. All Street Improvement Plans for the construction of streets, and related water, sewer, and stormwater drainage systems shall: bear a title showing the name of the street improvement project; the name of the Owner (the City of Kent); the name, mailing address, e-mail address, professional civil engineering seal, the signature of the design engineer, the date of expiration of the stamp, and the date that the stamp was signed.
3. The cover sheet and all subsequent plan sheets shall include the same general title block, and consecutive sheet numbers indicating subject sheet number of the total number of sheets. The title block shall be located in the lower right hand corner of the landscape mode drawing.
4. A vicinity map shall be provided on the cover sheet which clearly shows the location of the subject street improvement with respect to other public streets, other parcels and other adjacent development developments.
5. When the street improvement project is complex, then the cover sheet shall include an index drawing showing which plan sheets are related to which portion of the entire project.
6. Where modifications to existing streets and associated utilities are to be constructed, new features shall have darker lines, and existing features shall have lighter lines (or existing features shall be "screened, or "ghost-lined".)

7. All Street Improvement Plans submitted to the City shall be ink on mylar drawings and shall be clear, legible, and drawn to an engineering scale (i.e. 1" = 20', or 1" = 30', for example, not 1/8" = 1', or 1"=20'-0"). The horizontal scale shall be not more than 50 feet to the inch (1"=20' is preferred), and the vertical scale shall be not more than 10 feet to the inch (1"=2' is preferred, but vertical scales shall generally be exaggerated by a factor of 10 from the horizontal scale.) All plans shall contain a scale bar to facilitate plan size reductions, and a north arrow. **NOTE: North arrows on plans shall either point to the top of the page or to the right side of the sheets only!**
8. A suitable legend shall be provided on the applicable plan sheets. Standard APWA symbols shall be used wherever possible to facilitate City review and approval of the plans, and to facilitate the ease of use by the Contractor and the City inspectors after the project is out to bid, and/or the project is under construction.
9. The City does not encourage and may refuse to accept plan sets which are determined to be too cluttered, or too "busy", as determined by the City.
10. Each plan sheet shall contain the As-Built Certification contained within [DAB #E-1, As-Built Drawings](#), to facilitate the review and approval of the required As-Built Drawings for Street Improvement Plans. See item 17 below for additional As-Built Drawing requirements, and [DAB #6-1, Street Lighting Requirements](#), for the As-Built Certification required for Street Lighting Plans.
11. Street Improvement Plans will include right-of-way margins, their lengths, and the bearings along said right-of-way margins. Street Improvement Plans will also include adjacent property lines, and a suitable identification of the land use and ownership of abutting parcels.
12. Street Improvement Plans shall include cross-section for the proposed street improvement that is consistent with the applicable Standard Detail contained within the [City of Kent Construction Standards](#) for the applicable classification of the street being constructed, or improved.
13. Horizontal Street Plans shall include the following elements at a minimum:
 - a. Street and associated utility alignments shall read from left to right, and shall include the stations and City coordinates of all centerline Point of Curvatures (PC), Point of Intersections (PI), and Point of Tangency (PT), and centerline intersections. All street and associated utility alignments shall be tied to section corners, or quarter-section corners, and shall also include all necessary horizontal curvature data necessary to stake the horizontal alignment in the field. In addition to the PC, PI, and PT, the centers of all horizontal curves shall also be indicated with City Coordinates.
 - b. Bearings for all street and associated utility centerlines, referenced to the City of Kent Datum and State Plane Coordinate System. Contact Steve Merryman, the City Surveyor Manager, by telephone at (253) 856-5573, or via e-mail at smerryman@ci.kent.wa.us to obtain information regarding the City's Datum and the State Plane Coordinate System.
 - c. Existing and design elevations shall also be referenced to the City of Kent's Datum, and the used City Bench Mark shall be identified on the plan set using the City's Bench Mark Number, elevation, and a description of the Bench Mark.
 - d. Right-of-way lines, property lines, and easement lines for existing and proposed improvements. Public and private streets shall be identified by name, and private streets shall contain the auditor's file number for the street easements or tract.

- e. Adjacent lots shall be identified by site address and tax lot numbers; and lots within subdivisions shall be identified by Lot, Block, Subdivision Name & subdivision tax lot identifier. Include any other information that would prove useful to facilitate field locations in the future.
 - f. All plan sheets shall contain sufficient topographic features within and adjacent to the proposed street improvement and/or associated utility improvement to assess impacts of slopes, drainage, access, the feasibility of future extensions, availability of service connections, etc.
 - g. All existing and proposed public and private overhead and underground utilities, including, but not limited to, all appurtenances for: telephone, electrical power, television cable, natural gas, fiber optic cables, water, stormwater management facilities, sanitary sewer, septic drainfields. All telephone, television cable, fiber optic cables, and electrical lines shall be clearly shown to be underground or overhead.
 - h. All existing and proposed drainage facilities, including gutters, culverts, catch basins, ditches, swales, etc., shall include the direction of flow, size, diameter, type of materials, invert and rim elevations. See [DAB #5-3, Detailed Drainage Plans](#), for additional information required for drainage plans.
 - i. Private Streets, regardless of street width, shall include Vehicle Maneuvering Diagrams meeting the minimum requirements of [DAB #6-4, Vehicle Maneuvering Diagrams](#), for the design vehicle specified by Public Works. The minimum design vehicle for all private residential street shall be the AASHTO BUS which approximates both emergency vehicles and garbage trucks.
 - j. Curb return elevations shall be shown at quarter points for radii 35-feet and smaller), and at fifth points for radii larger than 35-feet at a minimum, to verify direction of flow for drainage and to assess the smoothness of pavement transitions through the horizontal and vertical curves.
 - k. Each plan sheet shall contain at least four sets of coordinate tics based upon the State Plane Coordinate System to facilitate subsequent City entry into the City's Geographic Information System (GIS).
14. Profile Plan Sheets shall include the following elements at a minimum:
- a. Street Profiles will include the profiles for all sanitary sewer, water mains, storm drain pipes, and other street related utilities to facilitate the assessment of potential vertical conflicts.
 - b. Both existing and finish grade centerline profiles shall be given for street improvements. The existing profiles shall include all grade breaks, and other topographic features and information relevant to assess the street improvement design.
 - c. The finish grade elevations shall shown with the same horizontal profile, and unless otherwise approved, the profiles shall be drawn directly under the plan views to facilitate assessment of the street improvement design.
 - d. Street profiles shall include centerline elevations: at all full and half station intervals at a minimum; at all Vertical Point of Curvature (VPC), Vertical Point of Intersection (VPI), and Vertical Point of Tangency (VPC), and at all low and high points along all vertical curves. NOTE: no vertical curve shall be permitted to have a vertical grade of less than 0.30% within 50-feet of the low point for a sag or the high point for a crest vertical curve.
 - e. Where streets are designed with horizontal curves requiring superelevations, secondary profiles are required for both sides of the street within the super elevated portions of the street.
 - f. All vertical curves shall include the length of the vertical curve (LVC) in feet, and the K value used to establish the length of the vertical curve. ($K \times A = LVC$, where A is the algebraic difference in percent of the two grades which meet at the center of the vertical curve and LVC is the length of the vertical curve in feet).

- g. Sanitary sewer and storm drain profiles shall include the following information at a minimum: pipe slopes (to enough decimal points that the calculation for pipe length multiplied by the slope in decimal form shall provide the difference in elevation between two adjacent inverts for the same pipe to a hundredth of a foot), pipe materials, pipe diameters, pipe lengths, rim and invert elevations, manhole and/or catch basin locations, City Identification Numbers, and all other relevant design information.
 - h. All profiles shall use a vertical scale which is 10 times the horizontal scale; i.e. if the horizontal scale for a street improvement project is 1"=20', then the vertical scale will be 1"=2' for that project.
15. Channelization and Traffic Sign Plans shall contain the following elements at a minimum:
- a. General Requirements:
 - (1) Unless otherwise approved by Public Works prior to submittal of plans, both channelization and traffic signs shall be included in a combined set of plans. Use the latest updates of [City of Kent Construction Standards](#), published [DAB's](#), and the [Manual of Uniform Traffic Control Devices](#) as amended by WSDOT.
 - (2) Show entire right-of-way width all elements listed below. On State Routes and City Principal Arterial Streets, show no less than 300-feet of the existing highway or street sections beyond the match lines for new to existing channelization elements. On other City Arterial Streets, show no less than 200-feet of the existing street beyond the match lines; and for Collector Streets and intersecting roads and commercial driveways and Private Streets, show no less than 100-feet of the existing section beyond the match lines with all elements listed below.
 - (3) Show only the new channelization where widening and/or improvements are proposed. Include stations and dimensions of all channelization features where proposed improvements tie into existing roadways.
 - (4) Provide one or more full size sheets (22-inches by 34-inches) copies of the channelization plans. A full size mylar is required for the final approval.
 - b. Required elements to be included on a Channelization Plan:
 - (1) Title Block located in lower right hand corner of landscape mode plan sheets.
 - (2) North arrow, section, township and range.
 - (3) Street and Highway names.
 - (4) Right-of-way lines (WSDOT, City and County).
 - (5) Construction centerlines, bearings, and 100-foot stations.
 - (6) Posted Speed Limit, Design Speed, and Design Vehicle.
 - (7) Street or Highway classification.
 - (8) Curve data for each horizontal curve, including but not limited to the following: curve radius; superelevation; horizontal curve length; tangent lengths; delta angle; and PC, PI, & PT stations.)
 - (9) Edge of traveled way, and edge of pavement lines.
 - (10) Intersecting roadways and driveways, and business names and descriptions.
 - (11) Angles between intersections.
 - (12) Widths of through lanes, turning lanes, bike lanes, shoulders, walkways, sidewalks, etc.
 - (13) Begin and end stations of right and left turn lanes. Indicate how storage length was determined.
 - (14) Begin and end stations with offsets for all channelization tapers.
 - (15) Left and right radii for all street intersections, private street and/or commercial driveways.
 - (16) Typical roadway sections showing all channelization features with dimensions (i.e. travel lanes, turning lanes, medians, shoulders, curb & gutter, bike lanes, sidewalks or walking paths, etc.
 - (17) Existing and proposed raised curbing.

- (18) Raised and painted islands. Separate sketch showing detail of island including offsets of key locations from reference lines. Include square footage of island and provisions for pedestrian or bicycle access where appropriate.
 - (19) Signature block for City approval.
 - (20) PE Stamp, signed and dated.
 - c. Required elements to be included in Traffic Sign Plans:
 - (1) Stations and offsets left and right for all signs; identify sign mounting system; sign size; and sign legend with standard sign numbers provided. This information is best summarized in a single table.
 - (2) The location of all street trees, and the location of all street lights.
 - (3) All traffic signs shall be provided with Diamond Grade VIP retroreflective sheeting, and a Construction Note shall list this requirement.
16. Street Tree Plans shall contain the following elements at a minimum:
- a. The common name and scientific name of the street tree species to be used. See [DAB #14, City of Kent Street Trees](#), for the list of approved Street Trees including their common names and scientific names, the minimum spacing of various Street Tree species, and other information related to Street Trees.
 - b. The station and offsets left and right to the center of each Street tree.
 - c. A summarizing table that includes stations, offsets left and right of centerline, and the total number of Street Trees to be planted.
 - d. Copies of all City of Kent Standard Details for Street Trees, or approved references to those standard details.
 - e. The location of all street lights within 100-feet of the planned street improvement.
 - f. The locations of all traffic signs.
 - g. A watering schedule for the Street Trees, including how many times each tree will be watered or irrigated, until such time that those trees are accepted by the City of Kent's Arborist after their one year maintenance period.
17. Standard Notes, as contained in [DAB #A-1, General Construction Notes](#), [DAB #A-2, General Notes For Water Projects](#), [DAB #A-4, General Notes for Storm Drainage Projects](#), shall be included with each set of plans. Specific Standard Notes which do not directly apply to the subject project shall be either be lined through, or not listed. These Standard Notes shall not be renumbered, but shall contain only those Standard Notes which are directly applicable to the subject project.
18. Separate plan sheets are required for Street Lighting Plans so that that Street Improvement Plans are not too cluttered and busy. See [DAB #6-1, Street Lighting Requirements](#), for the minimum plan requirements for Street Lighting Plans. NOTE: Street Improvement Plans shall show the location of street lights and all Street Trees, but simply showing the location of these street lights and Street Trees on the Street Improvement Plans does not meet the requirements for providing a Street Lighting Plan.
19. After construction is complete and the As-Built Drawings have been approved by the City, the Applicant / Owner shall then provide the city with a copy of the As-Built Drawings in either AutoCad (*.DWG) latest version, or in *.DXF format to facilitate City incorporation of these drawings into the City's Geographic Information System (GIS). See [DAB #E-1, As-Built Drawings](#), for additional information required for As-Built Drawings.

Last Revised January 21, 2003