

## **PART 5 - STREETS**

### **5.01 APPROVALS, PERMITS, AS-BUILTS AND MAINTENANCE BONDS**

- A. Plans and specifications for public street improvements must be certified by a professional engineer registered in the State of Iowa and utilize the NGVD of 1929.
- B. Plans and specifications for public street improvements must be reviewed and approved by the City Engineer prior to construction.
- C. Other local, state and federal permits may be required, depending on the circumstances. It shall be the responsibility of the Engineer of Record to acquire all applicable permits. A copy of all permits shall be provided to the City Engineer before construction.
- D. The Engineer of Record is responsible to submit "Record of Construction" drawings to the Engineer on reproducible vellum or Mylar and a digital base map in an AutoCAD file or other approved electronic format.
- E. A 4-year maintenance bond covering defective materials and workmanship is required for all street improvements.

### **5.02 DESIGN RESOURCES**

- A. A Policy on Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials, current edition.
- B. Iowa Department of Transportation Manuals, current editions with revisions:
  - Standard Road Plans
  - Road Design Details
  - Road Design Manual
  - Road Design Aids Manual
- C. Iowa Department of Transportation Urban Design Guide and Alternative Urban Design Guides, current edition.
- D. Iowa Department of Transportation "Standard Specifications for Highway and Bridge Construction", current edition.

### **5.03 STREET CLASSIFICATION**

Streets will be classified according to their functional use as described as follows. Existing facilities may not fully comply.

**Arterial Streets** provide a continuous route for the expeditious movement of large volumes of all types of through traffic across and beyond the City and between high-traffic generation points. The geometric design and traffic-control measures are used to facilitate the safe movement of through traffic. Local street access to arterial streets will be limited. Direct access from abutting properties will not be permitted.

**Collector Streets** provide for the movement of traffic between arterial routes and local streets as well as providing limited direct access to abutting property. Moderate amounts ( $\leq 2500$  vehicles per day) of low speed ( $\leq 25$  MPH) traffic, including bus traffic, may be carried on collector streets.

**Local Streets** serve as a means of access to abutting property. They are intended to be a low speed ( $\leq 25$  MPH) and short trip routes, with usually less than 500 vehicles per day.

**Industrial Streets** are intended to carry commercial or industrial traffic.

#### **5.04 RIGHT-OF-WAY WIDTH**

- A. The minimum right-of-way width shall be provided as follows:
  - 1. Arterial right-of-ways shall be 100 feet in width.
  - 2. Collector right-of-ways shall be 70 feet in width.
  - 3. Local right-of-ways shall be 60 feet in width.
  - 4. Cul-de-sac right-of-ways shall be 90 feet in diameter for local and 120 feet in diameter for industrial.
  - 5. Industrial right-of-ways shall be 70 feet in width.
- B. These widths do not provide for medians or boulevards if they are planned within the right-of-way.

#### **5.05 TRAFFIC LANE WIDTHS AND LENGTH RESTRICTIONS**

- A. All street widths shall be measured back-to-back of the curb.
- B. The minimum traffic lane width will be 12 feet for arterials.
- C. Local streets will have a minimum pavement width of 29 feet with parking restricted to one side.
- D. Collector and industrial streets shall have a minimum pavement width of 37 feet with parking restricted to one side.
- E. Arterial streets shall have a minimum pavement width of 31 feet with no parking permitted on the street.
- F. Cul-de-sacs shall be paved with a minimum radius equal to the pavement width. The other radius from the stem of the cul-de-sac to the head shall be a minimum of

25 feet. Cul-de-sacs shall have a maximum length of 500 feet from the center of the bulb to the centerline of the adjoining street.

- G. Streets shall be extended to the edge of the development when the City determines that it is necessary to facilitate future development.

#### **5.06 SEPARATE TURNING LANES**

Separate turning lanes may be included on arterial streets, but will generally not be included in other street design. Where separate turning lanes are required on the basis of a capacity analysis, use a 12-foot width for arterial streets and an 11-foot width for collector streets.

#### **5.07 MEDIANS AND BOULEVARDS**

- A. Medians or boulevards on arterial streets shall have a minimum width of 16 feet. At intersections, medians may be used to provide for a separate left-turn storage lane.
- B. Medians or boulevards which are included as a part of local or collector streets shall have a minimum width of 4 feet if paved or 9 feet if grassed. Paved medians on local and collector streets are discouraged.

#### **5.08 DESIGN SPEED**

A design speed will be used to design the geometric features for arterial streets. The design speed will not be less than 35 miles per hour; however, posted speed limits may be less. The design speed will be used to establish geometric features including sight distance, intersections, etc. to current AASHTO standards.

#### **5.09 CLEAR ZONES**

- A. On streets with curbs, the clear zone shall be 3 feet for streets with a posted speed limit of 25 mph or less, 6 feet for streets with posted speed limits of 35 to 45 mph and 10 feet for streets with a posted speed limit greater than 45 mph. On streets without curbs, the clear zone shall be 10 feet for 2-lane and 4-lane facilities.
- B. For sidewalks and trails, the clear zone shall be 1 foot for sidewalks less than 6 feet in width and 2 feet for sidewalks or trails 6 feet wide and greater.
- C. Variances to clear zone requirements will be considered for overhead electrical facilities where compliance will significantly impact existing trees. In no case will a clear zone of less than 2 feet be allowed. A clear zone variance must be approved by the City Engineer.

**5.10 STREET GRADES**

- A. The maximum street grade for arterial, industrial and cul-de-sac streets shall be 8%, for collector streets 10% and for local streets 12%.
- B. When 2 streets intersect, the grade of the lower classification street shall be minimized to allow safe stopping and starting in adverse weather.
- C. The minimum grade for streets shall be 0.5%, except around the bulbs of cul-de-sacs where the minimum grade shall be 0.7%.

**5.11 CURVE RADIUS**

- A. The minimum centerline radius for curves shall be as follows:

|                   |            |
|-------------------|------------|
| arterial .....    | 1,000 feet |
| collector .....   | 350 feet   |
| local .....       | 150 feet   |
| cul-de-sacs ..... | 150 feet   |
| industrial .....  | 350 feet   |

- B. Under no circumstances will variances be granted for radiuses less than 75 feet.

**5.12 PAVEMENT CROSS SECTION**

All pavements shall have a 2% crown cross section as shown in Figure 5.1.

**5.13 CURB AND GUTTER SECTION**

- A. Curbs shall be 6 inches as shown in Figure 5.1. Roll curbs are not allowed.
- B. Curbs shall be integral cast Portland cement concrete. There shall be no separation between the curb and gutter section and the pavement.

**5.14 INTERSECTION CORNER RADIUS**

- A. The corner radius at intersections will depend on the functional classification of the intersecting streets. These are the minimum criteria:

|                             |   |
|-----------------------------|---|
| arterial - arterial .....   | 50 feet   |
| arterial - collector .....  | 30 feet   |
| arterial - local .....      | 25 feet   |
| collector - collector ..... | 25 feet   |
| collector - local .....     | 25 feet   |
| local - local .....         | 25 feet   |
| industrial .....            | 50 feet   |
| alley - all .....           | Maximum allowable that will remain in the street R.O.W. (not more than 20 feet) |

Corner radiuses may be enlarged on routes that will have significant truck or bus traffic.

- B. See Figure 5.2 or 5.3 for typical intersection joint detail. City Engineer will determine which “Typical Intersection Dowling Plan” will be required.

**5.15 PAVEMENT MATERIAL AND THICKNESS**

- A. The pavement slab shall be constructed of non-reinforced Portland cement concrete conforming to the IDOT specifications Class C or M mix, or hot mix asphalt.
- B. The minimum required pavement thicknesses are as follows:

| <u>Street Class</u>      | <u>Portland Cement Concrete</u> | <u>Hot Mix Asphalt*</u> |
|--------------------------|---------------------------------|-------------------------|
| Arterial                 | 9 inches min.                   | 12 inches               |
| Collector and Industrial | 7½ inches                       | 9½ inches               |
| Residential              | 6 inches                        | 7½ inches               |

Pavement thickness requirements are intended as a guide. Arterial street projects shall be designed on the basis of soil conditions and projected traffic loadings.

\*Portland cement concrete curb and gutter sections 30 inches wide are required. Additional thickness for arterial, collector and industrial streets may be required on the basis of soil conditions and traffic loadings.

**5.16 SUBGRADE AND FILL SECTION REQUIREMENTS**

- A. The subgrade shall be scarified to a depth of 6 inches below the pavement and compacted to 90% of Modified Proctor Density.
- B. All fill sections shall be compacted to IDOT Type A limits.
- C. Some soils may require the use of a drainable base and tile system constructed to IDOT standards. Pavement construction on fully hydric soils or slopes exceeding 8% will require a drainable base and tile system. See Section 5.18 for a list of fully hydric soils. Pavements on other soils will be evaluated on a case-by-case basis. Pavement tile systems may be used for sump pump discharge tiles required by Part 9, Storm Sewers and Storm water Management Facilities.

**5.17 AREA BETWEEN THE SIDEWALK AND THE CURB (PARKWAY)**

- A. The parkway shall slope to the street at a rate of ½ of an inch vertical per horizontal foot.
- B. In residential areas the parkway shall be grassed except in such areas that the parkway is so narrow that grass does not grow well. In these narrow areas the alternate materials described in Paragraph C may be used upon approval of the City Engineer.
- C. In commercial areas alternate materials may be used in the parkway upon approval of the City Engineer. These materials include exposed aggregate concrete, asphalt and bricks or concrete pavers on an asphalt or concrete base.

**TABLE 5.1  
Summary of Design Criteria**

| <b>DESIGN STANDARD</b>     | <b>ARTERIAL</b>  | <b>COLLECTOR</b> | <b>LOCAL</b>     | <b>CUL-DE-SACS</b> | <b>INDUSTRIAL</b> |
|----------------------------|------------------|------------------|------------------|--------------------|-------------------|
| Minimum right-of-way width | 100'             | 70'              | 60'              | See Sec. 5.04      | 70'               |
| Minimum lane width         | 12'              | 12'              |                  |                    |                   |
| Minimum pavement width     | 31' <sup>1</sup> | 37' <sup>2</sup> | 29' <sup>2</sup> | 29' <sup>3</sup>   | 37' <sup>2</sup>  |
| Maximum grade              | 8%               | 10%              | 12%              | 8%                 | 8%                |
| Minimum grade              | 0.5%             | 0.5%             | 0.5%             | 0.7%               | 0.5%              |
| Minimum curve radius       | 1,000'           | 350'             | 150'             | 150'               | 150'              |
| Minimum pavement thickness | 9 <sup>4</sup>   | 7.5 <sup>4</sup> | 6 <sup>4</sup>   | 6 <sup>4</sup>     | 7.5 <sup>4</sup>  |
|                            | 12 <sup>5</sup>  | 9.5 <sup>5</sup> | 7.5 <sup>5</sup> | 7.5 <sup>5</sup>   | 9.5 <sup>5</sup>  |

- 1. No parking permitted.
- 2. Parking restricted to one side.
- 3. Radius equal to street width.
- 4. Portland Cement Concrete
- 5. Hot Mix Asphalt

**5.18 FULLY HYDRIC SOILS**

***Soils Susceptible to Frost Heaving or High Ground Water:***

| <b>SCS MAP SYMBOL</b> | <b>SCS MAP UNIT NAME</b> |
|-----------------------|--------------------------|
| BaB, BaC, BaD         | Backbone                 |
| Ck                    | Clyde                    |
| FoB                   | Floyd                    |
| Hm                    | Hayfield                 |
| KeB, KeC, KeC2        | Kenyon                   |
| Ld                    | Lawler                   |
| OrA, OrB              | Oran                     |
| OsA, OsB, OsC         | Ostrander                |
| ReA, ReB              | Readlyn                  |
| Sp, Sv                | Spillville               |