

SEC. 153.11 DESIGN STANDARDS.

(A) General requirements.

- (1) The design standards are intended to assure that the layout of the proposed subdivision is consistent with existing plans affecting the property and surrounding area and that it is in conformance with city plans.
- (2) The proposed subdivision shall conform to the Comprehensive Plan, Growth Development Plan, zoning provisions of the City Code, the design standards contained in this section, and other provisions of this chapter. The design standards and features set forth in this section are minimum requirements. The city may impose additional or more stringent requirements concerning lot size, streets and overall design as deemed appropriate considering the nature of the surrounding conditions.
- (3) The preliminary plat must cover all of the owner's contiguous land, but the final plat may cover only a portion of the preliminary plat provided it is in conformance with an approved preliminary plat and other requirements herein.
- (4) Where the parcel is subdivided into 1 or more tracts larger than for building lots appropriate for the zoning district and the area, the parcels shall be divided so as to allow for the opening of major streets and the ultimate extension of adjacent minor streets.
- (5) Subdivisions showing unplatted strips or private easements controlling access to public ways shall not receive approval. However, at or adjacent to the city's municipal line the city may allow or require a boulevard reserve or other appropriate control to provide a buffer wherever necessary or appropriate to control access to the city's right-of-way.

(B) Streets and alleys.

- (1) The arrangement of arterial and collector streets shall conform as nearly as possible to the Comprehensive Plan. Arterial and collector streets shall connect with streets already dedicated in adjoining or adjacent subdivisions or provide for future connections to adjoining unsubdivided tracts. The arrangement of arterial and collector streets shall be considered in relation to the reasonable circulation of traffic, to topographic conditions, natural features, to run-off of storm water, to public convenience and safety, and in appropriate relation to the proposed use of the area to be served.
- (2) Local streets should be so planned as to discourage their use by non-local traffic. Dead end streets are prohibited, but cul-de-sacs will be permitted where topography, design and other conditions justify their use. Cul-de-sacs shall not be longer than 500 feet, measured along the centerline from the intersection of origin to the center of the cul-de-sac. Each cul-de-sac shall have a terminus of nearly circular shape with a minimum

right-of-way diameter of 120 feet and a minimum radius to face of curb of 45 feet. The property line at the intersection of the turnaround and the straight portion of the street shall be rounded as a radius of not less than 20 feet. An easement may be required to allow for snow removal and storage or other public purpose.

- (3) Temporary dead-end streets shall be improved with an approved turn-around or temporary cul-de-sac for the purpose of providing turn around access for emergency vehicles, buses and general traffic. An approved sign shall be installed designating the cul-de-sac or turn around as temporary in nature.
- (4) (a) For all public ways hereafter dedicated and accepted, the minimum right-of-way widths, paved widths and construction requirements for all streets shall be as shown in the Comprehensive Plan; where existing or anticipated traffic on arterial streets warrants greater widths of right-of-way, these shall be required; where not shown therein, the minimum right-of-way width for all streets, alleys or pedestrian ways included in any subdivision shall not be less than the minimum dimensions for each classification as follows:

Street	R/W*	Width*	Radii	Strength	Curb Radius
Principal Arterial	120 ft.	Design	Design	10-ton	25
Minor Arterial	120 ft.	44 ft.	Design	10-ton	25
Major Collector	100 ft.	66 ft.	200 ft.	10-ton	25
Local Collector	80 ft.	40 ft.	200 ft.	10-ton	25
Local Street	68 ft.	36 ft.	200 ft.	7-ton	15
Cul-de-sac	120 ft.			10-ton	15
Frontage	50 ft.	36 ft.	200 ft.	10-ton	
Trail	25 ft.	8 ft.	N/A	7-ton	
Pedestrian Way	25 ft.	6 ft.	N/A	N/A	
Alley	25 ft.				

(b)*Street width is face to face.

(c) Principal and minor arterials shall be designed to 9-ton for winter carryover; they shall assume their 10-ton capacity rating when the final layers of surfacing have been placed.

(d) Major and local collector streets shall be designed to 9-ton for winter carryover; they shall assume their 10-ton capacity rating when the final layers of surfacing have been placed. Local streets shall be designed to 5-ton for winter carryover; they shall assume their 7-ton capacity rating when the final layers of surfacing have been placed.

(5) Minimum design standards for collector and arterial streets shall comply with Minnesota State Aid Design Standards.

(6) Roadway access standards shall be as follows:

Driveway Dimensions	Residential	Commercial or Industrial
	Urban	Urban
Driveway Access Width	22', 16' desired	6' – 32', 32' desired
Minimum Distance Between Driveways	20'	20'
Minimum Distance Between Driveways for Twin homes	5' unless there is a common driveway or access easements are provided for	NA
Minimum Corner Clearance from a Collector Street	60'	80', at the discretion of the City Engineer
Minimum Corner Clearance from a Local Street or Frontage Road	20'	20'

(7) Access spacing guidelines:

Type of Access by Land Use Type	Major Collector	Minor Collector
Low and Medium Density Residential		
Private Access	Not Permitted	As Needed
Minimum Corner Clearance from a Collector Street	660'	300'
Commercial, Industrial or High Density Residential		
Private Access	Not Permitted	As Needed
Minimum Corner Clearance from a Collector Street	660'	660'

- (a) These guidelines apply to City streets only. Scott County and Mn/DOT have access authority for roadways under their jurisdiction. Please refer to Scott County's minimum access spacing guidelines identified in their current Transportation Plan.
- (b) Access to Major Collectors is limited to public street access. Steps should be taken to redirect private accesses on Major Collectors to other local streets. New private access to Major Collectors is not permitted unless deemed necessary.
- (c) Private access to Minor Collectors is to be evaluated by other factors. Whenever possible, residential access should be directed to non-continuous streets rather than Minor Collector roadways. Commercial/Industrial properties are encouraged to provide common accesses with adjacent properties when access is located on the Minor Collector system. Cross-traffic between adjacent compatible properties is to be accommodated when feasible. A minimum spacing between accesses of 660'; in commercial, industrial, or high density residential areas is encouraged for the development of turn lanes and driver decision reaction areas.

(8) Roadway design speed guidelines:

Functional Classification	Design Speed
Minor Collector Street	30 mph
Major Collector Roadway	30 - 40 mph
Minor Arterial Roadway	45 – 55 mph

(a) At the discretion of the City Engineer for City roadways, with approval by the City Council.

(C) *Street grades.*

(1) There shall be a minimum grade on all streets of not less than 0.5%, and wherever possible grades within 30 feet of a local street intersection with arterial and collector streets shall not exceed 3%. The grades in all streets, in any subdivision shall not be greater than the maximum grades for each classification as follows:

(a) Arterial street: 5%.

(b) Collector street: 6%.

(c) Local street: 7%.

(2) Where horizontal street lines within a block deflect from each other more than 10 degrees at any 1 point, there shall be a connecting curve with a radius adequate to ensure a sight distance of not less than 200 feet for local and collector streets and of such greater radii as the city shall determine for arterial and other special cases. A tangent of at least 100 feet shall be introduced between reverse curves on arterial and collector streets and 50 feet on other streets.

(3) The length of vertical curves shall be in accordance with the American Association of State Highway and Transportation Officials Green Book, also known as the AASHTO Green Book.

(4) All proposed streets shall be offered for dedication as public streets. No private streets shall be permitted except as set further in the Zoning chapter of the City Code.

(5) Under normal conditions, streets shall be laid out so as to intersect as nearly as possible at right angles, except where topography or other conditions justify variation as determined by the city. The minimum angle of intersection of streets shall be 80 degrees. Street intersection jogs with an offset of less than 125 feet shall be prohibited.

- (6) Wherever a proposed residential subdivision contains or is adjacent to the right-of-way of an arterial or limited access highway, the layout of lots shall be an arterial or limited access highway, the layout of lots shall be designed to provide access to the lots from local streets or collector streets serving lots on both sides of the street and not from the arterial street or highway. In commercial or industrial subdivisions, provision may be made for a marginal access street approximately parallel to and adjacent to the boundary of the arterial or limited access highway. An alternative is to provide a street at a distance suitable for the appropriate use of land between such street and the right-of-way of the arterial or limited access highway. The distance shall be determined with due consideration of the minimum distance required for approach connections to future grade separations, grade crossings or for lot depth. The city shall decide which design alternative is the more suitable.
- (7) Wherever a proposed residential subdivision contains or is adjacent to the right-of-way of a collector street, the layout of lots shall be designed to provide access to the lots from local streets serving lots on both sides of the street and not from the collector street.
- (8) Dedication of streets having only half of the required width shall not be approved except where it is essential to the reasonable development of the subdivision and in conformity with the other requirements of these regulations. Dedication of such streets may also be allowed where it is found that it will be practical to require the dedication of the other half when the adjoining property is subdivided, or where it becomes necessary to acquire the remaining half by condemnation so it may be improved in the public interest.
- (9) When a tract is subdivided into larger than building lots or parcels, as set forth in the R-1 single-family residence district of the Zoning Chapter of the City Code, such lots or parcels shall be so arranged as to permit the logical location and opening of future streets and appropriate re-subdivision, with provision for adequate utility connections for the re-subdivision.
- (10) Alleys shall be allowed only where necessary. Alleys shall be at least 25 feet wide and allowed where necessary to continue an existing alley or in commercial areas where adequate off-street loading space is not available. Alley intersections shall be designed to permit safe vehicular movement, and sharp changes in alley alignment shall be prohibited. Where necessary, corners may be cut off sufficiently to permit safe vehicular movement. Dead-end and cul-de-sac alleys shall be prohibited.
- (11) Curb and gutter, with adjustments where applicable for handicap ramps, shall be installed as follows:
 - (a) Local streets: 4-inch surmountable type design (MnDOT 5412).
 - (b) Arterial and collector streets: standard 6-inch rise with an 18 inch wide gutter and known as B618.

- (12) Where proposed residential lots abut a collector street, they shall be platted in such a manner as to encourage turn-around access and egress on each lot and discourage direct access onto the streets.
- (13) The developer shall install street name identification signs and traffic signs. The city shall approve the design and location of all signs. These signs shall be installed before the start of any construction of structures in the subdivision. While under construction, each residence shall have house numbers visible from the street to emergency personnel.

(D) *Street names designation.* Streets shall be designated pursuant to established city standards in compliance with these standards and as approved by the City Council.

- (1) *Street name pattern.* North-South through streets and collector streets north of First Street shall be numerical with numbers progressing from south to north (e.g. First Street, Second Street, Third Street with streets farther north being larger numbers) and end with the suffix "street".
- (2) *Continuance of street name.* Existing names of streets which temporarily dead-end shall be continued when the development adjacent occurs. Streets which align at an intersection shall also continue with the same name unless the street makes a definite change in classification.
- (3) *Duplication.* Street names which sound alike, are spelled or pronounced similarly shall not be allowed. (e.g. Rustle Road and Russell Road). Also, street names which are the same or similar to a street name in an adjacent township shall be avoided. Also duplication of portions of street names should be avoided (e.g. River Road, Riverside Lane, River Ridge Circle).
- (4) *Street names which include directions or suffixes.* Street names which include suffixes or directions shall be avoided (e.g. Bay Road, Circle Drive, East Street) to avoid confusion.
- (5) *Street suffixes.* Street suffixes shall be chosen according to the following standard classification. Additional suffixes not listed below may be approved by the City Council.
 - (a) *Avenue.* A street, road or public way which runs in a north-south direction.
 - (b) *Bay.* A permanently closed cul-de-sac running in any direction, in which lots are located that typically back up to a body of water.
 - (c) *Boulevard.* A street, road or public way which runs in a southwest to northeast direction.
 - (d) *Circle.* A secondary street that begins and circles back to end on the same street, or a permanently closed cul-de-sac.
 - (e) *Court.* A permanently closed cul-de-sac running in any direction.

- (f) *Drive*. A meandering major route.
- (g) *Lane*. A short street or street whose name shall be related to, but not duplicate any part of the base street from which it extends and returns.
- (h) *Parkway*. A meandering major route which offers scenic amenities.
- (i) *Place*. A permanently closed cul-de-sac running in any direction.
- (j) *Road*. A street, road or public way which runs in a northwest to southeast direction.
- (k) *Street*. A street, road or public way which runs in an east-west direction.
- (l) *Terrace*. A short street.
- (m) *Way*. A short street, such as a half-block.

(6) *Cul-de-sacs*.

- (a) Short cul-de-sacs (7 or less lots) shall use the same name as the main street it comes off of, with a cul-de-sac suffix added for identity purposes (e.g. Bay, Circle, Court or Place).
- (b) Long cul-de-sacs (8 or more lots) shall have a different name from the street it extends from, but use a suffix for a cul-de-sac (e.g. Bay, Circle, Court or Place).
- (c) Series of cul-de-sacs. In subdivisions where a series of cul-de-sacs extend off the same primary street, the cul-de-sacs shall be assigned different street or suffix names which progress in alphabetical order from south to north (e.g. Bay, Circle, Court, Place).

(7) *Street name amendments*. Requests for a street name change shall be made in writing to the Community Development Director or designee, who shall proceed with public notice for a public hearing before the Planning Commission and final action by the City Council. All residents owning property on the subject street shall be notified of the hearing, along with property owners within 20 feet of the intersection of their street and the subject street. No amendments shall be considered for “new” names if the changes are based solely on the fact the name is “unpopular” with individuals. The application for a street name change shall include the following:

- (a) Street name change proposal (from what to what);
- (b) Location of street (using grid number and letter);
- (c) Reason(s) for the request in name or number.

(E) *Streets in flood hazard areas*. No street shall be approved if its final surface is lower than 2 feet above the regulatory flood protection elevation. The City Council may require profiles and elevations of finished streets for areas subject to flooding. Fill may be used for streets, provided such fill does not unduly increase flood heights and provided any such fill would not result in a

stage increase violating the requirements of M.S. Chapters 103A to 103L, as such chapters may be amended, supplemented, or replaced from time to time, and any applicable requirements imposed by FEMA pursuant to its rules and regulations. Drainage openings shall not restrict the flow of water so as to unduly increase flood heights and provided any such drainage opening would not violate the requirements of M.S. Chapters 103A to 103G, as such chapters may be amended, supplemented, or replaced from time to time, and any applicable requirements imposed by FEMA pursuant to its rules and regulations.

(F) *Sidewalks*. Sidewalks shall be required as follows:

- (1) Commercial areas and along all collector streets: 6 foot wide concrete sidewalks shall be located on both sides of the street.
- (2) Industrial areas: 6 foot wide concrete sidewalks shall be located on at least 1 side of the street. See division (F)(1) above for collector street requirements in industrial areas.
- (3) Residential areas: 6 foot wide concrete sidewalks shall be located on at least 1 side of all streets, except cul-de-sacs. See division (F)(1) above for collector street requirements in residential areas.
- (4) Sidewalks and/or trails may be required in areas identified in the City's Master Sidewalk and Trail Plan, in addition to or in lieu of sidewalks and trails identified in (F) (1), (2) and (3) above.

(G) *Blocks*.

- (1) *Block length*. In general, intersecting streets, determining block lengths, shall be provided at such intervals as to serve cross-traffic adequately and to meet existing streets. Where no existing plats control, the blocks in residential subdivisions shall normally not exceed 1,800 feet in length, except where topography or other conditions justify a departure from this maximum. Pedestrian ways and/or easements through blocks may be required. The width and location of the pedestrian ways shall be subject to the approval of the city.
- (2) *Block width*. The width of the block shall normally be sufficient to allow 2 tiers of lots of appropriate depth. Blocks intended for business or industrial use shall be of such widths as to be considered most suitable for their respective use, including adequate space for off-street parking and deliveries.

(H) *Lots*.

- (1) The minimum lot area, width and depth shall not be less than that established by the Zoning Chapter of the City Code.
- (2) Corner lots for residential use shall have an additional 7 feet of width to accommodate building setbacks from both streets as defined in the Zoning Chapter of the City Code.

- (3) Side lines of lots shall be approximately at right angles to street lines or radial to curved street lines.
- (4) Double frontage lots shall be avoided except where lots back to a thoroughfare or other arterial street or where topographic or other conditions render subdividing otherwise unreasonable. The double frontage lots shall have an additional depth of at least 20 feet in order to allow space for screen plantings along the back lot line.
- (5) All lots must have at least the minimum required frontage on a public dedicated street, except as set forth in the Zoning Chapter of the City Code.
- (6) All lots must have a minimum of 30 feet in width at the rear lot line.
- (7) Lots abutting on a water course, drainage way, channel, stream, lake or pond shall have an additional depth or width as required to assure compliance with flood plain and/or shoreland zoning and surface-water management.
- (8) Lot remnants which are below the minimum lot size must be added by the subdivider to adjacent or surrounding lots or be dedicated to the public if the Council determines a public use can be served rather than be allowed to remain as an unusable parcel.
- (9) Lots intended for commercial, industrial or any use other than single-family residence must be designed as such, and the lot must be of adequate size to allow off-street parking, loading areas and such other facilities as are required to satisfy the requirements of the Zoning Chapter of the City Code.
- (10) Areas of a lot between the Top of Bluff and Toe of Bluff shall not be developed. Development on Steep Slopes shall be carefully reviewed to ensure that adequate measures have been taken to prevent erosion, sedimentation and structural damage. Slopes shall not be created in excess of 3:1, unless approved by the City Council. A slope greater than 3:1 may require additional structural stabilization.
- (11) Erosion and siltation control measures shall be coordinated with the different stages of development. Appropriate control measures shall be installed prior to development when necessary to control erosion.
- (12) The top of the foundation and the garage floor of all structures shall be a minimum of 18 inches and a maximum of 36 inches above the grade of the crown of the street upon which the property fronts. Exceptions to this standard may be approved by the City Administrator or designee for special circumstances such as increased setback, site topography, flooding potential, and the like, provided that proper site and area drainage is maintained and the elevation of the structure is in keeping with the character of the area. The City Administrator or designee may require a certificate of survey prior to building permit issuance to assure compliance with this section if lot pads are not installed as part of the subdivision process.
- (13) Building pads shall be designed to meet a setback of 50 feet from the high water level of all water bodies.

(I) *Streetlights*. Streetlights, at a minimum, shall be spaced as follows:

- (1) *Commercial areas*. Decorative style streetlights located on both sides of the street and spaced not more than 150 feet apart.
- (2) *Industrial areas*. Shoe box street lights located at a minimum on one side of the street and not more than 200 feet apart.
- (3) *Residential areas*. City standard lantern style lights must be located at all intersections and sharp curves and mid-block, not more than 350 feet apart.

(J) *Easements*.

- (1) All utilities in all new subdivisions shall be placed underground unless the subdivision is in an existing platted block or an existing partially platted block, in which case allowance for placing some utilities above ground will be considered if overhead utilities are already installed in the block.
- (2) (a) Easements for sanitary sewer, water main, storm sewer, and for related service connections shall be provided as determined necessary by the city. Utility easements shall connect with easements established in adjoining properties. Minimum easement requirements for a single utility are as follows:

<i>Depth of Utility Required</i>	<i>Easement Width</i>
0—10 feet	20 feet
10—15 feet	30 feet
15—20 feet	40 feet

- (b) The city may require an additional 10 feet be added to the above requirements for each additional utility to be included in the easement.
- (3) Perpetual easements shall be provided in such a way as to provide continuity of alignment from block to block. The subdivider shall provide temporary construction easements where determined necessary by the city. Perpetual easements shall be kept free of vegetation or structures which would interfere with the free movement of utility service vehicles. Where easements are provided for city utilities (sanitary sewer, water main, storm sewer, and related service connections) or for watercourses, the size of lots on which the easements are placed shall be increased so that minimum dimension and area requirements are met exclusive of the easement areas. Easements shall be provided over natural drainage or ponding areas for management of storm water and significant wetlands.

- (4) When a subdivision is traversed by a watercourse, ditch, swale, drainage way, channel, or stream, a drainage easement shall be provided conforming substantially with the lines of such watercourse. The easement shall be of sufficient width to permit free flow of anticipated surface water, with additional room required for access by maintenance vehicles. Where determined necessary by the city, additional easement width shall be provided to accommodate surface water anticipated from future development adjacent to or otherwise upstream of the current subdivision.

(K) *Storm water.*

- (1) Storm sewers, culverts and ditches shall be designed using the 10-year rational method to accommodate a 10-year or greater frequency storm. Low points shall have an overflow that will direct the runoff from a 100-year frequency storm to a satisfactory outlet without damage to property or structures. The rate of runoff from new development shall not exceed the rate from pre-development conditions.
- (2) All subdivision design shall incorporate adequate provisions for storm water runoff consistent with the Jordan Comprehensive Surface Water Management Plan (CSWMP) as amended, and with established city policies, and conform to the following standards:
 - (a) The proposed provisions for storm water runoff shall be documented in a runoff water management plan, prepared by a Minnesota licensed engineer to the minimum standards described in division (K)(2)(c) of this section.
 - (b) All storm water improvements shall be constructed in accordance with the city's standard specifications and detail plates.
 - (c) A runoff water management plan shall include the following items.
 - (d) All storm water detention, retention and/or quality ponds shall be located in separate outlots and dedicated to the city. In addition, the subdivider shall provide adequate access to these outlots by means of easements or any other appropriate mechanism. The subdivider must provide the following:
 - (1) A map containing a delineation of the sub-watershed contributing runoff from offsite, and proposed and existing sub-watersheds on-site. The delineation shall conform to the nomenclature of the SWMP and shall indicate any significant departures from the watershed delineation of the SWMP.
 - (2) Delineation of existing on-site "wetlands," as defined in the Wetland Conservation Act, lakes, streams, shoreland and/or flood plain areas shall be shown on the plans.
 - (3) Show normal and high water elevations for all water bodies on the plans.
 - (4) Storm water runoff volumes and rates for the 2, 10 and 100-year events for the existing and proposed conditions. Rainfall depths for these storms are 2.8, 4.2 and 6.0 inches, with a Type II rainfall distribution.

- (5) All hydrologic and hydraulic computations completed to design the proposed storm water management facilities. Reservoir routing procedures and critical duration runoff events shall be used for design of water storage areas and outlets.
- (6) A grading plan identifying storm water overflow routes along streets or drainage easements designed to protect structures from damage due to:
 - (a) Storms in excess of the design storm; or
 - (b) Clogging, collapse or other failure of the primary drainage facilities.
- (7) Spot elevations at drainage breakpoints and directional arrows indicating site and swale drainage shall be shown.
- (8) An assessment of the potential for construction or contribution to regional detention basins, as opposed to the construction of on-site basins. The SWMP identifies potential regional pond areas for control of rate and nutrient loading. The following criteria shall be used to determine whether on-site storage is required within the subdivision.
 - (a) If the SWMP indicates construction or enlargement of a storage site or water quality storage in a wetland or other water body, the facility or its equivalent shall be constructed to meet the goals of the SWMP.
 - (b) If a proposed subdivision will increase rates of runoff and where downstream storm water storage or conveyance facilities are inadequate to protect downstream riparian owners from effects of these increases, then on-site storm water storage must be constructed to restrict storm water rates to the pre-development rates.
- (9) Where on-site water quality detention basins are required, copies of the calculations determining the design of the basins shall be submitted. Design of on-site detention basins, as described in the site's runoff water management plan, shall incorporate recommendations from the Nationwide Urban Runoff Program (NURP) in "Protecting Water Quality in Urban Areas," published by the Minnesota Pollution Control Agency, as adopted by the city, or the applicable publications, as adopted by the city. The following design considerations are required for on-site water quality detention basins. These designs include permanent detention for water quality treatment in accordance with the W. W. Walker Method (1987); extended detention designs may be substituted provided that they provide treatment equivalent to the requirements below:
 - (a) A permanent pool (dead storage) volume below the normal outlet shall be greater than or equal to the runoff from a 2-1/2 inch, 24-hour storm over the entire contributing drainage area.

- (b) A permanent pool average depth (basin volume/basin are) which shall be greater than 4 feet, with a maximum depth of less than 10 feet.
- (c) An emergency spillway (emergency outlet) adequate to control the 100-year frequency critical duration rainfall event.
- (d) Basin side slopes above the normal water level should be no steeper than 3:1 when possible, and preferably flatter. A basin shelf with a minimum width of 10 feet and a maximum slope of 10:1 below the normal water level is recommended to enhance wildlife habitat, reduce potential safety hazards, and improve access for long-term maintenance.
- (e) To prevent short-circuiting, the distance between the major inlets and normal outlet shall be maximized.
- (f) A flood pool (temporary storage) volume above the principal outlet spillway shall be adequate so that the peak discharge rate from the 2, 10 and 100 year frequency critical duration storm is not greater than the peak discharge for a similar storm and predevelopment watershed conditions.
- (g) Extended detention of runoff from the more frequent (1-year to 5-year) storms shall be achieved through a principal spillway design, which shall include a perforated vertical riser, a small orifice outlet or a compound weir.
- (h) Effective energy dissipation devices which reduce outlet velocities to 4 feet per second or less shall consist of rip rap, stilling pools or other such measures to prevent erosion at all storm water outfalls into the basin and at the detention basin outlet.
- (i) Trash and floatable debris skimming devices shall be placed on the outlet of all on-site detention basins to provide treatment up to the critical duration 10-year storm event. These devices can consist of baffled weirs, submerged inlets or other such measures capable of restricting the overflow of floatable materials, including litter, oil and grease. Computations for the design of the devices shall be included.
- (j) For purposes of erosion control, vegetation protection and wildlife habitat enhancement, the 10-year flood level of the basin shall be no more than 2 feet above the normal level of the basin.
 - (1) All ponds or basins shall have a 1 foot freeboard located entirely within the outlet set aside for the pond or basin. Where additional protection is warranted, the above frequencies or freeboard shall be increased as necessary.
 - (2) No structure, except piers, docks, and retaining walls shall be placed at an elevation such that the lowest floor, including basement floor, is less than 3 feet above the highest known water level, or less than 1 foot above the 100-year regulatory flood protection elevation, if determined, of any adjacent lake, pond,

river, watercourse, or wetland. If sufficient data on known high water levels is not available, the elevation of the line of permanent aquatic vegetation shall be used as the estimated high water elevation.

- (3) Structures shall maintain a 50-foot setback from the high water elevation of water bodies.
- (4) Storm water facilities shall be designed for a 10-year frequency storm for local pipe design and a 100-year frequency storm for detention basin design and trunk facilities.
- (5) Storm water facilities shall use design criteria utilizing the Rational Method for storm sewer design and the Soil Conservation Service TR-55/TR-20, or similar based program, for computing existing and proposed hydrologic/hydraulic calculations.
- (6) The maximum spacing between drainage structures is 400 feet.
- (7) Storm sewer pipe shall be designed to have a 3 feet per second minimum velocity.
- (8) The invert elevations of pond inlet flared end sections shall match the normal water level of the pond.
- (9) The minimum depth for catch basins located within the roadway shall be 3-1/2 feet.
- (10) Riprap and filter blanket shall be placed at all outlet flared end sections. The minimum class of riprap shall be MnDOT 3601.2, Class III.

(L) *Public land open space dedication; requirements.*

- (1) As a prerequisite to subdivision approval, subdividers shall dedicate land for parks, playgrounds, public open space and trails, pedestrian ways and sidewalks and/or shall make a cash payment to the city's park fund as provided by this subdivision. The dedication of land for public use shall be without restriction or reservation and shall be transferred to the city by dedication in the plat. The City shall give due consideration to the open space or park facilities that the developer proposes to include in the subdivision when calculating the amount to be dedicated.
- (2) In all new subdivisions, a per capita residential or per capita employee share of the gross area of all property being subdivided shall be dedicated for parks, playgrounds, public open space or other public use, as calculated in Table A. The percentages shall be in addition to the property dedicated for streets, alleys, drainage ways, pedestrian ways or other public ways. Slopes in excess of 18%, wetlands, ponding areas and natural waterways shall not be accepted by the city

as a part of the park land dedication requirements. The City shall make a finding that it actually needs the park dedication as a result of the City's approval of the subdivision, prior to the acceptance of the land or fee-in-lieu of.

- (3) Where a proposed park, playground, school site or other public site shown on the Comprehensive Plan, Growth Development Plan or official map is embraced in whole or in part by a boundary of a proposed subdivision and such public sites are not dedicated to the city, such public ground shall be dedicated in the plat to the city. If the subdivider does not choose to dedicate an area in excess of the required per capita resident or employee amount required of the proposed site, the city may take other action to obtain use of the site.
- (4) Land to be dedicated shall be reasonably suitable for its intended use and shall be at a location convenient to the people to be served. Factors used in evaluating the adequacy of proposed parks, playgrounds, open space or other public lands and recreation areas shall include size, shape, topography, geology, soil types, hydrology, tree cover, access and location.
- (5) No areas may be dedicated as park, playground, or public land until the area has been approved for the purpose to which it is to be dedicated. The subdivider shall leave the dedicated land in a condition acceptable to the city.
- (6) If in the judgment of the Council the area proposed to be dedicated is not suitable or desirable for park/playground purposes because of location, size or other reason, the city may require a cash payment in lieu of land dedication, which is the fair market value of the required buildable unplatted land. The amount of cash payment shall be in accordance with the payment schedules as set forth by ordinance adopted by the Council. The city may elect to accept a combination of land dedicated for park use and a cash payment.
- (7) The park cash payment shall be calculated at the time of final plat approval. The Council may require the payment at the time of final plat approval or at a later time under terms agreed upon in the subdivision contract. Delayed payment shall include interest at a rate set by the city.
- (8) Cash payments shall be deposited in the city's park and recreation department fund and shall only be used for, acquisition or development of parks, playgrounds, public open space and for trails, pedestrian ways and sidewalks.
- (9) Parks bordered on 1 or more sides by existing creeks or streams shall ensure access to the park is provided from a public street and that pathways that allow emergency motorized vehicle traffic within the park are present.
- (10) Property being re-platted with the same number of lots and same number of dwelling units shall be exempt from all park land dedication requirements. If the number of lots or the number of dwelling units is increased, or if land outside the

previously recorded plat is added, then the park land dedication and/or park cash contributions shall be based on the additional lots and on the additional land being added to the plat. If the additional land does not create additional lots, then each 1/3 acre added shall be considered a new lot for purposes of calculating the dedication requirements.

(11) When land is dedicated and deeded to the city for park purposes, it shall be the responsibility of the city to maintain such dedicated property.

(12) Land dedication to the city shall be in the form of lots or outlots with approved lot and block numbers.

(13) The developer shall be responsible for grading and seeding or sodding of required parkland, to city specifications.

(M) *Tree and woodland preservation.*

(1) *Purpose.* The purpose of this subdivision is to ensure that the natural features within the city are protected and to minimize any adverse effects development might have on the environment. Subdivisions shall be planned in such a manner that the optimum number of significant trees shall be preserved.

(2) *Scope of application.* The provisions of this section shall not apply to the following:

- (a) The removal of trees from commercial nurseries or horticulture properties such as tree farms, orchards or commercial forests. This exception shall not be interpreted to include lumber harvesting incidental to imminent development of land.
- (b) The removal of trees on public rights-of-way conducted by or on behalf of a federal, state, county, municipal or other governmental agency in pursuance of its lawful activities or functions in the construction or improvement of public rights-of-way.
- (c) The removal of trees deemed by the city to be diseased, dying or dead.
- (d) The removal of any tree that has become or threatens to become a danger to human life or property.
- (e) The removal of any tree by a public utility when such a tree has the reasonable potential of endangering the facilities operated by the utility.
- (f) Minor subdivisions that involve no more than 2 lots shall not be required to submit a tree preservation plan.
- (g) If no significant trees or woodlands are present on the site, a tree preservation plan will not be required.

(3) *Submittal requirements.*

- (a) All tree preservation plans must be certified by a forester or landscape architect or registered land surveyor retained by the applicant. The tree preservation plan, along with associated subdivision or grading permit plans, shall be submitted in accordance with the Jordan Subdivision Ordinance and Zoning Ordinance, as amended, whichever is applicable. All sites shall be staked, as depicted in the approved grading plan, and the required tree protection fencing shall be installed at the limits of the approved grading before grading is to commence. No encroachment, grading, trenching, filling, compaction, or change in soil chemistry shall occur within the fenced areas protecting the critical root zone of the trees to be saved.
- (b) The tree preservation plan shall be reviewed by the city's Planning Department to assess the best possible layout to preserve significant trees and significant woodlands and to enhance the efforts to minimize damage to significant trees and significant woodlands. The applicant shall meet with the Planning Department prior to submittal of the development application or prior to application for the grading permit, whichever is sooner, to determine the most feasible and practical placement of buildings, parking, driveways, streets, storage and other physical features, in order that the fewest significant trees and significant woodlands are destroyed or damaged.

(4) *Tree and woodland preservation plan requirements.* The tree preservation plan shall include the following information:

- (a) The name(s), telephone number(s), and address(es) of applicants, property owners, developers and/or builders;
- (b) Delineation of the buildings, structures, or impervious surfaces situated thereon or contemplated to be built thereon;
- (c) Delineation of all areas to be graded and limits of proposed land disturbance within the subdivision. The limits of approved site grading shall be delineated in the field. Significant trees shall be protected by fencing located at the perimeter of its critical root zone;
- (d) An inventory of size, species, and location of all existing significant trees located within 75 feet of the areas to be graded and limits of land disturbance created by the subdivision. Distance shall be measured from the tree's drip line. These significant trees should be identified in both graphic and tabular form. If no significant trees exist within 75 feet of the grading limits, a tree inventory will not be required;
- (e) Identification of all significant trees and significant woodlands proposed to be saved, along with measures to protect significant trees and significant woodlands. These significant trees and significant woodlands shall be identified in both graphic and tabular form;
- (f) Identification of all significant trees and significant woodlands which will be lost due to proposed land alterations. Significant trees shall be considered lost as a result of:

- (1) Grade change or land alteration, whether temporary or permanent, of greater than 1 foot measured vertically, affecting 60% (as measured on a horizontal plane) or more of the tree's root zone or the area under the tree which is at and within the drip line of the tree's canopy;
 - (2) Utility construction (i.e., sewer, water, storm sewer, gas, electric, telephone and cable TV) resulting in the cutting of 60% or more of the tree's roots within the root zone;
 - (3) Mechanical injury to the trunk of a significant tree causing loss of more than 40% of the bark; or
 - (4) Compaction to a depth of 6 inches or more of 60% or more of the surface of the soil within a significant tree's root zone, or the area under the tree which is at and within the drip line of the tree's canopy.
- (g) Identification of all diseased, hazardous, or nuisance trees. Prior to any grading, all diseased and hazardous trees on the subject property shall be removed from the property;
- (h) Signature of the person(s) preparing the plan.

(5) *Tree and woodland reforestation mitigation.*

- (a) (1) A developer shall replace significant live trees lost or reasonably anticipated to be lost as a result of grading, building upon, or any other land alteration of, the land immediately or in the future, by the Developer, his or her agent, successor in interest, or any other person to whom or by whom all or any part of the land may be sold, graded, built upon, or altered by planting that number of trees ("replacement trees") determined in accordance with the following formula:

A = Total Diameter Inches of Significant Trees Lost as a Result of the Land Alteration

B = Total Diameter Inches of Significant Trees Situated on the Land

C = Tree Replacement Constant (1.33)

D = Replacement Trees (Number of Caliper Inches)

$$[(A/B) \times C] \times A = D$$

EXAMPLE

A = 337 total diameter inches of significant trees lost

B = 943 total diameter inches of significant trees on the land

C = 1.33 tree replacement constant

D = 160 replacement trees

$$[(337/943) \times 1.33] \times 337 = 160$$

- (2) Trees installed in boulevards as a part of subdivision requirements may count toward tree replacement inches, if the Planning Commission and City Council determine the site area is limited in which trees may be planted.
- (b) No significant trees or significant woodlands shall be removed until a tree preservation plan is approved by the city and escrow received in accordance with the approved tree preservation plan. If a significant tree(s) or any significant woodland that was intended to be preserved is removed without permission of the city, or damaged so that it is in a state of decline within 1 year from date of project closure as determined by a forester or landscape architect, the applicant shall mitigate tree loss by reforestation of appropriate areas within the development area in accordance with the following replacement schedule.
 - (1) For each significant tree removed that was intended to be preserved, 2 deciduous trees with a minimum of 2-1/2 inch caliper or 2 coniferous trees with a height of not less than 6 feet must be planted.
 - (2) Where replacement of a significant woodland is required, the applicant shall be responsible for furnishing and installing 2 deciduous trees with a minimum of 2-1/2 inch caliper or 2 coniferous trees with a height of not less than 6 feet for every 500 square feet of significant woodland damaged or destroyed that was intended to be preserved, or any increment thereof.
- (c) The trees required to be replaced pursuant to this section shall be in addition to any other trees required to be planted pursuant to any other provision of the Code.
- (d) Replacement trees shall be planted in 1 or more of the following areas on the land:
 - (1) Restoration areas including steep slopes;
 - (2) Outlots or common areas;
 - (3) Buffer zones between different land uses and/or activities;
 - (4) Project entrance areas; and
 - (5) Any other part of the land except any thereof dedicated or conveyed to the city, unless the city consents thereto.
- (e) Replacement trees must be no less than the following sizes:
 - (1) Deciduous trees: no less than 3 caliper inches;

- (2) Coniferous trees - no less than 7 feet high;
- (3) On steep slopes (i.e., greater than 3:1) deciduous trees may be 2-1/2 caliper inches and coniferous trees may be 6 feet in height.

(f) Replacement trees shall be of a species similar to the trees which are lost or removed and shall include those species shown on the following table:

(1) *Deciduous trees.*

<i>Common/Genus</i>	<i>Common/Species</i>	<i>Cultivars</i>	<i>Comments</i>
Alder/Alnus	glutinosa	Common	
Aspen/Populus	tremuloides	Trembling	
Birch/Betula	nigra	River, Heritage, Royal Frost, Paper, Prairie Dream,	
Birch/Betula	paper/papyrifera	Paper, Prairie Dream	
Birch/Betula	populifolia	Whitespire	
Buckeye/Aesculus	common	Autumn Splendor, Ohio	
Catalpa	common	Northern	
Cherry/Prunus	maackii	Amur	
Chestnut/Aesculus	hippocastanum	Baumann Horse	
Chestnut/Aesculus	Hybrid	Fort McNair Red Horse	
Coffeetree/Gymnocladus	dioicus	Kentucky	
Elm/Ulmus	common	New Horizon,	Dutch Elm Disease resistant varieties
Elm/Ulmus	hybrid	Cathedral, Accolade, Triumph	Dutch Elm Disease resistant varieties
Ginkgo	biloba	Autumn Gold, Magyar, Princeton Sentry, male species only	Male species only
Hackberry	common		
Honeylocust/Gleditsia	inermis	Shademaster	
Honeylocust/Gleditsia	triacanthos	Imperial, Skyline, Sunburst	
Hornbeam/Capinus	caroliniana	American	
Ironwood/Ostrya	virginiana	American Hop-hornbeam	
Linden/Tilia	americana	Boulevard, Redmond, American Sentry,	
Linden/Tilia	cordata	Greenspire	
Linden/Tilia	Hybrid	Glenleven	
Maple/Acer	freemanii (Red X Silver)	Autumn Blaze, Sienna Glen,	
Maple/Acer	norway/platanoides	Cleveland, Crimson King, Deborah, Emerald	

		Lustre, Emerald Queen, Parkway, Princeton Gold, Royal Red, Variegated	
Maple/Acer	red/rubrum	Autumn Radiance, Autumn Spire, Firedance, Northfire, Red Sunset, Northwood, Burgundy Belle, Ruby Frost	
Maple/Acer	sugar/saccarum	Sugar, Green Mountain, Majesty, Fall Fiesta	
Oak/Quercus	bicolor	Swamp White	
Oak/Quercus	ellipsoidalis	Northern Pin	
Oak/Quercus	Hybrid	Regal Prince, Heritage	
Oak/Quercus	palustris	Pin	
Oak/Quercus	red	Red	
Oak/Quercus	robur	English	
Poplar/Populus	deltoides	Siouxland	
Poplar/Populus	euramericana	Robusta	
Walnut/Juglans	black/nigra	Black Walnut	
Yellowwood/Cladrastis	lutea	American Yellowwood	

(2) *Coniferous trees.*

<i>Common/Genus</i>	<i>Common/Species</i>	<i>Cultivars</i>
Fir/Abies	balsamea	Balsam
Fir/Abies	white/concolor	Candicans
Hemlock/Tsuga	canadensis	Canadian, Albospica
Larch/Larix	decidua	European
Larch/Larix	laricina	Tamarack
Pine/Pinus	banksiana	Jack
Pine/Pinus	cembra	Swiss Stone
Pine/Pinus	flexilis	Limber, Cesarini Blue, Extra Blue
Pine/Pinus	monticola	Ammerland
Pine/Pinus	nigra	Austrian
Pine/Pinus	norway	
Pine/Pinus	parviflora	Japanese Blue, Short-Needled Japanese Blue, Tempelhof Japanese White, Bergman Japanese White
Pine/Pinus	peuce	Blue Macedonian
Pine/Pinus	ponderosa	Yellow
Pine/Pinus	resinosa	Red
Pine/Pinus	strobus	White, Columnar
Pine/Pinus	sylvestris	Scotch, French Blue

Pseudotsuga	menziesii	Douglas Fir (aka: Oregon pine or Douglas Spruce), Hess Select Blue
Spruce/Picea	glauca	Black Hills
Spruce/Picea	pungens	Colorado

(6) *Time to perform.*

- (a) The applicant shall implement the tree preservation plan prior to and during any construction. The tree protection measures of the plan shall remain in place until all grading and construction activity is terminated or until a request is made to and approved by the city. The city shall have the right to inspect the development and/or building site in order to determine compliance with the approved tree preservation plan. The city shall determine whether compliance with the tree preservation plan has been met.
- (b) Replacement trees shall be planted not less than 18 months from the date of issuance of the permit.
- (c) Any replacement tree which is not alive or healthy 1 year after the date that the last replacement tree has been planted shall be removed and a new healthy tree of the same size and species shall be planted in place of the removed tree. A new healthy tree of the same size and species shall be planted in place of any replacement tree missing 1 year after such date. Planting shall occur not later than the first fall or spring following such year.

(7) *Protective measures.*

- (a) Measures to protect significant trees and significant woodlands approved, as part of the tree preservation plan shall be included in sales information and disseminated to potential buyers of wooded lots.
- (b) The developer shall indemnify the city against any loss, cost or expense, including an amount as and for reasonable attorneys' fees incurred in enforcing the terms of this chapter.

(8) *Financial guarantee.*

- (a) An applicant shall provide a financial guarantee of \$500 for each lot having significant trees located within 75 feet of the grading or land disturbance limits following the preliminary approval of the tree preservation plan and prior to any construction and/or grading.
- (b) Following written request by the applicant for acceptance, the financial guarantee will be released upon certification by the landscape architect, city engineer, or forester that the tree preservation plan was followed, but in no event shall the

financial guarantee be released earlier than 1 year after the date of the project closure.

(Ord. 85, passed 4- -2005; Am. Ord. 96, Second Series, passed 8-7-2006)(Ord. 2012-11)(Ord. 2014-02)

TABLE A
PARK LAND DEDICATION CALCULATIONS
PER CAPITA RESIDENTIAL SHARE FOR RESIDENTIAL SUBDIVISIONS AND PER
CAPITA EMPLOYEE SHARE FOR COMMERCIAL & INDUSTRIAL SUBDIVISIONS

Residential Share = .018 gross acres per capita for each new residential subdivision (799.27 sq ft per subdivision)

Commercial/Industrial Share = .007 gross acres per employee for each new commercial or industrial subdivision (310.51 sq. ft per subdivision)

Methodology for determining per capita park dedication share is illustrated below:

2014 Park Land (Includes 3.95 miles of trail or est. 3.8 acres)		
Deemed appropriate for current population	111.56	acres
Residential Share or Use of Parks & Trails	95%	
 Residential Acreage Usage by Residential Population (Land Multiplied by Residential share of use)	 105.982	
 Population (2012 State Demographer estimate)	 5,776	
<hr/> Per Capita Residential Share (# park acres per resident)	<hr/> 0.018	acres
Sq. Ft. per Resident Current	799.27	sq. ft.
 Commercial/Industrial Share	 5%	
Multiplied by Total Park (could add Trail Acreage)	11.156	acres
 Number of Employees in City (2012 QCEW Data tool MnDEED)	 1565	
<hr/> Per Capita Com./Ind. Share	<hr/> 0.007	
Sq. Ft. Per Employee in City	310.51	sq. ft.
Current acres commercial industrial	261	
Number of employees per acre (based on 2012 est)	6.00	
 How to apply		
Example: 40 Acre Single Family Res. Development	252	residents
 (97 lots, 2.6 residents per home average)	 4.63	 acres
<u>%</u> of Gross Development for Parks Based on Calculation	11.57	%
 Example: 40 Commercial or industrial development Employment (40*6.00)	 240	
Park land required to serve comm./industrial dev. (240 x.007)	1.68	
<u>%</u> of Gross Development for Parks C/I based on Calculation	4.27	%

(Ord. 2014-02)