

SECTION 500

Traffic and Roadway Design

500 TRAFFIC AND ROADWAY DESIGN

501 General Policies

All subdivisions and site plans subject to County approval shall provide for the safe and efficient movement of traffic onto and along an existing County road, and shall provide for all necessary improvements to the County transportation system including the provision of new roadways, bridges, culverts and traffic-related facilities consistent with the following policies.

- A. All developments shall provide for adequate roads, road improvements, intersections, driveways, bridges, culverts and other off-site and off-tract improvements required by the Planning Board in accordance with these Standards, the Official County Map and the County Engineer necessary for the safe and efficient movement of traffic.
- B. Improvements may be required to include among others: the dedication of additional rights-of-way, road pavement widening, grading of rights-of-way, curbs, sidewalks, shade trees, street and traffic control signs, traffic signals, marginal access streets, reverse frontage, off street parking facilities plus highway and traffic design features necessary to correct potential traffic and safety hazards which could be created by an increase in traffic volumes or impediments to traffic flows caused by the development.
- C. The applicant may be required to construct or install all traffic related off-tract improvements made necessary by the development in accordance with the standards established by these Standards. Where appropriate, the applicant may be required to contribute his fair share of the cost of such improvements.
- D. All street intersections with, or entrance and exit driveways, to a County road shall be located and designed to afford maximum safety to the traveling public.
- E. The proposed interior streets and walkways shall be designed to provide optimal vehicular and pedestrian circulation for the development and for any existing streets, roads and walkways which may adjoin the development or may be constructed in the future.
- F. All development shall conform to road and traffic-related improvements which appear in the County Transportation Master Plan, Official County Map and other County plans.
- G. An applicant may be required to submit a traffic impact report as provided in Section 502A for the purpose of determining the necessity and extent to which road and traffic improvements are needed.
- H. The applicant shall wherever possible consider implementation of traffic mitigation measures in the form of ridesharing programs, deferred parking, public transportation, bicycling and pedestrian improvements in order to minimize traffic and subsequent road improvements.
- I. Design or road improvements shall be in accordance with these Standards supplemented and modified, as needed by the County Planning Board based on the advice of the County Engineer.

502 Traffic Impact Report

- A. Any land development located along or affecting a County road may be required (as determined by the County Traffic Engineer) to submit a comprehensive Traffic Impact Report to the Planning Board if any one of the following conditions exist:
1. Proposed construction of 150 or more residential dwelling units.
 2. Proposed construction of non-residential development with 300 or more parking stalls.
 3. Any proposed development which will generate in excess of 100 vehicle trips during the weekday, morning, evening or Saturday peak hour using the latest "Institute of Transportation (ITE) Engineering Trip Generation Rates."
- B. The following items must be included in traffic impact reports:
1. Existing traffic volumes for the abutting and surrounding roadways and intersections. The scope of the analysis shall be determined in consultation with the County Engineer and may include off-tract intersections and highway links that may be affected by the development.
 2. Existing levels of service calculations using the latest edition of the Highway Capacity Manual. Different analytical methods require advanced approval from the County Engineer.
 3. AM & PM peak hour trips generated by the proposed development and any other significant peak anticipated (e.g., Saturday). Supporting information must be provided for any generation rates which deviate from the "ITE Trip Generation Manual".
 4. A schematic drawing(s) showing development generated trip distribution on surrounding roadway system. Full documentation of the distribution rationale must be provided.
 5. Future year traffic volumes with level of service calculations for a target year. Target year volumes must include volumes from adjacent developments and background traffic rates. (Target year, adjacent development, and other factors of the Traffic Impact Report to be determined by the Morris County Division of Transportation Management.)
 6. Traffic improvement strategies shall be recommended for mitigation of the problem areas. Strategies may include physical operational improvements, and shall be designed for a minimum Level of Service "C" in the peak hour.
 7. An assessment of any existing or anticipated safety problems.
 8. Justification for any deviation from municipal parking design standards or number of spaces proposed for the subject development.
 9. All capacity work sheets and base data such as machine counts and turning movement counts must be provided.
 10. Any other traffic or operational items that are relevant to the subject development.

Note: Additional information pertaining to the preparation of a Traffic Impact Report can be found in a publication titled Traffic Impact Study Format, April 1991, prepared by and on file at the Morris County Division of Transportation Management.

- C. The applicant’s engineer may request a waiver from strict compliance with this requirement if it can be demonstrated, in writing, that the land development will not have a significant impact on County roads. The County Traffic Engineer may grant said waiver, based on the documentation submitted.
- D. If the circumstances of a development warrant a comprehensive Traffic Impact Report because of its location in relation to land use, traffic volumes and traffic patterns, The County Traffic Engineer may require such a study even though the development does not meet the criteria stated above.

503 Off-Street Parking, Loading/Unloading and Customer Service Areas

A. Design of Off-Street Parking

- 1. Each land development subject to County site plan approval shall provide on its lot the number of off-street parking spaces required by any ordinance of the municipality in which the land development is to be located. In addition, the standards specified below shall be applied.
- 2. Off-street parking areas shall be designed to prevent the maneuvering of vehicles into or out of parking spaces or the storage of vehicles within any portion of an entrance driveway in the County right-of-way in accordance with Table 500-1.

Table 500-1: Parking Set Back	
Proposed Number of parking spaces on site	Minimum distance along entrance driveway from present, or where applicable, future right-of-way line of the County road to any parking space or parking aisle that has direct access to the entrance driveway.
1-20	10 feet
21 and over	20 feet for each 100 spaces or fraction thereof, but not to exceed 50 feet.

- 3. Off-street parking space, including adjacent parking access lanes or maneuvering space, shall be designed to prevent encroachment by vehicles on or over the existing or proposed right-of-way of the County road, including the sidewalk area.
- 4. Off-street parking areas and driveways for residences or non-residential uses shall be designed to prevent vehicles from backing onto the County road.

B. Off-Street Loading

- 1. Each land development subject to County site-plan approval shall provide on its lot the number of off-street vehicle loading or unloading spaces required by any zoning, subdivision, site-planning or other ordinance of the municipality in which the land development is to be located.

2. No part of any off-street vehicle loading or unloading space shall be located within the right-of-way of the County road including the sidewalk area. Off-street vehicle loading and unloading spaces shall be located and designed to permit any vehicle to maneuver from a driveway into and out of such space without encroaching upon any portion of a County road existing or proposed right-of-way including the sidewalk area.

C. Customer Service Areas

Temporary stopping space or maneuvering space for customers' vehicles at a roadside business establishment (such as a roadside grocery stand, filling station or drive-in bank) shall be located so that the stopping or maneuvering space is at least 5 feet back of the existing or (where applicable) future right-of-way line of the County road.

504 Driveways

The following standards 504:A through and including D shall apply to all driveways, except for single family residential driveways.

A. Number of Driveways

The number of driveways permitted from a proposed lot or site directly onto any County road shall be limited in accordance with Table 500-2 except under conditions where the safety and/or convenience of the general motoring public is impaired. Such conditions shall be determined and specified by the County Planning Board upon receipt of advice of the County Traffic Engineer.

Table 500-2: Driveway Spacing	
Length of Lot or Site Frontage	Permitted Number of Driveways
150 feet or less	1
151 feet to 800 feet	2
801 feet or greater	Specified by Planning Board

B. Location of Driveways

1. All entrance and exit driveways to a County road shall be located to afford maximum safety to traffic on the County road.
2. No entrance or exit driveway shall be located on the following portion of a County road: on a rotary; on a ramp of an interchange; or within 25 feet of the beginning of any ramp or other portion of an interchange.
3. Where two or more driveways connect a single site to any one County road, a minimum clear distance shall separate the closest of any two such driveways.
4. Where a site occupies a corner of two intersecting roads, no driveway entrance or exit shall be located within the minimum distances established in Table 500-4 and Figure 500-1.

5. No part of any driveway shall be located within the minimum distance of a side property line as established in Table 500-4 and Figure 500-1. However, upon application to the Planning Board and approval of the design by the County Traffic Engineer, the Planning Board may permit a driveway serving two or more adjacent sites to be located on or within 10 feet of the side property line between the adjacent sites.
6. Driveways shall be designed to prevent vehicles from backing out on the County road.

C. Sight Distance of Driveways

1. Any exit driveway or driveway lane shall be so designed in profile and grading and shall be so located to permit the following minimum sight distance measured in each direction along the County road; the measurement shall be from the driver's seat of a vehicle standing on that portion of the exit driveway with the front of the vehicle a minimum of 10 feet behind the curb line or edge of shoulder of the County road; with the height of eye of 3.25 feet to top of object 4.0 feet above the pavement. (See Table 500-3.)

Table 500-3: Required Sight Distance	
Allowable Speed on County Road	Required Sight Distance in Feet*
25 MPH	300 Ft.
30 MPH	350 Ft.
35 MPH	425 Ft.
40 MPH	475 Ft.
45 MPH	525 Ft.
50 MPH	600 Ft.
<p>* Where 25% or more of traffic using the driveway is comprised of single-unit trucks or tractor-trailer trucks, the above required sight-distance shall be increased by 25% and 50% respectively.</p>	

D. Geometric Design

The geometric design of a driveway connection to a County road should be governed by sound traffic engineering principles. Below are guidelines in preparing a geometric design, but deviation from them may be necessitated from time to time due to the many variables encountered in the course of preparing a design. The applicant should be aware, therefore, that although the driveway layout may conform to these guidelines, conditions may dictate deviations from them and requirements of the County Traffic Engineer shall be final. Driveway design standards #1 through #3 are further described in Figure 500-1 and Table 500-4.

1. Two-Way Operation: Driveways used for two-way operation will intersect the County road at an angle to as near 90 degrees as site conditions will permit and in no case will be less than 60 degrees.
2. One-Way Operation: Driveways used by vehicles in one direction of travel (right turn only) shall not form an angle smaller than 45 degrees with a County road.

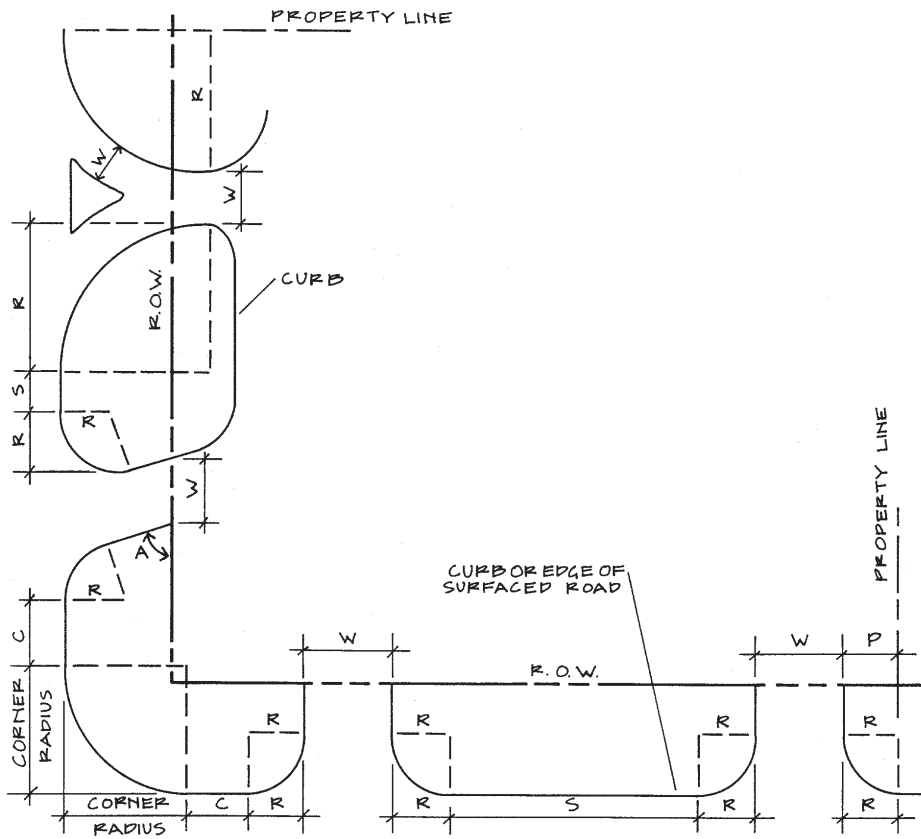


FIGURE 500-1	
Morris County Typical Detail Driveway Location Diagram	
Not to Scale	10-95

3. The dimensions of driveways shall be designed to adequately accommodate the volume and character of vehicles anticipated to be attracted daily onto the land development for which a site-plan is prepared. The required maximum and minimum dimensions for driveways connecting to a County road at 90 degrees are set forth in Table 500-4 and Figure 500-1. Driveways serving a large volume of daily traffic or traffic over 25 per cent of which is truck traffic shall be required to utilize high to maximum dimensions. Driveways serving low daily traffic volumes or traffic less than 25 per cent of which is truck traffic shall be permitted to use low to minimum dimensions.
 4. Any vertical curve on a driveway shall be flat enough to prevent the dragging of any vehicle undercarriage. The maximum permitted gradients for driveways shall not exceed a 2 per cent grade for a distance of 20 feet in back of gutterline. Whenever possible the driveway shall be graded to prevent stormwater entering the site from the County road.
 5. The surface of any driveway subject to County site-plan approval shall be constructed with permanent pavement for a minimum distance of 25 feet from the County road edge of pavement.
- E. Residential driveways of single family lots shall be designed in accordance with the following standards:
1. The location and design of single family residential driveway shall conform to Table 500-4 and Figure 500-1.
 2. Driveways shall be designed to prevent vehicles from backing out on the County road.
 3. Driveway shall be located and designed to provide optimal sight distance along the County road.
 4. The profile of the driveway at the connection to the County road shall be designed with a "leveling area" prior to vehicles entering the County road.
 5. The surface of the driveway subject to County approval shall be constructed with permanent pavement for a minimum distance of 10 feet from the County road edge of pavement.
 6. Whenever possible the driveway shall be graded to prevent stormwater from flowing onto the County road.

Table 500-4: Driveway Dimensions

	Dimension Reference (See Fig. 500-1) (feet)	Single Family Residential (feet)	Commercial and Multi-family Residential (feet)	Industrial (feet)
Width ¹ One Way One-way (min./max) Two-Way (min./max)	W	10-12	12-15 24-30	15-18 30-36
Turning Radius ² Minimum Maximum	R	5 15	15 35	30 45
Minimum Spacing ³ From Property Line From Street Corner ⁴ Between Driveways	P C S	5 10 50	10 or -R 25 150	-R 25 150
Angle ⁵ Two-way One-way (minimum)	A	90° -	60° 45°	60° 45°

1. The width shown applies to rural routes and most urban streets, including neighborhood, business, residential, and industrial streets. The width is intended to be measured along the right-of-way line, in most instances at the inner limit of a curbed radius, or between the line of the radius and the near edge of a curbed island at least 50 feet square in area.
2. In high pedestrian activity areas, the radii should be half the values shown. The maximum radii for major generator driveways will be higher than the values shown and will be determined by the County Engineer.
3. Measured along the curb or edge of pavement from the roadway end of the curb radius, except for conditions noted in Figure 500-1. In high pedestrian activity areas, the minimum spacing between driveways should be 5 feet.
4. At signalized intersections the minimum spacing shall be doubled.
5. Minimum acute angle measured from edge of pavement, and generally based on one-way operation. For two-way driveways, and in high pedestrian activity areas, the minimum angle should be 70 degrees.

505 Speed-Change Lanes

A speed-change lane is an auxiliary lane for the acceleration or deceleration of vehicles entering or leaving the through traffic lane. Speed change lanes may be required where certain development roads and driveways are proposed to intersect County roads.

- A. Construction of speed-change lanes by the developer shall be at the direction of the County Traffic Engineer. Factors governing this determination shall include but not be limited to current and anticipated traffic volume and speed on the County road and anticipated character and volume of traffic on the development street or driveway.
- B. Where pavement widening and curbing are required in accordance with Section 510A this additional width of pavement will generally be acceptable as serving the purpose of speed change lanes.

- C. Where full width speed change lanes are required their dimensional design shall comply with the following table:

Table 500-5: Speed Change Lanes		
Acceleration Lanes		
Legal Speed Limit	Full Width	Taper
25 MPH to 40 MPH	200 feet	150 feet
40 MPH to 50 MPH	350 feet	200 feet
50 MPH and over	450 feet	250 feet
Deceleration Lanes		
Legal Speed Limit	Full Width	Taper
25 MPH to 40 MPH	150 feet	200 feet
40 MPH and over	200 feet	250 feet

- D. In all cases the full width widened roadway shall be preceded or terminated with an uncurbed, paved taper having a length set forth in Table 500-5 measured from the end of curb to the existing pavement. Exception: Where the pavement taper will become a permanent design of the roadway, curbing of the taper is required.
- E. The area behind the taper shall be cleared of all trees, poles and other obstructions for a distance of not less than the width of the new pavement edge as measured from the centerline of the road which would present a hazard to vehicles running off the edge of the taper pavement.

506 Left-turn Lanes, Jughandles and Overpasses

The construction of and/or the conveyance of land to the County for left turn lanes, jughandles and overpasses may be required by the Planning Board, under one or more of the following circumstances:

- A. When the Circulation Element of the County Master Plan or the Official County Map shows the proposed location of jughandles and/or overpasses.
- B. When a development is proposed that provides peak hour traffic in excess of 150 vehicle trips. A trip is defined as a single or one-every-vehicle movement with the origin or destination inside the study site.
- C. Where the sight distance is below that shown in Table 500-3.
- D. Where the existing level of service is Level "D", as described in the Highway Capacity Manual, published by the Highway Research Board, during the time period when the County road would be utilized by drivers entering and leaving the development.

507 Traffic Control

Traffic control measures may include signals, pavement markings, signage, and curbed islands.

- A. The Planning Board may require installation of traffic control measures at driveways and intersections depending on the need as determined by the County Traffic Engineer and based upon the Traffic Impact Report as required in Section 502.
- B. All traffic control measures shall be provided by the applicant and shall conform to the Manual of Uniform Traffic Control Devices, the New Jersey Department of Transportation, and the specifications of the County Engineer.
- C. Traffic control measures in residential, rural and historic zones will be designed to take into consideration the character of the area.

508 Street Intersections

A. General

- 1. All street intersections with a County road shall, given the physical constraints of the site, be located to afford maximum safety to the traveling public.
- 2. All street intersections with a County road shall be designed in accordance with Figure 500-2.

B. Location of Street Intersections

- 1. Where there is an existing or proposed street intersection on the County road opposite the frontage of the development and where site conditions allow, the road servicing the development shall be located directly across from said existing or proposed road forming a 4-way intersection.
- 2. If Section 508:B-1 above does not or cannot be applied, where site conditions allow, the proposed intersection with a County road shall be off-set with other proposed or existing intersections by a minimum distance of 250 feet.
- 3. Only one new street shall be permitted for a development to connect to a County road, except where the development frontage along the County road exceeds 1,000 feet.
- 4. Where the development frontage exceeds 1,000 feet along a County road, new streets shall be placed at intervals of not less than 800 feet. Consideration shall be given to the locations of existing streets opposite and/or adjacent to the development in the final location of the development street.

C. Design of Street Intersections

- 1. Intersections shall be made at right angles, unless otherwise approved by the County Traffic Engineer. The angle of the intersection shall be measured at the intersection of the centerline of the intersecting street with the centerline of the County road.
- 2. A 30x30 inch high intensity stop sign, 12 inch white stop line, and 4 inch double yellow centerline shall be placed at the proposed street in accordance with Figure 500-2.

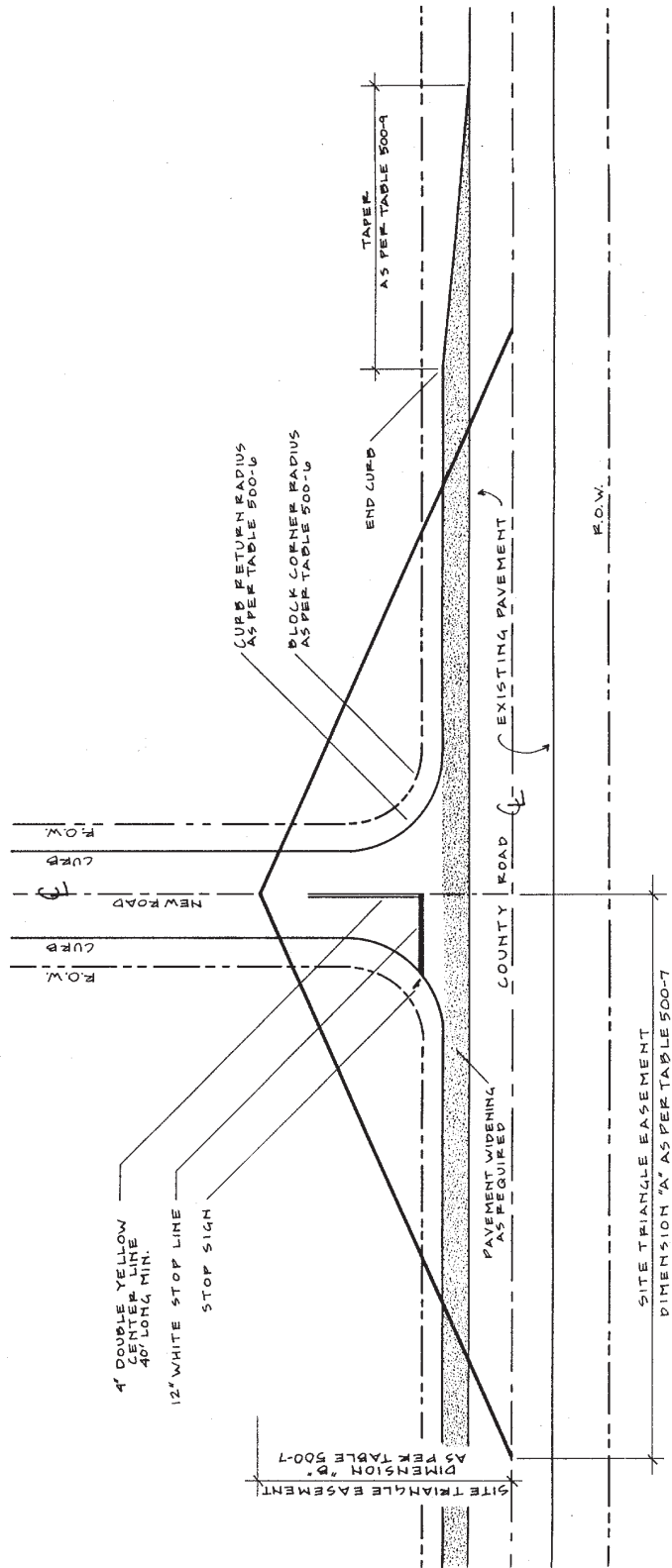


FIGURE 500-2
 Morris County Typical Detail
Intersection Design
 Not to Scale 10-95

3. Curb return radii shall be provided between the intersecting curb lines of the County road and proposed street in accordance with Table 500-6. The highest road classification at the intersection shall determine the curb return radii standard. The curb return radii shall be off-set from the roadway centerline in accordance with pavement widths established in Section 510A or as otherwise directed by the County Planning Board.

D. Sight Triangles

1. In addition to the rights-of-way dedications required under Section 509A-1, sight triangle easements shall be dedicated to the County by the developer at all intersections, both proposed and existing, on which the development fronts.

Table 500-6 Corner Radii Standards		
Street	Curb Radii	Block Corner Radii
Arterial	Fifty (50) feet	Forty (40) feet
Collector	Forty (40) feet	Thirty (30) feet
*Minor	Thirty-five (35) feet	Twenty five (25) feet
*Where bus or truck traffic from the minor street exceeds 3% of the total traffic from the minor street, curb radii shall be forty (40) feet.		

2. In cases where the sight triangle easement extends beyond the property limits of the development, only that portion within the ownership or control of the developer is required.
3. Natural or man-made obstacles shall not be located within the sight triangle. Such sight easements shall assure that an unobstructed view of the County road is maintained through the specified triangular area. Traffic control devices and other man-made or natural objects may remain if it can be demonstrated that they do not obstruct the view of on-coming traffic.
4. Sight triangle easements shall be in accordance with the following schedule.

Table 500-7: Site Triangle Easements		
	"A"	"B"
Minor to a Arterial	300'	90'
Monor to a Collector	200'	90'
Collector to a Collector	120'	200'
Collector to an Arterial	120'	300'
Distances "A" and "B" as measured along the centerlines from the point of intersection. (see Figure 500-2).		

509 Road Rights of Way

A. Dedication of Road Right-Of-Way

1. All proposed developments which front on or include County roads, the existing deed lines of which do not conform to the right-of-way widths adopted in the County Master Plan or Official County Map, shall dedicate the required additional right-of-way width for the entire frontage along the County road or roads. The additional right-of-way shall be that portion of the property which lies between the existing right-of-way and the proposed future right-of-way line of the County road or roads.
2. Where any road classified as an arterial or collector road intersects with an arterial or a collector road in the adopted County Master plan or Official County Map, the right-of-way dedication shall be increased an additional 12 feet along the development frontage or frontages on both roads for a distance of 250 feet from the intersection of the centerline of the roads.
3. The construction of and/or the conveyance of land to the County for left turn lanes, jughandles, and overpasses to a development may be required by the Planning Board based upon criteria set forth in Section 506.
4. Where the total additional right-of-way is to be secured from just one side of a County road, only one-half of the required additional right-of-way shall be dedicated by the development as a condition of approval of the development. The development shall reserve the remaining area of right-of-way for future acquisition and shall so designate the area on the development maps. The building setback line shall be measured and shown from the future right-of-way line.
5. The final subdivision plat (which is to be filed in the Office of the County Clerk of Morris County), minor subdivision plat, or site plan shall bear the notation "Dedicated to the County of Morris for Road Purposes" which shall further be defined by metes and bounds. In addition, the developer shall show concrete monuments to be set on the new right-of-way line at the tract corners and points of curvature.
6. The developer shall furnish the Planning Board with a bargain and sale type deed, drawn to the County of Morris, a Municipal Corporation and shall include a metes and bounds description which corresponds to the dedicated area as shown on the subdivision plat, or site plan as the case might be.
7. The deed description shall include:
 - a. A beginning point referenced to a tax map lot and block, a prior deed or filed map, and the nearest street intersection.
 - b. Square footage or acreage of the dedicated area.
 - c. A reference to the subdivision plat or site plan as the case may be stating the title, municipality, date and last revision, and the name and address of the surveyor/engineer.

B. Right-of-Way Encroachments Prohibited

No development which adjoins or includes a County road or roads shall be designed to permit any of the following uses within the County road right-of-way: conduct of private business; erection of buildings, permanent or temporary; sales of merchandising displays; vehicular parking areas; servicing of vehicles; service equipment and appurtenances thereto; fencing of any kind, to include living and artificial or fabricated types; walls of timber, stone, concrete, metal or other materials; signs of all types, excepting traffic and regulatory and street signs; shrubberies and horticultural materials, excepting trees designated to remain or to be planted as a requirement under these regulations.

510 Roadway Widening

- A. The County road frontage shall not be widened unless the development application involves either of the following, in which case it may be widened:
1. Residential subdivisions and site plans of densities equal to or greater than two (2) units per acre.
 2. Commercial, industrial and other nonresidential subdivision and site plan applications.
- B. Where road widening is required, such widening shall be designed in accordance with Table 500-8 and Figure 500-3 of these Standards, or as directed by the Planning Board.
- C. The type of road from Table 500-8 shall be determined by the Planning Board based on the advice of the County Engineer and the following guidelines.

Table 500-8: Roadway Design Standards			
Road Type	Pavement *Half Width	Curb	R.O.W. *Half Width
A	24'	required	33'
B	20'	required	33'
C	18'	**varies	33'

*As measured from existing pavement centerline.
 **As determined by the Planning Board based on the advice of the County Engineer.

1. Road Type 'A' is applicable to developments proposed along County roads where widening has been constructed at 24 feet from centerline or where the County has specifically adopted plans for a 48 foot wide road.
 2. Road Type 'B' is applicable to County roads where a designated parking lane is required such as in a commercial zone.
 3. Road Type 'C' is applicable to other development applications where road widening is required under Section 510:A and Road Types 'A' and 'B' are not applicable.
- D. The Planning Board may modify and waive the roadway widening standards in consideration of the following:

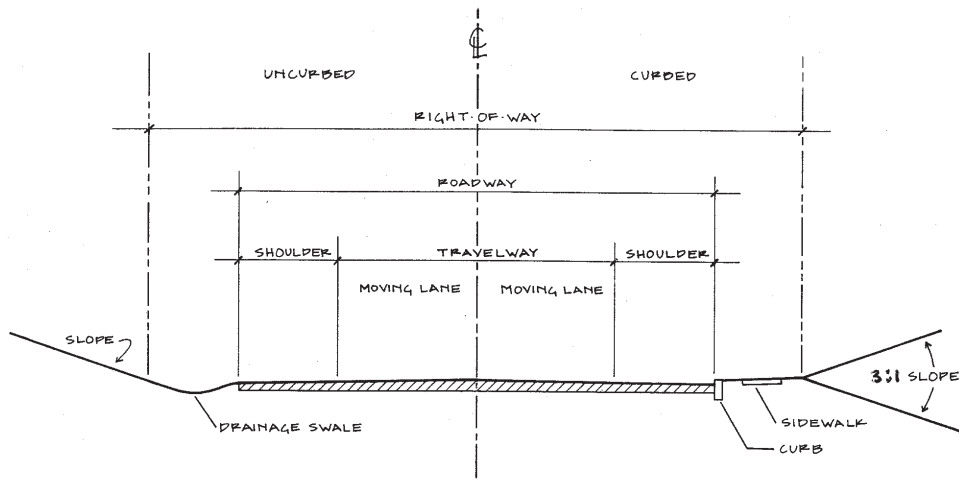


FIGURE 500-3
 Morris County Typical Detail
Road Design Section
 Not to Scale 10-95

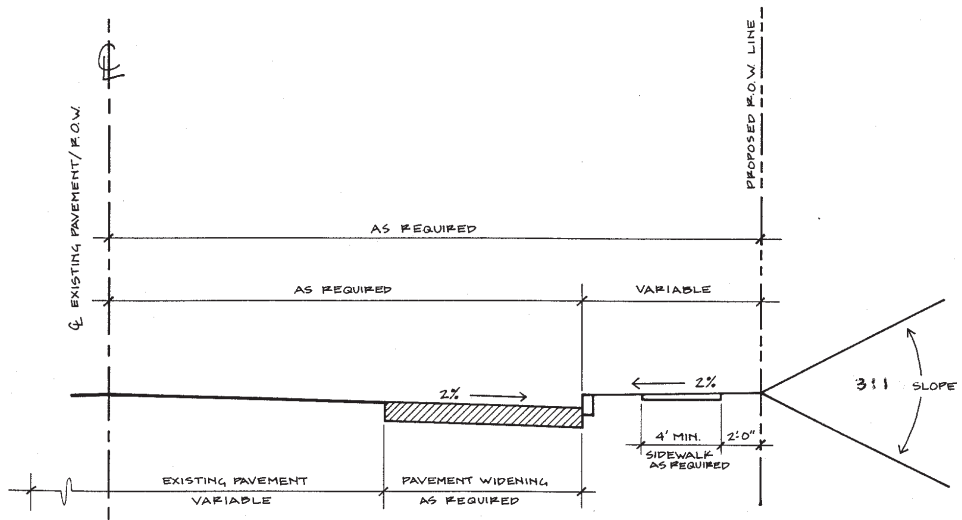


FIGURE 500-4
 Morris County Typical Detail
Road Widening Section
 Not to Scale 10-95

1. Where the pavement width and curb have been established by previous road improvements.
 2. Where an existing site is proposed for redevelopment, and the Planning Board has determined that the proposed changes will have little or no affect upon the County road and drainage systems.
 3. Where single-family residential lots are proposed using reverse frontage and no driveways or streets will connect to the County road.
 4. Where widening of the road pavement is undesirable as provided in Section 105.
 5. Where a redevelopment plan or historic preservation plan element or survey has been adopted by the municipality. (It is the policy of Morris County that design standards and widths of roadways and rights-of-way in historic districts be continued and maintained in their existing configuration.)
- E. Notwithstanding the above, a development may be required to make road improvements with respect to drainage, street intersections, driveway connections and traffic circulation as determined by the County Engineer and in accordance with other Sections of these Standards.
- F. The alignment of road widening improvements shall conform to the County road improvement plans (where such plans exist) and the recommendations of the County Engineer, if in the judgment of the Planning Board such realignment will not impose an undue hardship on the applicant and other affected property owners.

511 Pavement

- A. Wherever pavement widening is required along the County road frontage of a development, the area between the edge of existing pavement and the curb shall be paved as specified and shown in Figures 500-5 and 500-6 as applicable.
1. Where the existing pavement cross-slopes are 3 per cent or greater, the new pavement shall be overlayed to the road centerline to attain standard 2 per cent cross slopes in accordance with Figure 500-5. Where existing pavement cross-slopes are less than 3 per cent, existing edge of pavement shall be saw cut to create an even edge to receive additional pavement in accordance with Figure 500-6.
 2. The widened roadway shall be preceded and terminated with an uncurbed paved taper as shown in Figure 500-7. The lengths of paved tapers shall conform with Table 500-9.
 3. The area behind the taper shall be cleared of all trees, poles and other obstructions which would present a hazard to vehicles running off the edge of the pavement taper. The cleared area shall equal the distance of the new curb line (edge of pavement) as measured from centerline of the road.
 4. Two Special #2L Signs as shown in Figure 500-8 shall be placed along the pavement taper.
 5. Where high volumes of traffic are anticipated at development driveways or roads, design standards set forth for intersections shall be applied as required by the County Traffic Engineer.

B. Minimum Standard Road Details

All developments which abut County roads shall submit plans, profiles and cross-sections as specified in Section 402:F-1 thru 3 and shall include the following:

1. Road Profiles

All improvements to a County road shall maintain a positive gutter flow at the new curbline. The profile shall show the proposed gutter line (bottom of curb) of the widening in relation to the existing centerline and edge of pavement. The minimum allowable profile grade is 0.5 per cent for pavement gutters, and 2.0 per cent for drainage swales.

2. Road Plans

- a. The extent of the pavement widening and resurfacing shall be shown on the drawings by shading in accordance with the pavement cross-sections.
- b. Alignment data for curbing must be shown. All plans shall specifically note that the alignment, grade and stake out of any improvement to a County road shall be inspected by the County Engineer prior to construction.

3. Road Cross Sections

- a. County roads shall maintain a uniform 2 per cent cross slope between centerline and gutterline.
- b. The remaining road right-of-way (behind the curb line or edge of pavement) shall also be graded at 2 per cent.
- c. If by determination of the County Planning Board, grading of the full right-of-way is unfeasible, then the right-of-way shall be graded at a minimum of 3 feet behind the curb line or edge of pavement.

Table 500-9: Pavement Taper	
Additional Width of Pavement (W)	Length of Taper (L)
0-2'	25'
2-4'	50'
4-6'	75'
6-8'	100'
8-10'	125'
10-12'	150'
12-14'	200'

C.. Marginal Service Roads / Reverse Frontage

Where possible and as directed by the Planning Board, applicants shall design the development so that access driveways will connect with internal roads, not the County road. Where a marginal road or reverse frontage can not be achieved, all access driveways to the County road shall be in accordance with the standard as found in Section 504.

512 Curbing

A. Curbing Along Development Frontages

Where widening of the County road frontage is required, curbing shall be constructed in accordance with Table 500-8 and the standards of this Section.

B. Minimum Curbing at Public Street Intersections

Curbing shall be placed along the County road for a minimum distance of 125 feet from the end of the curb returns. The placement of the curb in feet from the centerline of the County road shall be determined by the Planning Board. In addition, the area between the curb and existing edge of pavement shall be paved to the specifications of Section 510:B.

C. Minimum Curbing at Driveway Connections

Driveways serving non-residential developments requiring County site plan approval shall provide curbing at the following locations:

1. Along the curb returns specified in Section 508:C-3 plus 25 feet along the County road from the point of tangency of each curb return with the curb line; or
2. Where the option is available and with the approval for the Planning Board, along the depressed curb line plus an additional 15 feet in both directions along the County road.

D. Any existing curb openings not required by the development shall be closed with construction of new curbing.

E. Specifications

1. The alignment and grade of curbing shall conform to that established or existing in the area and should be subject to the approval of the County Engineer.
2. Curbing shall be constructed in accordance with the design standards set forth in Figures 500-9 and 500-10.
3. Depressed curb
 - a. Where a proposed driveway is to serve any land development, curbing shall be carried across the driveway opening as depressed curb.
 - b. New depressed curb shall be constructed in accordance with Figure 500-11.

513 Drainage

Drainage facilities shall be designed as necessary in connection with road widening improvements in accordance with Section 600 of these Standards.

514 Sidewalks

- A. Each land development subject to County approval shall provide a sidewalk within the County road right-of-way if such is required by a zoning, subdivision, site-plan or other ordinance of the municipality in which the land development is to be located. Where no local ordinance requires a sidewalk, the County Planning Board may require the installation of a sidewalk in the County right-of-way in order to protect pedestrian traffic while facilitating vehicular traffic. If a sidewalk is required as a condition of approval under these Standards or is required by a municipality, such sidewalk shall be located in accordance with local specifications. In the event that no local specifications exist, sidewalks shall be constructed in accordance with Figure 500-12 and the following:
- B. Sidewalk Construction Specifications
 - 1. Sidewalks shall be constructed of portland cement concrete, 2,500 lbs., in accordance with the standards and specifications of the New Jersey Department of Transportation.
 - 2. Sidewalks shall be a minimum of 4 feet in width. The outside edge of the sidewalk shall be 2 feet inside the right-of-way line except in commercial areas.
 - 3. Sidewalks shall conform to standards slope specifications of 1/4 inch per foot rising from the top of standard curb, except where depressed curb-type driveways require a lowering of the sidewalk grade.
 - 4. Where pedestrian crossings exist or are proposed, sidewalks and curbs shall be designed with ramps and curb cuts in accordance with the Barrier Free Subcode of the Uniform Construction Code N.J.A.C. 5:23-7:31 as supplemented by any municipal standards.

515 Utility Poles

Utility poles, both new and relocated shall be positioned a maximum 2 feet off the County road right-of-way line and as directed by the County Traffic Engineer and/or utility company so as to avoid hazardous conditions along the County roadway.

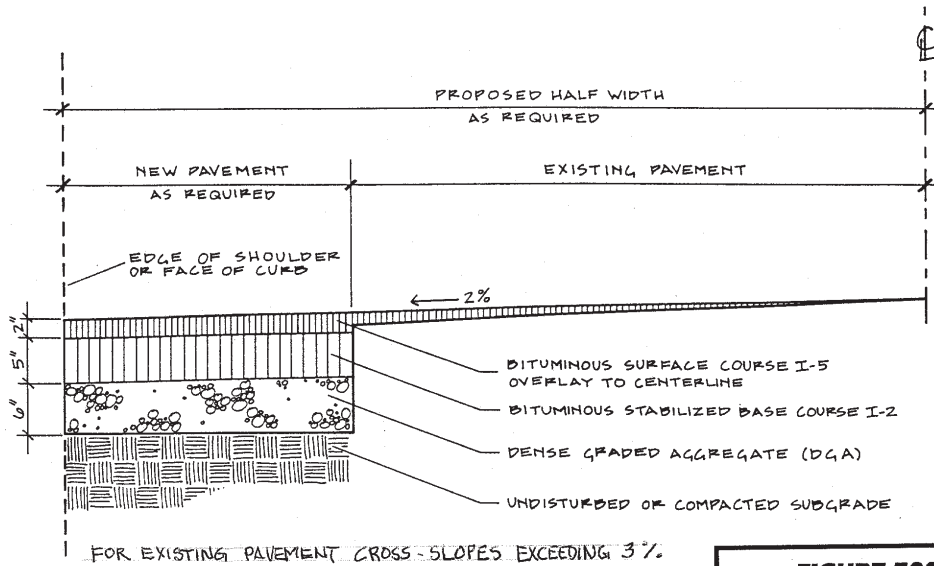


FIGURE 500-5
 Morris County Typical Detail
Pavement Widening Section (CL)
 Not to Scale 10-95

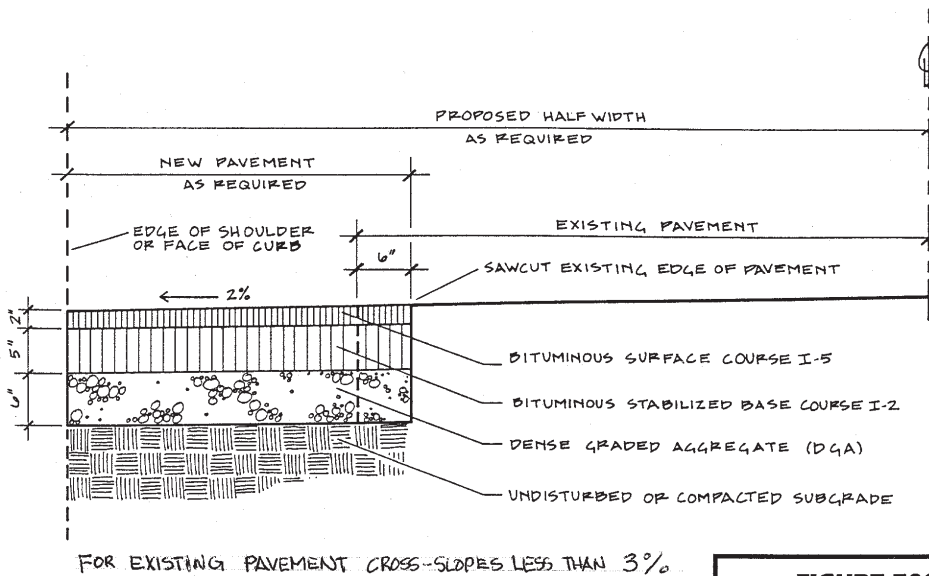


FIGURE 500-6
 Morris County Typical Detail
Pavement Widening Section (EP)
 Not to Scale 10-95

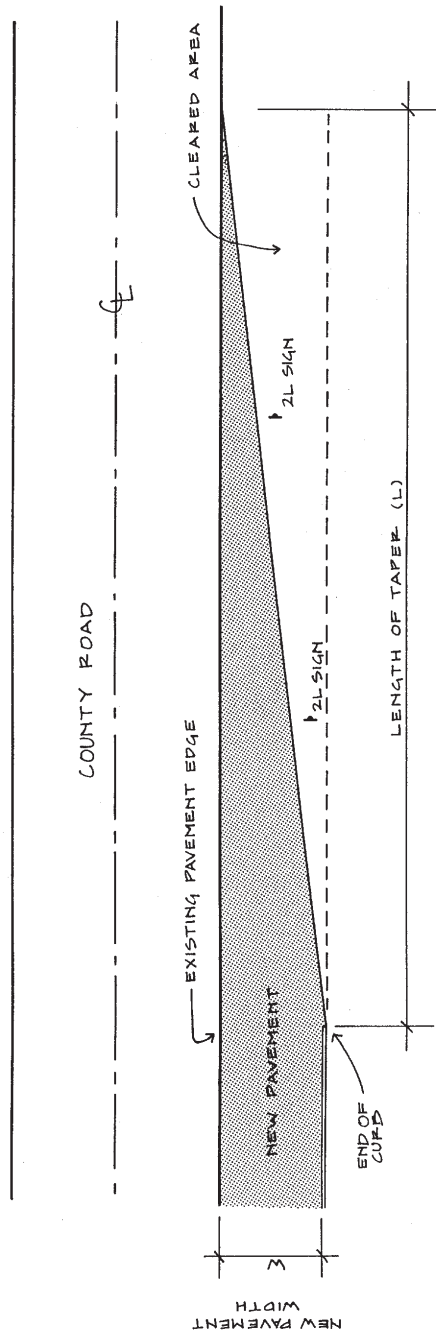
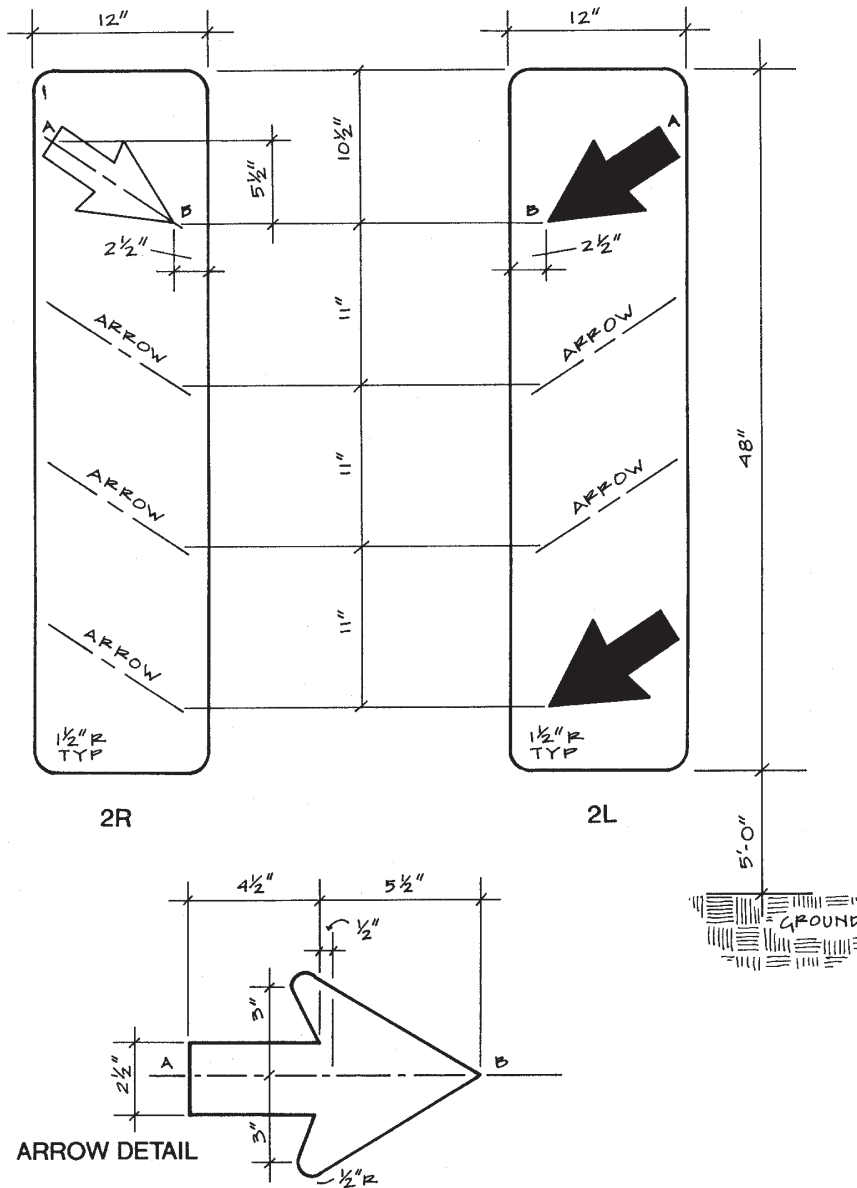


FIGURE 500-7	
Morris County Typical Detail Pavement Taper	
Not to Scale	10-95



SPECIAL SIGN #2R & #2L

FIGURE 500-8	
Morris County Typical Detail Special Sign 2R & 2L	
Not to Scale	10-95

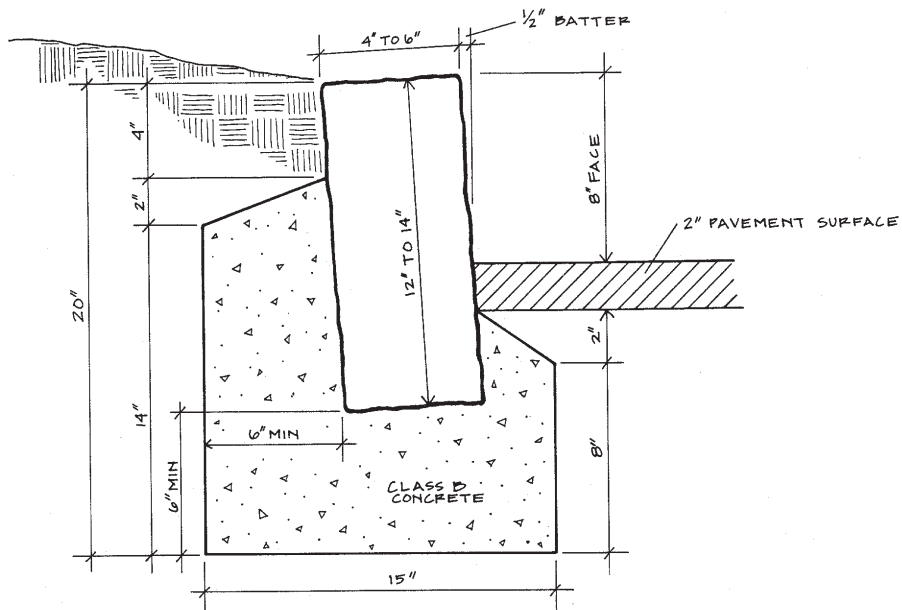


FIGURE 500-9	
Morris County Typical Detail Granite Block Curb	
Not to Scale	10-95

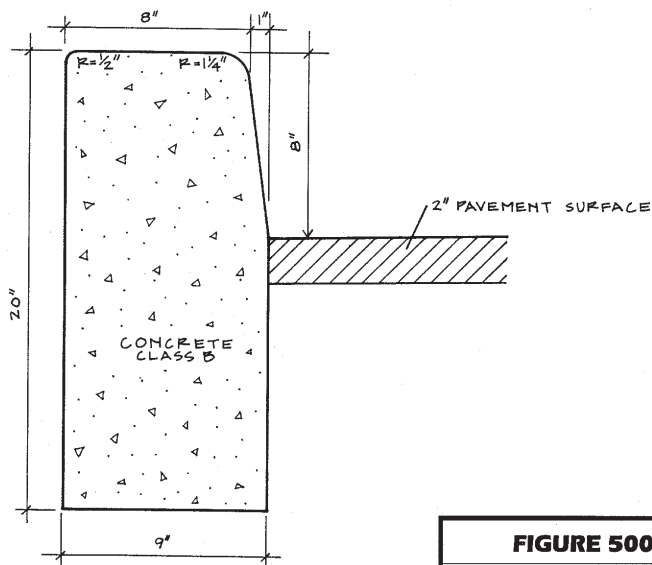


FIGURE 500-10	
Morris County Typical Detail Concrete Curb	
Not to Scale	10-95

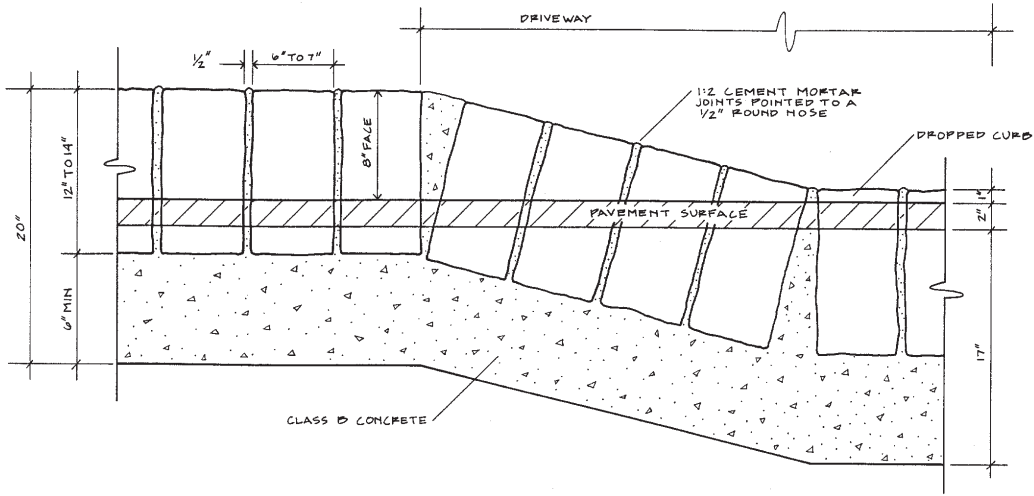


FIGURE 500-11
 Morris County Typical Detail
Depressed Curb
 Not to Scale | 10-95

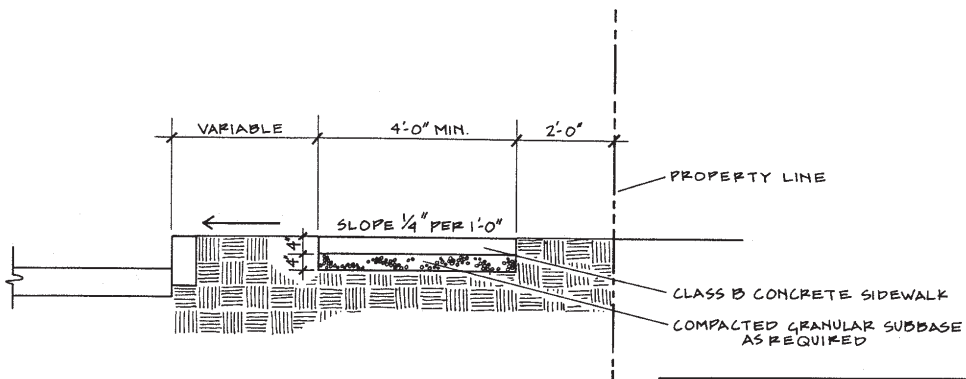


FIGURE 500-12
 Morris County Typical Detail
Concrete Side Walk
 Not to Scale | 10-95