



**North Carolina Department of Transportation  
Traffic Engineering Branch**

**January, 1987**

**Policy  
on  
Street and Driveway Access  
to  
North Carolina Highways**



**POLICY ON STREET AND DRIVEWAY ACCESS  
TO NORTH CAROLINA HIGHWAYS**

Published by the  
North Carolina Department of Transportation  
Division of Highways  
Traffic Engineering Branch

## **FOREWORD**

The primary concern of those responsible for North Carolina's vast highway system is to provide for the safe and efficient movement of people and goods. As an aid in achieving this goal, this manual sets forth the Policy on Street and Driveway Access to North Carolina Highways and establishes the minimum requirements for the location, design and construction of street and driveway connections. This Policy also includes the legal basis for the exercise of this authority and sets forth the procedures to be followed when applying for a Street and Driveway Access Permit.

# TABLE OF CONTENTS

<u>ITEMS</u>	<u>PAGE</u>
Board of Transportation Ordinance.....	1
Introduction.....	2
Procedures for Preparing and Securing a Street and Driveway Access Permit.....	4
A. General.....	4
B. Location of Property.....	5
C. Classification of Permits.....	5
D. Site Plan Requirements.....	7
E. Approval by Local Governments.....	8
Temporary Street and Driveway Access Permit.....	9
Conditions & Limitations of Street & Driveway Access Permits..	9
Street and Driveway Access Design Criteria.....	12
A. Site Requirements.....	12
B. Number & Arrangement of Driveways .....	16
C. Driveway Profile.....	17
D. Drainage Requirements.....	18
E. Paving Requirements.....	19
F. Types of Commercial & Residential Subdivision Access.....	19
G. Auxiliary Lanes.....	19
H. Median Crossovers.....	20
I. Control Dimensions.....	20
Definitions.....	22
Figures (See reverse side for listing).....	26
Sample Street & Driveway Access Permit Application.....	56
Location of Division and District Offices.....	58

## LIST OF FIGURES

	<u>Page</u>
Fig. 1 - Single Driveway - Diagrammatic.....	26
Fig. 2 - Double Driveways - Diagrammatic.....	27
Fig. 3 - Double Driveways to a Corner Installation - Diagrammatic.....	28
Fig. 4 - Single Driveways to a Corner Service Station - Rural.....	29
Fig. 5 - Single Driveways to a Corner Service Station - Urban-Curbed.....	30
Fig. 6 - Single Driveway Commercial Establishment-Urban-Open Ditch.....	31
Fig. 7 - Single Driveway Commercial Establishment-Urban-Curbed.....	32
Fig. 8 - Double Driveways to a Corner Service Station - Rural.....	33
Fig. 9 - Double Driveways to a Corner Service Station - Rural (RSDA).....	35
Fig.10 - Double Driveways to a Corner Service Station - Urban.....	36
Fig.11 - Driveways to a Public Building - Rural.....	37
Fig.12 - Driveway for Drive-In Theater - Rural.....	38
Fig.13 - Driveway Groupings with Frontage Road - Rural.....	39
Fig.14 - Layout for Curbed Driveway Entrances.....	40
Fig.15 - Drop Curb Design.....	41
Fig.16 - Slope and Drainage Requirements.....	42
Fig.17 - Controlled Access Area.....	43
Fig.18 - Example of Shopping Center Layout.....	44
Fig.19 - Example of Shopping Center Layout.....	45
Fig.20 - Example of Shopping Center with Bank & Service Station.....	46
Fig.21 - Swept Path of Passenger Cars.....	47
Fig.22 - Standard Driveway Turnout - Radius Type.....	48
Fig.23 - Standard Street Turnout.....	49
Fig.24 - Standard Driveway Turnout - Drop Curb Type.....	50
Fig.25 - Divided Entrance.....	51
Fig.26A-Left Turn Prohibition - Shoulder & Ditch Section.....	52
Fig.26B-Left Turn Prohibition - Curb and Gutter Section.....	53
Fig.27 - Left and Right Turn Lane Storage Lengths.....	54
Fig.28 - Recommended Treatment for Left-Turn Lanes.....	55

BOARD OF TRANSPORTATION

ORDINANCE

**Policy on Street and Driveway Access to North Carolina Highways**

WHEREAS, G.S. 136-18(5) and G.S. 136-93 grants the Board of Transportation the authority to make rules, regulations, and ordinances for use on the State highways; and including street and driveway access to State highways; and

WHEREAS, in furtherance of public safety and welfare, it is deemed necessary to regulate street and driveway access; and

WHEREAS, the State Traffic Engineer has recommended the adoption of street and driveway access regulations hereinafter referred to, based upon engineering studies and recommendations of the traffic engineers and highway Division Engineers; and the State Highway Administrator has reviewed and concurs in the recommendations; and the Secretary of Transportation has determined that these regulations should be adopted by the Department of Transportation.

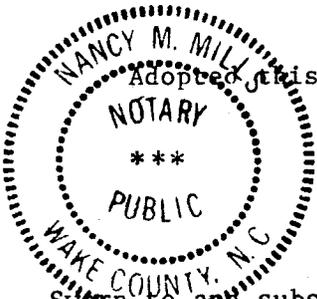
NOW, THEREFORE, BE AND IT IS HEREBY ORDAINED that from after the 1st day of January, 1987, the POLICY ON STREET AND DRIVEWAY ACCESS TO NORTH CAROLINA HIGHWAYS shall be in effect and copies of the same will be placed on file in the office of the Secretary of the Board of Transportation in Raleigh, in the office of the Division Engineers of the several divisions, and in the offices of the District Engineers of the several districts.

BE IT FURTHER ORDAINED that the MINIMUM STANDARDS FOR ENTRANCES TO HIGHWAYS, adopted by the State Highway Commission, July 6, 1951, and amended June 2, 1955; March 3, 1958; and January 7, 1966, shall remain in full force and effect and shall be applicable to all entrances constructed prior to January 1, 1987, and the ordinance establishing such standards shall remain in full force and effect as it applies to entrances constructed prior to January 1, 1987.

James M. Lynch  
State Traffic Engineer

George E. Wells  
State Highway Administrator

[Signature]  
James E. Harrington  
Secretary of Transportation



Adopted this the 9th day of January, 1987.

Sworn to and subscribed before me this the 9th day of January, 1987.

My Commission expires April 26, 1991

Nancy M. Mills  
Notary Public  
Nancy M. Mills

## INTRODUCTION

The North Carolina Department of Transportation has deemed it necessary to regulate the location, design, construction, and maintenance of street and driveway connections to the State Highway System for the purpose of protection for such highways, economy of maintenance, preservation of proper drainage, safe and efficient movement of traffic thereon, and full utilization of the taxpayer's investment. The objective of this Policy is to establish uniform criteria governing such location, design, construction, and maintenance.

The Department of Transportation is aware of the fact that property fronting landowners have certain rights of access consistent with their needs, except along limited access highways. However, it must be recognized that indiscriminate roadside development and unregulated access connections result in decreased highway capacity, driver confusion, and increased safety hazards to all traffic. Most roadside interference can be attributed directly to vehicular traffic entering, leaving, and parking adjacent to access provision for business establishments and commercial roadside developments.

Roadway users also have certain rights. They have the right to freedom of movement, safety, and efficient expenditure of the public highway funds.

It, therefore, is the responsibility of the North Carolina Department of Transportation to regulate the location, design, and operation of access streets and driveways and to reconcile, to the extent feasible, the needs and rights of both property owners and roadway users.

When an existing roadway is improved or altered by reconstruction, the existing street and driveways shall be altered to conform with the regulations set forth in this Policy.

Deviations from the minimum requirements stated herein may be permitted by the Division of Highways in unusual circumstances based on sound engineering principles and an engineering investigation.

## **PROCEDURES FOR PREPARING AND SECURING A STREET AND DRIVEWAY ACCESS PERMIT**

### **A. *General***

A permit shall be secured prior to the construction of any new access or the alteration of any existing access within the right-of-way of a State-maintained roadway when the work is to be done by any person or agency other than the North Carolina Division of Highways. Permits for single residences are required only where access connections involve a public safety hazard or at locations involving a highway construction project. A new permit is also required prior to the change or alteration of existing use of property. Failure to secure a permit prior to construction or change in the use of property may result in the removal of the driveway(s) or street(s) connections at the property owner's expense.

Application to the North Carolina Department of Transportation for a Street and Driveway Access Permit shall be made on a form provided by the Division of Highways. All required signatures or seals of approval shall be shown on the permit application.

All applications for permits shall disclose the present and proposed use of the property for which access is requested. Any intended use of the access in conjunction with any adjacent property, whether owned by the applicant or by others, or to be purchased or sold by the applicant or others, shall be disclosed in the application.

In instances where permit application is made for a new subdivision street connection to a State-maintained roadway, a disclosure statement shall fully and completely disclose the status (whether public or private) of the street upon which the houses or lots front. If the street is designated by the applicant for public use and State maintenance, the applicant shall dedicate the required right-of-way to the public and agree to construct the street in accordance with the standards contained in the "Subdivision Roads, Minimum Construction Standards" manual published and adopted by the Department of Transportation.

Application for a Street and Driveway Access Permit should be made in the early planning stages of development. This permit is issued by the District Engineer of the Division of Highways. However, in certain areas in the state, local governments may have site plan approval for street and driveway connections within its jurisdiction and must be processed by these local governments prior to any Division of Highways review. See Page 58 for the locations and addresses of the Division and District offices.

## **B. *Location of Property***

The location of the property to which access is required shall be identified clearly enough to be located in the field by the Division of Highways engineering staff. The applicant should indicate the location on a segment of a North Carolina Department of Transportation county map, which is available at the District Office where application is made.

Where the location of a development requires local planning board, zoning authority or local governmental approvals, it must be obtained prior to submitting the Street and Driveway Access Permit with the Division of Highways.

## **C. *Classification of Permits***

Depending on the location, all permit applications will be classified by the District Engineer as "Urban" or "Rural", as defined in the definitions section. This classification will determine the minimum design standards which must be met in order to be considered for approval.

A Street and Driveway Access Permit shall be classified as Residential/Subdivision, Regular Commercial, or Special Commercial. Definitions of each classification and the procedures for processing are as follows:

1. **RESIDENTIAL/SUBDIVISION**- Street and Driveway Access Permit Application requesting access onto the State Highway System for residential subdivisions, apartment complexes, mobile home parks, and condominium developments shall normally be given this classification.

Residential/Subdivision permit applications and plans shall be reviewed and given final approval by the District Engineer. The submitted permit application, which is subject to revision, will be returned directly to the applicant.

If the permit application and plans are reviewed at the District Engineer's office, the process normally takes about two weeks. However, if it is anticipated the development will generate large volumes of traffic or the operational capacity of the State roadway is in question, the District Engineer should forward the permit application with plans to the Traffic Engineering Branch of the Division of Highways for review and comments. The recommended treatment will be returned from the Traffic Engineering Branch to the Division Engineer with a copy to the District Engineer. This process will normally take about four weeks for final approval to be given. The applicant will be notified by the District Engineer when the permit requires review by the Traffic Engineering Branch.

When a new street connection to the State Highway System is designated by the applicant as a public street, it must be constructed in accordance with the Division of Highways publication, "Subdivision roads, Minimum Construction Standards". Copies of this Bulletin will be available at the District Engineer's office upon request.

A new public street which fails to meet minimum Subdivision road Standards shall not be accepted by the Division of Highways onto the State System.

2. **REGULAR COMMERCIAL** - Routine permit applications, primarily low to moderate volume traffic generators, shall be given this classification. Examples of property usage include, but are not limited to small shopping centers (generally less than 75,000 square feet), single commercial business, light industrial and manufacturing establishments, small service business, service organizations, churches, and single residences, where required.

Regular Commercial Permit applications and plans shall be reviewed and given final approval by the District Engineer. The submitted permit application, which is subject to revision, will be returned directly to the applicant within two weeks.

However, if the District Engineer has concerns regarding the operational capacity or safety of the abutting roadway, he may choose to forward the permit application to the Traffic Engineering Branch for review recommendations and a report will be sent to the District Engineer within four weeks. The District Engineer will notify the applicant when a review by the Traffic Engineering Branch is required.

3. **SPECIAL COMMERCIAL** - This classification is primarily for high volume traffic generators. Examples of this classification are large shopping centers (generally in excess of 75,000 square feet), major recreational facilities, large office buildings and/or complexes containing more than 200 parking spaces, hospitals, large industrial developments, airports, and civic centers. Any other development which is expected to generate large volumes of traffic or create operational problems may also be classified as a Special Commercial. In addition to property use, a permit application may also be classified Special Commercial by the District Engineer for various other reasons, among these being access requested within 400 feet of an interchange, in the vicinity of high accident location, on a major arterial carrying extremely high volumes of traffic, involvement with an existing or proposed median crossover, highway improvements that are in the Transportation Improvement Program, or involvement with an active roadway construction project. A permit application for more than two driveways onto a single highway frontage shall be classified Special Commercial.

Special Commercial Permit applications and plans shall be reviewed and given final approval by the District Engineer. The submitted permit application, which is subject to revision, will be returned directly to the applicant within two weeks. However, if the District Engineer has concerns regarding the operational capacity or safety of the abutting roadway, he may choose to forward the permit application to the Traffic Engineering Branch with a copy of the site plan to the Division Traffic Engineer for review and comments. The Traffic Engineering Branch will coordinate final recommendations and a report will be sent to the Division Engineer with a copy to the District Engineer. If this method of review is followed, the process will normally take about four weeks, and the applicant will be advised of the Traffic Engineering Branch review by the District Engineer.

## **D. *Site Plan Requirements***

All applications for Street and Driveway Access Permits issued under these regulations shall be accompanied by detailed site plans. Each permit application classified Residential/Subdivision or Regular Commercial shall be accompanied by four (4) complete site plans.

Special Commercial permit applications shall also require four (4) site plans for distribution. All plans should be drawn to engineering scales of twenty (20), thirty (30), forty (40), or fifty (50) feet per inch. Photographs are not acceptable but may accompany site plans for illustrative purposes. Freehand sketches for special commercial permits are not acceptable.

Information to be shown on all submitted site plans shall include the following as applicable:

1. A detailed description of the property to be served by the permit, together with a detailed description of the adjoining land owned or controlled by the applicant.
2. Right-of-way lines, highway control-of-access, if present, and property lines.
3. Driveway approaches and roadway alignment.
4. Parking, interior drives, channelization, traffic flow pattern, etc.
5. Buildings, utilities, streams, bridges, retaining walls, signs and other fixed objects.
6. Distance of intersecting roads, streets, driveways, railways or crossovers within three hundred (300) feet of the proposed development.
7. Width of rights-of-way.
8. Width and type of adjacent road surface.
9. Width of existing and proposed driveways or streets.
10. Necessary and existing pipe, tile, or other drains, stating type and size.
11. Width of property frontage.
12. Distance from right-of-way to gasoline service island.
13. Distance from right-of-way to all buildings.
14. Distance between driveways being requested.
15. Distance between driveway and nearest property line.

16. Distance between edge of pavement and right-of-way.
17. Type of surface, stabilization, and construction (base, surface, etc.) of driveways, streets and approaches.
18. All proposed turning radii with ramps for the handicap pedestrian.
19. Proposed treatment of right-of-way area adjacent to and between approaches.
20. Rate of slope or grade of approaches and driveways.
21. Distance to, and design of (including drainage), the next drives on both sides of highway (both directions), if within two hundred (200) feet.
22. Proposed commercial lighting within two hundred (200) feet of the highway right-of-way.
23. All parcels intended for use with requested access.
24. North arrow.
25. Vicinity map.

At locations where application is made for access to a high volume traffic generator, such as major shopping centers or large residential developments, the applicant may be required to submit a detailed traffic generation and impact analysis.

## **E. *Approval by Local Governments***

In areas where City or County governments have site plan and/or driveway approval (see permit application form) for development plans, the Street and Driveway Access Permit must be processed and approved by them prior to submission and review by the Division of Highways. If the regulations of the local government are more restrictive than those of the Division of Highways, the design will be governed by local regulations. This, however, does not imply the Division of Highways is obligated to approve entrance designs that are too constrictive to allow smooth and safe traffic flow.

Several municipalities have driveway designs that are not detailed in this policy. The use of "flare" entrances in lieu of the standard driveway design is an acceptable alternate; however, the alternate does not replace the need for a street-type design when traffic volumes are substantial.

Some local governments assess developments of a Traffic Impact Fee based on the size of development or traffic generation projected by the development. Such fees do not release the development from any and all improvements required by the Division of Highways. When local governments require the developments to widen the abutting State System roadway to a width compatible with an ultimate thoroughfare plan section, the Division of Highways may, if warranted, require construction of additional improvements to assure the safety and capacity of the proposed entrance(s).

## **TEMPORARY STREET AND DRIVEWAY ACCESS PERMIT**

Permits may be issued by the District Engineer for the construction and operation of street or driveway connections to the State Highway System for a specific period of time. Such permits shall clearly indicate the access connections are temporary and are to be removed by the applicant at the end of the specified time period. A performance bond may be required to assure the proper removal of the driveways and restoration of the highway right-of-way. Examples of types of temporary permits include but are not limited to grading operations, on-site drainage, and logging operations.

### **CONDITIONS AND LIMITATIONS OF STREET AND DRIVEWAY ACCESS PERMITS**

All work performed on the State Highway System under the terms of a Street and Driveway Access Permit is subject to the conditions on the permit itself and all accompanying plans, drawings, or other attachments. The permit form is illustrated herein on page 56.

Driveway construction must be completed within 90 days after the approval date for Regular Commercial Permits. Notification shall be given to the District Engineer when work is started and when it is completed. An extension of time not to exceed 90 days may be granted if valid reasons exist for the delay.

Driveway and street construction must be completed within one year after the approval date of Special Commercial and Residential/Subdivision permits. Notification shall be given to the District Engineer when work is completed. An extension of time not to exceed 90 days may be granted by the District Engineer if valid reasons exist for the delay.

Authority for final approval of any construction or placement of any structure of drainage facility within public right-of-way rests with the Division of Highways. All work done and all materials used within the right-of-way shall meet or exceed the North Carolina Standard Specifications for Roads and Structures.

The installation of driveway pipe by the applicant requires inspection by an authorized representative of the Division of Highways. The applicant will be charged an inspection fee covering all installations proposed by the Street and Driveway Access Permit. The applicant may request installation by State forces on a cost reimbursable basis and if maintenance forces are available for the installation, no inspection fee will be required.

The Division of Highways reserves the right to periodically inspect the work of the applicant or his contractor to insure compliance with the permit and the approved plan to insure proper compliance with other State polices and standards. These inspections shall be made by the District Engineer or his authorized representatives. The inspector will have authority to reject defective material and may suspend any work that is improperly performed. Any costs incurred in removing or correcting defective materials or workmanship shall be borne by the applicant.

An applicant shall not hold the Division of Highways and its duly appointed agents, officers, and employees liable for any claim arising from his negligence or his contractor's negligence in operations covered by the permit.

The applicant shall take necessary precautions to prevent injury to persons or damage to property from operations covered by the permit, and shall use flag persons, warning signs, and other safety devices in accordance with the North Carolina Construction and Maintenance Operations Supplement to the Manual on Uniform Traffic Control Devices for Street and Highways.

The applicant shall replace all joints of curb, combination curb and gutter, or sidewalk damaged during construction as directed by the District Engineer.

The applicant shall be responsible for performing all construction covered by the permit. A single permit may be issued for both driveway work and other minor work at the same location, such as backslope grading, minor widening for left and right turn lanes, etc., provided the work is to be done by the same person or contractor. Utility work and major pavement widening may require an Encroachment Agreement in addition to the Street and Driveway Access Permit.

The portion of improvements located on public right-of-way shall be considered the property of the North Carolina Department of Transportation and may be utilized in any manner deemed necessary by the Division of Highways. The applicant shall not be entitled to any claims of reimbursement for applicant funded construction expenditures on public right-of-way.

The entire cost of constructing and maintaining an approved private street or driveway connection shall be borne by the applicant, his grantees, successors, and assignees. At those locations where it is determined by the Division of Highways that a commercial driveway or private street requires additions to the existing highway facility for safe and efficient traffic operation, the applicant may be fully responsible for the additions which include, but are not limited to, separate turn lanes, deceleration lanes, acceleration lanes, lane tapers and transitions, right-of-way to contain the new widening, and traffic signals. Generally, these additions are necessitated by the development and will be used exclusively by traffic destined for the establishments within the development.

The property owner having access to a state highway shall be fully responsible for the maintenance of any private street or driveway including the portion from the public right-of-way to the back of ditch in a cut section, the shoulder point in a fill section, or the back of curb in a curb and gutter section. Proper maintenance shall ensure the original profile is retained, operational speed and safety is not reduced by rough surface, and no damage or deterioration to the public roadway pavement is incurred as a result of driveway conditions, including drainage provisions. The level of maintenance should also be adequate to ensure that deviation from the intended circulation pattern is not necessary because of surface irregularities. This maintenance responsibility includes the removal of snow and ice and keeping the portion within the public right-of-way in a safe condition so as not to endanger public travel. Driveway pipes and culverts properly installed on public right-of-way under a permit become the property of the North Carolina Department of Transportation and will henceforth be maintained by the Division of Highways. Where turning lanes are constructed under the permit, the Division of Highways will provide routine maintenance and remove snow and ice on the portion of such lanes which constitute an integral part of the State highway. If the property owner fails to maintain the driveway or street connection to the satisfaction of the District Engineer, the Division of Highways may, upon written notice to the property owner, barricade the driveway or street from further use until such repairs deemed necessary are made.

The applicant shall remove all surplus materials and excavation to an area outside the right-of-way unless the permit provides for disposal at locations within the right-of-way.

The applicant shall not place or cause to be placed any commercial sign, permanent fixture, parking area, or other subject on or over the public right-of-way.

The Division of Highways will make every reasonable effort to insure that street and driveway connections to the State Highway System conform to the regulations set forth in the Policy. Any alterations, deviations, deletions, or additions to the approved permit must be expressly approved by the District Engineer.

Application for a Street and Driveway Access Permit will be accepted only from property owners or from applicants authorized by property owners. Certification of legal ownership may be required. Upon approval of the application by the Division of Highways, a permit will be issued to the applicant stipulating the conditions under which the installation is to be performed.

Approval of a Street and Driveway Access Permit application shall be subject to compliance with all regulations, standards criteria, requirements, etc. of this Policy in addition to any specific stipulations deemed necessary and appropriate by the Division of Highways.

## STREET AND DRIVEWAY ACCESS DESIGN CRITERIA

### A. *SITE REQUIREMENTS*

1. ***Location*** - The location of driveways, particularly commercial type, is a critical factor in minimizing the hazard and disruption to traffic and pedestrians. In the interest of public safety and convenience, the Division of Highways may restrict the placement of a driveway to a particular location along the property owner's frontage. Driveway and street connections to the State Highway System should be clearly visible to all approaching traffic. Driveways will not generally be allowed along acceleration or deceleration lanes and associated tapers. No driveway will be allowed within the intersection of radii of intersecting roadways and shall meet the other criteria for arrangement of driveways as specified herein. No driveway will be allowed through a reserved sight distance area.
  
2. ***Sight Distance*** - To the extent feasible within frontage limits, a driveway or street connection should provide the sight distance requirements as set forth in A Policy on Geometric Design of Highways and Streets (1984) by the American Association of State Highway Officials. The following table lists sight distance values for various design vehicles.

DESIGN VEHICLE CROSSING	SIGHT DISTANCE (ft) PER 10 MPH OF ARTERIAL DESIGN SPEED FOR ARTERIAL WIDTH OF				
	ARTERIAL	TWO LANES	FOUR LANES	SIX LANES	EIGHT LANES
P		100	120	130	140
SU		130	150	170	190
WB-50		170	200	210	220

This table summarizes the required sight distance along arterial roads or streets for a stopped vehicle to cross the arterial. If located on a divided facility, the median width is not accounted for in this table and may be ignored if it is narrow. However, where the median width is 20 feet or more for passenger vehicle crossings, or 40 feet or more for truck crossings, the required sight distance may be based on a two-stop crossing and consideration given to the width of each one-way pavement at a time.

At signalized median crossovers, these sight distance values do not apply. However, limited sight distance shall not be used purely to justify the installation of a traffic signal.

In those locations where the required sight distance cannot be met to the right and/or left of the driveway location, left-turn movements from or into the driveway may be prohibited, thus, restricting the driveway operation to right turns only. In addition to those locations where the required sight distance cannot be met to the left of the driveway, a deceleration taper and a right turn acceleration lane, designed in accordance with AASHTO standards, should be required.

In order to achieve adequate sight distance, the property owner may be required to reserve a portion of his property near the entrance and keep it clear of any obstructions to vision.

The available sight distance at street and driveway connections to the State Highway System shall not be restricted by landscaping, permanent or temporary signing, or in any other manner. The property owner or lessee having access to the State Highway System shall be fully responsible for providing, where possible, and maintaining safe sight distances along their property frontage. If the property owner or lessee fails to comply with this requirement, the Division of Highways may, upon written notice to the property owner or lessee, remove such obstacles from the right-of-way at his expense or barricade the driveway from further use until such corrections and improvements deemed necessary are made.

3. ***Identification Signing and Landscaping*** - Only low growing shrubbery, consistent with the Division of Highways landscaping policies, as contained in the publication "Guidelines for Planting Within Highway Right of Way", will be allowed within a landscaped median at the entranceway to a residential subdivision, whether the street connection to the State Highway System is designated as a public street or not. Any identification signing within the subdivision median shall not obstruct the driver's line of sight and, if located within a recovery area of 30 feet, shall be of a "breakaway design". Any identification sign of a design considered non-breakaway shall be located no closer than 30 feet from the through travelway.
4. ***Controlled Access*** - Where access rights have been acquired by the Division of Highways, street or driveway access will not be allowed.
5. ***Vehicle Storage Space*** - In designing driveways, adequate storage must be provided on commercial sites so that vehicles do not backlog onto the highway. This problem is most evident with drive-in service developments that generate high volumes and require drivers to remain in their vehicles while being served or until service begins. Such operations shall be carefully analyzed to assure the site plan provides adequate storage. The layout of a site used as a car wash, drive-in bank or theater, fast food restaurant, service station, etc. must provide ample storage for waiting vehicles off the right-of-way. Specific storage areas shall be determined on an individual basis; however, the following minimum storage areas are required:
  - a. For drive-in theaters, a storage area between the ticket booth(s) and the highway right-of-way equal to 10 percent of the rated vehicle capacity of the theater shall be provided.
  - b. For single-lane drive-in banks, storage to accommodate a minimum queue of 6 vehicles shall be provided. Banks having several drive-in service windows shall have storage to accommodate a minimum of 4 vehicles for each service lane.

- c. For single-lane drive-through car washes, storage to accommodate a minimum of 12 vehicles shall be provided. Automatic or self-service car washes having multibay design shall have minimum vehicle storage space of 60 feet in length for each bay.
  - d. For fast-food restaurants with drive-in window service, storage to accommodate a minimum of 8 vehicles per service lane shall be provided.
  - e. For service stations where the pump islands are perpendicular to the pavement edge, minimum vehicle storage of 50 feet in length between the pump islands and the public right of way shall be provided. In such cases where 50 feet would be physically unattainable, some deviation from this minimum can be considered on a case by case basis and only after a showing of actual necessity. However, in no case should the setback be less than 35 feet for perpendicular pump islands.
  - f. For shopping centers, a minimum storage of 100 feet shall be required before any crossing or left-turning conflicts can be allowed.
6. **Parking** - The primary concept in designing a parking facility is to minimize the interference with traffic flow on adjacent streets. A sufficient length of curb should be extended along driveways into large parking areas to prohibit interference between vehicles circulating within the area and those exiting or entering the highway. The length of this section will be determined from the maximum vehicle storage required for the anticipated vehicular volumes. A center median in the access driveway may be required to preserve the length of storage. Channelization may be required to extend into commercial sites beyond the right-of-way to minimize congestion and conflicts at the entrance.

In designing any parking facility, the area should be large enough to accommodate the expected peak parking demand. Vehicles should be able to perform all necessary circulation within the parking area and shall not have to exit onto a street and re-enter the parking area. Parking maneuvers shall not restrict or impede the ingress flow off traffic from the highway. Vehicle circulation on the site may be either two-way or one-way, depending on site dimensions and the angle of the parking stall. Two-way circulation is generally allowed with 90 degree stalls, and one-way circulation is generally used with stall angles less than 90 degrees.

At parking areas with service attendants, gates or other control devices, the vehicle storage should be of adequate length so that entering vehicles do not wait on the adjacent highway. If adequate vehicle storage cannot be provided on the site, separate turn lanes on the adjacent highway should be required.

No portion of a parking area, attendant booth, gates, signing, or parking activity shall encroach on the highway right of way.

Where the applicant for a street and driveway access permit has planned or developed an angle parking arrangement on his property, it shall not be allowed for vehicles to back into the driveway entrance or onto the highway right of way when entering or leaving the development.

7. **Circulation Pattern** - The geometrics of the internal circulation pattern should allow all desirable maneuvers to be made with ease. The radii of internal curves should be as large as possible. Internal circulation for residential subdivisions shall be directed to one or more central common street or driveway connection. Residential subdivision entrances shall be designed in accordance with the current requirements set forth in the current edition of the North Carolina Department of Transportation bulletin "Subdivision Roads, Minimum Construction Standards".

The circulation pattern of traffic to property having a pair of one-way drives should be a counter-clockwise flow except where the entrance or exit driveway is within 100 feet of a street intersection or where the property is located on the left side of a one-way roadway. When this occurs, the pair of one-way drives may be permitted to operate in a clockwise circulation pattern.

8. **Set Backs** - Improvements on private property adjacent to the right-of-way shall be located so that parking, stopping, storage, and maneuvering of vehicles on the right-of-way will not be necessary in order for the vehicles or patrons to be properly served, and shall not restrict the sight distance of adjacent drives. See Set Back (G) Requirements in section on Control Dimensions.
9. **Signing** - The property owner or lessee shall not place or erect any advertising sign, price list, flag, or other identifying marker for the purpose of attracting attention to the site, either fixed or movable, on or extending over any portion of the highway right-of-way.
10. **Lighting** - Lighting commercial driveways used extensively after dark may be helpful to assist motorists in easily locating the entrances. Such lighting shall be erected on private property. Lights on commercial premises shall not violate G.S. 136-32.2. Such lights shall not be similar to traffic control devices (i.e., signals or flashing beacons). No signs may have lights that are not effectively shielded so as to prevent light rays from causing glare or impairing the vision of motorists.

In the case of some major commercial developments, it may be desirable for the developer to place highway or street lighting units to illuminate a part of the highway facility. Provisions for such lighting should be included in the permit application. The units shall meet standards and specifications approved by the Division of Highways.

## **B. *Number and Arrangements of Driveways***

The number of street and driveway connections permitted serving a single property frontage or commercial development along a State maintained roadway shall be the minimum deemed necessary by the Division of Highways for reasonable service to the property without undue impairment of safety, convenience and utility of the highway. Normally, not more than two combined driveway entrances and exits shall be permitted for any single property frontage or commercial site. Additional entrances or exits may be permitted only after a showing of actual necessity. Where frontage is less than seventy-two (72) feet, only one combined entrance and exit shall be permitted, the width of which shall not exceed thirty-six (36) feet measured parallel to the centerline of the adjacent highway. The property which has more than one frontage on a State maintained roadway should not be permitted more than two drives per frontage.

Adjacent property owners may, by written mutual agreement, construct a joint driveway to serve both properties, subject to the following:

1. All requirements of this Policy shall be met with the exception of the edge clearance dimension (E) which shall not apply, and
2. In the event that the driveway does not conform with the requirements of this Policy, the joint driveway shall be corrected or removed at the property owner's expense. Failure to do so may result in the Division of Highways doing such work and billing each property owner for 50% of the total cost.

The arrangement of driveways should be related to adjacent driveways and nearby street intersections. At the intersection of two highways, driveways connecting a corner property with each highway may be permitted where essential to the conduct of business to the corner tract. Driveways close to intersections shall comply with all location requirements and not be closer to the curb line or edge of pavement of the intersection streets than a minimum distance. The minimum distance shall be at least 20 feet from the point of tangency of the radius curvature of the intersecting streets or 20 feet from the intersection right-of-way lines to the beginning of outside driveway radius, whichever is greater. Where the radius curvature of intersecting streets exceeds 30 feet, the minimum corner clearance (C) of 20 feet from the point of tangency may be reduced by an equal difference. The radius of the driveway shall not encroach on the minimum corner clearance (C).

At shopping center locations or other establishments where traffic volume in relation to capacity is high, driveways should be located as far from street intersections as practical. In all instances, driveways serving high volume generators should be a minimum of 100 feet from the intersection of public roads.

Where two driveways are requested along a single property frontage, the distance measured along the right-of-way line between the tangent projection of the inside edges of adjacent driveways shall be at least 20 feet. When more than two driveways on one frontage are necessary to facilitate operations, the minimum distance between drives should be increased to 100 feet.

Where a commercial establishment is served by more than one driveway, an island separator shall be provided and maintained between drives. The distance between tangent projections of the island measured along the right-of-way line shall have a minimum length of 20 feet. The island should be located 6 feet from the edge of pavement along uncurbed sections of roadway, unless instructed by the Division of Highways to be otherwise. Where the island is less than 30 feet long or less than 10 feet in width its shape shall be defined by the use of concrete curb, masonry, or other devices approved on an individual basis, to restrict the path of vehicles using the driveways.

The minimum distance between the centerlines of driveways into shopping centers and similar developments that generate high traffic volumes should be at least 400 feet and preferably 600 feet. This minimum distance between drives does not apply to service drives not used by the general public, nor does it apply to service station driveways unless the driveway provides easy access to the abutting development.

### **C. *Driveway Profile***

All driveways constructed in rural locations shall have a grade that slopes away from the highway surface at a rate equal to the slope of the shoulder but not less than 1/4 inch per foot nor greater than 1 inch per foot. This slope shall continue for a distance equal to the prevailing shoulder width or longer so as not to cause a hump or a depression in the shoulder area. Beyond the shoulder, the grade of rural commercial driveways within the right-of-way should not exceed 10 percent. The slopes of drives constructed in urban areas shall be compatible with the provisions for drainage of the existing designed cross-section but should not exceed a maximum grade of 6 percent within the right-of-way. Where special circumstances require driveway grades in excess of the above maximums, the Division of Highways will establish a safe profile design on an individual basis.

Where a sidewalk is located close to the curb line and the driveway opening is to be provided across a depression or curb cut, the sidewalk should be warped to conform to the driveway profile. One or both edges of the sidewalk may be depressed across the driveway, provided the resulting sidewalk cross slope does not exceed 1/2 inch per foot. In some cases, it may be necessary to discontinue the sidewalk across the driveway and to construct a curb along each driveway edge. In such instances, the curb cuts and curb ramps must be constructed in conformance with the "Guidelines for Curb Cuts and Curb Ramps for Handicapped Persons".

Where curbs are cut for the construction of commercial driveways, the entire curb and gutter section shall be removed. The removal of only the raised portion of the curb and paving over the broken section will not be allowed. Cut curb ends shall be tapered from full height to ground level in a distance of approximately 2 feet or constructed with radii as required. Where drainage is carried along the curb, the driveway shall be constructed in such a fashion to prevent runoff from spilling into private property.

The maximum difference between the cross slope of the travelway (usually 1/4 inch per foot or approximately 2 percent) and the slope of the driveway to the sidewalk shall not exceed 8 percent. Breakover angles in excess of 8 percent may be too sharp for satisfactory driveway speed. This maximum breakover angle also applies to roadways with shoulders, especially on high speed rural highways.

## **D. *Drainage***

Driveways must be constructed so that they do not adversely affect the highway drainage or drainage of the adjacent properties. The drainage and the stability of the highway subgrade must not be impaired by driveway construction or roadside development. In no case may the construction of a driveway cause water to flow across the highway pavement, or to pond on the shoulders or in the ditch, or result in erosion within the right-of-way.

Drainage collected by ditches, gutters, or pipes on private property shall not be discharged into the highway drainage system unless expressly approved by the Division of Highways. The applicant may be required to submit a drainage study to the Division of Highways justifying the drainage system proposed and the pipe or sewer sizes to be used. Natural drainage laws and practices must be observed.

Where the construction of a driveway necessitates crossing a highway ditch, a culvert pipe shall be installed in the ditch. The low point of the driveway profile shall be at or close to the ditch line. Under no circumstances will existing ditches or gutters be filled without adequate alternate provisions for drainage being made.

Culvert pipe shall be of a size adequate to carry the anticipated flow in the ditch as determined by the Division of Highways and shall not be smaller than 15 inches, inside diameter.

The structural material and gauge of the driveway culvert pipe shall be adequate to withstand the loads from the anticipated vehicular traffic across the driveway. The culvert shall meet or exceed the requirements of the North Carolina Standard Specifications for Roads and Structures. The length of the culvert may be determined as the sum of the width of the driveway (surfaced width and shoulder) at the ditch line and the length needed to accommodate a sideslope of at least 1 vertical to 3 horizontal from the driveway grade to the ditch. A minimum 20 feet of pipe shall be used on all commercial and residential subdivision driveways. Plastic pipe is not acceptable for drainage purposes.

Where headwalls or wingwalls are constructed with drainage facilities, a minimum roadway clearance of 30 feet, measured from the edge of pavement, should be observed unless protected by guardrail. The use of flared-end sections should be encouraged.

All drainage structures deemed necessary by the Division of Highways, including incidentals, shall be furnished by the applicant. The Division of Highways will install the drainage pipe for the applicant at the current rate of installation. If, however, the applicant makes the installation, the applicant will be appropriately charged for the inspection. One inspection fee will be charged for each application, regardless of the number of installations involved, provided all installations are available for inspection.

## **E. *Paving Requirements***

Where a new street or driveway connection is made to the State Highway System, a permanent pavement should be placed to the end of the connecting radii, sidewalk, or other portion of the connection within the highway right-of-way. Where application for access is made for a commercial or industrial development, permanent pavement should be placed for a minimum of 50 feet from the edge of roadway. Permanent pavement types include portland cement concrete, asphalt concrete, and bituminous surface treatment. Gravel or other stabilization material without a permanent wearing surface is not desirable. The use of portland cement concrete is recommended for areas where fuels may be spilled and where heavy wheel loads will remain for long periods of time.

The type and design of permanent pavement used on street and driveway connections shall be shown on the submitted site plan and should provide at least the same structural strength as that of the roadway. Where separate turn lanes and/or tapers are built along paved roadways, the permanent paving should be of the same type and strength as that of the adjacent roadway.

All proposed pavement designs will be reviewed by the Division of Highways on an individual basis and approval will be based upon sound engineering principles.

## **F. *Type of Commercial and Residential Subdivision Access***

A paved driveway turnout (Figure 23) shall be used for commercial and residential subdivision drives that generate 500 vehicle trips or more per day. For commercial and residential subdivision developments that generate fewer than 500 vehicle trips per day, a paved driveway turnout (Figure 22 or Figure 24) may be used.

## **G. *Auxiliary Lane Requirements***

Turn lanes for either or both left and/or right turns into a commercial or residential subdivision driveway may be necessary for safety when there are high roadway and/or turning volumes of traffic, when the roadway speeds are moderate or high, or where needed due to limited sight distance. The final determination for the need, location, and design of turn lanes rests with the Division of Highways.

Left and right turn lanes shall be constructed in accordance with State standards and specifications. Right-turn lanes should generally be constructed entirely within the frontage of the property being served, since an adjacent property owner might subsequently require an entrance that would otherwise come into the turn lane. On an undivided highway or a divided highway with a median width inadequate for a left-turn lane, it may be necessary to widen the highway in order to provide for the turn lane.

Acceleration and deceleration lanes are significant safety features of the highway, especially on rural highways or where sight distances are limited. These auxiliary lanes may be approved where needed and AASHTO warrants are met. The lanes, where approved, shall be constructed in accordance with State standards and specifications.

## H. *Median Crossovers*

Where a divided highway has been constructed with a median, crossovers in the median for new driveways will not be permitted where there are frequent openings for intersections with local streets that form a street network. Left-turn access into the property may therefore need to be by use of entrances to side streets adjacent to the property or from a frontage or service road.

The layout of entrances to a large development should be done in such a manner as to take advantage of existing or preplanned median crossovers. In such cases, the construction of left-turn lanes must be considered.

Requests for median crossovers in conjunction with a street and driveway access permit application will be reviewed on an individual basis and shall be in substantial conformance with the Median Crossover Policy for North Carolina Streets and Highways. The final determination of location, spacing, and design of turn lanes, tapers, storage requirements, radii, surface treatment and traffic controls related to median crossovers shall rest with the state traffic engineer.

## I. *Control Dimensions (See Figures 1 through 5)*

1. *Width of Commercial Driveways (W)* - The width of commercial driveways measured parallel to the edge of traveled way and from edge of pavement to edge of pavement at the narrowest width shall be within the minimum and maximum limits specified. An urban driveway with two-way operations shall have a minimum of 20 feet and a maximum of 36 feet; however, a 50-foot (face to face) maximum drive width may be allowed for driveways serving establishments with special needs for accommodating large trucks. The need for 50-foot driveways will be considered on a case-by-case basis only after a showing of actual necessity. A two-way operation for rural driveways shall be within a minimum width of 20 feet and a maximum width of 50 feet. For one-way operation, a 12-foot minimum and 24-foot maximum apply for both urban and rural locations. These values are based on edge of pavement dimensions not including the width of gutter if a curb-and-gutter section is proposed.
2. *Commercial Driveway Angle (Y)* - The minimum angle of the driveway with respect to the pavement edge shall be as specified and shall follow this angle away from the roadway to the right-of-way line or to a distance of 40 feet from the edge of pavement, whichever is less: Rural and urban commercial driveways with two-way operation (60 degree minimum) and one-way operation (ingress, 45 degree minimum and egress, 60 degree minimum).
3. *Edge Clearance (E)* - All portions of a commercial driveway including the returns shall be between two frontage boundary lines. The edge clearance (E) measured parallel to the edge of pavement from the frontage boundary line to the nearest point on the projected edge of the driveway shall be a minimum of 5 feet (10 feet desirable) in urban areas and 10 feet in rural areas.
4. *Driveway or Island Return, Outside (R), Inside (U)* - At junctions of driveways and streets or highways, the radius must not be greater than the edge clearance (E). The outside radius of the street-type driveway connection (R) shall be within the minimum and maximum limits

specified: Urban (5 feet minimum, 30 feet maximum) and Rural (10 feet minimum, 50 feet maximum). However, the maximum radii dimension may be exceeded if larger radii are needed to accommodate larger vehicles expected to frequent a proposed development (commercial service entrances, service stations being serviced by tanker trucks, truck terminals, etc.). The inside radius (U) of a street-type driveway connection shall be within the same limits as outside radius expected in rural areas where the minimum may be reduced to 10 feet where double driveways are approved with minimum separation or where the driveway angle (Y) is less than 75 degrees.

Driveways located within curb-and-gutter sections can use the standard driveway turnout designs, either the radius type as shown in Figure 22 on page 47 or the drop-curb type as shown in Figure 24 on page 49. These designs are primarily for low-volume developments generating no more than 500 vehicle trips (two-way) per day. If the proposed development will generate vehicle trips in excess of 500 per day, a street-type design should be required, as shown in Figure 23 on page 48.

5. **Right-of-Way Line Returns (J & K)** - The radii returns at the right of way shall not exceed the maximum limits specified: J - 30 feet maximum, K - 10 feet maximum.
6. **Islands Between Driveways, Offset Distance (S)** - Two or more commercial driveways to a single property frontage shall be separated by an island area. The near edge of the island area parallel to the highway shall be located 6 feet from the edge of pavement along uncurbed roadways or at the curb line on curbed roadways, unless specifically instructed by the Division of Highways to be otherwise. Where the island area is less than 30 feet in length or less than 10 feet in width, its shape shall be defined by the use of concrete curb, masonry, or other devices, approved on an individual basis, to restrict the path of vehicles using the driveways. All island areas shall be delineated by accepted traffic-control devices.
7. **Distance Between Drive (D)** - The minimum distance between drives shall be as specified: Double driveways, 20 feet; more than two drives per property frontage, 100 feet; high volume traffic generators, 400 feet.
8. **Set Backs (G)** - Set backs of gasoline pump islands shall be a minimum of 12 feet outside the highway right-of-way.

Buildings or other installations with one row of 90-degree parking between it and the highway right of way should be at least 40 feet outside the right of way. See vehicle storage space requirements in the site requirements section.

9. **Corner Clearance (C)** - The minimum corner clearance from the curb line or edge of pavement of intersecting streets shall be at least 20 feet from the point of tangency of the radius curvature or 20 feet from the intersection of right-of-way lines, whichever is greater. Where the radius curvature of intersecting streets exceeds 30 feet, the minimum corner clearance of 20 feet from the point of tangency may be reduced by an equal difference. The radius of the driveway shall not encroach on the minimum corner clearance.

At all signalized intersections, the minimum corner clearance may be increased as deemed necessary to avoid interference with the traffic signal operations.

## DEFINITIONS

In the interpretation of the Policy on Street and Driveway Access to North Carolina Highways, the word "shall" is to be interpreted as being mandatory. Where certain requirements in the design or construction of access provisions are described with the "shall" stipulation, it is mandatory that these requirements be met. The word "should" is to be interpreted as being the recommendation of the Division of Highways and, where indicated, denotes a factor or principle to be considered by the applicant before a permit is issued. The word "may" is to be interpreted as being a permissive condition. No requirement for design and application is intended.

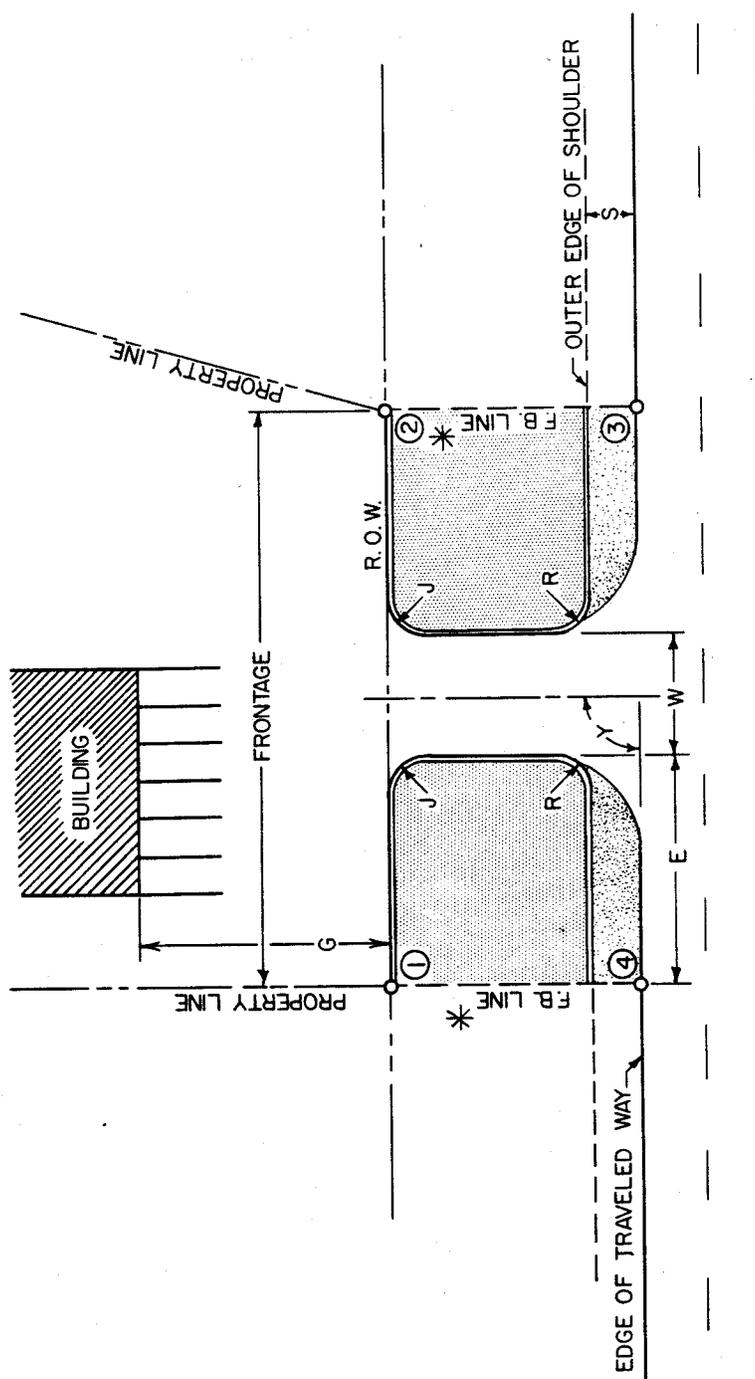
The following words, for the purpose of this Policy, shall have the following meanings ascribed to them.

1. **Access** - Ingress and egress to land fronting on the State Highway System.
2. **Auxiliary Lane** - The portion of the roadway adjoining the traveled way for speed change, turning, storage for turning, weaving, truck climbing or for other purposes.
3. **Breakover Angle** - The difference between the cross slope of the travelway and the slope of the driveway.
4. **Commercial Driveway** - A driveway serving a commercial establishment, industry, governmental or educational institution, business, public establishment, or other comparable traffic generator. (This classification includes single family residential streets, where required by the District Engineer.)
5. **Control of Access** - The condition in which the right of owners or occupants of abutting land or other persons to access, light, air, or view in connection with a highway is fully or partially controlled by public authority.
6. **Corner Clearance (C)** - At an intersecting street or highway, the distance measured from the edge of the pavement curb line or the intersection of the right-of-way lines to the beginning of outsidedriveway radius; C in Figures 3, 4, & 5.
7. **Distance Between Drives (D)** - The distance measured along the right-of-way line between the tangent projections of the inside edges of adjacent driveways to the same frontage: D in Figures 2 & 3.
8. **Driveway** - Every entrance and/or exit to serve vehicular traffic to or from property fronting the State Highway System.
9. **Driveway Angle (Y)** - The angle between the driveway centerline and the edge of traveled way; Y in Figures 1 through 5.
10. **Driveway or Island Returns (R & U)** - Outside (R), the outside or larger curve radius on the edge of driveway, used where Y is 75 degrees or larger; R in Figures 1 through 5. Inside (U), the inside or smaller curve radius on the edge of driveway, used where Y is 75 degrees; U in Figures 2 through 5.

11. **Driveway Width (W)** - The narrowest width of driveway measured parallel with the edge of traveled way; W in Figure 1 through 5.
12. **Edge Clearance (E)** - The distance measured along the edge of the traveled way between the frontage boundary line and the tangent projection of the nearest edge of the driveway; E in Figures 1 through 5.
13. **Frontage** - The length along the highway right-of-way line of a single property tract or roadside development area between the edges of the property at a highway intersection has a separate frontage along each roadway.
14. **Frontage Boundary Line (F. B. Line)** - A line, perpendicular to the highway centerline, at each end of the frontage, extending from the right-of-way line to the edge of the through traffic lane; line between points (1) and (4) or (2) and (3) in Figures 1 and 2.
15. **Intersection Returns** - The radius of the edge of pavement between intersecting streets or highways; segment 1-2 in Figure 3.
16. **Island Area** - An area adjacent to the roadway which serves as a physical barrier to direct the flow of traffic and to separate highway traffic from the activity on private property.
17. **Offset Distance (S)** - Distance between the edge of pavement and the near edge of an island area parallel to the highway.
18. **Private Residential Driveway** - A driveway connecting to a State-maintained street or highway to provide entrance to and/or exit from a private residential dwelling for the exclusive use and benefit of those residing within.
19. **Residential Subdivision Driveway** - A driveway connecting to a State-maintained street or highway to provide entrance to and/or exit from residential subdivisions, apartment complexes, mobile home parks and condominiums.
20. **Right-of-Way** - The land within legally defined property boundaries whose title vests in the State and is designated or intended for highway purposes.
21. **Right-of-Way Line Returns (J & K)** - J, the larger radius return at the right-of-way line; J in Figures 1 through 5. K, the smaller radius return at the right-of-way line; K in Figures 2 through 5.
22. **Rural Area** - All territory which is not urban as defined herein.
23. **Set Back (G)** - The lateral distance between the right-of-way line and gasoline pump curb base, display stand, building, or other fixed object, the use of which will result in space for vehicles to stop or park between such facilities and the right-of-way line; G in Figures 1 through 5.
24. **Shopping Center** - A development with more than one commercial or service establishment planned or constructed.

25. **Storage Area** - Space used by queuing vehicles while being served or until service begins.
26. **Traveled Way** - That portion of the right-of-way which is originally available and open to the public for vehicular travel.
27. **Trip** - A single or one direction vehicle movement with either the origin or destination inside the site.
28. **Urban Area** - Territory generally within an incorporated area or with frontage on a highway which is at least fifty percent built-up with structures devoted to business, industry, or dwelling houses for a distance of a quarter of a mile or more.

\* NOTE: F. B. LINE = FRONTAGE BOUNDARY LINE

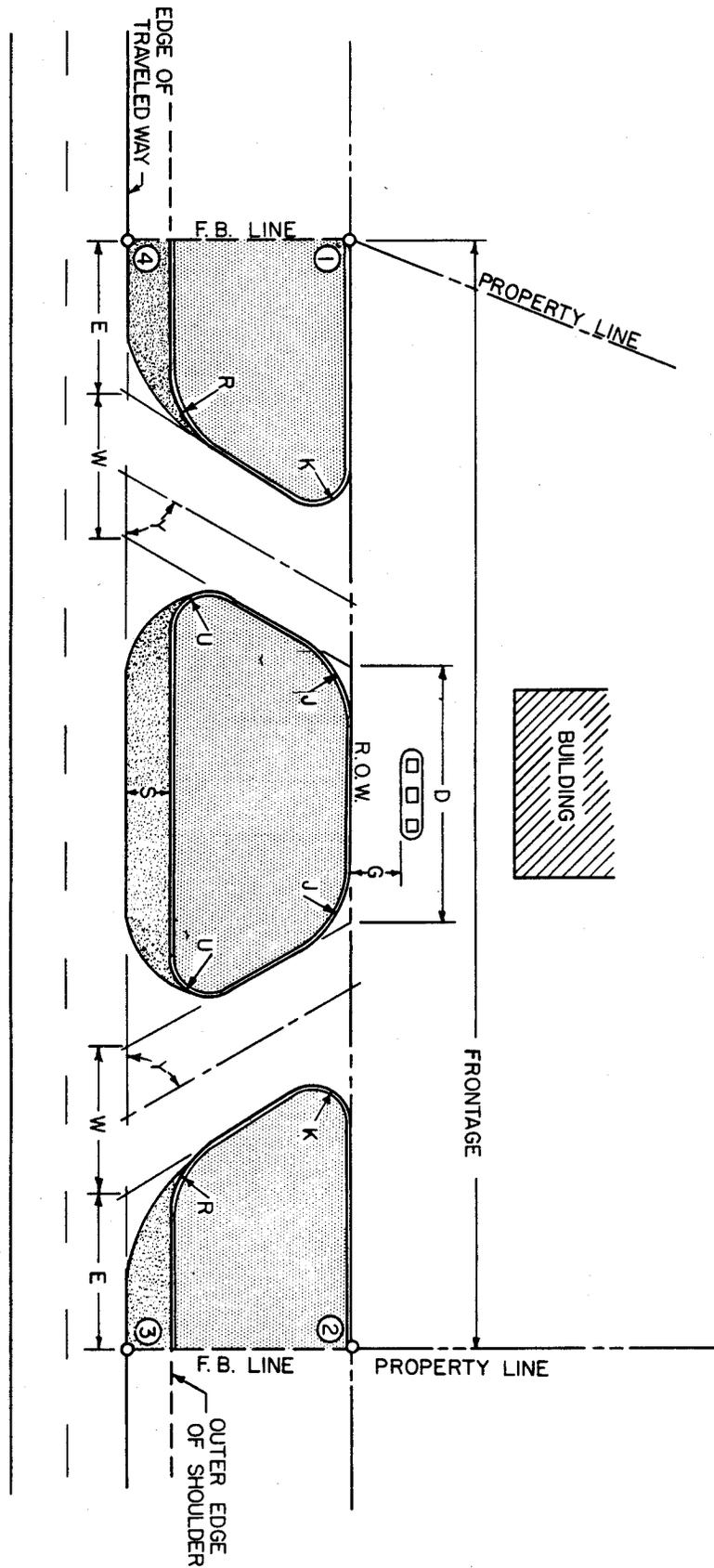


SINGLE DRIVEWAY - DIAGRAMMATIC  
FOR ILLUSTRATING DEFINITIONS

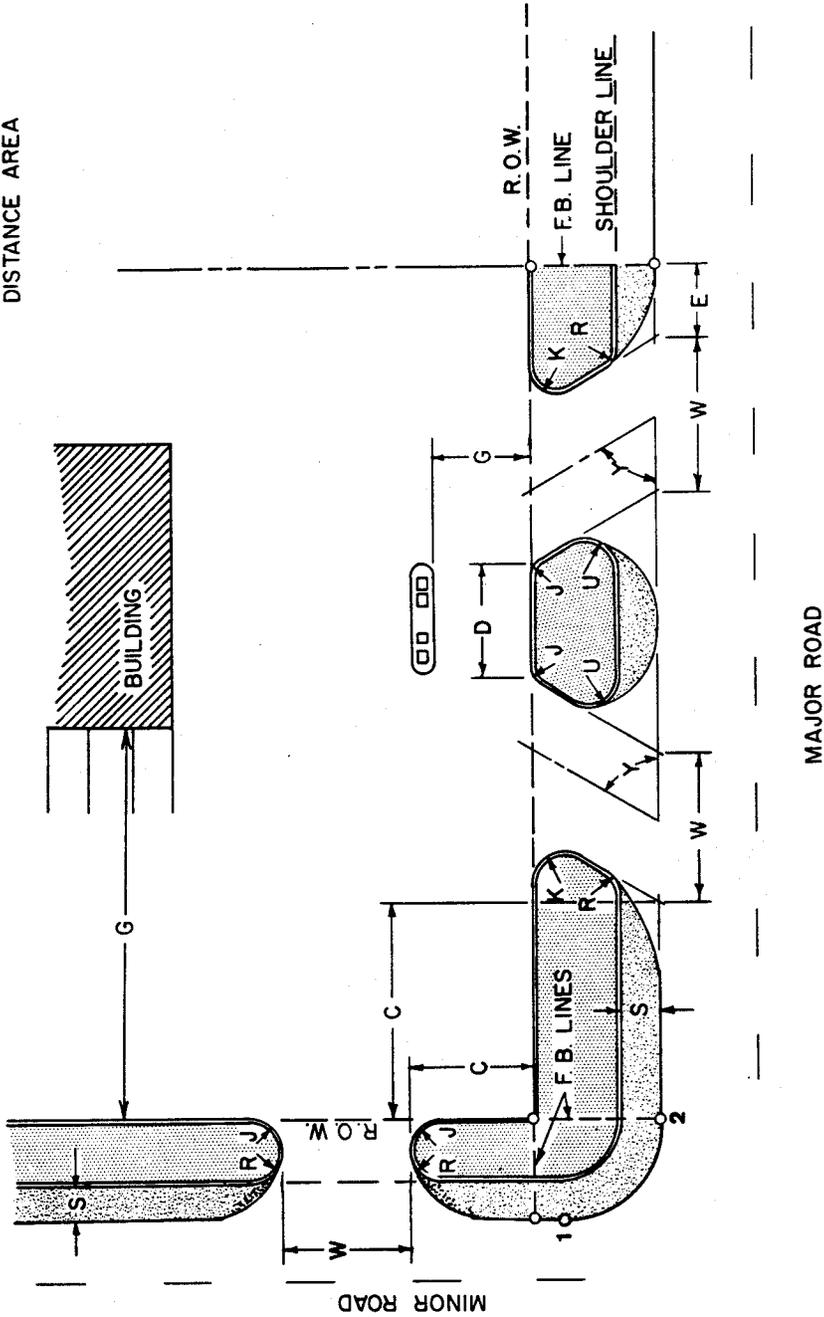
FIGURE 1

DOUBLE DRIVEWAYS – DIAGRAMMATIC  
FOR ILLUSTRATING DEFINITIONS

FIGURE 2



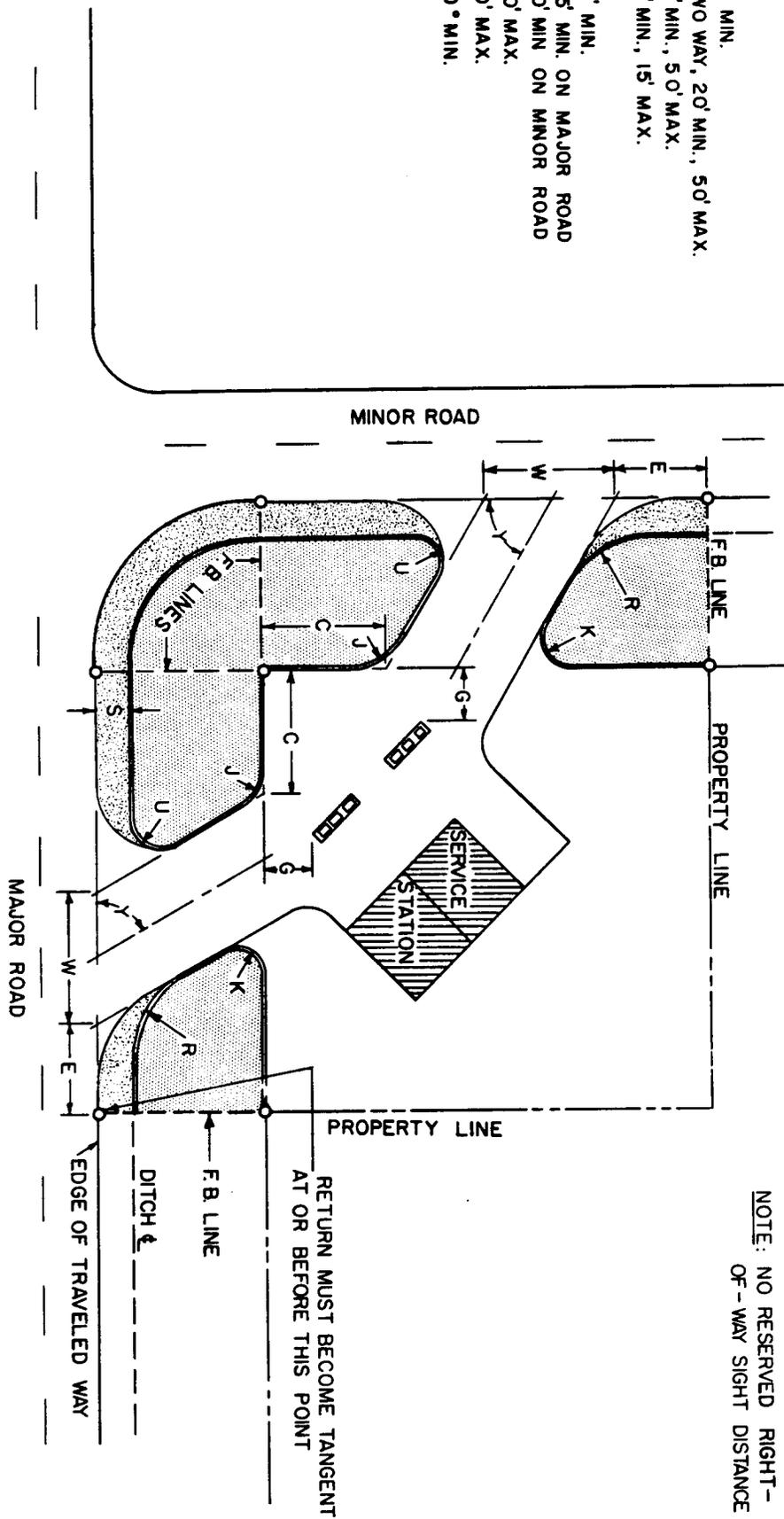
NOTE: NO RESERVED SIGHT  
DISTANCE AREA



DOUBLE DRIVEWAYS TO A CORNER INSTALLATION - DIAGRAMMATIC  
FOR ILLUSTRATING DEFINITIONS

FIGURE 3

- E - 10' MIN.
- W - TWO WAY, 20' MIN., 50' MAX.
- R - 10' MIN., 50' MAX.
- U - 10' MIN., 15' MAX.
- S - 6'
- G - 12' MIN.
- C - 25' MIN. ON MAJOR ROAD  
20' MIN. ON MINOR ROAD
- J - 30' MAX.
- K - 10' MAX.
- Y - 60° MIN.

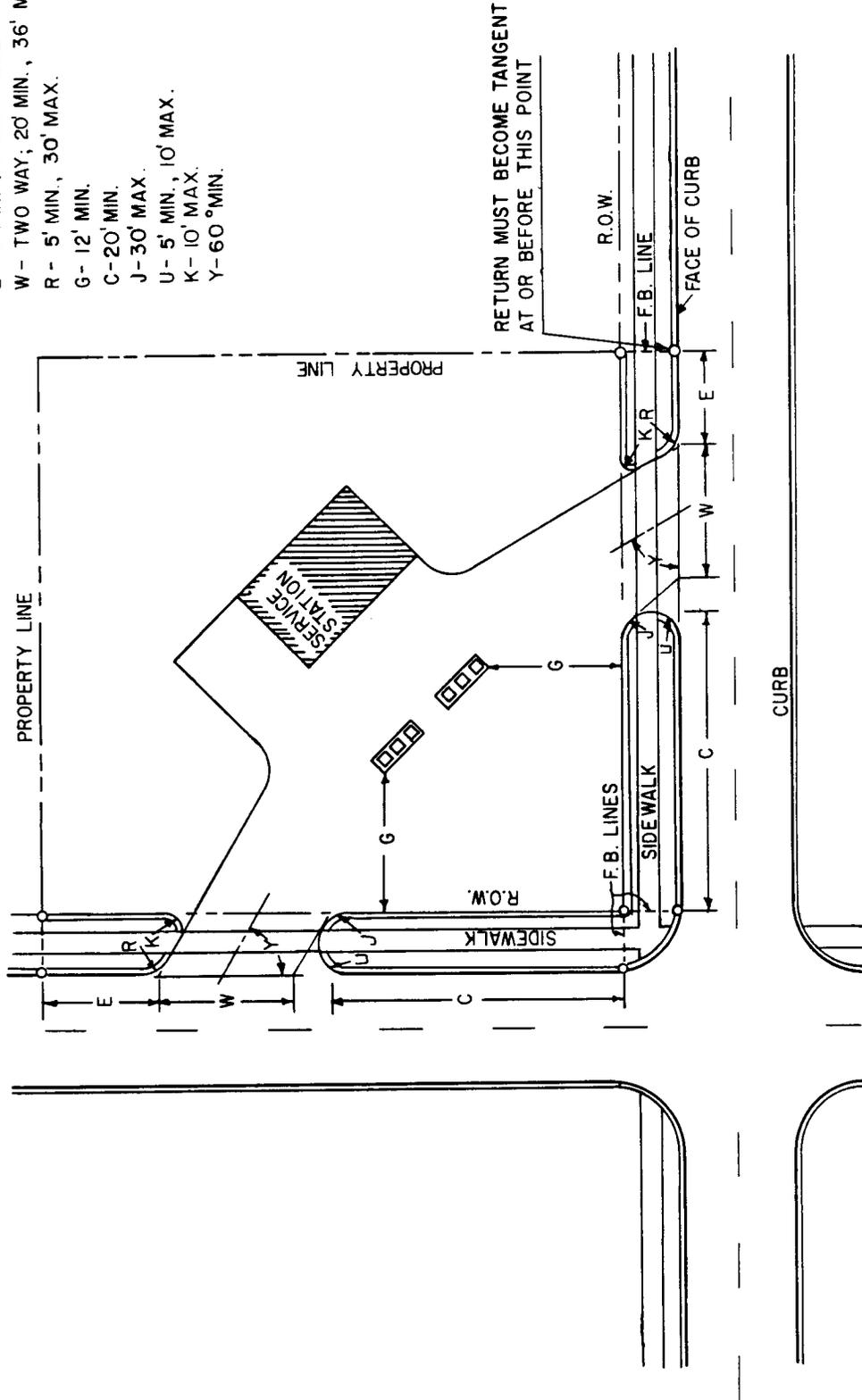


NOTE: NO RESERVED RIGHT-  
OF-WAY SIGHT DISTANCE

SINGLE DRIVEWAYS TO A CORNER SERVICE STATION - RURAL

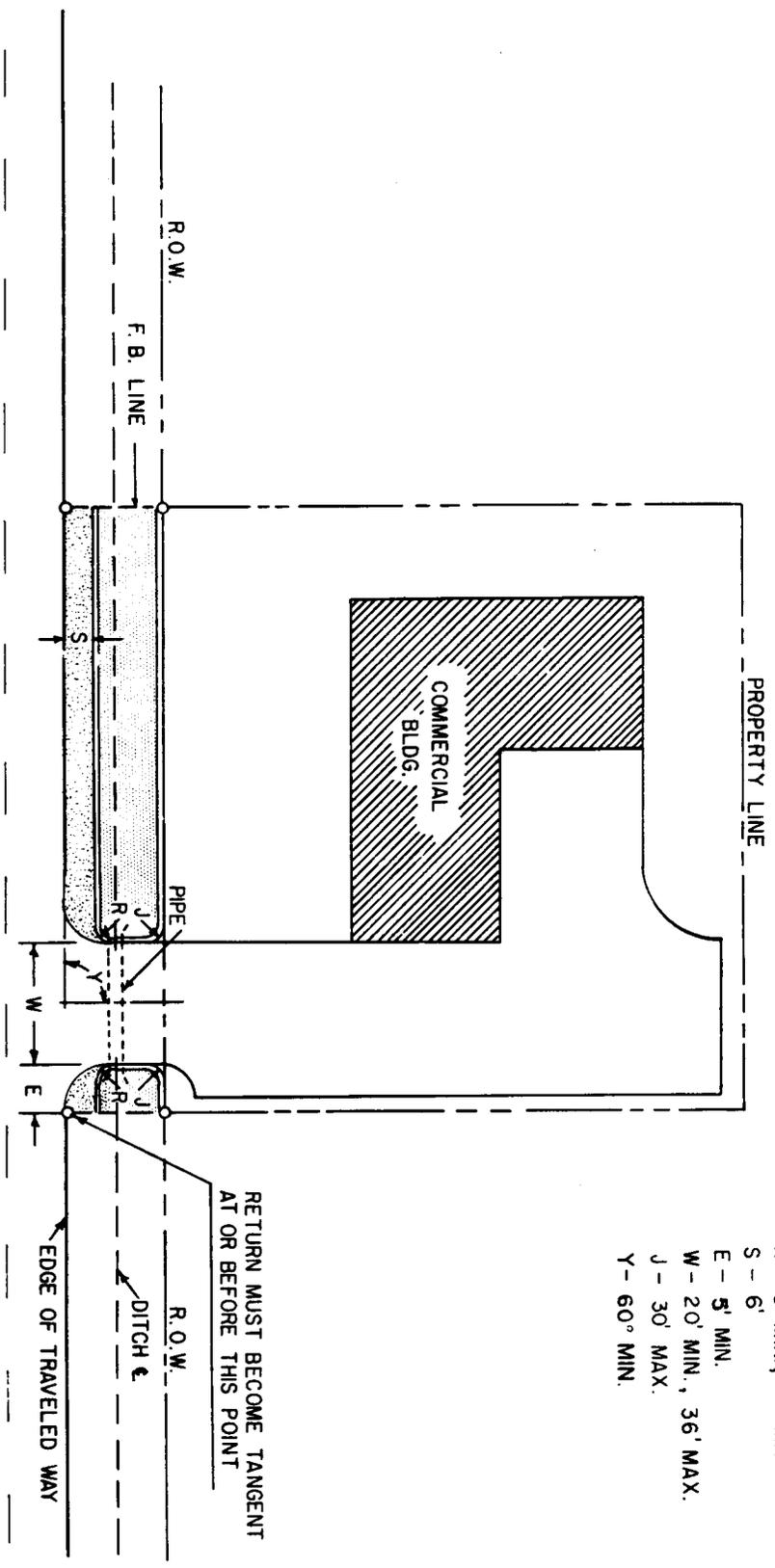
FIGURE 4

- E - 5' MIN. (10' DESIRABLE)
- W - TWO WAY; 20' MIN., 36' MAX.
- R - 5' MIN., 30' MAX.
- G - 12' MIN.
- C - 20' MIN.
- J - 30' MAX.
- U - 5' MIN., 10' MAX.
- K - 10' MAX.
- Y - 60° MIN.



SINGLE DRIVEWAYS TO A CORNER SERVICE STATION - URBAN - CURBED

FIGURE 5

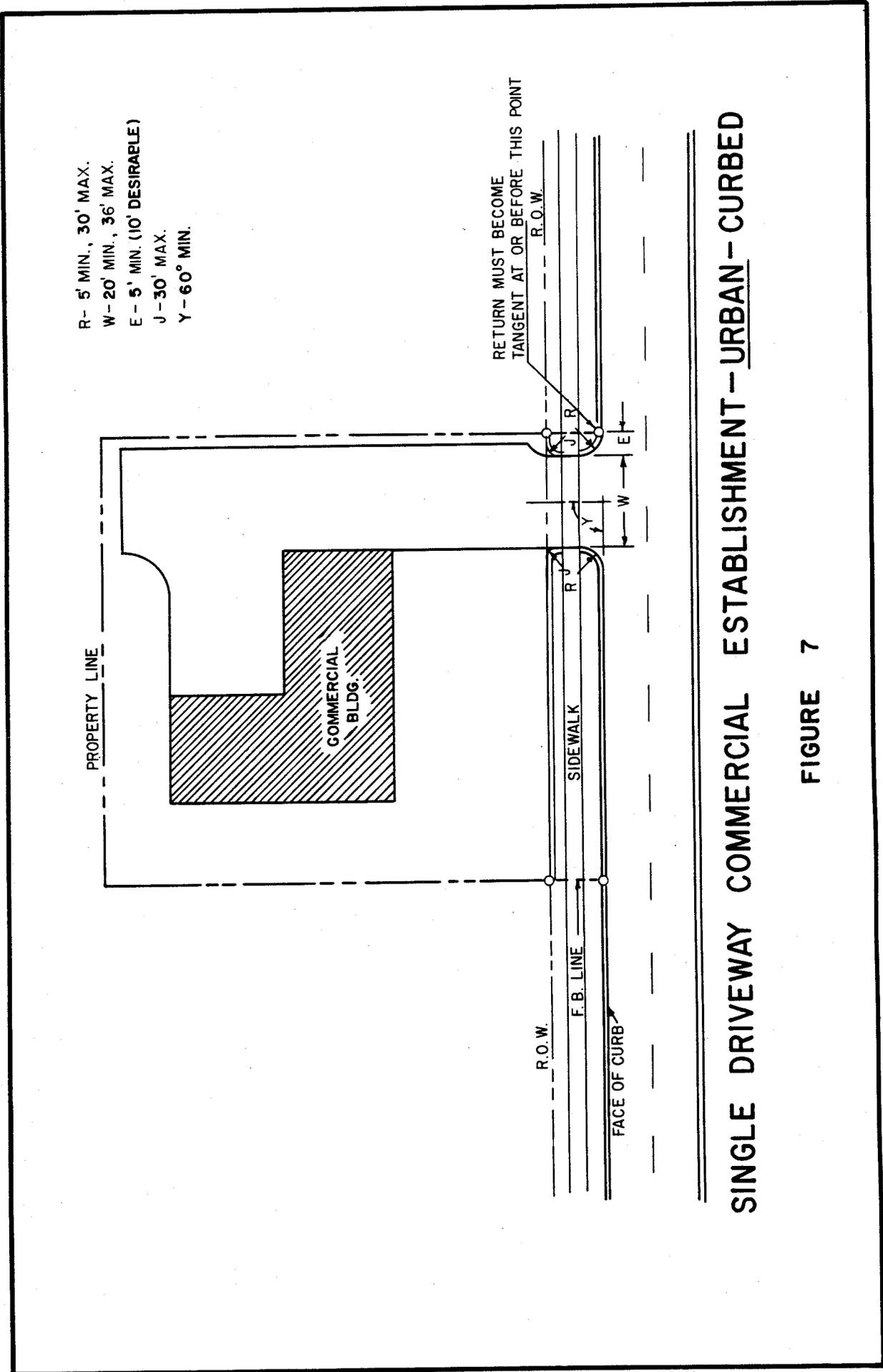


- R - 5' MIN., 30' MAX.
- S - 6'
- E - 5' MIN.
- W - 20' MIN., 36' MAX.
- J - 30' MAX.
- Y - 60° MIN.

RETURN MUST BECOME TANGENT AT OR BEFORE THIS POINT

SINGLE DRIVEWAY COMMERCIAL ESTABLISHMENT - URBAN - OPEN DITCH

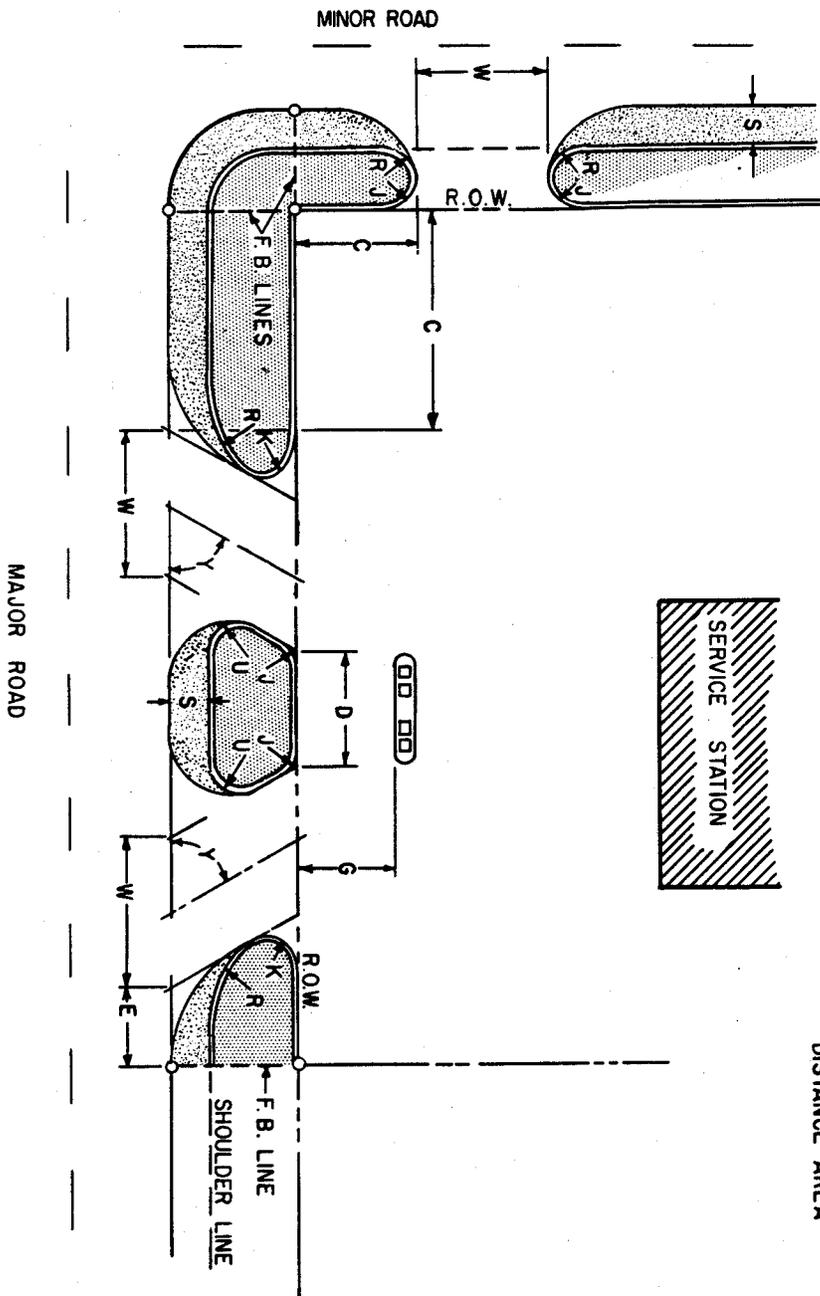
FIGURE 6



**SINGLE DRIVEWAY COMMERCIAL ESTABLISHMENT - URBAN - CURBED**

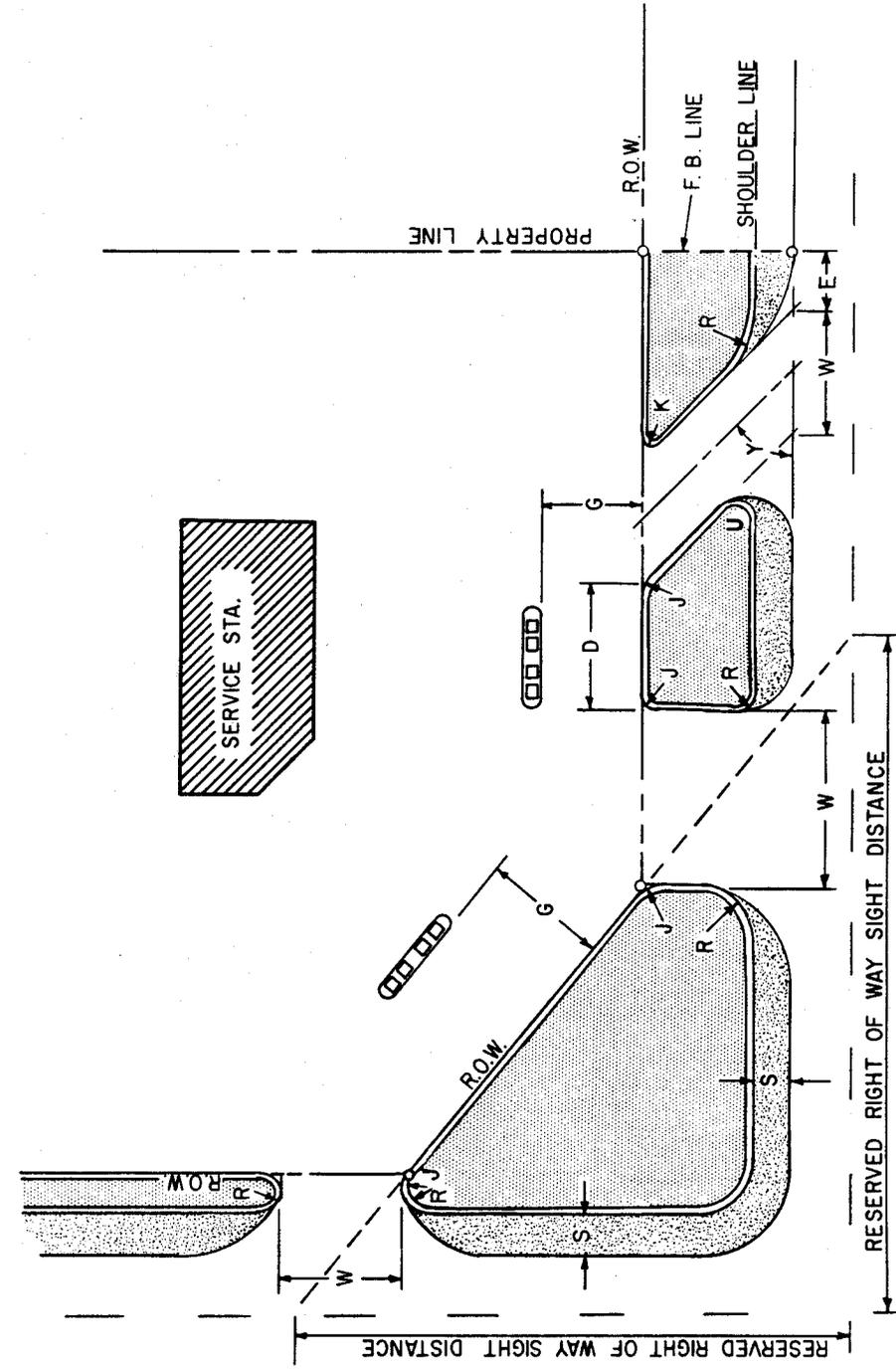
**FIGURE 7**

E	-	10'	MIN.			
W	-	ONE WAY:	12'	MIN.,	24'	MAX.
		TWO WAY:	20'	MIN.,	50'	MAX.
R	-	10'	MIN.,	50'	MAX.	
D	-	20'	MIN.			
S	-	6'				
G	-	12'	MIN.			
C	-	25'	MIN.	ON MAJOR ROAD		
		20'	MIN.	ON MINOR ROAD		
U	-	10'	MIN.,	15'	MAX.	
J	-	30'	MAX.			
K	-	10'	MAX.			
Y	-	60°	MIN.			



DOUBLE DRIVEWAYS TO A CORNER SERVICE STATION - RURAL

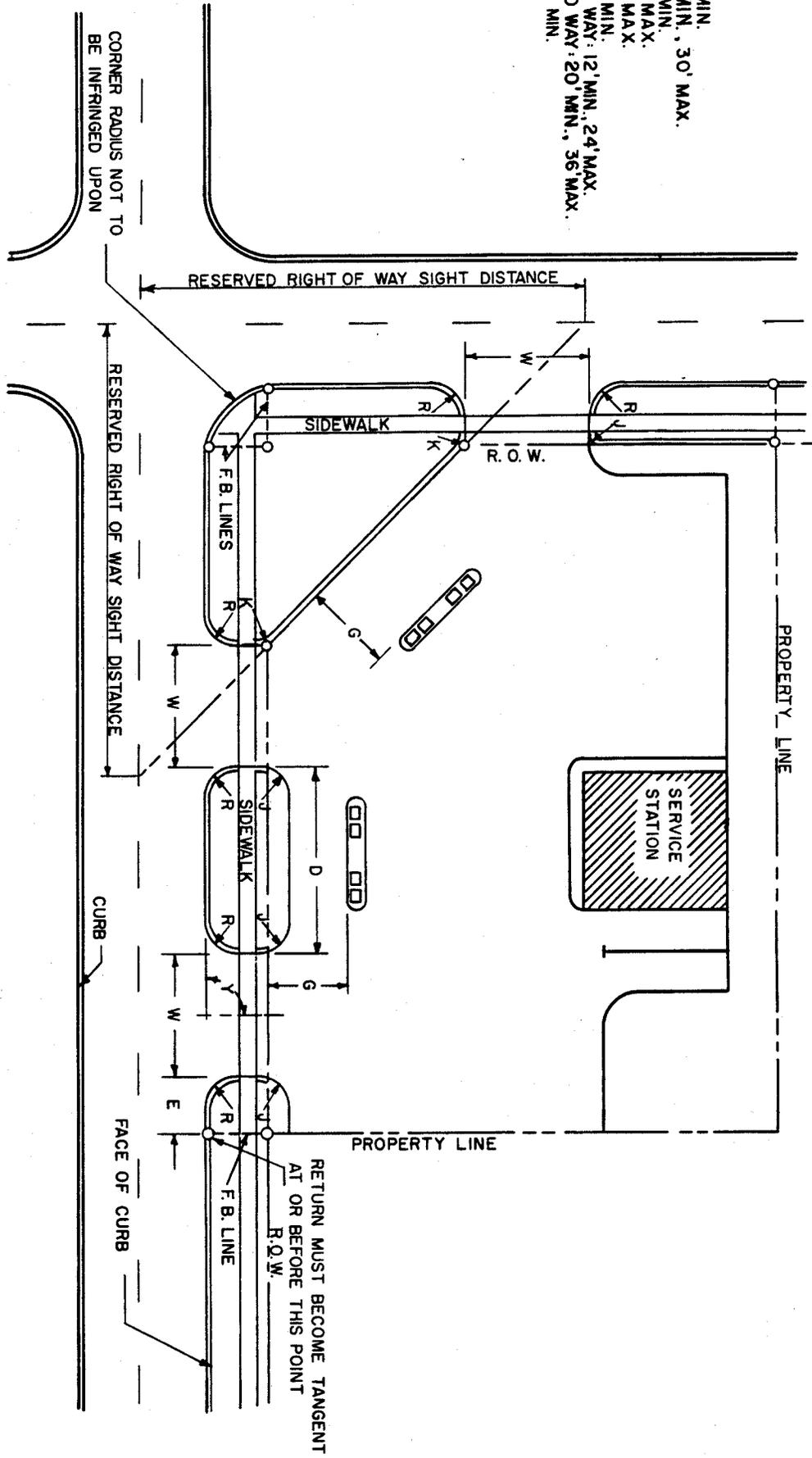
FIGURE 8



- E - 10' MIN.
- W - ONE WAY; 12' MIN., 24' MAX.  
TWO WAY; 20' MIN., 50' MAX.
- R - 10' MIN., 50' MAX.
- D - 20' MIN.
- S - 6'
- G - 12' MIN.
- U - 10' MIN., 15' MAX.
- J - 30' MAX.
- K - 10' MAX.
- Y - 60° MIN.

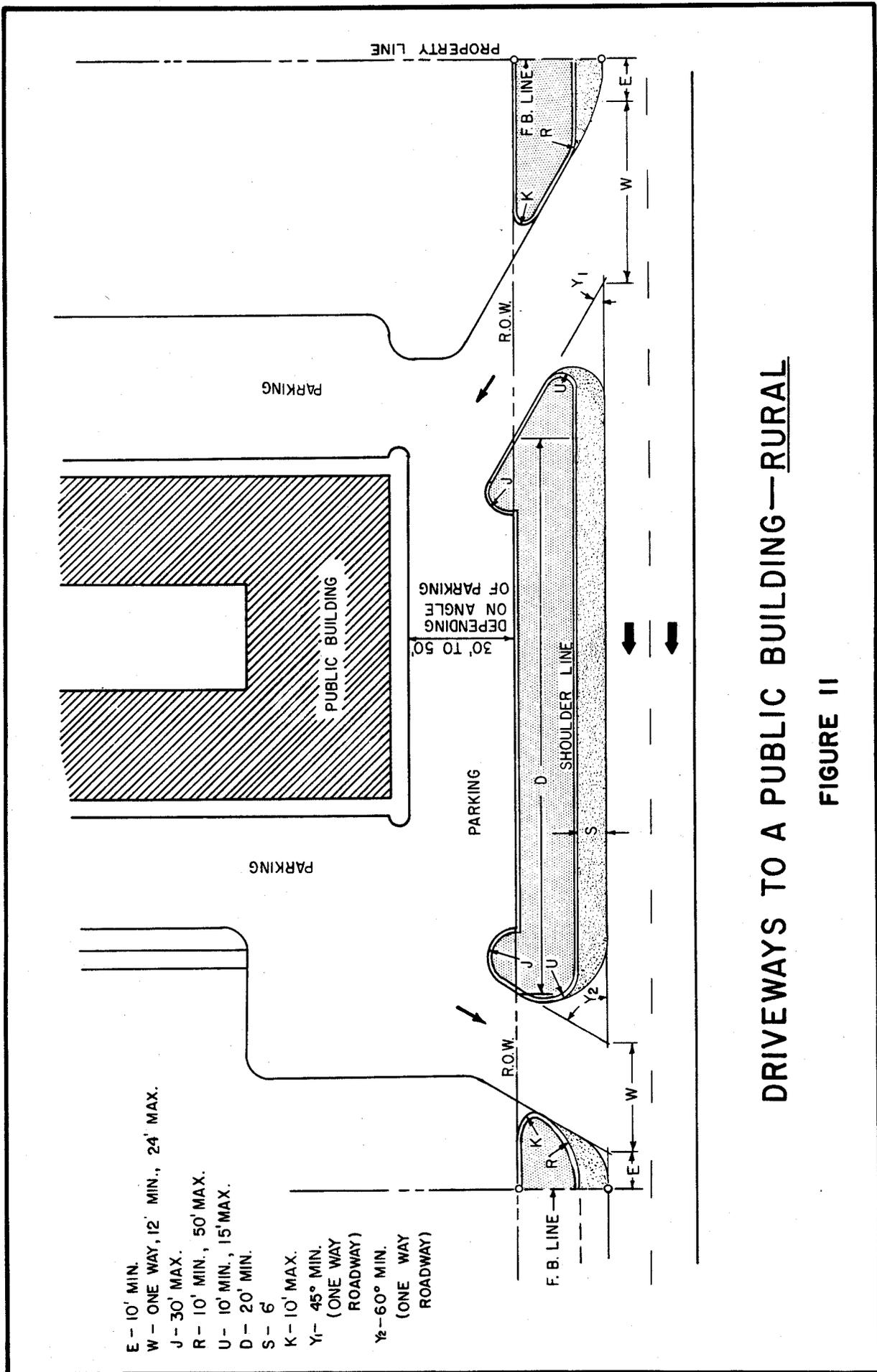
**DOUBLE DRIVEWAYS TO A CORNER SERVICE STATION - RURAL**  
**RESERVED SIGHT DISTANCE AREA**  
**FIGURE 9**

- E - 5' MIN.
- R - 5' MIN., 30' MAX.
- G - 12' MIN.
- J - 30' MAX.
- K - 10' MAX.
- D - 20' MIN.
- W - ONE WAY: 12' MIN., 24' MAX.  
TWO WAY: 20' MIN., 36' MAX.
- Y - 60° MIN.



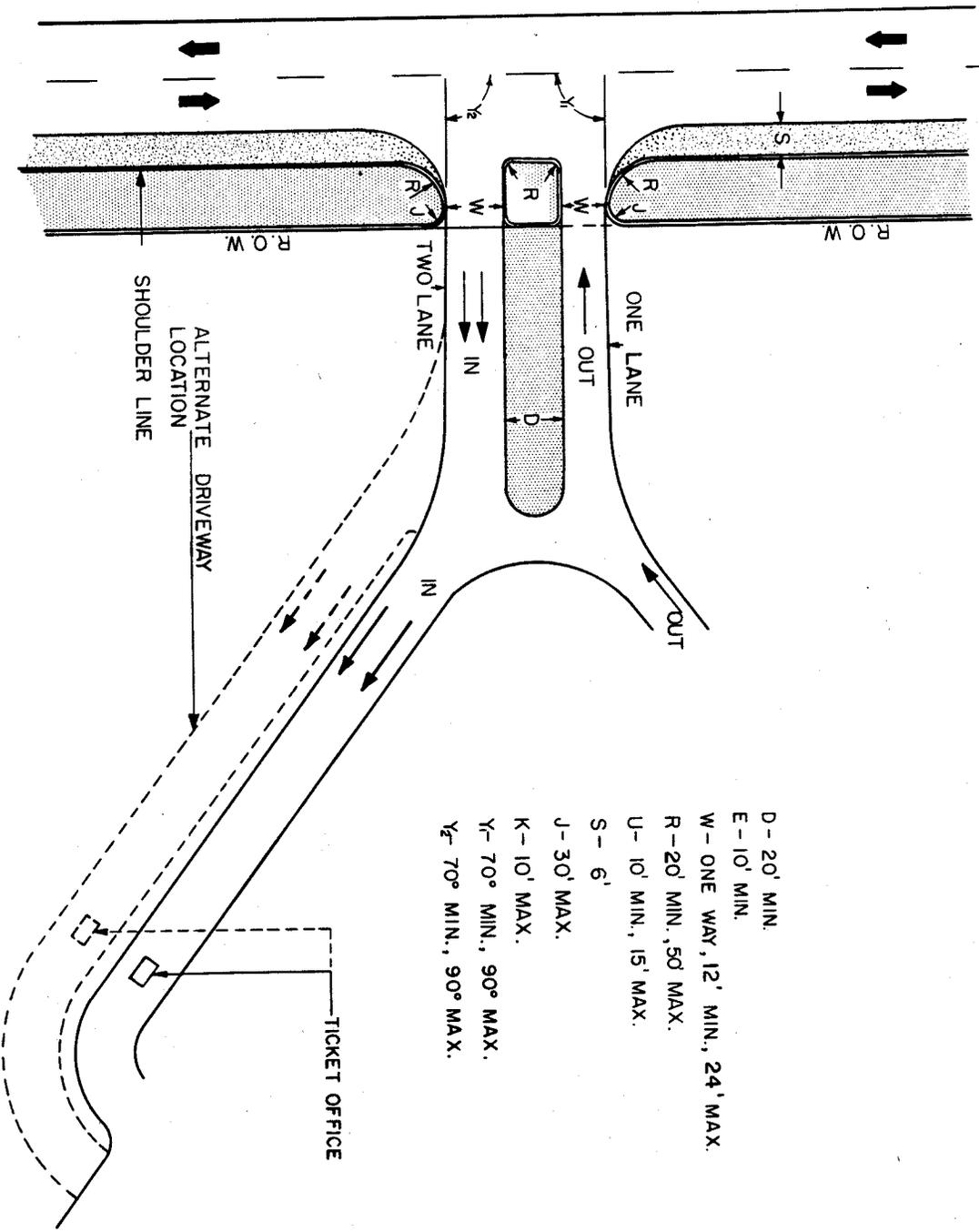
**DOUBLE DRIVEWAYS TO A CORNER SERVICE STATION - URBAN**  
RESERVED SIGHT DISTANCE AREA

FIGURE 10



- E - 10' MIN.
- W - ONE WAY, 12' MIN., 24' MAX.
- J - 30' MAX.
- R - 10' MIN., 50' MAX.
- U - 10' MIN., 15' MAX.
- D - 20' MIN.
- S - 6'
- K - 10' MAX.
- Y<sub>1</sub> - 45° MIN.  
(ONE WAY ROADWAY)
- Y<sub>2</sub> - 60° MIN.  
(ONE WAY ROADWAY)

**DRIVEWAYS TO A PUBLIC BUILDING—RURAL**  
**FIGURE 11**



DRIVEWAY FOR DRIVE-IN THEATER - RURAL

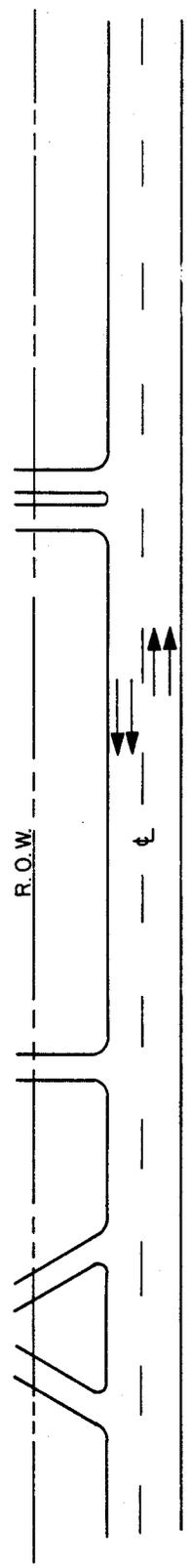
FIGURE 12

R.O.W.

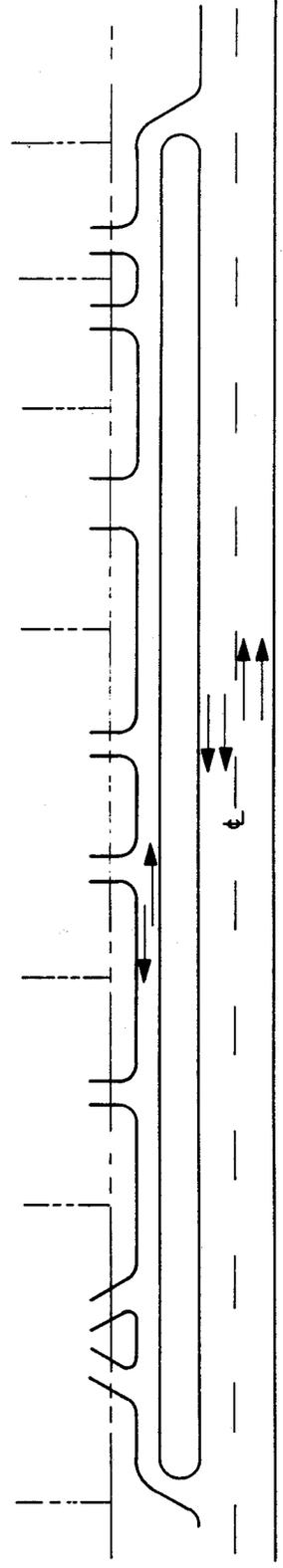
R.O.W.



STAGE 1 - ROADSIDE UNDEVELOPED



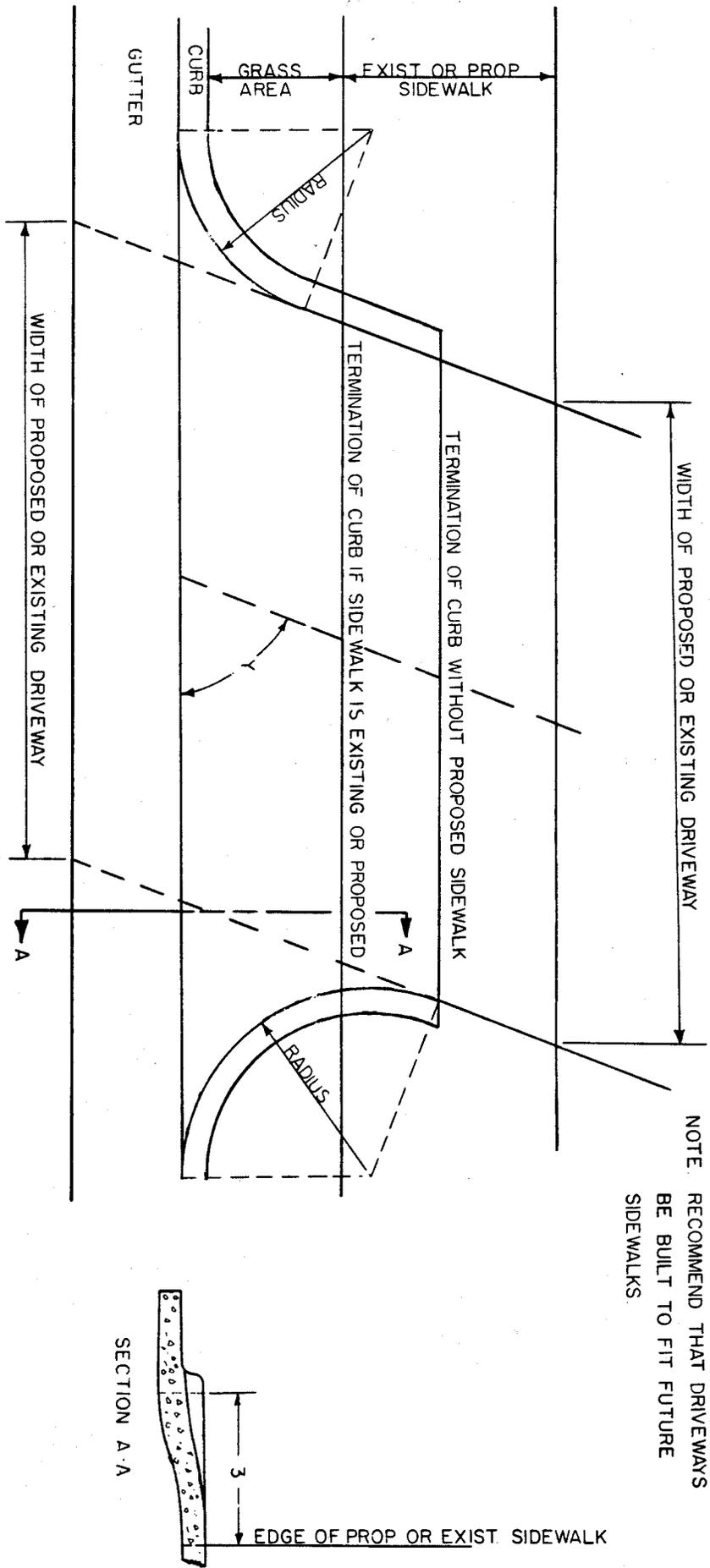
STAGE 2 - ROADSIDE PARTIALLY DEVELOPED  
LIMITED NUMBER OF DRIVEWAYS



STAGE 3 - FRONTAGE ROAD PROVIDED  
DIRECT DRIVEWAY CONNECTIONS ELIMINATED

**DRIVEWAY GROUPINGS WITH FRONTAGE ROAD - RURAL**

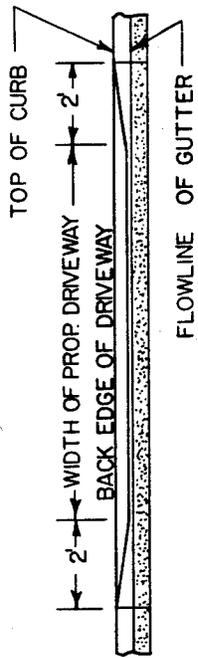
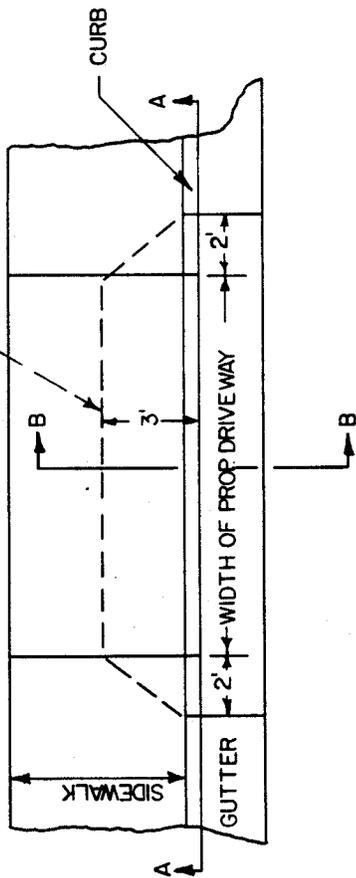
**FIGURE 13**



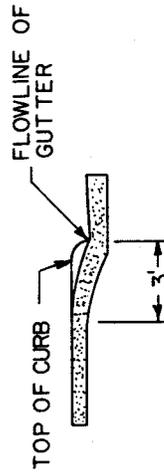
LAYOUT FOR CURBED DRIVEWAY ENTRANCES

FIGURE 14

TERMINATION LINE OF DRIVEWAY ENTRANCE  
IF SIDEWALK IS NOT PROPOSED



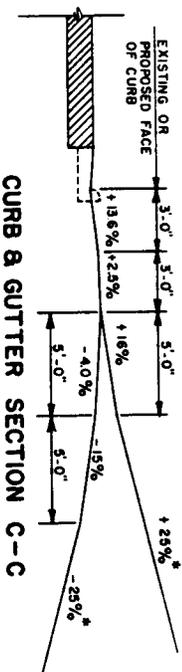
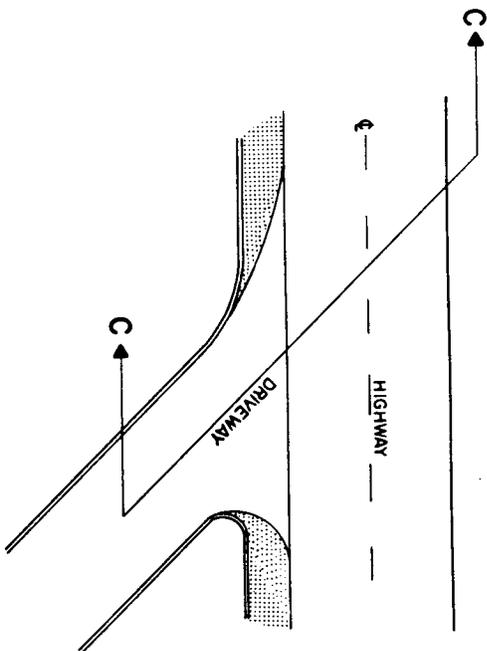
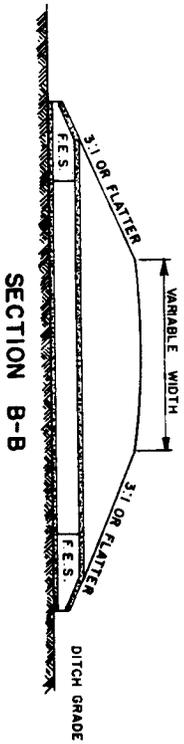
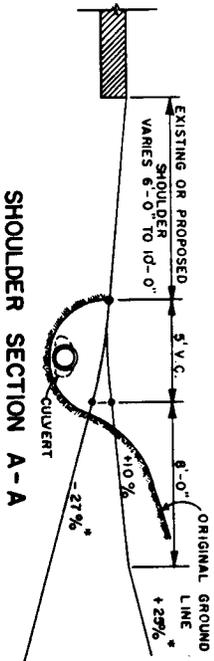
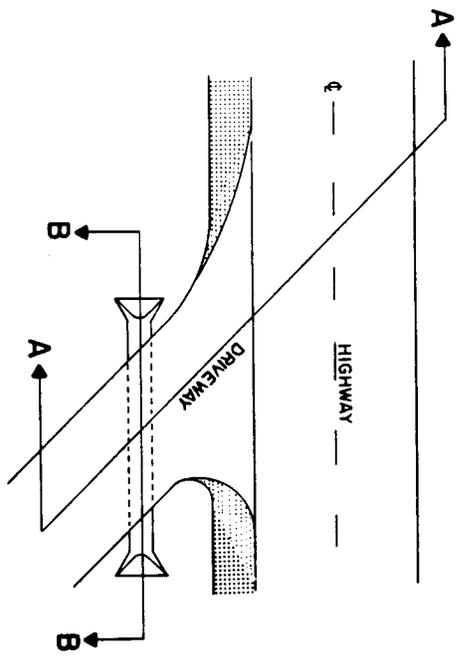
SECTION A-A



SECTION B-B

## DROP CURB DESIGN

FIGURE 15



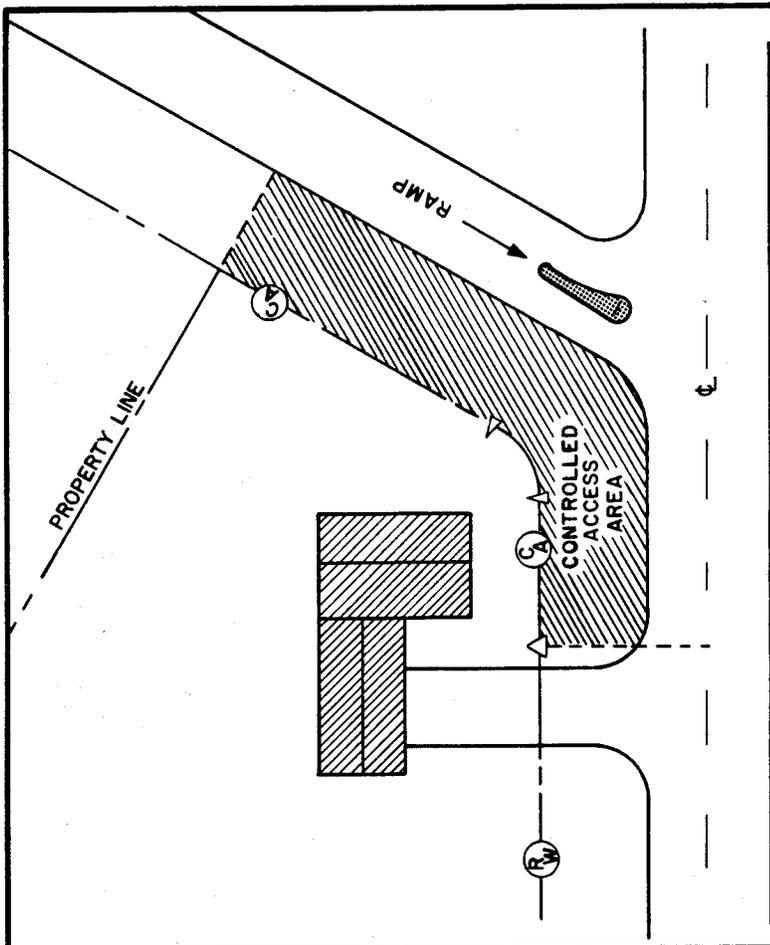
\* MAXIMUM LIMIT FOR VEHICULAR CLEARANCE, ±1.5% DESIRABLE MAXIMUM.

**LEGEND**

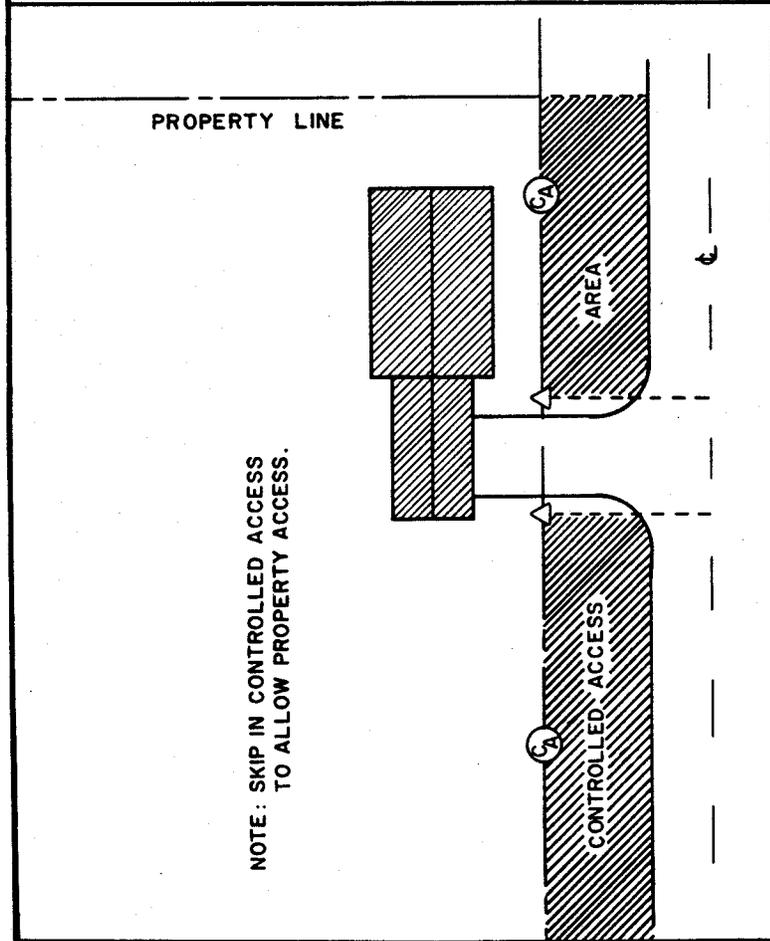
V.C. = VERTICAL CURVE  
 SLOPE (%) =  $\frac{\text{CHANGE IN ELEVATION}}{\text{HORIZONTAL DISTANCE}} \times 100$

**SLOPE AND DRAINAGE REQUIREMENTS**

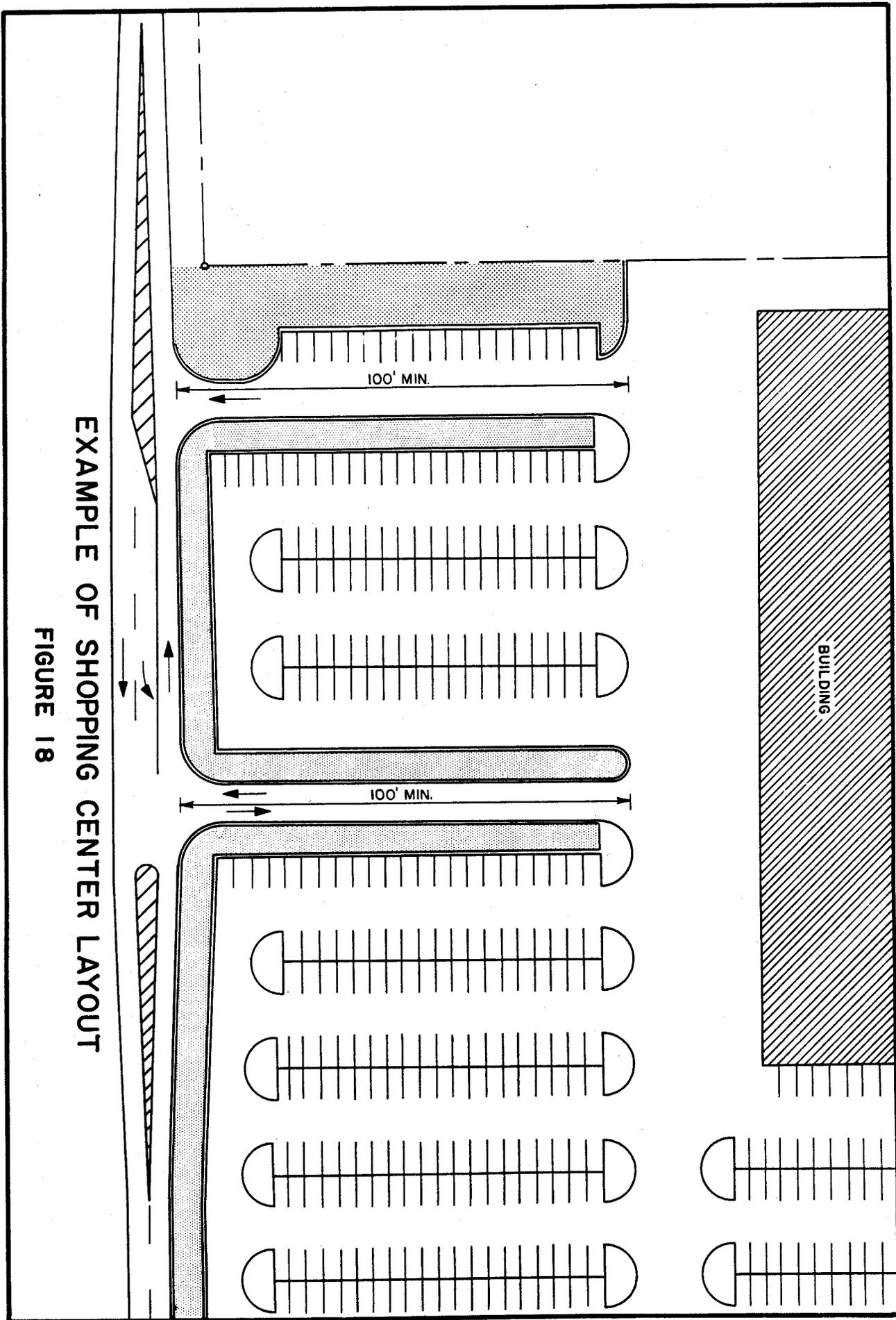
FIGURE 16



CONTROLLED ACCESS AREA  
FIGURE 17

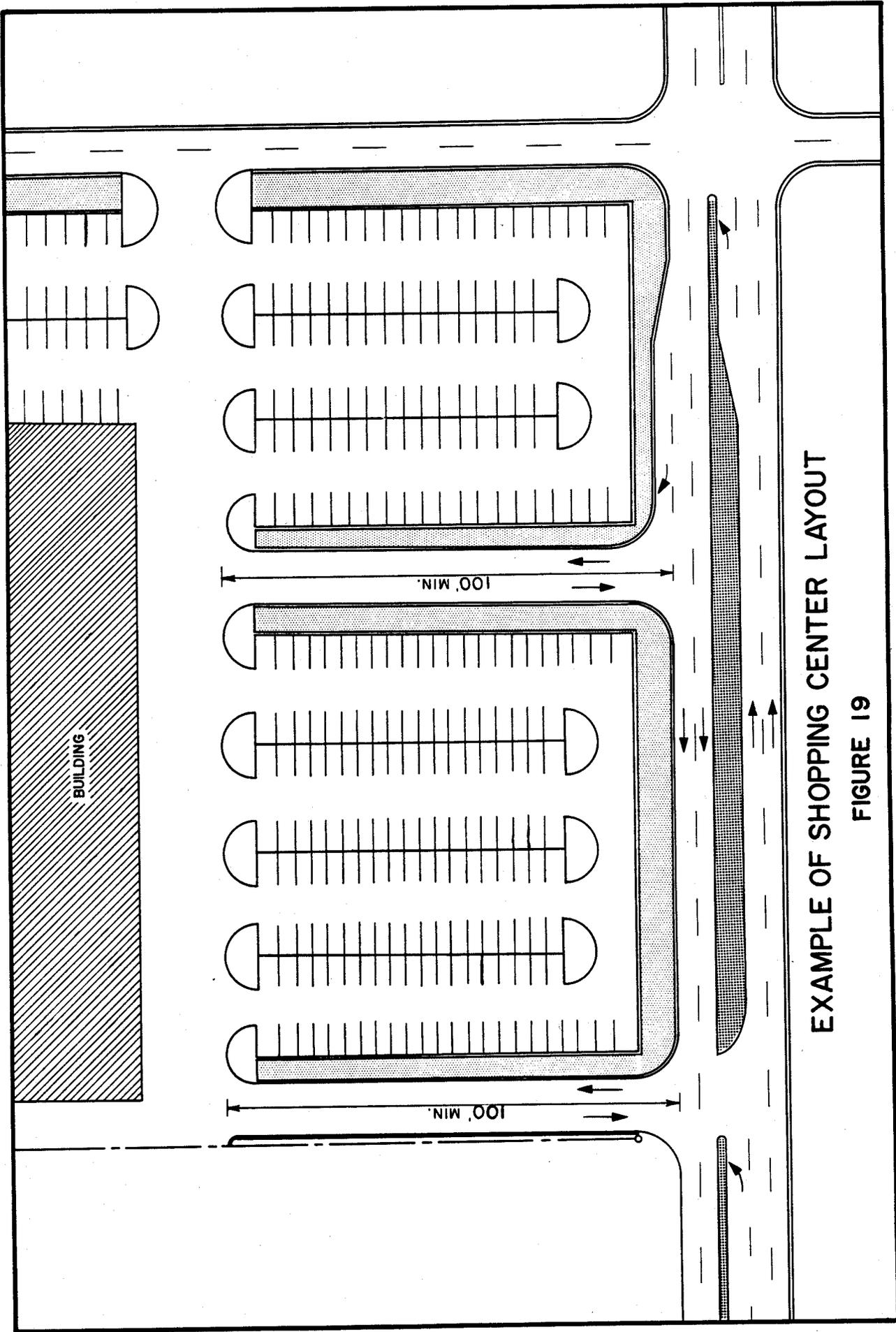


CONTROLLED ACCESS AREA  
FIGURE 17



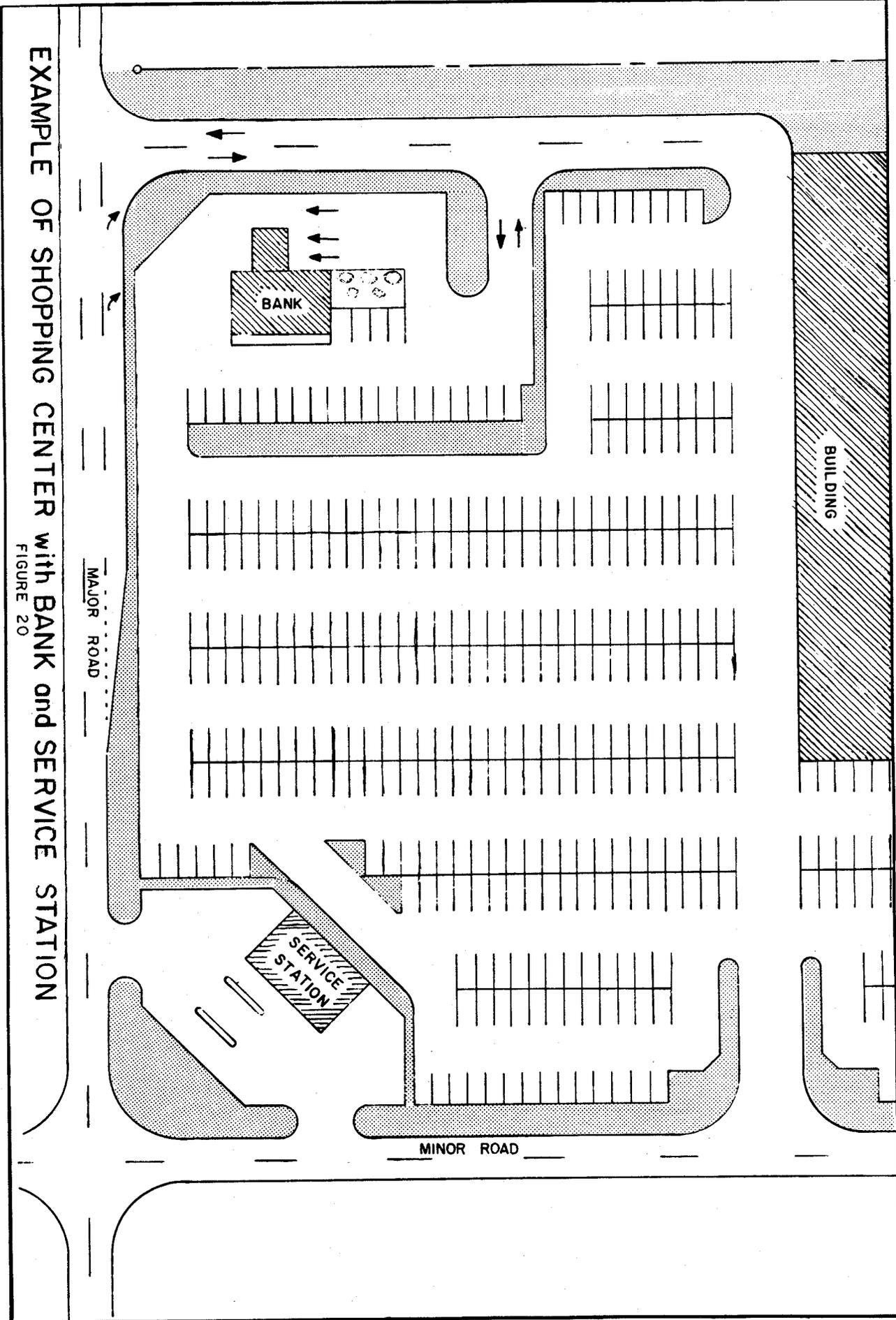
EXAMPLE OF SHOPPING CENTER LAYOUT

FIGURE 18



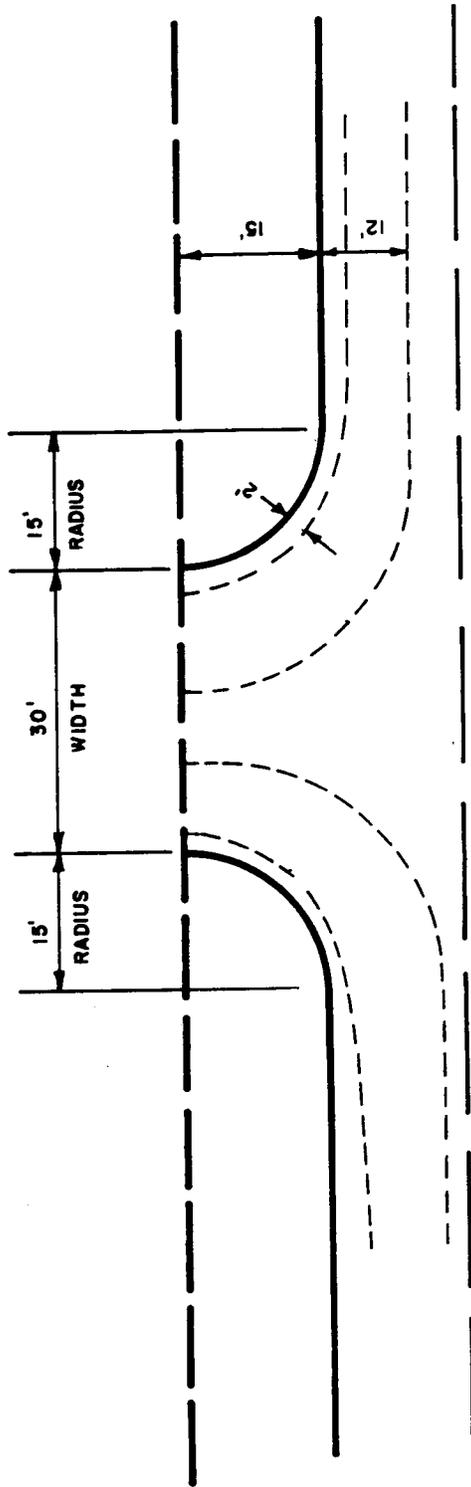
EXAMPLE OF SHOPPING CENTER LAYOUT

FIGURE 19



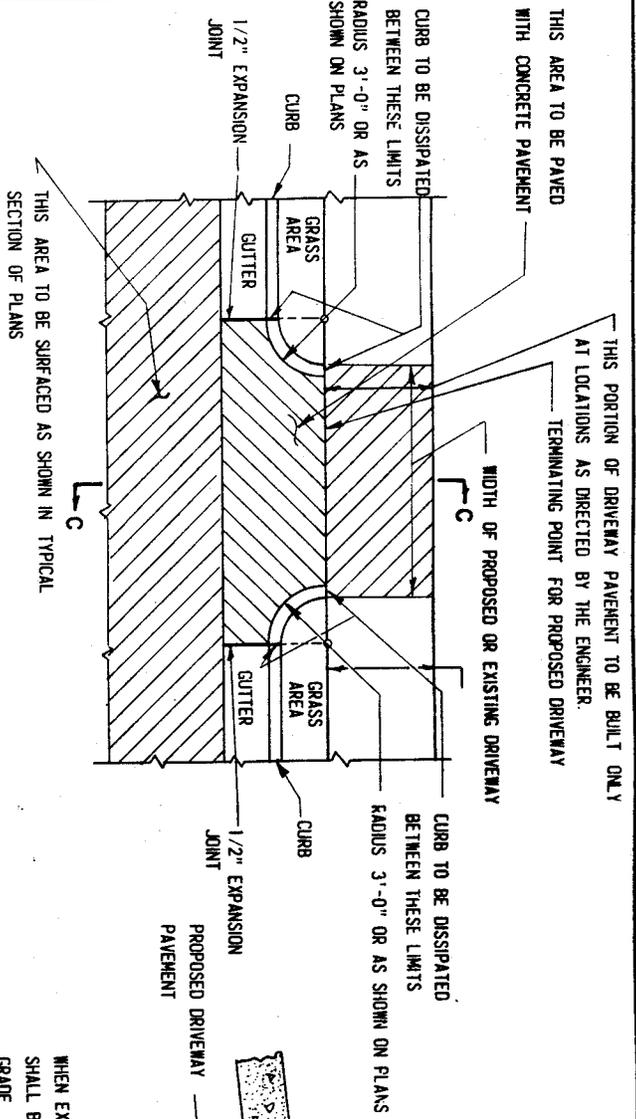
EXAMPLE OF SHOPPING CENTER with BANK and SERVICE STATION

FIGURE 20



Swept Path of Passenger Cars Entering and Exiting From 12-foot Curb Lane

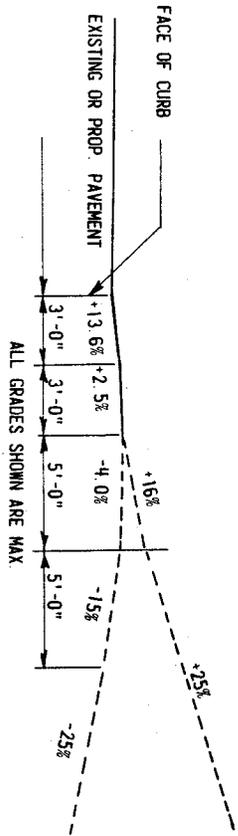
FIGURE 21



WHEN EXISTING DRIVEWAY PAVEMENT IS CONCRETE, A SAW CUT 2" DEEP SHALL BE REQUIRED AT THE POINT OF TIE IN WITH EXISTING DRIVEWAY GRADE. SAW JOINT TO BE PERPENDICULAR TO EDGE OF EXISTING DRIVEWAY PAVEMENT.

**METHOD OF TIE IN**

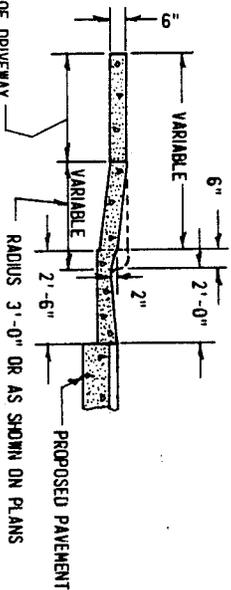
**PART PLAN PAVED DRIVEWAY TURNOUT**  
TO BE USED ON PROPOSED OR EXISTING INTERSECTING DRIVEWAYS



**DRIVEWAY TURNOUT GRADES**

THIS PORTION OF DRIVEWAY PAVEMENT TO BE BUILT ONLY AT LOCATIONS AS DIRECTED BY THE ENGINEER

**SECTION-C-C**

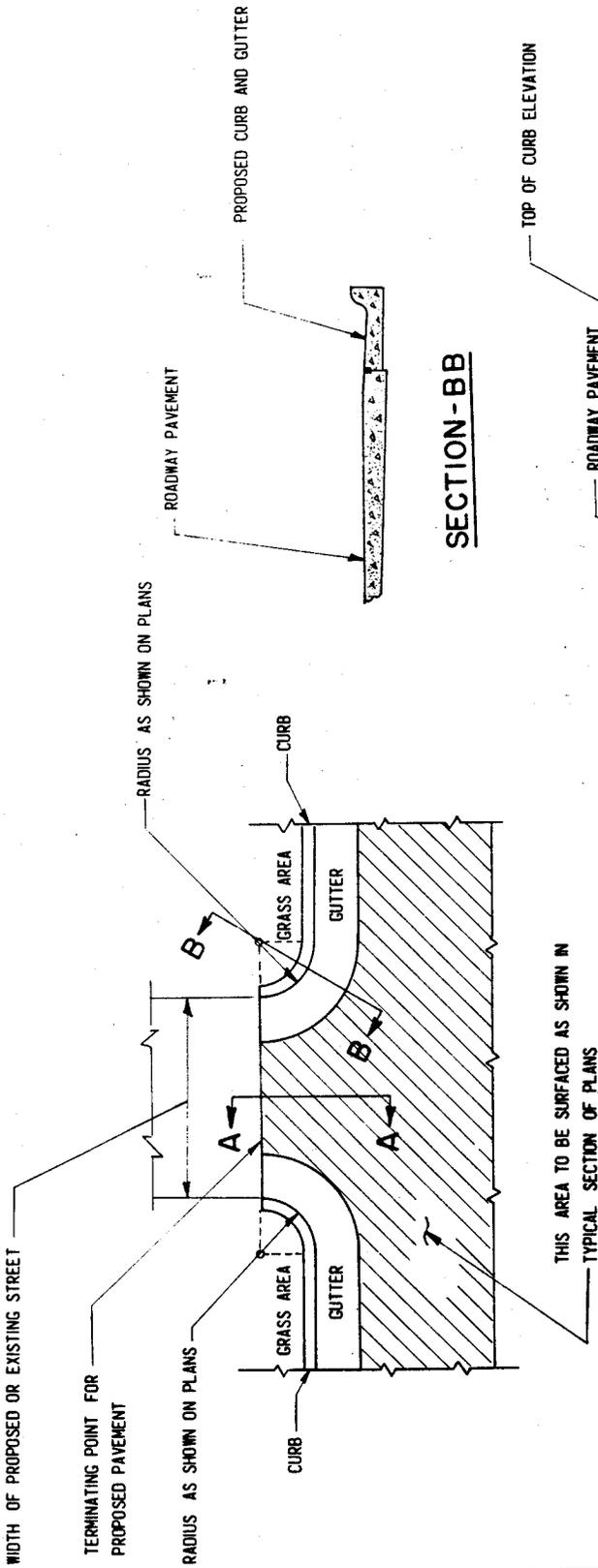


REVISIONS		
NO.	DATE	DESCRIPTION
A	11-10-77	Removed Street Turnouts
B	10-10-78	Added 1/2" Expansion Joint
C	10-26-82	Added Notes & Dimensions

**STANDARD DRIVEWAY TURNOUT RADIUS TYPE**

FIGURE 22

STD. NO.	REV.
848.02	C



**PART PLAN PAVED STREET TURNOUT**

TO BE USED ON PROPOSED AND EXISTING STREET INTERSECTIONS OR MAJOR TYPE COMMERCIAL ENTRANCES

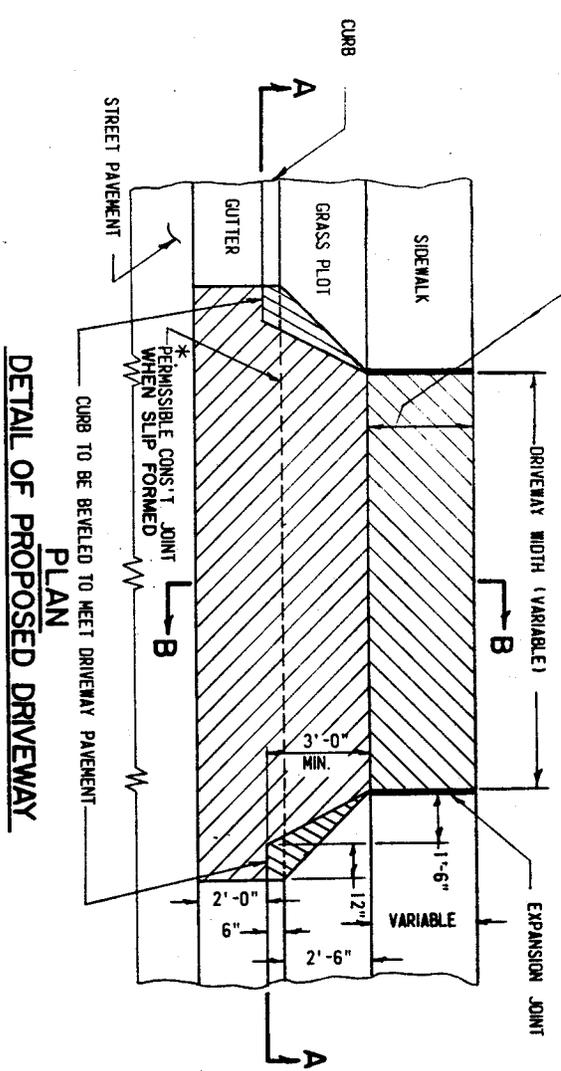
REVISIONS	
NO.	DATE

**STANDARD STREET TURNOUT**

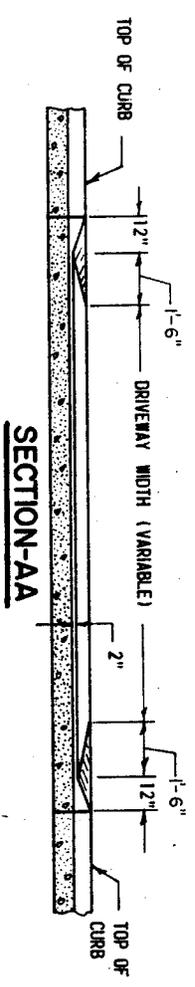
STD. NO.	REV.
848.04	

FIGURE 23

THIS PORTION OF DRIVEWAY PAVEMENT TO BE BUILT ONLY AT LOCATIONS AS DIRECTED BY THE ENGINEER.

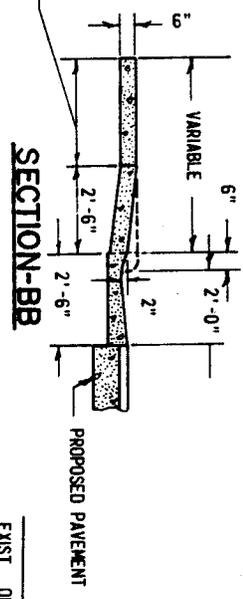


**DETAIL OF PROPOSED DRIVEWAY PLAN**



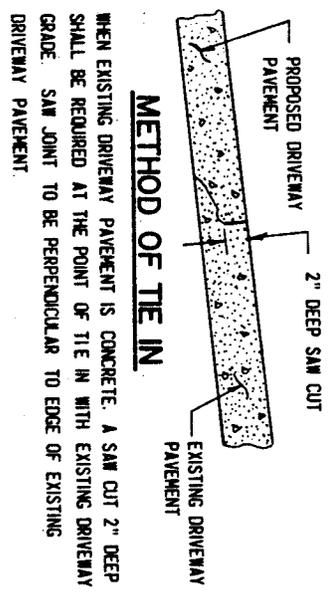
**SECTION-AA**

THIS PORTION OF DRIVEWAY PAVEMENT TO BE BUILT ONLY AT LOCATIONS AS DIRECTED BY THE ENGINEER



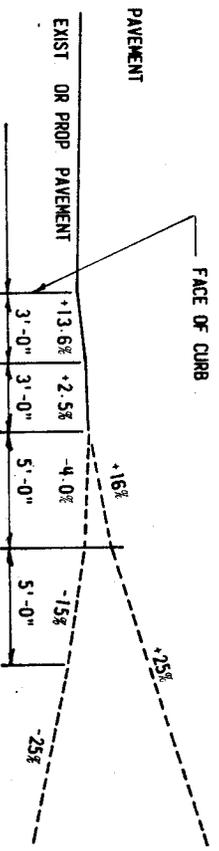
**SECTION-BB**

**GENERAL NOTES**  
 \* NOTE: NO CONSTRUCTION JOINT WILL BE PERMITTED IF FORMS ARE USED TO CAST DRIVEWAY. SLIP FORMING OF CURB AND GUTTER WILL PERMIT USE OF CONSTRUCTION JOINT.



**METHOD OF THE IN**

NO.	DATE	DESCRIPTIONS
A	11-10-77	Revised and Reflowed
B	10-26-82	Added 1'-6" To Section A-A
C	5-21-85	Modified Permissible Construction Joint When Slip Formed General Notes, Additional Construction Joint Notes

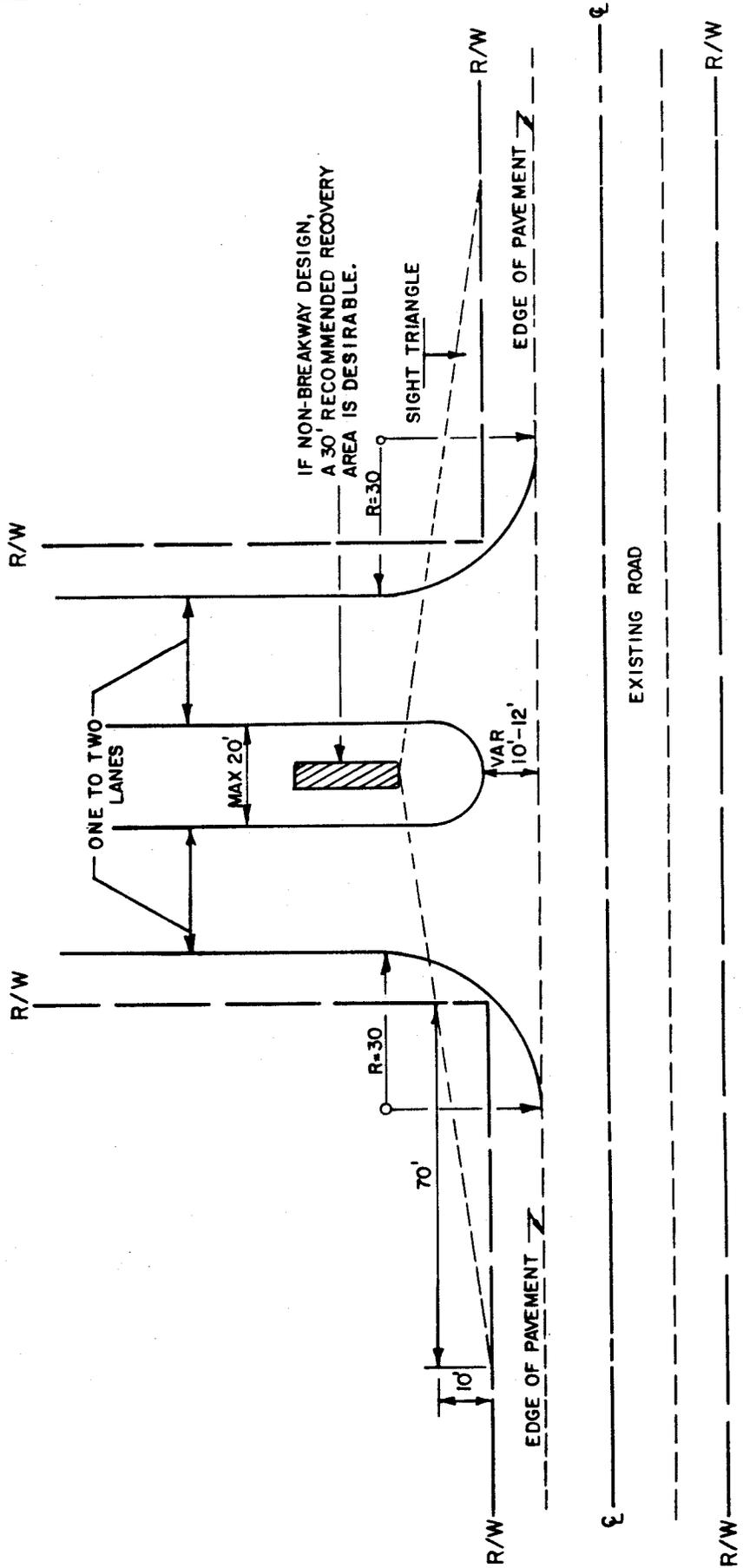


**DRIVEWAY TURNOUT GRADES**

**STANDARD DRIVEWAY TURNOUT DROP CURB TYPE**

FIGURE 24

STD. NO.	REV.
848.03	C



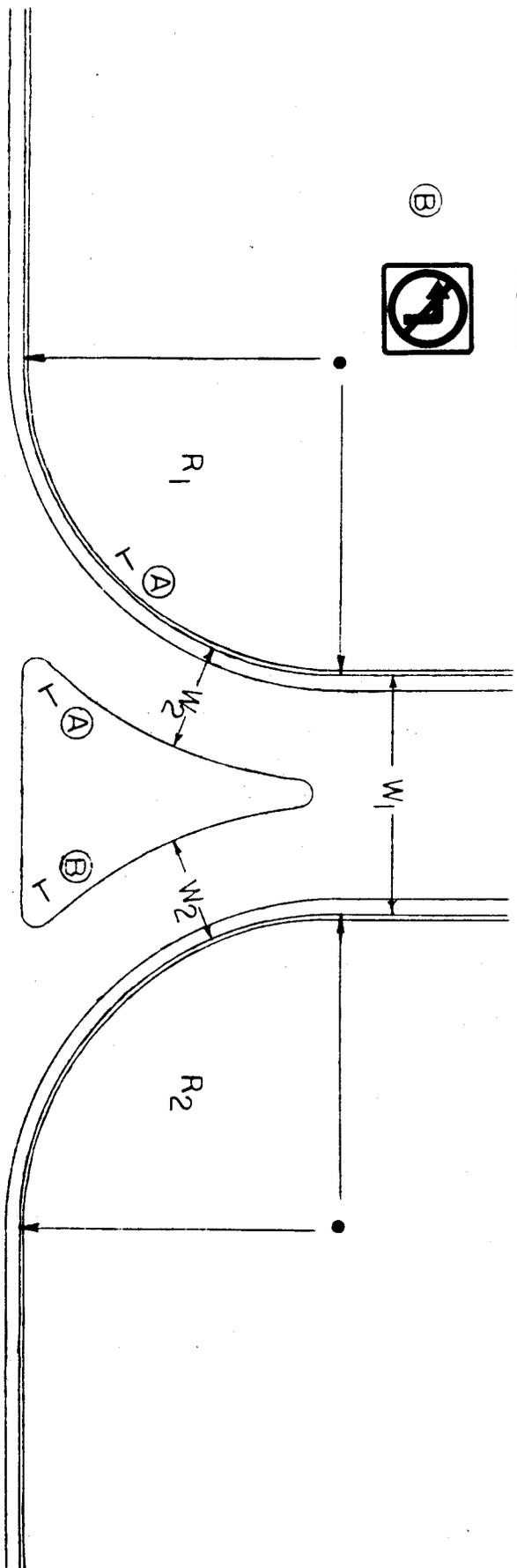
DIVIDED ENTRANCE  
 MAXIMUM WIDTHS  
 OF  
 ROADWAYS and MEDIAN

FIGURE 25

SIGN LEGEND



$W_1 =$	
$W_2 =$	
$R_1 =$	
$R_2 =$	



LEFT TURN PROHIBITION  
CHANNELIZATION DETAIL IN A  
CURB AND GUTTER SECTION

FIGURE 26A

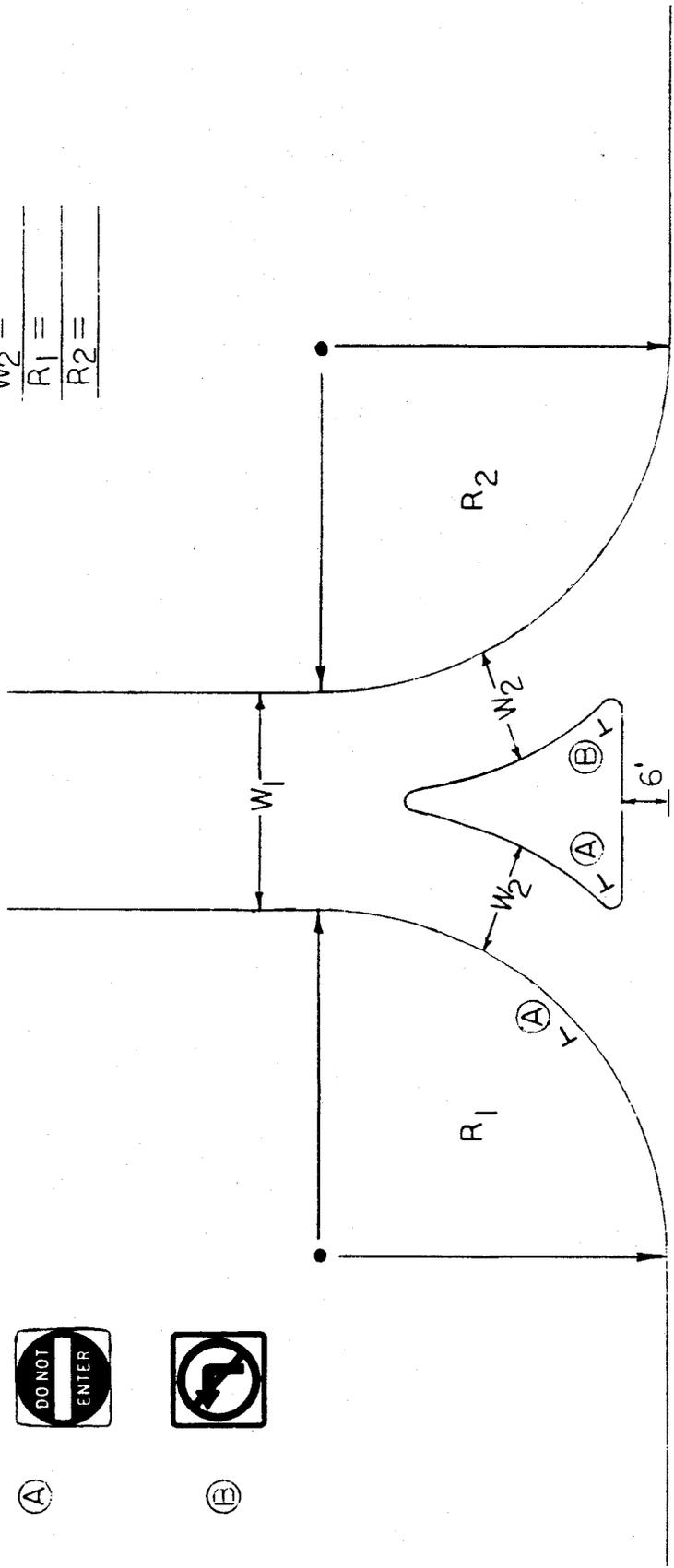
SIGN LEGEND

(A)



(E)

W<sub>1</sub> = \_\_\_\_\_  
 W<sub>2</sub> = \_\_\_\_\_  
 R<sub>1</sub> = \_\_\_\_\_  
 R<sub>2</sub> = \_\_\_\_\_



LEFT TURN PROHIBITION  
 CHANNELIZATION DETAIL IN A  
 SHOULDER AND DITCH SECTION

FIGURE 26B

$V_o$  = OPPOSING VOLUME (VPH)

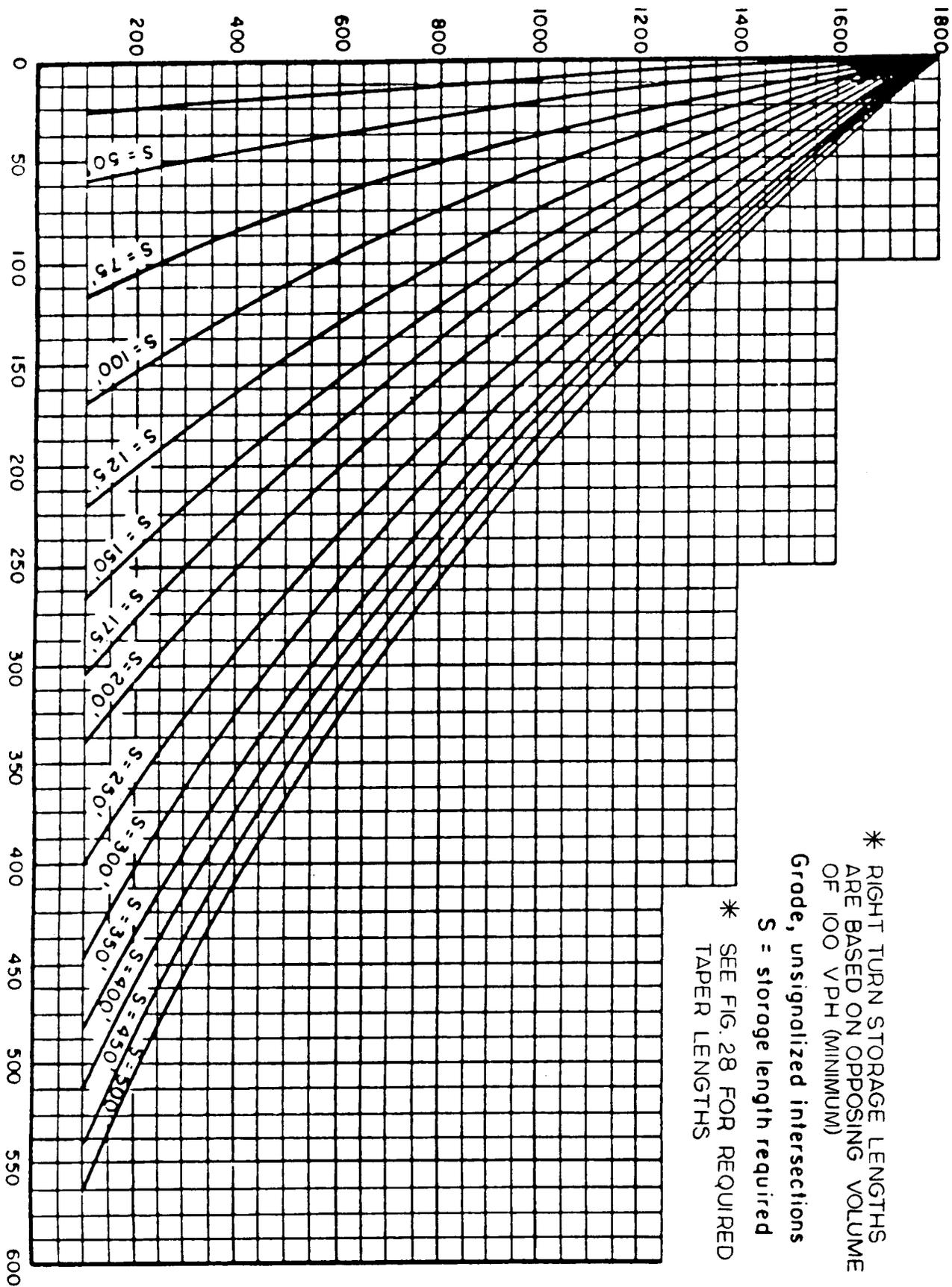
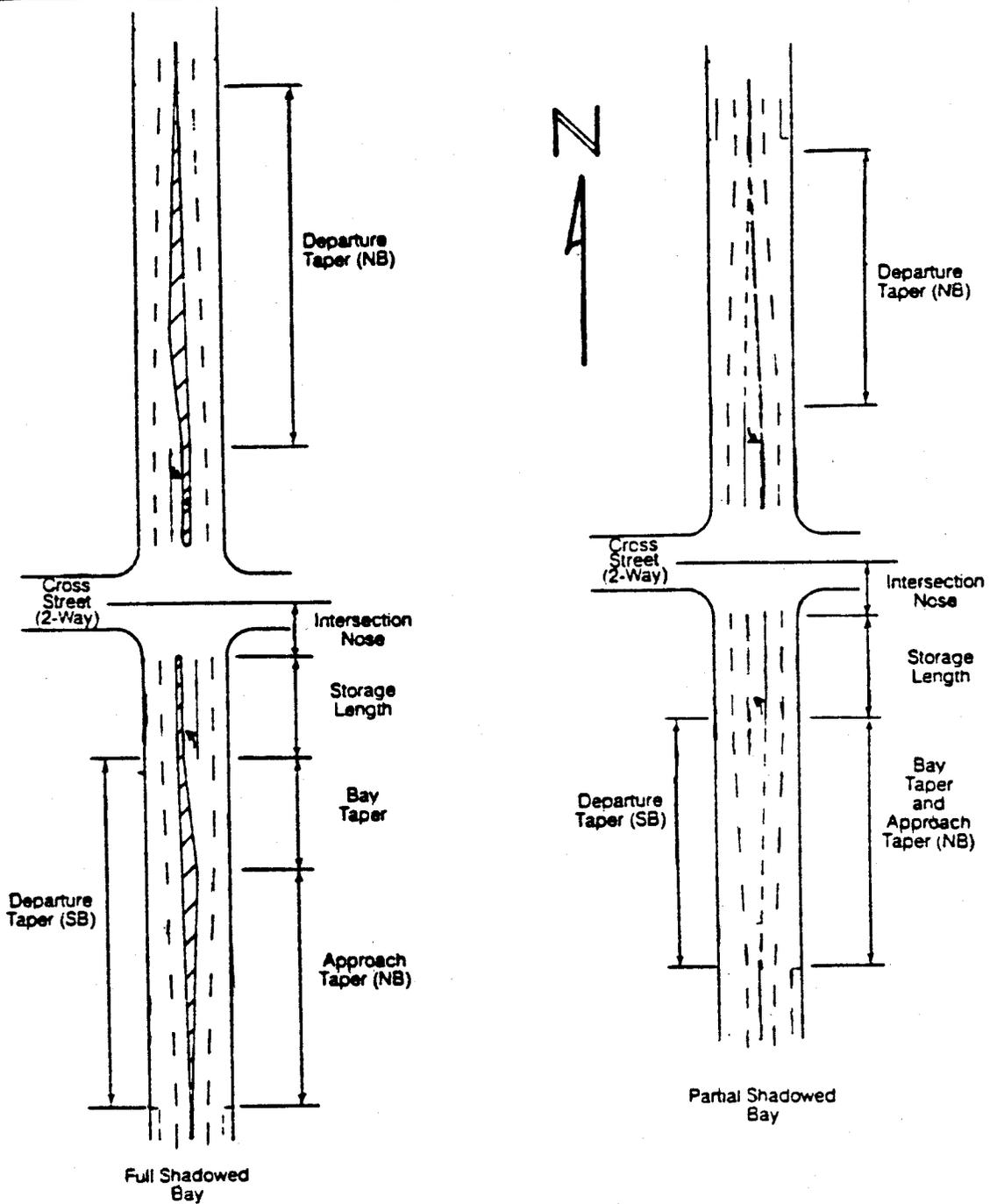


FIGURE 27



Type of Taper                      Equation

Approach and Departure  
for speeds <40 mph                       $L = \frac{WS^2}{60}$

Approach and Departure  
for speeds >40 mph                       $L = WS$

Bay (All speeds)                       $L = \frac{WS}{3}$

S = Speed in MPH  
L = Length in feet  
W = Width of offset in feet

**RECOMMENDED TREATMENT FOR LEFT-TURN LANES  
FIGURE 28**



# APPROVALS

APPROVAL BY: Local Governmental Authority (when required)

SIGNATURE

TITLE

DATE

APPLICATION RECEIVED BY DISTRICT ENGINEER

APPLICATION APPROVED BY DISTRICT ENGINEER

SIGNATURE

DATE

SIGNATURE

DATE

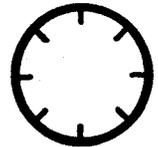
COMMENTS:

### SHOW:

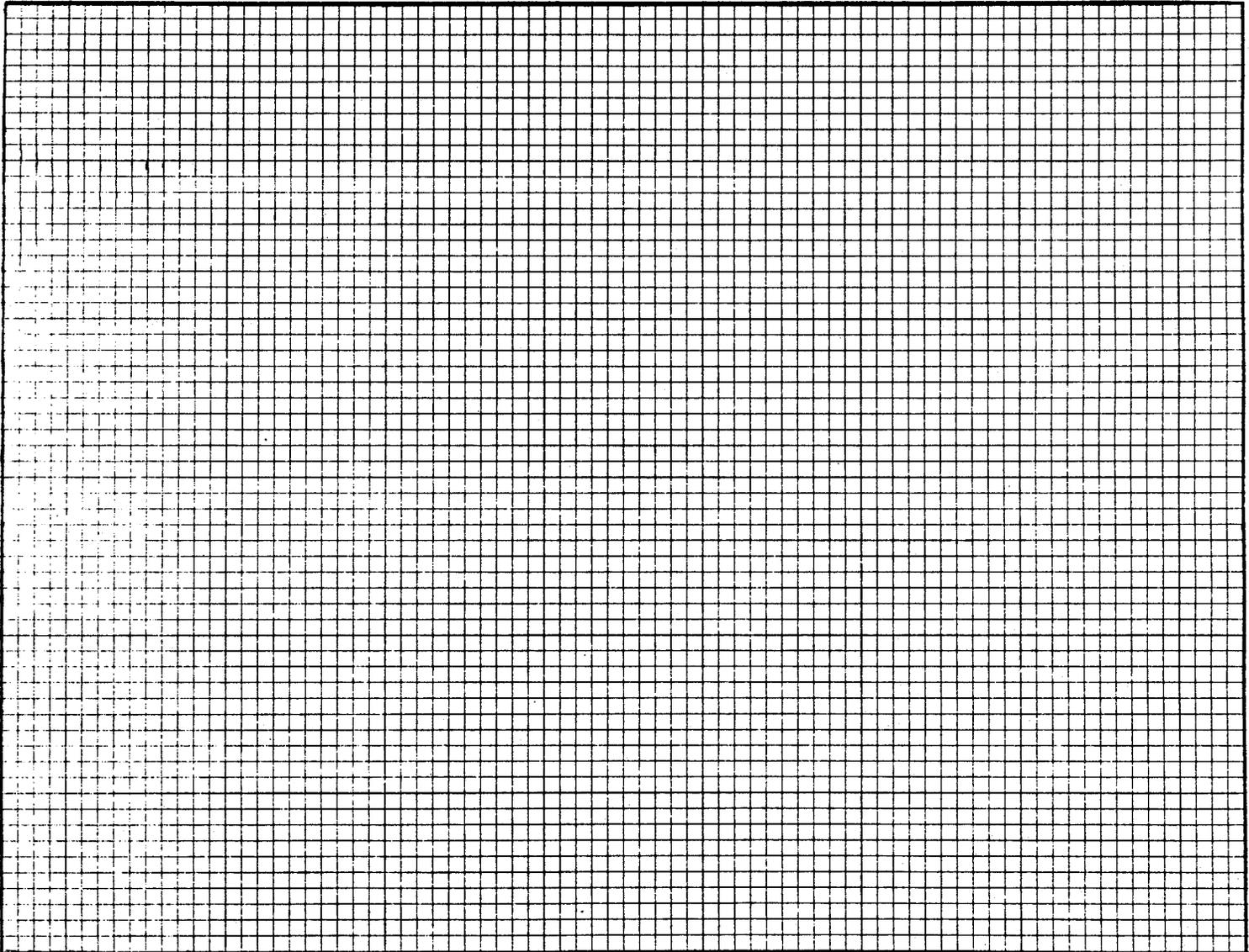
1. LOCATION OF DRIVEWAYS
2. DETAILS OF WORK, INCLUDING PIPES
3. EXISTING BUILDING, WALL, ETC.
4. PROPOSED BUILDING, WALL, ETC.
5. HIGHWAY FEATURES

### PROPOSED PLANS

DRAW OR SKETCH BELOW, OR ATTACH  
CONSTRUCTION PLANS FOR STREETS  
OR DRIVEWAYS.



INDICATE  
NORTH



LOCATION OF DIVISION AND DISTRICT OFFICES

<u>Div. No.</u>	<u>Division Office</u>	<u>District Office</u>	<u>Counties Covered By District Office</u>
1	Ahoskie	Elizabeth City Ahoskie Plymouth	Camden, Currituck, Dare, Pasquotank, Gates, Perquimans Bertie, Hertford, Northampton Chowan, Hyde, Martin, Tyrrell, Washington
2	Greenville	Washington New Bern Kinston	Beaufort, Pitt Carteret, Craven, Pamlico Greene, Jones, Lenoir
3	Wilmington	Jacksonville Clinton Wilmington	Onslow, Pender Duplin, Sampson Brunswick, New Hanover
4	Wilson	Halifax Nashville Goldsboro	Edgecombe, Halifax Nash, Wilson Johnston, Wayne
5	Durham	Raleigh Durham Henderson	Wake Durham, Granville, Person Franklin, Vance, Warren
6	Fayetteville	Lumberton Fayetteville Whiteville	Robeson Cumberland, Harnett Columbus, Bladen
7	Greensboro	Graham Greensboro Reidsville	Alamance, Orange Guilford Caswell, Rockingham
8	Aberdeen	Asheboro Aberdeen Rockingham	Chatham, Randolph Lee, Hoke, Moore Montgomery, Richmond, Scotland
9	Winston-Salem	Salisbury Winston-Salem	Davidson, Rowan Davie, Forsyth, Stokes
10	Albemarle	Albemarle Monroe Newell	Cabarrus, Stanly Union, Anson Mecklenburg
11	N. Wilkesboro	Elkin Boone N. Wilkesboro	Alleghany, Surry, Yadkin Avery, Caldwell, Watauga Ashe, Wilkes

12	Shelby	Shelby Statesville	Cleveland, Gaston, Lincoln Alexander, Catawba, Iredell
13	Asheville	Marion Mitchell Asheville	Burke, McDowell, Rutherford, Buncombe, Madison, Yancey
14	Sylva	Horse Shoe Bryson Andrews	Henderson, Polk, Transylvania Jackson, Swain, Haywood Cherokee, Clay, Graham, Macon

(CHECK LOCAL TELEPHONE DIRECTORIES FOR ADDRESS AND TELEPHONE  
NUMBERS OF DIVISION AND DISTRICT OFFICES)