CITY OF VESTAVIA HILLS

PUBLIC WORKS MANUAL
Engineering Standards

Adopted by the Planning and Zoning Commission
of the City of Vestavia Hills, Alabama on

April 8, 2010

BIRMINGHAM METROPOLITAN PLANNING ORGANIZATION (MPO)

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BIRMINGHAM METROPOLITAN PLANNING ORGANIZATION (MPO)

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§1.1. Street Design Standards

Table 1.1 Street Design Standards (Notes)

Specifications are based on two-lane road sections. The Commission, upon a recommendation by the City Engineer, may require a median, turn lanes, acceleration and deceleration lanes, or additional travel lanes where trips generated by anticipated uses or where City, County, or regional plans require increased design improvements.

Street Type	Low Density Residential		Medium Density Residential			
	Local	Collector	Local 1	Collector 1	Local 2	Collector 2
1. Design Speed Posted Speed	25-35 mph 20-25 mph	30-40 mph 25-30 mph	25-35 mph 20-25 mph	25-40 mph 20-30 mph	25-35 mph 20-25 mph	25-40 mph 20-30 mph
2. On-Street Parking (parallel)	none	none	7 ft one side	7 ft one side	7 ft one side	7 ft one side
3. Curb Type/Width (all applicable sides)	20” valley curb or swale(1)	20” valley curb or swale(1)	2 ft curb/gutter	2 ft curb/gutter	2 ft curb/gutter	2 ft curb/gutter
4. Min. Planting Strip (both sides)	3 ft (1)	3 ft (1)	4 ft	4 ft	4 ft	4 ft
5. Min. Sidewalk width (2,3)	4 ft (2) one side	4 ft (2) one side	5 ft one side	5 ft one side	5 ft both sides	5 ft both sides
6. Min. Travel Lane Width	11 ft	12 ft	10 ft	11 ft	10 ft	11 ft
7. Prohibitive Median: Min. Width (where required) (4)	none	11 ft	none	11 ft	none	11 ft
8. Min. Travelway (edge of pavement to edge of pavement) (5)	22 ft	24 ft	27 ft	29 ft	27 ft	29 ft
9. Min. ROW (6)	45 ft	50 ft	50 ft	55 ft	55 ft	60 ft

[1] A vegetative swale with a minimum width of sixty-six (66) inches may be provided as a substitute for a valley curb and planting strip.

[2] Where sidewalks are provided, curb and gutter shall also be installed with the minimum planting strip between the sidewalk and curb; OR a valley curb may be used and the planting strip shall be increased to five (5) foot minimum width between the sidewalk and valley curb.

[3] Sidewalk width may be reduced to four (4) feet on residential culs-de-sac. ROW may be reduced accordingly.

[4] Generally, medians are not required. However, where left turn lanes at intersections may be required, a median may be required to limit access between intersections.

[5] Travelway width does not include curb and/or gutter width. Where additional travel lanes (including turn, acceleration, and deceleration lanes) are required by the Commission, travelway width shall be adjusted by adding travel lane widths as listed in Row 6.

[6] Minimum right-of-way includes widths required for curb and gutter or valley curb. Where swales are used, right-of-way width shall be calculated as needed to accommodate width of swales. Width of median, if required, not included.

Table 1.1 (cont.) Street Design Standards (Notes)

Specifications are based on two-lane road sections. The Commission, upon a recommendation by the City Engineer, may require a median, turn lanes, acceleration and deceleration lanes, or additional travel lanes where trips generated by anticipated uses or where City, County, or regional plans require increased design improvements.

Street Type	High Density Residential		Neighborhood Mixed-Use or Non-Residential		General Mixed-Use or Non-Residential		Frontage Road
	Local	Collector	Local	Collector	Local	Collector	
1. Design Speed Posted Speed	25-35 mph 20-25 mph	25-40 mph 20-30 mph	25-35 mph 20-25 mph	32-40 mph 25-30 mph	25-35 mph 20-25 mph	32-40 mph 25-30 mph	25-40 mph 20-30 mph
2. On-Street Parking (1) (parallel)	7 ft one side	7 ft one side	7 ft both sides	7 ft both sides	7 ft both sides	7 ft both sides	optional, on developed side
3. Curb Type/Width	2 ft curb/gutter	2 ft curb/gutter	2 ft curb/gutter	2 ft curb/gutter	2 ft curb/gutter	2 ft curb/gutter	2 ft curb/gutter
4. Min. Planting Strip/Tree Well	4 ft both sides	4 ft both sides	4 ft both sides	4 ft both sides	4 ft both sides	4 ft both sides	4 ft developed side
5. Min. Sidewalk Width (2)	5 ft both sides	5 ft both sides	6 ft both sides	6 ft both sides	8 ft both sides	10 ft both sides	5 ft developed side
6. Min. Travel Lane Width	10 ft	11 ft	10 ft	11 ft	10 ft	11 ft	11 ft
7. Min. Travelway (edge of pavement to edge of pavement) (3)	27 ft	29 ft	34 ft	36 ft	34 ft	36 ft	22 ft
8. Min. ROW (4)	50 ft	55 ft	65 ft	65 ft	70 ft	75 ft	45 ft

[1] For angled parking, increase parking width to 18 feet and increase travelway and Total ROW widths accordingly.

[2] Sidewalk width may be reduced to four (4) feet on residential culs-de-sac. ROW may be reduced accordingly.

[3] Travelway width does not include curb and gutter width. Where additional travel lanes (including turn, acceleration, and deceleration lanes) are required by the Commission, travelway width shall be adjusted by adding travel lane widths as listed in Row 6.

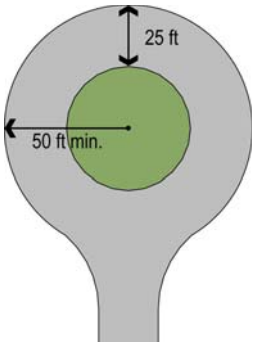
[4] Total right-of-way includes widths required for curb and gutter.

§1.2. Dead End Streets and Cul-de-sacs

1.2.1. For the purposes of these standards, the length of a dead end street shall be measured from the center line of the street from which the dead end street takes access to the center of the turnaround at the end of said dead end street, or in the absence of a turnaround to the end of the pavement. Vehicular turnarounds shall be required as follows:

1. New dead end streets of 150 feet or less in length shall not require a vehicular turnaround.
2. Dead end streets of 151-600 ft in length shall have a cul-de-sac turnaround unless a hammerhead is approved by the City Engineer for dead end streets with low traffic volumes.

3. Dead end streets, regardless of whether a turnaround is provided, shall not exceed 600 feet in length.



1.2.2. Cul-de-sacs shall terminate with an outside gutter radius of not less than fifty (50) feet. To reduce increases in stormwater runoff, a planted circle should be installed with a mountable curb and low maintenance plants at the center of the cul-de-sac. The circle shall be dimensioned to accommodate a twenty (20) ft wide driving surface at the front of the cul-de-sac and a twenty-five (25) ft wide driving surface at the back, or as otherwise approved by the City Engineer and Fire Marshal to provide maneuvering space to avoid damage to the planting circle and any curbing.

1.2.3. For streets with a width of twenty-eight (28) feet or greater, hammerhead "L" and "T" turnarounds shall be designed in accordance with Figure 1.2A and Figure 1.2B respectively. For streets less than twenty-eight (28) feet wide, hammerhead turnarounds shall be designed in accordance with Figure 1.2C.

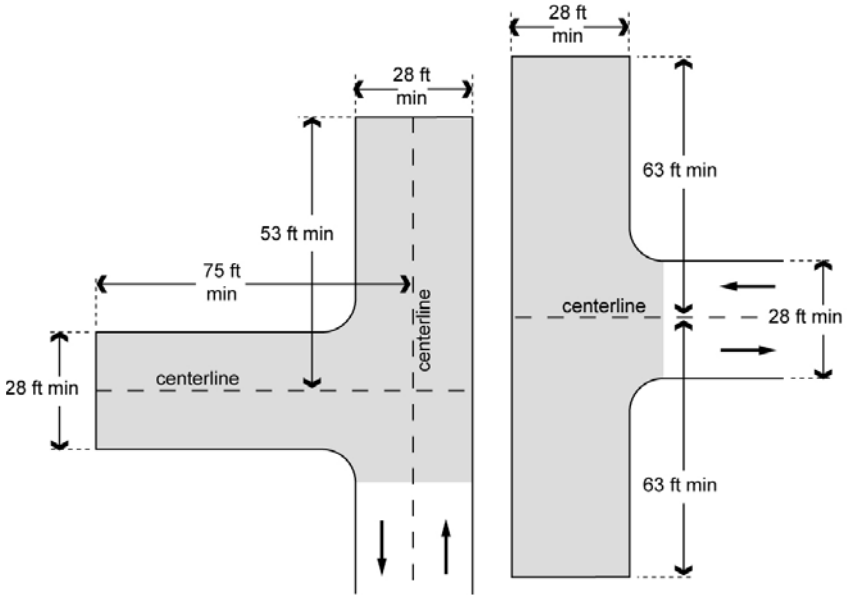


Figure 1.2A Hammerhead "L" turnaround

Figure 1.2B Hammerhead "T" turnaround

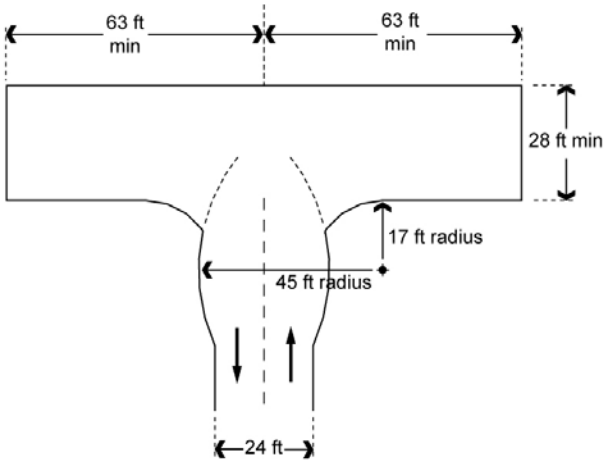


Figure 1.2C Hammerhead "T" turnaround

§1.3. Road Shoulders

Shoulders, where required, shall be a minimum of eight (8) feet back of the curb line, or as required by the of City Engineer, with a rise of not less than eight (8) inches nor more than fifteen (15) inches from the flow line of the gutter. In large lot subdivisions and entrance roads with a projected average weekday traffic volume less than 400, the minimum shoulder width shall be four (4) feet. Shoulder widths on roads without curbs and gutters shall be in accordance with AASHTO standards.

§1.4. Driveways

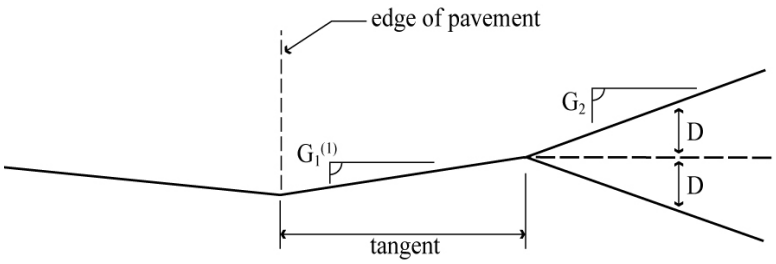
1.4.1. The width of driveways, measured at the nearest points of the radius returns, shall meet the requirements of Table 1.4.1. Requests for driveways shall be reviewed in accordance with Ordinance #1811.

1. Driveways to non-residential uses may exceed the maximum width, provided that it is determined by the City Engineer that the need to provide safer turning movements and/or the number of trips generated for truck traffic to or from the property will justify the need for additional driveway widths and/or lanes.
2. Driveways, in which ingress and egress lanes are separated by a raised median, may exceed the maximum two-way width, provided that the individual ingress or egress lane will not exceed the width limits for one-way traffic. Additionally, monuments, walks, vegetation, or signage shall conform to all applicable sight distance requirements.
3. Radius of driveway curve. The radius of curve connecting the edge of the acceleration or deceleration lane or through-traffic lane to the edge of the driveway shall meet the requirements of Table 1.4.1.

Table 1.4.1 Driveway Standards

Driveway Width		
Use	Minimum	Maximum
Residential (to individual dwellings)	12 ft	20 ft
Non-residential Uses		
One-Way Traffic	15 ft	20 ft
Two-Way Traffic	24 ft	36 ft
Driveway Radius		
Use	Radius of Curve* in Feet	
	Minimum	Maximum
Residential	5	15
Non-Residential		
Arterial	25	40
Collector	25	30
Local	10	25
* A driveway flare may be used instead of a curve for residential uses.		

1.4.2. Driveway grades (vertical profile) shall be subject to the limitations as shown in Figure 1.4.2 and in Table 1.4.2. Any driveway grade which exceeds the recommended grades requires approval of the City Engineer. Within ten (10) feet of the curb line, or in the absence of a curb, the edge of pavement, the driveway grade shall not exceed six (6) percent.



(1) The value of G_1 is limited by shoulder slope or presence of sidewalk, but shall not exceed the maximum grade provided.

Figure 1.4.2 Driveway Grade at Street Edge

Table 1.4.2 Driveway Grades at Street Edge				
	Driveway Grade (D)		G_1	G_2
	Desirable	Maximum	Maximum	Maximum
Industrial	<1%	3%	6%	15%
Other Non-residential	<3%	6%	6%	5-8%
Residential	<6%	15%	6%	5-8%

1.4.3. Pavement Markings, Signage. Driveways with more than one (1) ingress or egress lane shall have the pavement surfaced marked in accordance with the requirements of the Manual on Uniform Traffic Control Devices, latest revision. The pavement markings and signage shall be continually maintained by the owner in good condition and visible to drivers at all times.

§1.5. Alleys

Where required or provided, alleys shall have the minimum dimensions shown in Table 1.5. Where deemed necessary for public safety, the City Engineer may require a wider pavement width. Paving shall be as approved by the City Engineer.

Table 1.5 Alley Requirements		
	Min. ROW width	Min. Pavement Width
Single-family	20 ft	12 ft
Multi-family and Non-Residential	24 ft	20 ft

§1.6. Stopping Sight Distances and Street Curvature

Table 1.6 Sight Distance Requirements (Notes)			
Street Design Speed (mph)	Stopping Sight Distance (ft) (1)	Intersection Sight Distance (ft) (1,2)	Min. Radius of Street Curvature (ft)
15	75	170	125
20	110	225	150
25	150	280	175
30	200	335	250
35	250	390	375
40	305	445	550
45	360	500	700
50	425	555	1000

[1] Distances are intended as a minimum guideline. Site conditions such as grades, traffic volumes, signalization types, etc. may warrant increases in desired sight distances.

[2] The provided intersection sight distances are recommended for stopped cars to safely cross or merge left onto a roadway with traffic moving at the design speed indicated in the left-most column.

§1.7. Intersection Curb Radii

For streets with parallel on-street parking, curb radii at intersections shall be consistent with the lower values in the "Curb Radius" column in Table 1.7. In the absence of on-street parking, the higher number shall govern. For streets with angled parking, the lesser number may be further reduced by the City Engineer.

Table 1.7 Intersection Curb Radius				
Street Type	On-street Parking	Curb Radius	Effective Turning Radius	Curb Type
Low Density Residential Local	no	20-24 ft	20-24 ft	valley curb or swale
Low Density Residential Collector	no	20-24 ft	20-24 ft	valley curb or swale
Medium Density Residential Local	yes	15-18 ft	22-25 ft	curb and gutter
Medium Density Residential Collector	yes	18-21 ft	25-28 ft	curb and gutter
Neighborhood Mixed-Use Local	yes	15-18 ft	22-26 ft	curb and gutter
Neighborhood Mixed-Use Collector	yes	18-21 ft	25-29 ft	curb and gutter
General Mixed-Use Local	yes	12-15 ft	20-23 ft	curb and gutter
Core Mixed-Use Collector	yes	15-18 ft	22-26 ft	curb and gutter
Frontage Road	yes	18-21 ft	25-29 ft	curb and gutter

§1.8. Access Management

1.8.1. Spacing shall be provided between intersections and driveways as required by §3.3 Access Management of the Subdivision Regulations.

1.8.2. Traffic Impact Study. The City Engineer may require a Traffic Impact Study by an engineer, using the standard format specified by the Institute of Transportation Engineers (ITE) publication Traffic Access and Impact Studies for Site Development, dated 1991, or the latest subsequent edition, to assess the traffic impacts of a proposed access to adjacent and nearby streets and intersections when the expected number of trips generated by the proposed use exceeds an estimated 1,000 vehicle trips per day or 100 peak hour vehicle trips per day. In addition, the City Engineer may require a Traffic Impact Study for sites that generate less than 1,000 vehicle trips per day, or 100 peak hour vehicle trips per day, if the sites are located at or near high-volume intersections or other locations where the use may constitute a threat or danger to the safe and efficient flow of traffic. The City Engineer may waive this provision if a recent, valid traffic study has been completed, from which needed traffic data can be extrapolated.

Unless otherwise specified by the City Engineer, the study shall address trip generation and directional distribution, traffic assignment to streets and access locations, twenty-four (24) hour and a.m. and p.m. peak hour traffic forecasting (on-site and off-site), capacity analysis and level of service for adjacent streets and nearby intersections before and after the proposed full development, and recommendations for street improvements and traffic control installation and/or modifications to existing signals. The traffic data used in the study shall be consistent with the use and density data as referenced in Trip Generation, sixth edition, 1997, published by ITE, or the latest edition; current city and state traffic counts for surrounding streets; and the marketing study for the proposed use.

1.8.3. Throat Length. Driveways for non-residential uses must extend a minimum of sixty (60) feet into the property from the lot line abutting the street before the edge of the driveway may be intersected by an aisle or another drive and thirty (30) feet before the edge of the driveway may be intersected by an off-street parking space.

1.8.4. Deceleration Lanes. Deceleration lanes shall be required for each access to arterial or collector streets where the proposed use will increase traffic volumes on the existing street to a total in excess of 1,000 vehicle trips per day or 100 peak-hour vehicle trips per day.

The deceleration lane, a minimum of twelve (12) feet wide, measured from the face of the curb (for curb sections without a monolithic gutter), the edge of the gutter (for a monolithic curb and gutter section), or the edge of the shoulder line (for a non-curbed section to the center of the lane line), shall be constructed with the length measured from the centerline of the access point according to the criteria in Table 1.8B.

Table 1.8B Minimum Deceleration Lane

Speed Limit	Length of Taper	Total Length
35 mph or less	75 ft	200 ft
40 to 45 mph	110 ft	250 ft
50 to 55 mph	150 ft	300 ft

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Article 2 CONSTRUCTION STANDARDS

§2.1. Clearing and Grubbing

All areas that receive fill material shall be cleared of vegetation, trees, stumps, large rocks, and other objectionable or unsuitable material prior to placing fill material.

§2.2. Embankment

The City Engineer or designated agent shall determine what material is suitable for embankment. Natural ground areas shall be properly compacted prior to placing embankment. Embankment material shall be placed in uniform lifts of ten (10) inches or less and compacted to ninety-five (95) percent of standard density as determined by ALDOT (Alabama Department of Transportation) standards. In-place density method pursuant to ALDOT standards may be used.

§2.3. Sub-grade

Finish grade shall conform to the lines, grades and cross-section as shown on the approved plan unless specific permission is acquired in writing from the City Engineer. All sub-grade construction shall be compacted to a 95 percent of modified Proctor density as determined by ASTH designation D-1557, as revised from time to time.

§2.4. Bases

Prior to placing any base material, the subgrade shall be prepared and tested. The type material to be used for base and required thickness shall be stated on the approved plan.

Base material consisting of crushed rock, stone particles, or slag shall contain an approved filler of sand or other fine mineral filler. Required six (6) inch base of this material shall be spread without segregation and may be placed and compacted to full depth in one (1) layer. Required base layer greater than six (6) inches shall be placed in approximately equal layers. Compaction shall be by vibratory, steel wheel rollers or other approved rollers to obtain a density of 100 percent when tested as determined by ALDOT standards method. In place density method pursuant to ALDOT standards may be used.

§2.5. Paving Requirements

All public streets, alleys and driveways shall be paved and conform to the following minimum requirements:

2.5.1. A two (2) inch bituminous binder and a one (1) inch seal course on a suitable primed macadam base eight (8) inches thick on a properly drained and compacted sub-grade is required.

2.5.2. Minimum plant mix requirements for all residential streets will be as follows:

Binder - 140 lbs. per square yard Seal - 80 lbs. per square yard.

2.5.3. Greater thickness may be required dependent upon street classification as provided in the Subdivision Regulations. Should any problem be encountered with the sub-grade, base, or binder layers, or should much immediate construction traffic be projected following road construction, the City Engineer may require the placement of seal course of plant mix be delayed for a minimum period of six (6) months. If problems are encountered relative to pavement thickness, coring or plant mix may be required. Double Bituminous Surface Treatment pavement on an approved crushed stone base may be approved, where curbs and gutters are not required, for the following cases:

1. Entrance roads into subdivided areas where projected average weekday volumes will not exceed 400.
2. Roads serving large lot subdivisions.

2.5.4. On all roadways the seal course shall not be applied until one (1) year after the binder has been properly installed. Before the seal is applied, all work previously required shall be repaired to meet minimum City standards.

§2.6. Culverts

A special design drawing shall be required for any drainage structure having a required end area of twenty (20) sq. ft. or more. Reinforced concrete drainage structures shall be constructed in accordance with standard drawings and specifications approved by the City Engineer. Standard specification drawings for many minor structures may be obtained through ALDOT or some concrete companies.

2.6.1. Reinforced concrete pipe and arch pipe class and installation shall be in accordance with current specifications of ALDOT.

2.6.2. Corrugated metal pipe and arch pipe culverts shall be fully coated with asphalt with a paved invert or fully coated with a polymeric coating. Gauge, corrugations and installation shall be in accordance with current specifications of ALDOT.

2.6.3. All storm drainpipes shall be a minimum of eighteen (18) inches and subject to review and approval by the City Engineer.

§2.7. Swales and Ditches

2.7.1. The minimum flow line slope for paved ditches shall be 0.33% and shall be 1.0% for unpaved ditches.

2.7.2. Eight (8) inches of masonry, stone, tile, concrete block or brick walls shall have a minimum flair or one (1) inch per foot and a maximum flair of six (6) inches per foot. Culvert pipe may be utilized if such sewers and drainage ditches shall be of sufficient size to provide for future extensions into adjacent areas.

§2.8. Headwalls

Headwall with wing walls and end walls shall be installed on pipe culverts. Headwalls for pre-cast concrete or brick masonry construction shall be approved by the City Engineer. Headwalls for pipe sizes larger than forty-eight (48) inches shall be shown on the approved plans. Headwalls for multi-line installation shall be shown on the approved plans.

§2.9. Combination Curb and Gutters, Valley Curbs

2.9.1. Portland cement concrete having a compressive strength of 3000 PSI at twenty-eight (28) days shall be used. Granite, as approved by the City Engineer, may be substituted. Combination curb and gutter and valley curbs shall be constructed of Portland cement concrete. Installation shall be on a prepared sub-grade and conform to the cross-section shown on the plans. The surface finish of the concrete shall have a light broomed or burlap drag texture. The edges shall be smoothed with a radius type tool.

2.9.2. Transverse contraction joints shall be constructed at intervals not exceeding twenty (20) feet in combination curb and gutter and valley curb. Joint depth shall be no less than 1/5 of the cross-section and concrete. Sawed contraction joints shall be done early after the concrete has set to prevent the formation of uncontrolled cracking. Expansion joints shall be constructed at immovable structures and at points of

curvature for short radius curves. Filler material for expansion joints shall be approved by the City Engineer or authorized agent. Construction joints may be either expansion or butt-type joints.

2.9.3. No combination curb and gutter, valley curb or sidewalk shall be placed on frozen or soft earth or when other unsuitable conditions exist.

2.9.4. Gutters shall be constructed of 3,000 PSI concrete six (6) inches thick. Valley gutters shall not be less than thirty (30) inches wide.

2.9.5. Combination curb and gutter shall be used where negative grade entering or within a circle exceeds two (2) percent.

§2.10. Inlets

Inlet design for installation on eighteen (18) inch through forty-two (42) inch pipe shall be approved by the City Engineer. Depth for this type inlet shall not exceed six (6) feet from invert of inlet to top of pipe. Storm drain inlet shall not be supported by the storm drainpipe. Special design installation shall be required for pipes larger than forty-two (42) inches in diameter. This design shall be submitted with street drainage plan for approval by the City Engineer.

§2.11. Sidewalks

Sidewalks shall be constructed in accordance with the specifications shown in Figure 2.11 and as provided herein.

2.11.1. Sidewalk installation shall be on an unfrozen prepared sub-grade.

2.11.2. Concrete mix: straight cement mix, no fly ash, ochre coloring added at 25 lbs./yd. , maximum 5 inch slump.

2.11.3. Sidewalks shall have expansion joints at all concrete-to-concrete connections, such as driveways, curbs, curb ramps and private sidewalks and every thirty (30) ft on straight runs. One-half (1/2) inch expansion joints shall be provided between all fixed objects including steps and walls.

2.11.4. Five (5) foot wide sidewalks shall have contraction joints every five (5) feet; wider sidewalks shall have contraction joints spaced as required by the City Engineer.

2.11.5. All construction debris shall be removed and disposed off site.

2.11.6. Contact City Engineer for final approval of work.

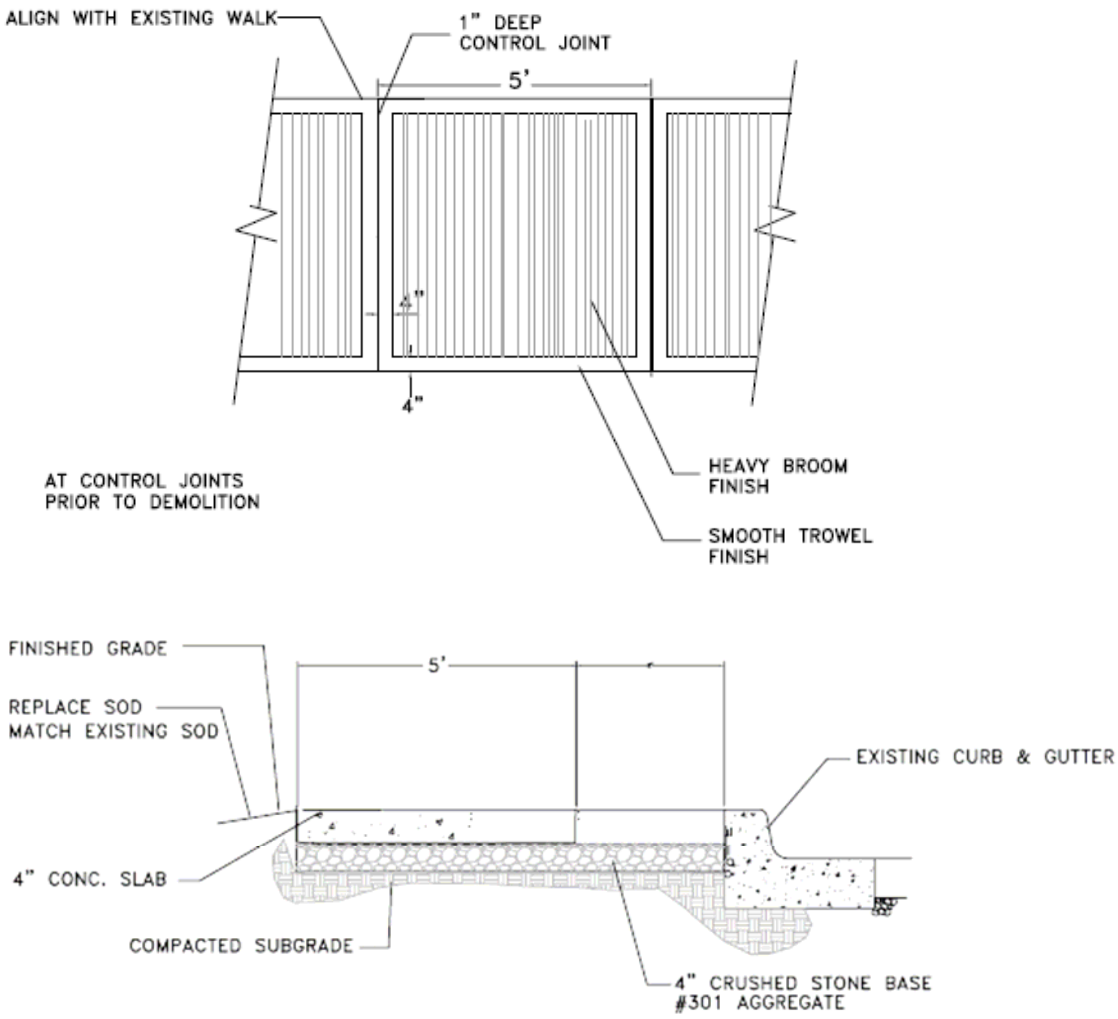

Figure 2.11 Sidewalk Specifications

2.11.7. The cross slope of a sidewalk shall be a minimum of 0.25 inch per foot and a maximum of 0.5 inch per foot sloping to the street. The planting strip between the curb and the edge of the sidewalk shall have minimum cross slopes as provided in Table 2.11. In cases of extreme topography, the City Engineer may permit greater cross slopes within planting strips only. Adjustments to such cross slopes should be gradual to avoid abrupt grade changes.

Table 2.11 Planting Strip Slope Requirements			
Centerline Grade of Street	1 -4%	4.1- 8%	Greater than 8%
Planting Strip Cross Slope	0.5" inch per ft	1 inch per ft	1 ½" inch per ft

§2.12. Drainage and Grading

2.12.1. The finished slope along the bottom centerline of any lot drainage easement shall not be less than one (1) percent.

2.12.2. The side slopes of any lot drainage easement shall not be greater than 4 (horizontal) to 1 (vertical).

§2.13. Utilities

2.13.1. Water, gas, and sanitary mains, and appurtenances if applicable, will be constructed prior to installation of paving with all mains being extended for service to all lots so that no subsequent cutting of pavement will be required to permit service to all lots.

2.13.2. Permits for utility installation on existing or proposed rights-of-way. Any person, firm, or corporation wishing to place a utility facility within a street right-of-way shall apply to the agency controlling said street on the proper prescribed utility permit forms.

2.13.3. Location and Trench Backfill. Utilities shall generally be located a minimum of six (6) feet from the edge of existing or proposed paving. In areas where location less than the minimum is approved, incompressible backfill material (sand, slag, crushed stone or gravel) shall be required.

2.13.4. Backfill for utilities crossing any proposed roadway section shall conform to the ALDOT Standard Specifications for Highways and Bridges in force at the time of installation.

2.13.5. Incompressible backfill material may be used to backfill such open trenches in lieu of compacted backfill material. The material used shall be of a type approved by the City Engineer for this purpose.

2.13.6. All open cuts, under existing paving shall be backfilled with compacted stone. The stone used must be of a type approved by the City Engineer for this purpose. A permanent pavement patch shall be in accordance with the typical repair section made available by the City Engineer.

2.13.7. Cased and Uncased Construction. All polyvinyl chloride (PVC) pipe used for water lines shall be encased with a casing approved by the Public Works Director, City Engineer or authorized agent.

§2.14. Road and Street Inspection and Testing

2.14.1. Notification of Work. It shall be the duty and responsibility of the developer or contractor to give notification to the City Engineer, twenty-four (24) hours prior to starting each phase of construction and to notify the City Engineer the day work is resumed after a delay for any reason. This includes all phases of construction, clearing, grading, drainage, gutters, inlets, base, surfacing and any work that pertains to streets or development. Failure to notify as specified may be grounds for non-acceptance.

2.14.2. Inspection. The contractor and developer shall be notified of any unacceptable work found by the City Engineer or authorized agent.

2.14.3. Testing. Testing shall be at the cost of the developer and shall be by a testing company approved by the City.

2.14.4. Embankment density tests shall be required by the City Engineer or authorized agent. Subgrade and base minimum density testing shall include one test representative of each 1000 linear feet of each street or portion thereof. Additional tests may be required by the City Engineer or authorized agent.

2.14.5. See §2.5 regarding density requirements.