

2. STREETS

2.1 General:

The street system, including the street layout, shall be in accordance with generally accepted engineering practices and in compliance with the Comprehensive Plan, the latest Thoroughfare Plan, the Zoning Ordinances, the Subdivision Regulations and other applicable regulations. The drainage system, as incorporated into the street system, shall comply with Section 3 of this document. The plans and specifications, design computations, if required, and other applicable data shall be submitted to the City for review. Construction shall not commence prior to approval of the plans and specifications by the City. All changes during construction shall be submitted to the City's Engineer for approval and acceptance by the City prior to any construction modifications.

2.2 Street Arrangement:

Unless otherwise approved by the City, provisions shall be made for the extension of existing major arterials, collector streets and local streets in accordance with the Thoroughfare Plan and any specific street alignments as adopted by the City Council.

Off-center intersections will be considered for approval only for minor collector and local streets and only when there is a minimum property line separation of 125' unless otherwise approved by the City's Engineer.

Within residential areas, the following design elements are encouraged: (A) Developing only a limited number of access points to arterial streets bordering the subdivision; (B) Incorporating curvilinear streets into the plan; (C) More than one point of access; and (D) Incorporating a discontinuous residential street network, which utilizes three-way intersections in lieu of four-way intersections. When these factors are incorporated into a residential street plan, the result is enhanced character and traffic safety.

2.3 Thoroughfare and Street Geometry:

Geometric design standards are presented in two formats within this section. Table 2.1 identifies specific design criteria for each standard roadway type. Figure 2.1A and 2.1B shows the typical cross-section for each standard roadway type. It is noted that dimensions shown are to the face of curb, unless specifically identified otherwise.

Each roadway type is keyed to the City Thoroughfare Plan, with the exception of local streets. The reader is referred to this document for information as to the locations where these roadways are to be used.

2.4 Turn Lanes:

All left turn storage areas shall be ten (10) feet wide with minimum storage requirements for left-turn lanes as in Figure 2.2. The transition curves used in left-turn

lanes shall be two (2), 250-foot radius reverse curves with a total transition length of 100 feet.

TABLE 2.1
GEOMETRIC DESIGN STANDARDS

Design Element	Principal Arterial Divided	Minor Arterial Divided	Major Collector Undivided	Minor Collector Undivided	Local (Residential)
Number Traffic Lanes	6	4	4	2	2
Minimum Lane Width (Feet)	12	12	11	11 + 2 Parking	15
Minimum R.O.W. Width* (Feet)	120	100	74	65	50
Design Speed (M.P.H.)	45	40	40	40	30****
Stopping Sight Distance (Feet)	400	325	325	325	325
Median Width ** (Feet)	16	14	--	--	--
Minimum Lateral Clearance (Feet)	6	6	6	6	--
Parking Permitted	NO	NO	NO	Com. Some Res. Yes	Res. Yes
Minimum Horizontal Centerline Curvature (Feet)	1200	850	Com. 700 Res. 600	Com. 500 Res. 350	Res. 250 ELBOW – 50'

* **RIGHT-OF-WAY REQUIREMENTS FOR STATE HIGHWAYS AND/OR THE PROVISION OF RIGHT TURN LANES OR OTHER INTERSECTION IMPROVEMENTS MAY EXCEED THIS MINIMUM R.O.W. STANDARDS**

** **LARGER MEDIANS MAY BE REQUIRED TO PROVIDE FOR MULTIPLE TURN LANES.**

*** **LOCAL RESIDENTIAL CUL-DE-SACS SHALL HAVE A MINIMUM R.O.W. RADIUS OF FIFTY-SEVEN AND ONE-HALF FEET (57.5').**

**** **A LOWER DESIGN SPEED MAY BE USED IF, IN THE JUDGEMENT OF THE CITY'S ENGINEER, SITE FEATURES (TOPOGRAPHY, STREET PATTERN, ETC.) DICTATE. IN NO CASE SHALL THE DESIGN SPEED BE LOWER THAN 20 MPH.**

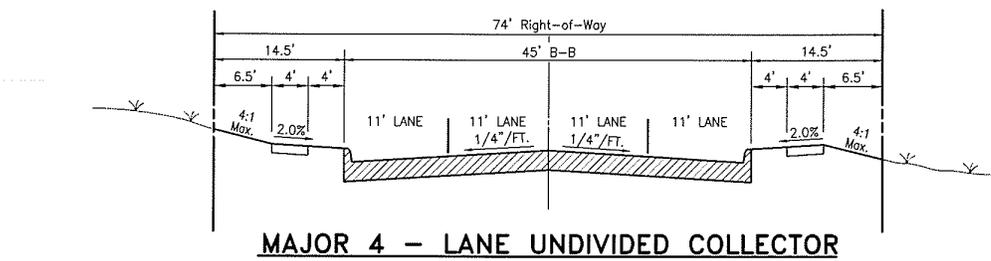
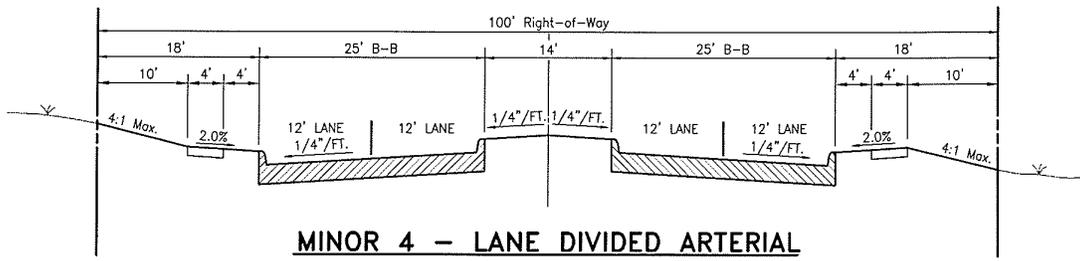
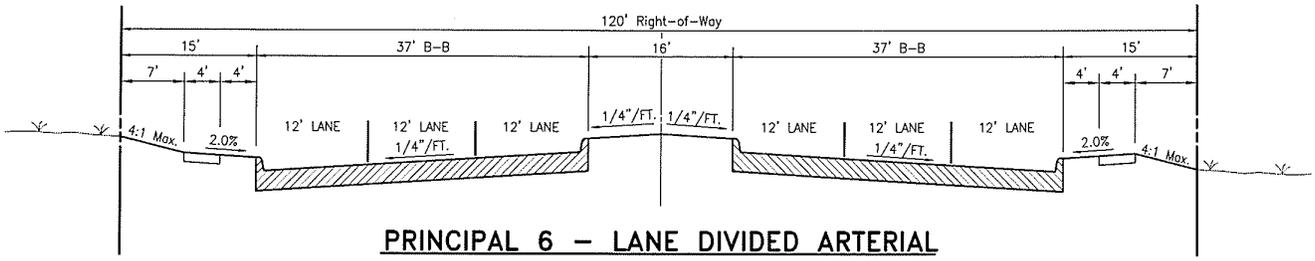
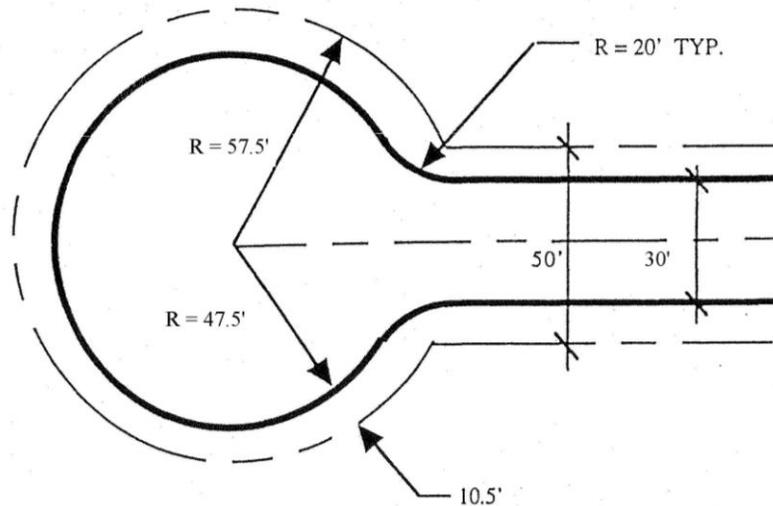
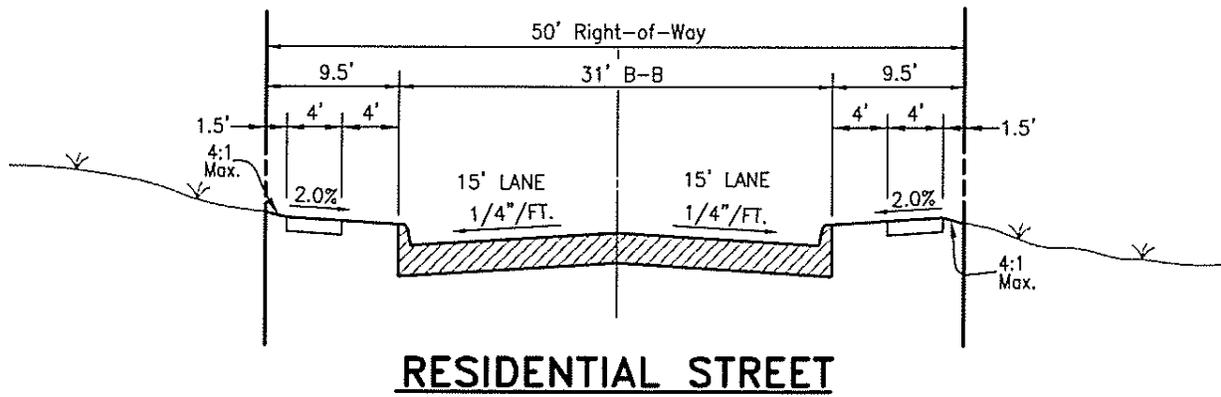
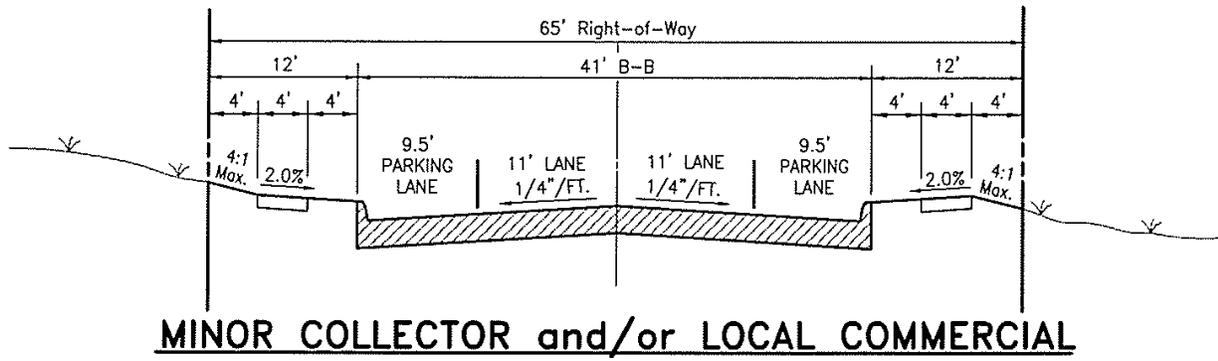


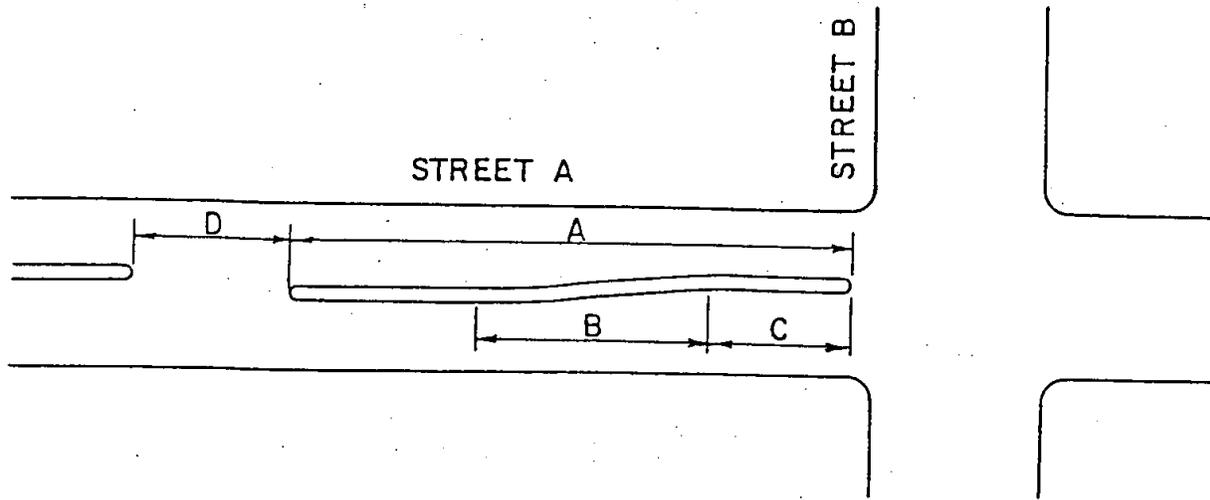
FIGURE 2.1A



Typical Cross Sections - Collector and Local Streets

FIGURE 2.1B

FIGURE 2.2
MEDIAN DESIGN STANDARDS



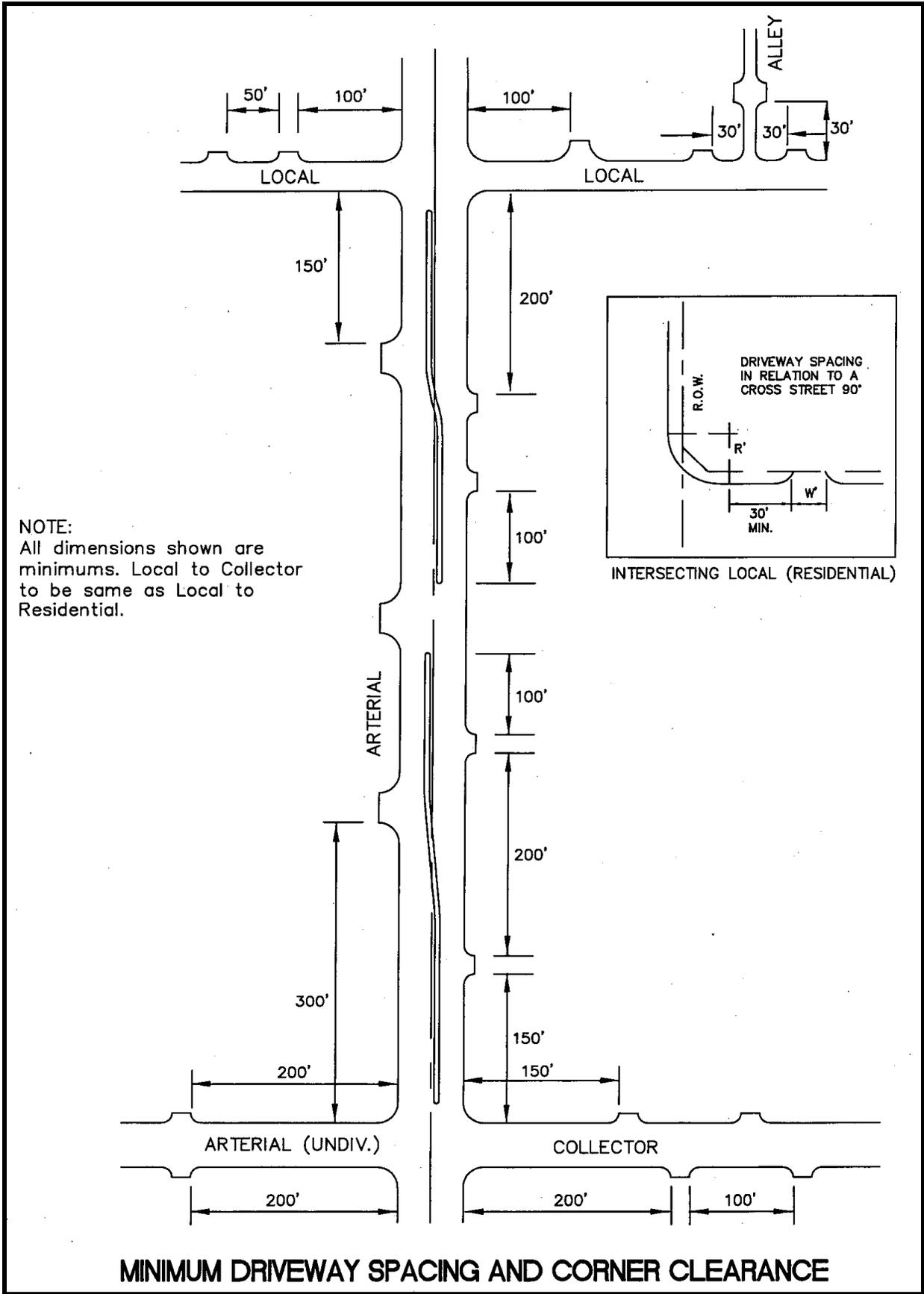
INTERSECTING STREET TYPE		MINIMUM LENGTH (FEET)			
STREET A	STREET B	A	B	C*	D**
Principal Arterial	Principal Arterial	310	100	150	60
Principal Arterial	Minor Arterial	260	100	100	60
Principal Arterial	Major Collector Minor Collector	260	100	100	60
Principal Arterial	Local/Private	220	100	60	60
Minor Arterial	Principal Arterial	310	100	150	60
Minor Arterial	Minor Arterial	260	100	100	60
Minor Arterial	Major Collector Minor Collector	260	100	100	60
Minor Arterial	Local/Private	220	100	60	60

LEFT-TURN STORAGE AREA WIDTH 10' MINIMUM

MEDIAN WIDTH (SEE GEOMETRIC DESIGN STANDARD FOR PRINCIPAL AND MINOR ARTERIAL).

***MINIMUM LENGTH - ACTUAL LENGTH DEPENDENT UPON ANTICIPATED TURN VOLUMN**

**** OR STREET WIDTH + 8 FEET - WHICHEVER IS GREATER**



NOTE:
 All dimensions shown are minimums. Local to Collector to be same as Local to Residential.

MINIMUM DRIVEWAY SPACING AND CORNER CLEARANCE

FIGURE 2.3

2.5 Median Openings, Width, Location and Spacing:

Arterial thoroughfares in Royse City are to have raised medians. Arterials having two-way left turn lanes are discouraged and may be allowed only in special circumstances with the approval of the City Council.

Median openings at intersections shall be from right-of-way to right-of-way of the intersecting street, unless otherwise approved by the City's Engineer.

The width of mid-block median openings shall not be less than 60 feet, or greater than 70 feet.

Using the above requirements, examples of the minimum distance between median openings on a divided street where left-turn storage is provided in both directions are:

- A. 310 feet from nose to nose of the median from the intersection of two major thoroughfares to a street or drive (see Figure 2.2);
- B. 260 feet from nose to nose of the median from the intersection of two secondary thoroughfares or a secondary thoroughfare and a major thoroughfare to a residential street or a drive, and;
- C. 220 feet from nose to nose of the median for intersection combinations of drives and/or residential streets.

2.6 Driveway Locations:

Minimum standards for driveway separation accessing the same site are shown in Figure 2.3. This standard applies to all non-residential uses.

There is a minimum distance upstream and downstream from adjacent intersections within which driveways should not be located. This separation distance varies with the classification of street and is shown in Figure 2.3. This standard applies to all non-residential users.

At mid-block access points, there is a minimum distance from a median nose, within which driveways should not be located. This is shown in Figure 2.3 and is equally applicable along both major and minor arterials for non-residential uses.

2.7 Block Lengths:

In general, streets shall be provided at such intervals as to serve cross traffic adequately and to intersect with existing streets. Where no existing plats control, the blocks shall be not more than 1,200 feet in length. Block arrangements must provide access to all lots, and in no case, shall a block interfere with traffic circulation.

2.8 Street Intersections:

More than two streets intersecting at one point shall not be allowed. All streets and thoroughfares should intersect other streets and thoroughfares at an angle of ninety (90) degrees unless otherwise approved by the City's Engineer.

Arterial and collector street intersections shall have property line corner clips with a minimum tangent distance of thirty (30) feet. Residential streets shall not normally be required to have a corner clip at their intersection with other streets or thoroughfares, but a 10-foot by 10-foot sidewalk corner easement will be required.

Curb radii at intersections shall have a minimum radius of thirty (30) feet along arterials, twenty-five (25) feet along collectors and twenty (20) feet along residential streets.

In any case where streets intersect at an angle of other than ninety (90) degrees, the City shall review and comment regarding non-standard right-of-way corner clips and curb return radii.

2.9 Relation to Adjoining Streets:

The system of streets designed for the development, except in approved cases, must connect with streets already dedicated in adjacent developments. Where no adjacent connections are platted, the streets must be the reasonable projection of streets in the nearest subdivided tracts and must be continued to the boundaries of the tract development, so that other developments may eventually connect with the proposed development.

At the intersection of a new subdivision street with an existing boulevard arterial, the Developer of the subdivision shall construct a median opening in the boulevard, unless otherwise directed by the City in writing.

Strips of land controlling access to or egress from other property or any street or alley or having the effect of restricting or damaging the adjoining property for development or subdivision purposes or which will not be taxable or accessible for special improvements shall not be permitted in any development unless such reserve strips are conveyed to the City on fee simple. The City Planning Director or the City's Engineer makes this determination. When such access is needed to maintain permanent City owned utilities, the roadway will be an improved right-of-way. If the utilities are temporary, an improved easement may be approved.

2.10 Dead End Streets, Cul-de-Sacs and Courts:

Cul-de-sacs are permitted and encouraged within residential subdivisions. Use of this design shall provide proper access to all lots and shall not exceed six hundred (600) feet in length, measured from the center of the cul-de-sac to the center of the intersecting street (not a dead end street). Specific aspects of the standard cul-de-sac design are given in Figure 2.1B. In lieu of the typical design shown, the City may approve alternative concepts for a specific application.

2.11 Alleys and Alley Widths:

Alleys shall be provided in all residential areas and shall be properly designed and paved with concrete. No alley may be over 1,000 feet long. Prior to the approval of the preliminary plat, the City Council may waive the residential alley requirement upon determination by the Council, if it is in the best interest of the City. Alleys may be required in commercial and industrial districts. The City may waive this requirement

where other definite and assured provisions are made for service access such as off-street loading, unloading and parking consistent with and adequate for the uses proposed. The minimum mid-block right-of-way width of an alley shall be seventeen (17) feet. Dead-end alleys shall not be permitted. The City may waive this requirement where such dead-end alleys are unavoidable and where adequate turnaround facilities have been provided. Adequate provisions shall be made at all intersections in order that equipment, such as garbage collection vehicles and maintenance vehicles, can maneuver the corners. The interior edge of the pavement, at the corners, shall have a minimum radius of thirty (30) feet. The exterior edge of the pavement, at the corners, shall have a minimum radius of twenty (20) feet. The right-of-way limits shall be expanded, if necessary, beyond the minimum requirement in order to include all of the paved section and utilities within the, right-of-way of the alley. Alley turnouts shall be paved to the property line and shall be fifteen (15) feet wide at that point. All alleys shall have a minimum of twelve (12) feet of paved concrete width with 2'-6" parkway widths. The concrete shall be reinforced and have a minimum compressive strength of 4,000 psi (NCTCOG Item 303.3.4.2 Class P1) within 28 days and have a minimum thickness of eight (8) inches in commercial areas and a minimum of six (6) inches in residential areas.

2.12 Street Grades:

Arterial streets may have a maximum grade of seven and one-half (7½) percent, for a maximum continuous distance of two hundred (200) feet. Collector streets may have a maximum grade of seven and one-half (7½) percent. Residential streets may have a maximum grade of ten (10) percent, unless otherwise approved by the City, where the natural topography is such as to require steeper grades. All streets must have a minimum grade of at least five-tenths (0.5) of one (1) percent. Centerline grade changes with an algebraic difference of more than one (1) percent shall be connected with vertical curves in compliance with the minimum length requirements set forth in Table 2.2.

2.13 Pavement Design:

Pavement and pavement subgrades (Roadway and Alley) shall be designed based on a minimum 20-year design life and a geotechnical evaluation utilizing onsite sub-surface soil samples. Pavement design calculations shall be prepared by Professional Engineer licensed in the State of Texas, and be submitted with the preliminary construction plans for review as part of the construction plan review process. The submittal shall include the pavement design traffic loadings and design life.

All new City streets, alleys and rehabilitation of existing streets shall be constructed in accordance the latest City of Royse City Technical Construction Standards and Specifications and the North Central Texas Council of Governments (NCTCOG) Public Works Construction Standards. The following pavement and subgrade standards are minimum design criteria only:

- A. Residential Pavement: Reinforced concrete pavement thickness shall be determined by pavement design calculations. Minimum thickness of reinforced concrete pavement shall be no less than six (6) inches. Concrete strength shall be NCTCOG Item 303.3.4.2. Class P1 (4,000 psi Compressive Strength in 28-days),

with a cement content of not less than 6 sacks per cubic yard. Subgrade preparation and thickness shall be based on pavement design calculations and shall be no less than six (6) inches in depth.

- B. Arterial, Minor Collector and Major Collector Pavement: Reinforced concrete pavement thickness shall be determined by pavement design calculations. Minimum thickness of reinforced concrete pavement shall be no less than eight (8) inches. Concrete strength shall be NCTCOG Item 303.3.4.2. Class P1 (4,000 psi Compressive Strength in 28-days), with a cement content of not less than 6 sacks per cubic yard. Subgrade preparation and thickness shall be based on pavement design calculations and shall be no less than six (6) inches in depth.
- C. Subgrade: Subgrade design shall be based on representative onsite subsurface soil conditions and testing. Testing shall be in accordance with the NCTCOG Standard Specifications for Public Works Construction and be completed by a geotechnical testing lab. The geotechnical investigation shall be submitted to the City as part of the pavement design submittal. In general, the soils testing shall be based on onsite sub-surface soil samples and the testing of Atterburg limits. Based on the testing results, the pavement design shall provide the type of the subgrade stabilization proposed (Lime Stabilized, Cement Stabilized or Asphalt Stabilized). Stabilization shall span the width of the street, back-of-curb to back-of-curb, plus twelve (12) inches beyond the back of curb on each side. Subgrades shall be mechanically compacted to ninety-five (95) percent standard proctor densities at optimum moisture.

Future driveway cuts on existing streets shall have proposed driveway pavement constructed within 48-hours of driveway excavation or a temporary concrete mud mat shall be constructed to protect the existing street subgrade from excessive moisture penetration or moisture evaporation.

TABLE 2.2

CREST VERTICAL CURVES

Design Speed (MPH)	Coeff. of Friction (a)	Stopping Sight Dist. (Ft.)	Stopping Sight Dist. Rounded for Design (Ft.)	K	K Rounded for Design
15	0.42	72.98	75	4.01	5
20	0.40	106.83	125	8.59	10
25	0.38	146.70	150	16.19	20
30	0.36	193.58	200	28.20	30
35	0.34	248.72	250	46.55	50
40	0.32	313.67	325	74.03	80
45	0.31	383.12	400	110.44	120

(a) AASHTO, p. 316

TABLE 2.2 Cont'd
CREST VERTICAL CURVES

ROUNDED
 MINIMUM LENGTH OF VERTICAL CURVE IN FEET
 For Speeds and K Values Shown Below
 (L - KA)

Algebraic Grade Diff. (%) (A)	MPH K	15 5	20 10	25 20	30 30	35 50	40 80	45 120
1		5	10	20	30	50	80	120
2		10	20	40	60	100	160	240
3		15	30	60	90	150	240	360
4		20	40	80	120	200	320	480
5		25	50	100	150	250	400	600
6		30	60	120	180	300	480	720
7		35	70	140	210	350	560	840
8		40	80	160	240	400	640	960
9		45	90	180	270	450	720	1080
10		50	100	200	300	500	800	1200
11		55	110	220	330	550	880	1320
12		60	120	240	360	600	960	1440
13		65	130	260	390	650	1040	1560
14		70	140	280	420	700	1120	1680
15		75	150	300	450	750	1200	1800

TABLE 2.2 Cont'd

SAG VERTICAL CURVES

Design Speed (MPH)	Coeff. of Friction (a)	Stopping Sight Dist. (Ft.)	Stopping Sight Dist. Rounded for Design (Ft.)	K	K Rounded for Design
15	0.42	72.98	75	8.13	10
20	0.40	106.83	125	14.75	20
25	0.38	146.70	150	23.56	30
30	0.36	193.58	200	34.78	40
35	0.34	248.72	250	48.69	50
40	0.32	313.67	325	65.69	70
45	0.31	383.12	400	84.31	90

(a) AASHTO, p. 316

(b) AASHTO, p. 312

TABLE 2.2 Cont'd
SAG VERTICAL CURVES

ROUNDED
 MINIMUM LENGTH OF VERTICAL CURVE IN FEET
 For Speeds and K Values Shown Below
 (L - KA)

Algebraic Grade Diff. (%) (A)	MPH K	15 10	20 20	25 30	30 40	35 50	40 70	45 90
1		10	20	30	40	50	70	90
2		20	40	60	80	100	140	180
3		30	60	90	120	150	210	270
4		40	80	120	160	200	280	360
5		50	100	150	200	250	350	450
6		60	120	180	240	300	420	540
7		70	140	210	280	350	490	630
8		80	160	240	320	400	560	720
9		90	180	270	360	450	630	810
10		100	200	300	400	500	700	900
11		110	220	330	440	550	770	990
12		120	240	360	480	600	840	1080
13		130	260	390	520	650	910	1170
14		140	280	420	560	700	980	1260
15		150	300	450	600	750	1050	1350

2.14 Parkways, Grades and Sidewalks:

All parkways shall be constructed to conform to top of curb grades with a standard transverse slope of one-quarter ($\frac{1}{4}$) inch per foot rise from top of curb to right-of-way.

Where the natural topography is such as to require steeper grades, transverse slopes (except for sidewalk) up to three-quarter ($\frac{3}{4}$) inch per foot may be used with approval of the City.

Sidewalks shall be provided for all residential streets in subdivisions zoned for one or two family dwellings and on all streets designated on the adopted Master Thoroughfare Plan. Barrier free ramps and sidewalks along screening walls, landscaped areas, trails or in parks, shall be installed by the Developer with street construction and the sidewalks in front of residential lots shall be installed by the home builder. The City may require sidewalks in other locations. Where provided, there shall not be less than four (4) feet in width with the inside edge of the sidewalk to be placed four (4) feet off the back of the street curb and located wholly within the dedicated street right-of-way, sidewalk corner easement or road easement in the case of private streets. This requirement may be waived by the City Council.

Sidewalks placed adjacent to the back of the curb must be five (5) feet wide and approved by the City's Engineer.

Sidewalks shall be of concrete having a minimum of 3000-psi compressive strength in 28 days. The concrete thickness shall be four (4) inches reinforced with No. 3 bars at 24-inch centers both ways. A minimum of 1½ inches of sand must be placed under sidewalk. Subgrade (including sand) shall be compacted to 95% density.

2.15 Driveways:

Residential: Residential driveways to serve single car garages shall not be less than twelve (12) feet or for two car garages, carports and/or storage areas shall be not less than eighteen (18) feet nor more than twenty-four (24) feet in width at the property line. The width of the driveway will be larger at the garage for a three car (width to be twenty-eight (28) feet) or larger garage (case by case basis). Residential driveways shall be separated from one another by a distance of at least ten (10) feet. The radii of all residential driveway returns shall be a minimum of five (5) feet and shall not extend past the adjoining property line. The driveway approaches devoted to one use shall not occupy more than sixty percent (60%) of the frontage abutting the roadway or alley.

Multi-Family and Non-Residential: Driveways providing access to multi-family or non-residential uses shall generally have widths between twenty four (24) and forty five (45) feet when measured at their narrowest point near, or at, the property line. The minimum radius for these uses shall be twenty-five (25) feet. Larger radii are encouraged. Limitations on permissible locations for these driveways are addressed in Section 2.6, Driveway Locations. Driveway radii returns shall not extend across abutting property lines.

2.16 Traffic Information and Control Devices:

The developer shall arrange for the installation of all pavement striping, regulatory, warning and guide signs, including posts, as shown on the approved plans. Street name signs shall be installed at each intersection. Examples of regulatory, warning, information and guide signs are as follows:

- A. Regulatory signs shall include, but are not limited to, STOP, 4-WAY, YIELD, KEEP RIGHT and speed limit signs.
- B. Warning signs shall include, but are not limited to, DEAD END, NO OUTLET, DIVIDED ROAD and PAVEMENT ENDS.
- C. Guide signals shall include, but are not limited to, street name signs, DETOUR, direction arrow and advance arrow.
- D. Traffic striping shall be provided by the developer as shown on the approved plans.

The materials and fabrication of sign posts shall be in accordance with the Standard Specifications for Construction. The developer shall be responsible for the expenses incurred by the City for manufacture and installation of these signs.

House street numbers shall be placed on the curbs for each lot and shall comply with the requirements of the Standard Specifications for Construction.

2.17 Street Lighting:

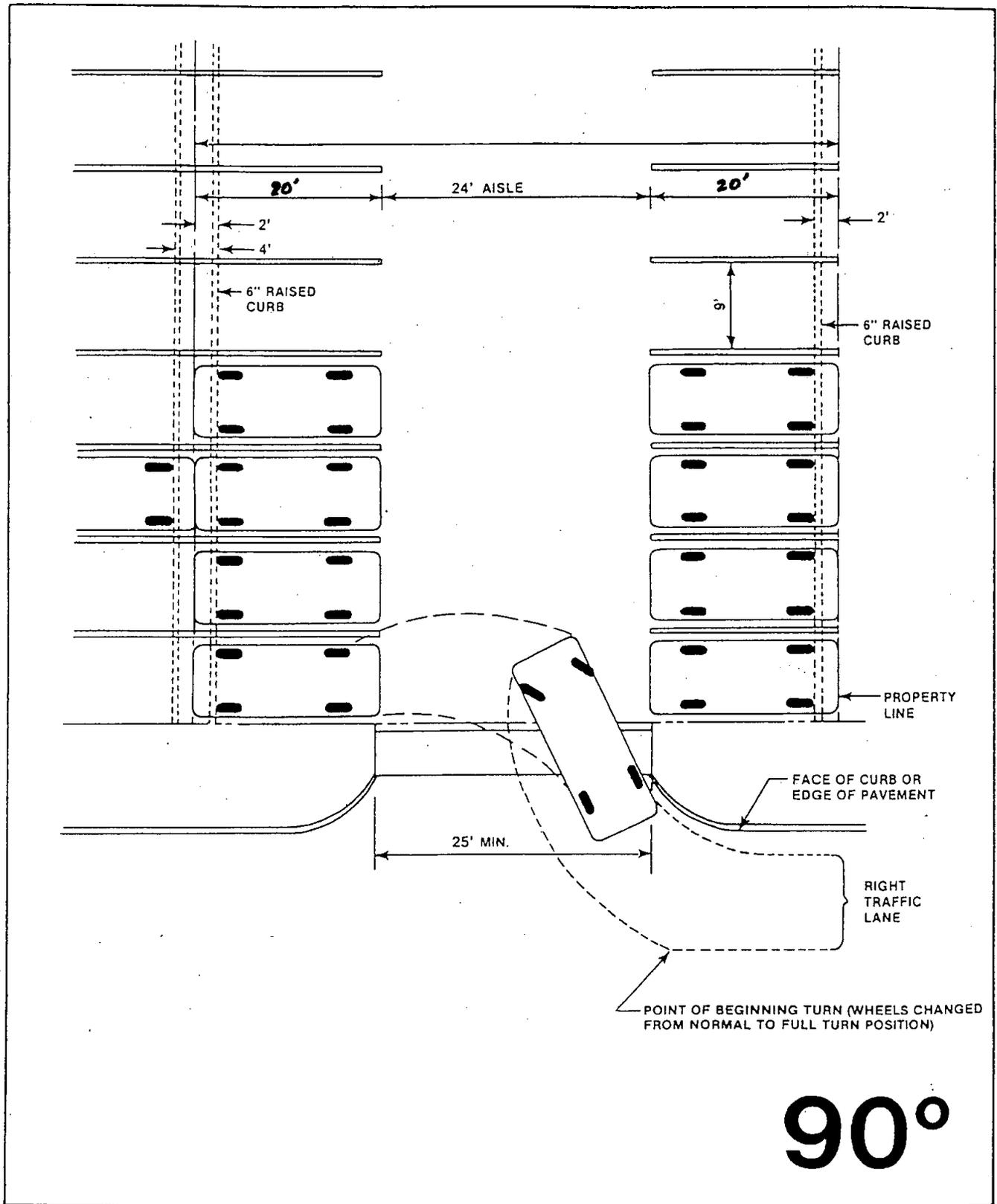
All developments shall be provided with streetlights. In, general, lights should be located at street intersections and at intervals no greater than four hundred (400) feet apart. Streetlights should be the equivalent of 175-watt mercury vapor fixtures on minor residential streets. All collector and arterial, or commercial streets shall have sodium vapor fixtures with a minimum wattage of 250 or 400 watts as directed, in writing, by the City. In some instances, the City may require greater wattage.

2.18 Barrier Free Ramps:

Barrier free ramps shall be provided in all commercial areas and in residential areas which have sidewalks. Ramps shall be located to provide access in accordance with the standards set by the Americans with Disabilities Act (A.D.A.) at all pedestrian sidewalks and meet all Texas Accessibility Standards (TAS). Lay down curbs and ramps shall be constructed at all street intersections and driveways whether or not sidewalks are being installed. Lay down curbs and ramps shall be constructed by the developer. The developer shall be responsible for paying for and arranging for all TAS design reviews and post construction inspections. Results of TAS inspections shall be provided to the City. Prior to acceptance of the development by the City, the developer shall request from the Texas Department and Licensing and Regulation a post construction inspection of barrier free ramps. Results shall be provided to the City.

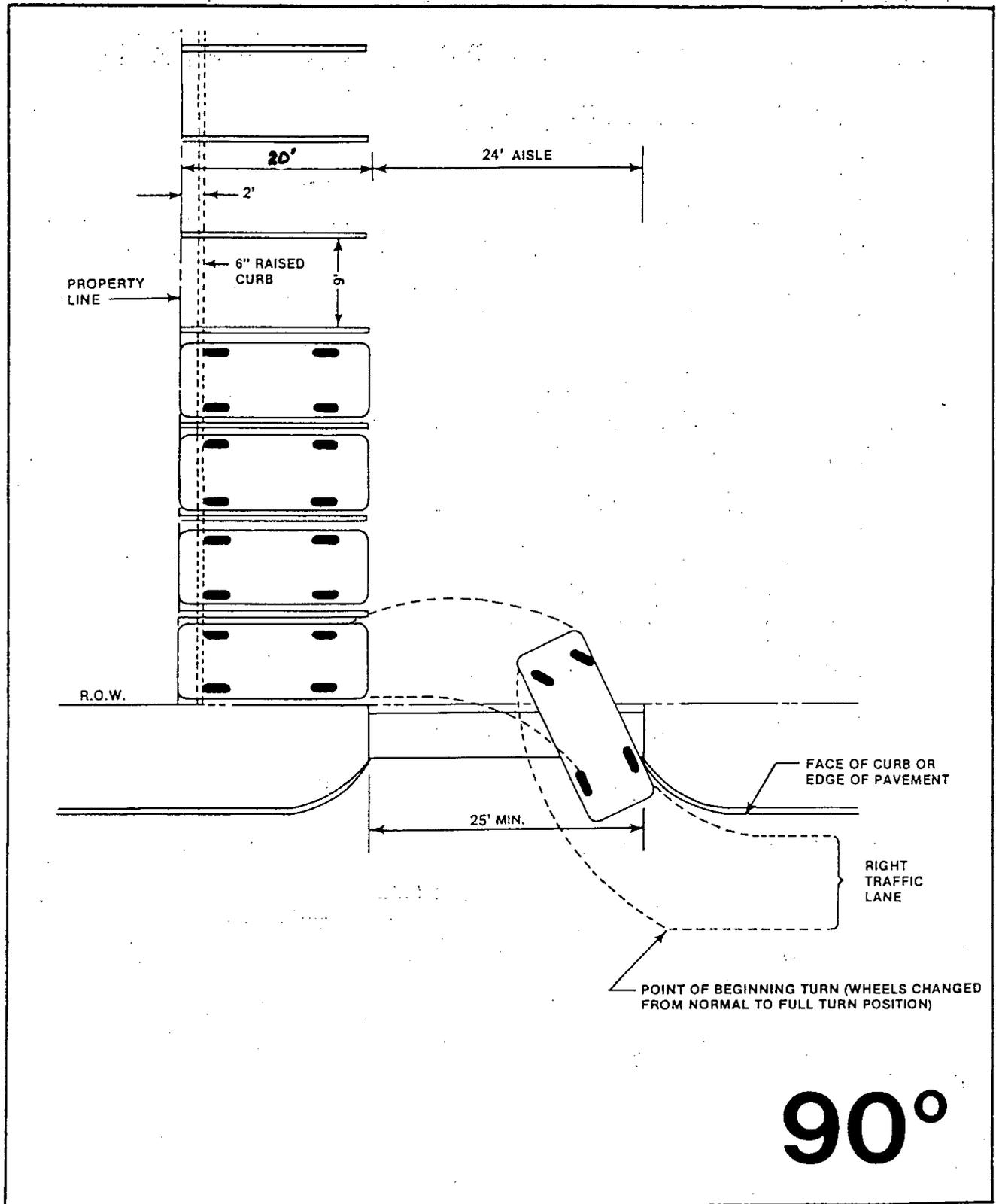
2.19 Off-Street Parking:

- A. All parking areas and spaces shall be designed and constructed in accordance with the following requirements:
1. All parking areas and spaces shall be designed and constructed so as to have free ingress and egress at all times.
 2. No parking space or parking area shall be designed so as to require a vehicle to back into a public street or across a public sidewalk, except in the case of one and two family dwelling units.
 3. Minimum Dimensions for Off-Street Parking:
 - a) Ninety-degree parking (Figures 2.4a and 2.4b) — Each parking space shall not be less than nine (9) feet in width and eighteen (18) feet in length with two (2) feet of over hang between curb and sidewalk or property line. Dual head in parking spaces should be a minimum of twenty (20) feet in length; Maneuvering space shall not be less than twenty-four (24) feet.
 - b) Sixty-degree angle parking (Figures 2.5a and 2.5b) — Each parking space shall be not less than nine (9) feet wide perpendicular to the parking angle nor less than twenty and one tenth (20.1) feet in length when measured at right angles to the building or parking line. Maneuvering space shall be not less than fourteen and one-half (14½) feet for one way traffic or twenty two (22) feet for two way traffic perpendicular to the building or parking line.
 - c) Forty-five degree angle parking (Figures 2.6a and 2.6b) — Each parking space shall not be less than nine (9) feet wide perpendicular to the parking angle nor less than nineteen (19) feet in length when measured at right angles to the building or parking line. Maneuvering space shall be not less than twelve (12) feet for one way traffic or twenty-one (21) feet for two-way traffic perpendicular to the building or parking line.



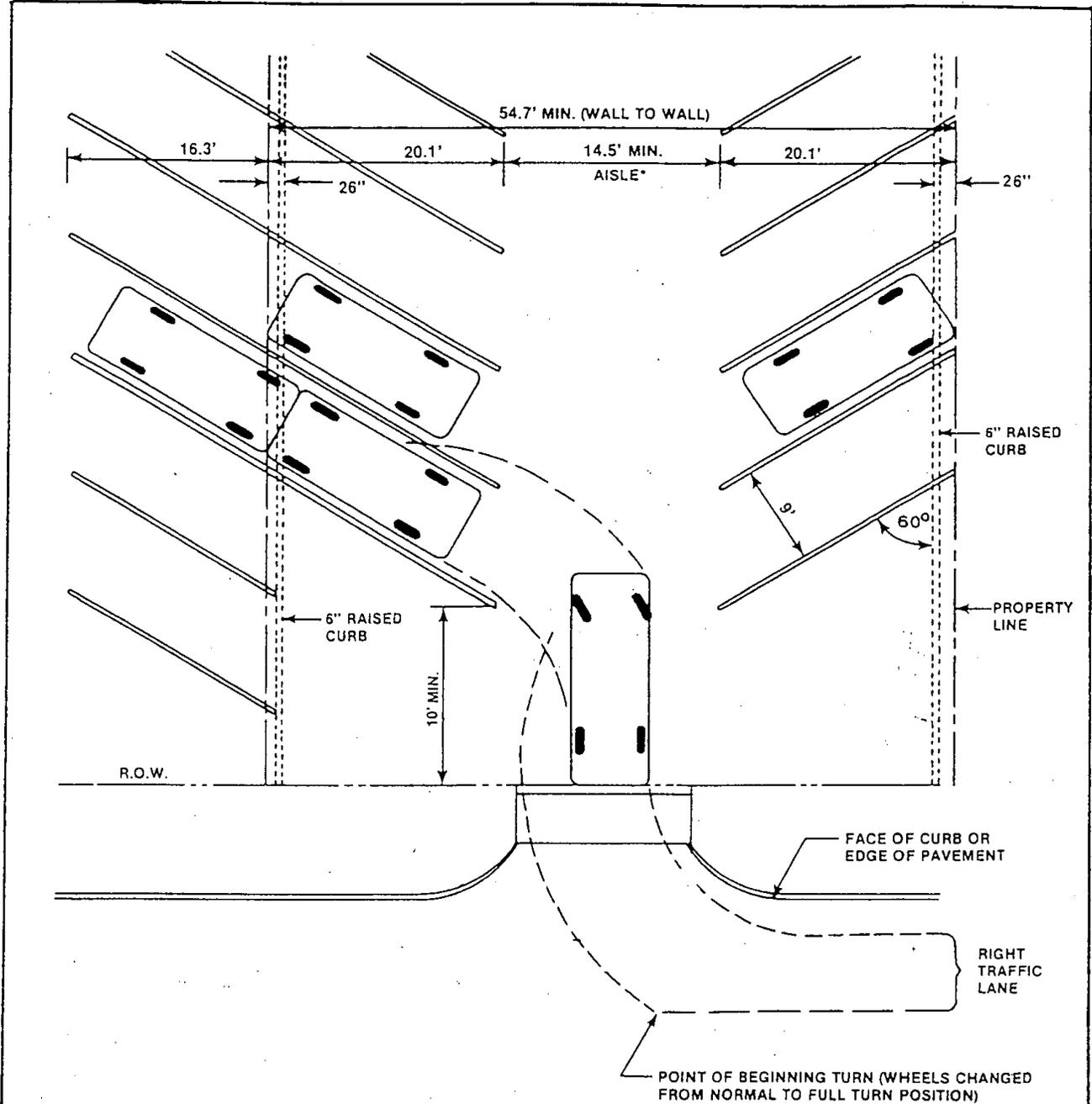
90° Parking – Double Row.

FIGURE 2.4a



90° Parking – Single Row.

FIGURE 2.4b



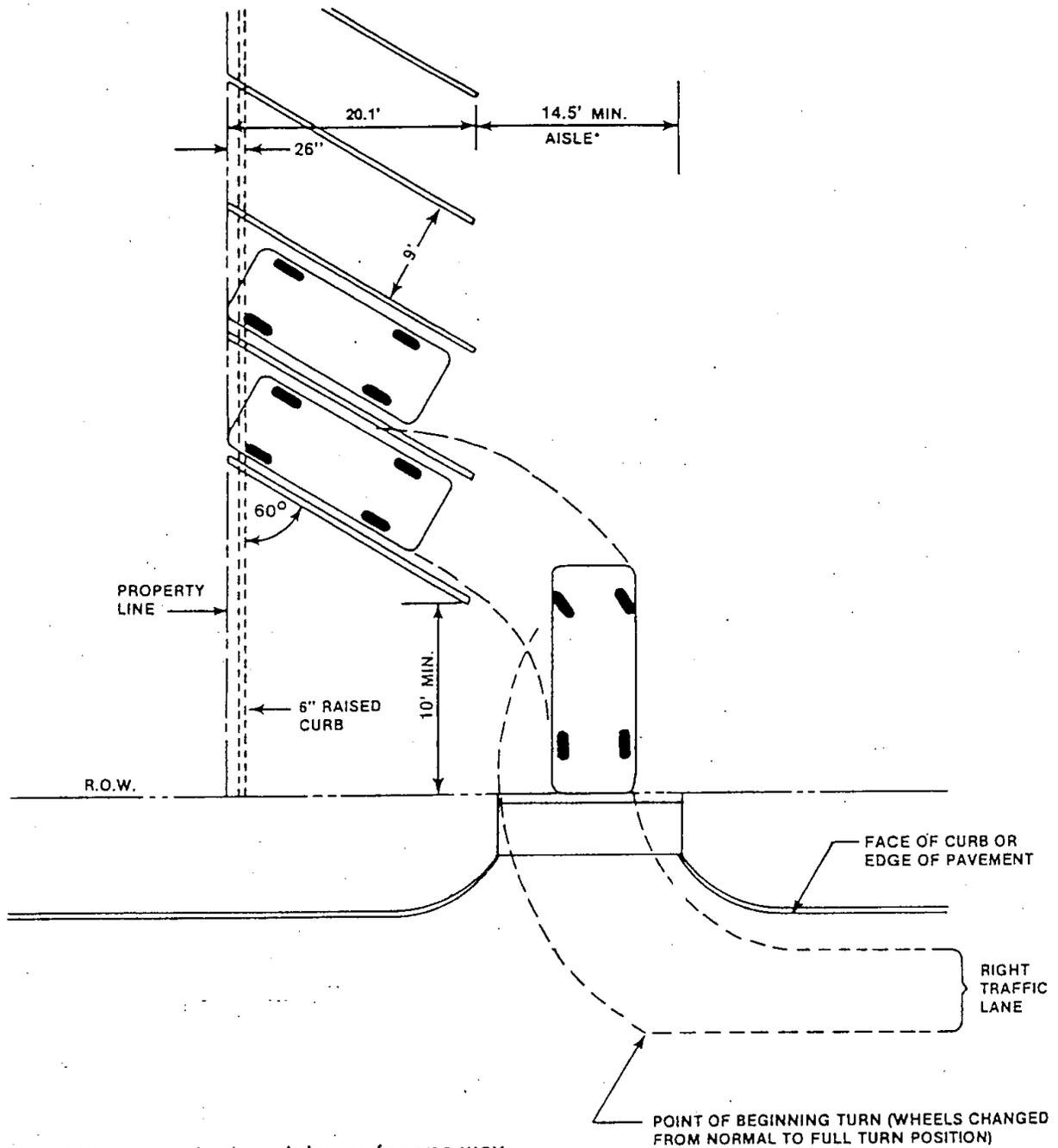
*Aisle width shown is the minimum for one-way traffic. For ease of operation and for long rows of parking, widths should be increased approximately 5'

For two-way traffic, the aisle width must be increased to 22.0' (Clear distance of 24.3')

60°

60° Parking – Double Row.

FIGURE 2.5a



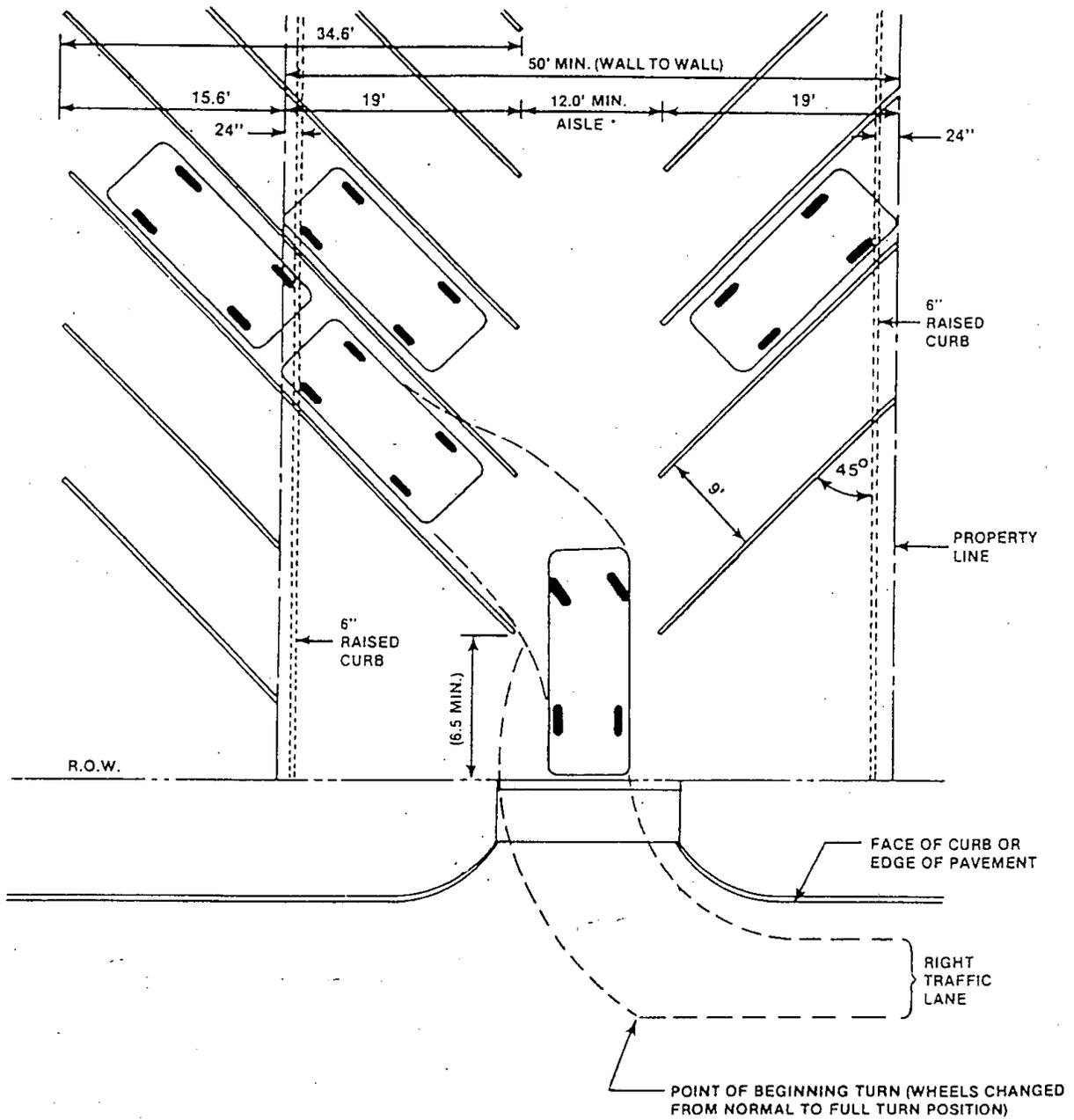
* Aisle width shown is the minimum for one-way traffic. For ease of operation and for long rows of parking, widths should be increased approximately 5'

For two-way traffic, the aisle width must be increased to 22.0' (Clear distance of 24.3')

60°

60° Parking – Single Row.

FIGURE 2.5b



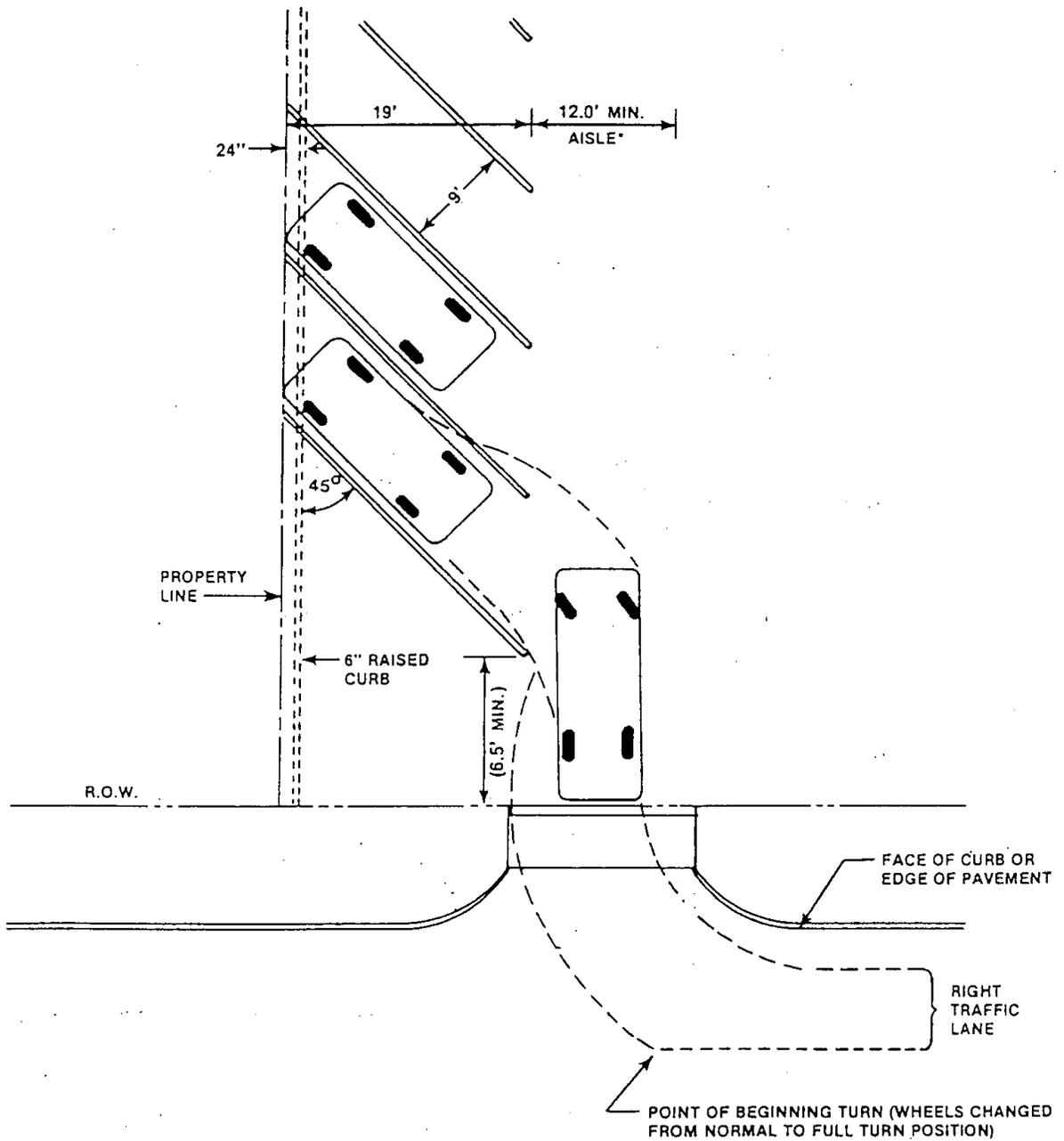
* Aisle width shown is the minimum for one-way traffic. For ease of operation and for long rows of parking, width should be increased approximately 5'

For two-way traffic the aisle width must be increased to 21' (Clear distance of 24.2')

45°

45° Parking – Double Row.

FIGURE 2.6a



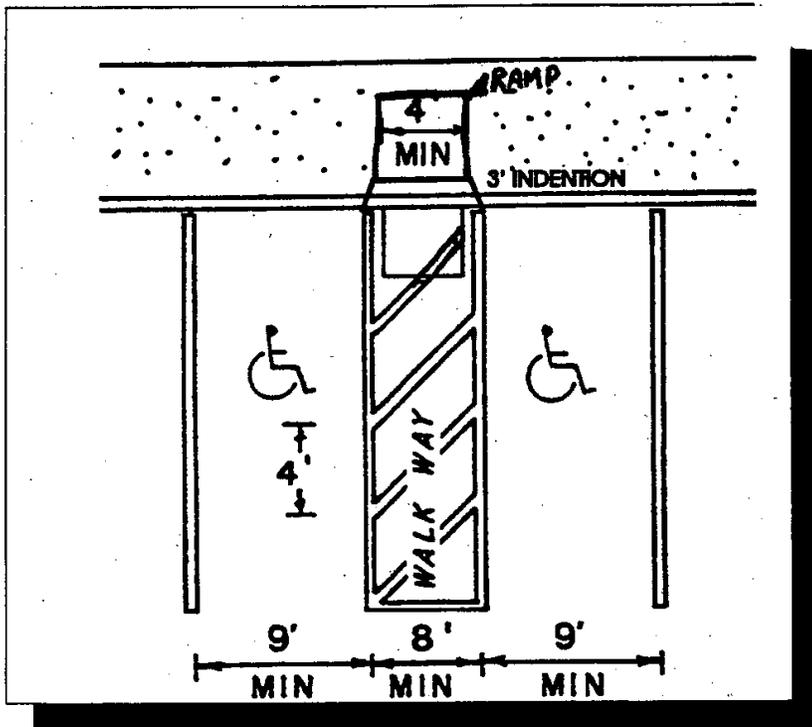
* Aisle width shown is the minimum for one-way traffic. For ease of operation and for long rows of parking, widths should be increased approximately 5'

For two-way traffic, the aisle width must be increased to 21.0' (Clear distance of 24.2')

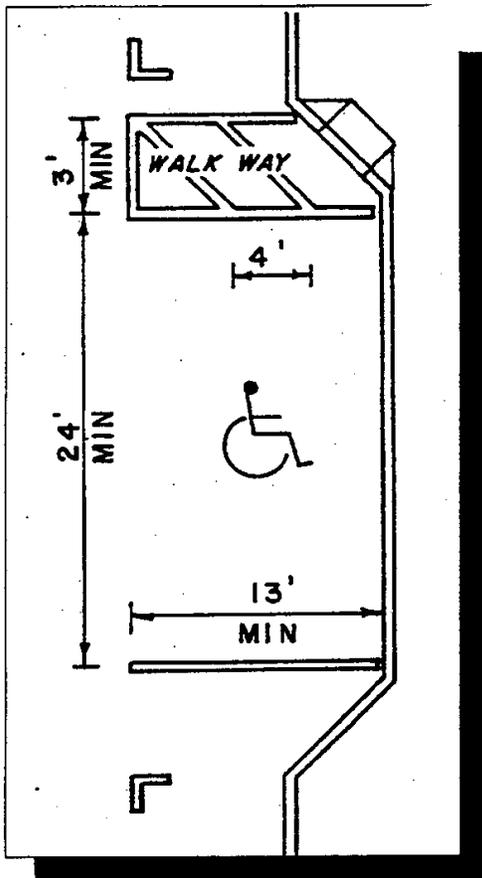
45°

45° Parking – Single Row.

FIGURE 2.6b



**HANDICAPPED
PARKING STANDARDS**
Head-in or Angle
parking Dimensions



**HANDICAPPED
PARKING
STANDARDS**
Parallel parking
Dimensions

- d) Parallel Parking — Each parking space shall not be less than eight (8) feet in width and twenty-two (22) feet in length. Maneuvering space will not be less than twenty (20) feet.
- e) Handicap Space Parking — Where handicapped parking is required or installed, the design shall be as in Figure 2.7.
- f) When off-street parking facilities are located adjacent to a public alley, the width of said alley may be utilized as a portion of the maneuvering space requirement, provided the alley is paved.
- g) When off-street parking facilities are provided' in excess of minimum amounts herein specified, or when off-street parking facilities are provided, but not required by this chapter, said off-street parking facilities shall comply with the minimum requirements for parking and maneuvering space herein specified.

4. Paving Standards:

- a) Unless otherwise approved by the City Council or as specified in these standards, all parking lots shall be paved with concrete and designed according to City standards and specifications. The parking lanes must be clearly marked by approved paint, buttons or other material. All driveway approaches shall be constructed of concrete in the same strength as the adjacent street and shall be curbed per City standards.
- b) All parking lot pavement and drive isles shall be concrete except for new car dealership's display area parking and existing asphalt parking lots being rehabilitated. A concrete or asphalt pavement (parking lot) design shall be provided to the City's Engineer for review. The minimum concrete design shall be five-inch (5"), NCTCOG Item 303.3.4.2. Class P1 (4000 psi in 28-days) concrete and minimum asphalt design shall be three-inch (3") asphalt base course on three (3) inch asphalt surface course on compacted subgrade.
- c) Industrial and commercial parking lot pavement shall be concrete and designed by a Professional Engineer, licensed in Texas. Pavement design shall be submitted to the City's Engineer for review.
- d) The pavement within a designated loading area shall be designed and constructed to carry the additional loading of merchandise, goods, sanitation pick-up, etc., in order to prevent any unnecessary failure in the pavement itself. The pavement design shall be included in the engineering construction plans and specifications and submitted to the City's Engineer for review.
- e) Fire lane pavement shall be a minimum of six (6) inches — Concrete strength shall be NCTCOG Item 303.3.4.2. Class P1 (4000 psi in 28-days).

5. No parking area more than three (3) parking spaces in depth shall be designed or constructed which ends in a dead end, unless adequate turnaround space is provided.
6. All entrances or exits in a parking lot shall be a minimum of thirty (30) feet from the beginning point of any corner radius.
7. All entrances or exits in a parking lot shall be a minimum of twenty-four (24) feet and a maximum of forty-five (45) feet in width, unless One-way, in which case they shall both be a minimum of twelve (12) feet, or as approved by the City Council.
8. The driveway approach angle to any parking area shall be a maximum of sixteen (16) degrees; the departure angle a maximum of ten (10) degrees; the ramp angle a maximum of eleven (11) degrees; or otherwise shall be approved by the City's Engineer.
9. No parking areas or parking spaces shall be allowed to pave over or utilize public right-of-way, with the exception of approved entrances and exits, unless the Board of Adjustment and City Council grants an exception.
10. Any lighting used to illuminate any off-street parking area shall be so designed and constructed as to direct the light onto the property and away from any adjoining property or street.
11. All multi-family and commercial parking areas and parking spaces shall be designed and constructed to protect adjacent residences from the direct glare of headlights of vehicles using the parking area.
12. All multi-family, retail, commercial and industrial parking lots shall be required to provide a fire lane with a minimum width of twenty (20) feet (requires minimum thirty (30) foot inside curve radius) or a width of twenty-four (24) feet (requires minimum twenty (20) foot inside curve radius) and shall be approved by the City's Engineer and Fire Marshall.
13. All fire lanes shall loop back to another fire lane or street or have a circular turnaround at the end with a minimum outside pavement radius of forty (40) feet. Dead end fire lanes up to one hundred fifty (150) feet long will be allowed with the Fire Chief and City's Engineer's approval.
14. No City street curb, alley or street pavement may be cut without, a permit from the City.