

# **COMMERCIAL SITE ACCESS POLICY AND STANDARD DESIGNS**



Ministry  
of  
Transportation

**TRANSPORTATION ENGINEERING &  
STANDARDS BRANCH**

**SURVEYS & DESIGN OFFICE**

**HIGHWAY PLANNING & DESIGN  
DEVELOPMENT SECTION**

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# COMMERCIAL SITE ACCESS POLICY AND STANDARD DESIGNS MANUAL

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# COMMERCIAL SITE ACCESS POLICY AND STANDARD DESIGNS

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## COMMERCIAL SITE ACCESS STANDARD DESIGNS

### CSAS-PROF

### CSAS-1 to CSAS-32

# COMMERCIAL SITE ACCESS POLICY AND STANDARD DESIGNS

## ABBREVIATIONS USED ON CSAS DESIGNS

<u>Abbreviation</u>	<u>Description</u>
CSAS	Commercial Site Access Standard
Sh	Shoulder
R	Radius
Min	Minimum
Max	Maximum
Reqd	Required

## **COMMERCIAL SITE ACCESS POLICY AND STANDARD DESIGNS**

### **NUMERICAL LISTING**

**CSAS-PROF** Profile Standard to be used in conjunction with Commercial Site Access Standard Designs.

**CSAS-1 to CSAS-22 to be used at service stations, motels, (over 10 units), etc.**

- CSAS-1** Urban 2 & 4 lane highway, near side location, double access.
- CSAS-2** Urban 2 & 4 lane highway, near side location, single access.
- CSAS-3** Urban 4-lane curbed highway, near side location, double access.
- CSAS-4** Urban 4-lane curbed highway, near side location, single access.
- CSAS-5** Urban 2 & 4 lane highway, far side location, double access.
- CSAS-6** Urban 2 & 4 lane highway, far side location, single access.
- CSAS-7** Urban 4-lane curbed highway, far side location, double access.
- CSAS-8** Urban 4-lane curbed highway, far side location, single access.
- CSAS-9** Urban 2 & 4 lane highway, between intersections, double access.
- CSAS-10** Urban 4-lane curbed highway, between intersections, double access.
- CSAS-11** Urban 2 & 4 lane highway, adjacent commercial sites, double access.
- CSAS-12** Urban 4-lane curbed highway, adjacent commercial sites, double access.
- CSAS-13** Rural 2 & 4 lane highway, near side location, double access, raised island design.
- CSAS-14** Rural 2 & 4 lane highway, near side location, double access open ditch design.
- CSAS-15** Rural 2 & 4 lane highway, near side location, single access.
- CSAS-16** Rural 2 & 4 lane highway, far side location, double access, raised island design.
- CSAS-17** Rural 2 & 4 lane highway, far side location, double access, open ditch design.
- CSAS-18** Rural 2 & 4 lane highway, far side location, single access.
- CSAS-19** Rural 2 & 4 lane highway, between intersections, double access raised island design.
- CSAS-20** Rural 2 & 4 lane highway, between intersections, double access open ditch design.
- CSAS-21** Rural 2 & 4 lane highway, adjacent commercial sites, double access raised island design.
- CSAS-22** Rural 2 & 4 lane highway, adjacent commercial sites, double access open ditch design.

## **COMMERCIAL SITE ACCESS POLICY AND STANDARD DESIGNS**

### **NUMERICAL LISTING continued**

**CSAS-23 to be used at industrial sites, MTO patrol yards, public boat launching sites, etc.**

CSAS-23    Truck access.

**CSAS-24 to CSAS-27 to be used at shopping centres, large parking areas, drive-in theatres, race tracks, etc.**

CSAS-24    Entrance to shopping centre for rural and urban areas.

CSAS-25    Entrance to shopping centre for rural and urban areas, signalized.

CSAS-26    Entrance to shopping centre for rural and urban areas,  
where the entrance design facilitates SU type vehicles.

CSAS-27    Entrance to shopping centre for rural and urban areas,  
where the entrance design facilitates WB-15 type vehicles.

**CSAS-28 to be used at camp grounds, trailer parks, and park sites.**

CSAS-28    Entrance to recreational area.

**CSAS-29 and CSAS-30 to be used at utility stations.**

CSAS-29    Entrance to small utility station for rural and urban areas.

CSAS-30    Entrance to large utility station for rural and urban areas;  
to be considered upon special request by utility company only.

**CSAS-31 and CSAS-32 to be used at small business; convenience stores, real estate offices, Doctor's offices, etc.**

CSAS-31    Entrance to small business for rural areas.

CSAS-32    Entrance to small business for urban areas.



# COMMERCIAL SITE ACCESS POLICY AND STANDARD DESIGNS

## LOCATION LISTING

### URBAN AREA

#### Near Side

Urban 2 & 4 lane highway, near side location, double access .....	CSAS-1
Urban 2 & 4 lane highway, near side location, single access .....	CSAS-2
Urban 4-lane curbed highway, near side location, double access .....	CSAS-3
Urban 4-lane curbed highway, near side location, single access .....	CSAS-4

#### Far Side

Urban 2 & 4 lane highway, far side location, double access .....	CSAS-5
Urban 2 & 4 lane highway, far side location, single access .....	CSAS-6
Urban 4-lane curbed highway, far side location, double access .....	CSAS-7
Urban 4-lane curbed highway, far side location, single access .....	CSAS-8

#### Between Intersections

Urban 2 & 4 lane highway, between intersections, double access .....	CSAS-9
Urban 4-lane curbed highway, between intersections, double access .....	CSAS-10

#### Adjacent Commercial Sites

Urban 2 & 4 lane highway, adjacent commercial sites, double access .....	CSAS-11
Urban 4-lane curbed highway, adjacent commercial sites, double access .....	CSAS-12

# **COMMERCIAL SITE ACCESS POLICY AND STANDARD DESIGNS**

## **LOCATION LISTING continued**

### **RURAL AREA**

#### **Near side**

Rural 2 & 4 lane highway, near side location, double access raised island design . . . . .	CSAS-13
Rural 2 & 4 lane highway, near side location, double access open ditch design . . . . .	CSAS-14
Rural 2 & 4 lane highway, near side location, single access . . . . .	CSAS-15

#### **Far Side**

Rural 2 & 4 lane highway, far side location, double access raised island design . . . . .	CSAS-16
Rural 2 & 4 lane highway, far side location, double access open ditch design . . . . .	CSAS-17
Rural 2 & 4 lane highway, far side location, single access . . . . .	CSAS-18

#### **Between Intersections**

Rural 2 & 4 lane highway, between intersections, double access raised island design . . . . .	CSAS-19
Rural 2 & 4 lane highway, between intersections, double access open ditch design . . . . .	CSAS-20

#### **Adjacent Commercial Sites**

Rural 2 & 4 lane highway, adjacent commercial sites, double access raised island design . . .	CSAS-21
Rural 2 & 4 lane highway, adjacent commercial sites, double access open ditch design . . . .	CSAS-22

# COMMERCIAL SITE ACCESS POLICY AND STANDARD DESIGNS

## LOCATION LISTING continued

### MISCELLANEOUS

Commercial Site Profile Standard .....	CSAS-PROF
Truck access .....	CSAS-23
Entrance to shopping centre for rural and urban areas .....	CSAS-24
Entrance to shopping centre for rural and urban areas, signalized .....	CSAS-25
Entrance to shopping centre for rural and urban areas, where the entrance design facilitates SU type vehicles .....	CSAS-26
Entrance to shopping centre for rural and urban areas, where the entrance design facilitates WB-15 type vehicles .....	CSAS-27
Entrance to recreational area .....	CSAS-28
Entrance to small utility station for rural and urban areas .....	CSAS-29
Entrance to large utility station for rural and urban areas .....	CSAS-30
Entrance to small business for rural areas .....	CSAS-31
Entrance to small business for urban areas .....	CSAS-32

## DEFINITIONS

### Introduction

This manual relates to commercial, industrial and institutional entrances. Information regarding urban private entrances and rural entrances are included in the "Ontario Provincial Standards for Roads and Municipal Services" manual, "Volume 3; Drawings for Roads, Barriers, Drainage, Sanitary Sewers, Watermains and structures".

It is mandatory to use uniform terminology in Commercial Site Access Standards, agreements, permits, manuals, policy statements, general correspondence and direct communications with the general public so that the Ministry's intent is clearly understood by all parties concerned.

The following definitions of entrances shall be used:

### Commercial/Industrial/institutional Entrance

A Commercial, industrial or institutional entrance is a private entrance opening onto a provincial highway from a parcel of land serving a business or institution. The design of the entrance will vary with the specific use of the property and a change in use may require a different entrance standard to be constructed.

**Note:** If a double access entrance standard is required to serve the proposed use, it shall be treated as a single entrance, for permit application.

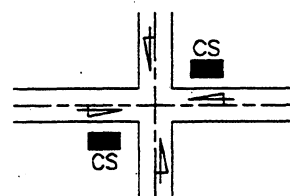
### Curb and Curbing

Curb and /or curbing may consist of:

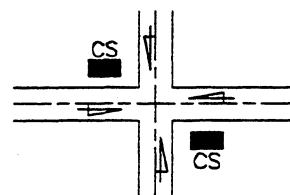
- Concrete curb or curb and gutter
- Pre-cast concrete curb
- Wooden curbs
- Asphalt curbs
- Ornamental curbs

### Channelization

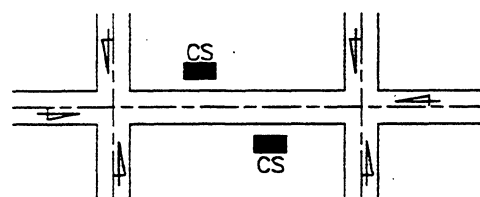
A physical object which is readily visible to the driver and is used by the driver both as an indicator of the existence of an entrance and as a guide in properly and safely entering or leaving a commercial site.



Near Side Location



Far Side Location



Between Intersections

**Figure 1**  
**Commercial Site Locations**

### Daylighting or Visibility Triangle

Daylighting or visibility triangle is land acquired at an intersection for the purpose of sight line requirements.

### Design Vehicles \*

Commercial Site Access Standards have been designed utilizing SU, WB-15 and WB-17.5 Design Vehicle turning templates.

- SU Design Vehicle is a single unit truck or bus having a 6.1 m wheelbase and an overall length of 9.1 m. The width of the vehicle is 2.6 m.
- WB-15 Design Vehicle is a semitrailer combination with a 15.2 m wheelbase and an overall length of 16.8 m. The width of the vehicle is 2.6 m.
- WB-17.5 Design Vehicle is a semitrailer combination with a 17.5 m wheelbase and an overall length of 19.5 m. The width of the vehicle is 2.6 m.

\* The WB-20.5 is not a practical design vehicle for the layout of CSAS designs.

**Island**

An island is defined as an area where, by design, traffic may not readily traverse. Typically, an island is either:

- (i) a raised area surrounded by curb and gutter or equivalent, such as logs and precast curbs, or
- (ii) a depressed area, such as a ditch.

**Reconstruction or Resurfacing**

Reconstruction or resurfacing is work done by contract, day labour or equipment rental on a King's Highway or Secondary Highway. (Does not include normal maintenance work.)

**Rural Area**

For the application of CSAS designs a Rural Area is a section of any highway where the posted speed is 80 km/h or greater.

**Design Speed**

A speed selected for design purposes and generally 20 km/h above the posted speed.

**Speed Limit**

Speed limit is the posted speed for the highway.

**Urban Area**

For the application of CSAS designs an Urban Area is a section of any highway where the posted is less than 80 km/h.

**Visibility**

Visibility is the distance of unobstructed view required so that drivers can control their vehicles to avoid striking an unexpected obstacle in the travelled way.

For the application of CSAS designs, Visibility and Sight Distance is synonymous and interchangeable.

Measurement of visibility is subject to the following criteria:

- (i) Height of eye of driver of a vehicle entering the highway is defined as 1.05 m above the ground.
- (ii) Height of object is defined as 1.30 m above the highway and represents the roof of a vehicle.
- (iii) Height of eye of a driver of a vehicle entering the highway is to be measured from a point setback 3.0 m from the edge of pavement of the thru-lane. This represents the point of location of the driver's eye when awaiting an opportunity to enter the highway.
- (iv) Visibility is to be measured from the point represented in (iii) above to the centre of the traffic lane affected by the entering vehicle which produces the least length. On highways having two-way traffic lanes where access to the commercial site is permitted from two directions, sight distance must be measured from both approaches. For a divided highway, visibility need only be measured for one direction, as vehicles only encounter other vehicles moving in the same direction.

Visibility requirements for commercial entrances are detailed on page 6.

## PURPOSE OF THIS MANUAL

This manual details the Ministry's policies relating to commercial site entrances, whether constructed by the owner or reconstructed by either the owner or the Ministry, and serves as a guide in the selection of an appropriate commercial site access standard design.

## POLICY

### Introduction

According to the "Public Transportation and Highway Improvement Act Revised Statutes of Ontario, 1990 P.50", no person shall, except under a permit from the Minister, construct any private road, entrance way, gate or other structure or facility as a means of access to the King's Highway other than a Controlled Access Highway.

The Ministry's intent through the control of access on Provincial Highways is;

- to ensure the safety of the travelling public, and
- to protect the operating integrity of its highways.

When considering the granting of a permit for an entrance between the highway and private land, the Ministry's intent through control of access is of paramount importance. It is, therefore, necessary that each entrance be considered from an engineering point of view. Occasionally, it will be necessary to deny an entrance. In all such cases, the engineering reason for denial should be clear and concise and made available to the applicant.

Commercial, industrial and institutional site access designs have been standardized to assist both the Ministry and the Applicants in choosing a design which has been found to be safe for both the highway user and the person using the entrance.

During the design stage of a highway reconstruction or resurfacing project, when considering the addition of By-Pass Lanes and Storage Lanes etc., the designer should consult the District Office and the Regional Traffic Section in order to determine whether existing commercial entrances sufficiently affect the safety and/or operational efficiency of the highway to warrant the addition of by-pass lanes, storage lanes, additional tapers, etc. Should the provision of such facilities be considered necessary, the work will be carried out at the Ministry's expense as part of the highway project.

In instances where no highway project is anticipated and where the District after consultation with the appropriate sections in the Region (Traffic and/or Planning and Design), determine that either by-pass lanes, storage lanes or additional tapers are required on highways at an existing commercial entrance, the work will be at the Ministry's expense. The Regional Planning and Design Section will be the authority to develop the appropriate design and obtain the cost estimate, regardless of the means utilized by the District to carry out the construction.

When an application is made to the Ministry for the construction of a new, or reconstruction of an existing commercial site access and where, after consultation with the Regional Traffic Section, it is determined that additional by-pass lanes, storage lanes or tapers are required within five (5) years of opening of the development, (as a result of traffic generated by the applicant's operations) the work will be carried out at the applicant's expense and shall be a condition of approval for the said application. The District will obtain an approved design and estimate of cost from the Head, Regional Planning and Design Section, regardless of the means utilized to carry out the necessary construction,

### Curbing

Raised islands to commercial sites shall be curbed to provide positive control unless all conditions for open ditch construction are met. Concrete barrier curbs of the Ontario Provincial Standards Drawings (OPSD), 600 series are recommended. Other materials and types of curbing may be used at the discretion of the District Engineer. Such curbs must provide adequate delineation and physically discourage crossing of the island by vehicles.

Where curbing exists or is proposed as part of the roadway, the curb utilized should conform to the roadway curb.

### Investigations of Major Traffic Generators

It is essential that investigations are made into the potential for increased traffic generation that may result from the introduction of a commercial site access. As well, due consideration must be given to Ministry planned changes to the highway in the vicinity of a requested commercial entrance. Consideration of this aspect are extremely significant in the case of shopping plazas, shopping centres, fairgrounds, schools, hospitals, airports, roadside marinas, major tourist attractions, drive-in theatres, race tracks, arenas, etc. The District Office and Regional Planning and Design Section should avail themselves of the assistance that can be provided by the Regional Traffic Section.

**Note:** All permit applications for large traffic generators shall be referred to the Regional Planning and Design Section and the Regional Traffic Section prior to the District issuing a permit.

### Islands with Open Ditch Construction

On rural highways at commercial site locations with double access designs, islands may be of open ditch construction when the length of the island exceeds 15 m and when the width is sufficient to accommodate slopes which are at least 3:1, and ditches capable of providing sub-drainage to the granular base course. However, proper delineation, as determined by the District Engineer, is required at both ends of the island and the entrances shall be paved in accordance with procedures for the "Paving of Entrances".

### Modification to CSAS Designs and Design for New Commercial Entrances

When an existing commercial establishment has a frontage less than that required for the application of a standard access design, the minimum dimensions, as required for the appropriate CSAS design, may be reduced at the discretion of the District Engineer and /or Regional Manager, Engineering and Right-of-Way Office. However, no modification to the design for new commercial entrances may be carried out without the approval of the Regional Manager, Engineering and Right-of-Way Office.

### Paving of Entrances

#### (i) Types of Treatment

Three types of treatments will be applied to commercial sites.

Treatment "A" will consist of:

- paved tapers
- paving entrances to:  
ROW limit or  
back of island or  
end of entrance radius or  
sidewalk,  
whichever is the lesser.

Treatment "B" will consist of:

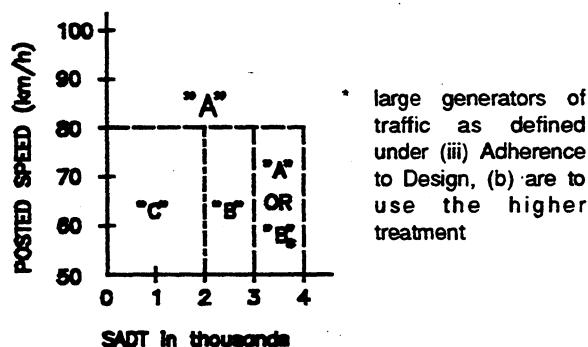
- paving entrance to:  
ROW limit or  
back of island or  
end of entrance radius or  
sidewalk,  
whichever is the lesser.

Treatment "C" will consist of:

- no mandatory paving
- acceptable delineation of ends of islands.

#### (ii) Guidelines for Choice of Type

The graph below provides guidelines for the choice of treatment.



#### (iii) Adherence to Design

- (a) "B" and "C" could be raised one class in unusual circumstances, such as steep downgrades or to maintain consistent design along a particular section of highway.

- (b) Large generators of traffic (race tracks, fairgrounds, shopping centres, shopping plazas, schools, hospitals, airports, roadside marinas, major tourist attractions, drive-in theatres, arenas, etc.) are to use Class "A" treatment when posted speed is 50 km/h, or more with SADT above 3000. Turning lanes and traffic signals may be required, depending on traffic volumes.

(iv) Implementation

Where these guidelines are met at the time of carrying out a reconstruction and/or resurfacing contract on an existing highway, the Ministry will construct the appropriate treatment at its expense, when required because of the effects of the roadway construction, or where required because of maintenance or existing traffic control problems.

Where traffic control problems exist because of failure to comply with conditions laid down in the permit, the entrance should **NOT** be upgraded and consideration given to close the entrance for failure to comply with the condition of the permit.

When application is made to the Ministry to permit construction of a new or reconstruction of an existing commercial site access, the treatment which is warranted will be constructed at the applicant's expense and shall be a condition of approval for the said application.

#### Protection of the Ministry's Future Property Requirements

The design of any commercial site access shall, whenever possible, be determined on the basis of the future highway requirements to ensure the minimum of modifications during any future reconstruction. The applicant should be advised of the Ministry's future requirements. Acquisition should not normally be initiated until such time as the total project requirements have been finalized and requested in the normal manner. However, if the Preliminary Design phase has been completed by the Regional Planning and Design Section for a project within which an application is received, the District has the discretion to issue a property request for additional right-of-way requirements from the applicant. Each such request will be treated on its own merits.

#### Selection of Appropriate CSAS Designs

The following is a guide in the selection of appropriate CSAS Designs and should be used when existing entrances are being reconstructed by the ministry and when applications for entrance permits are being considered:

CSAS-PROF	To be used in conjunction with commercial site access standards.
CSAS-1 to CSAS-22	To be used at service stations, motels (over 10 units), etc.
CSAS-23	To be used at industrial sites, patrol yards, public boat launching sites, etc.
CSAS-24 to CSAS-27	To be used at shopping centres, large parking area, drive-in theatres, race tracks, etc.
CSAS-28	To be used at camp grounds, trailer parks, and park sites, etc.
CSAS-29	To be used at small utility stations.
CSAS-30	To be used at large utility stations.
CSAS-31 & CSAS-32	To be used at small business; convenience stores, real estate offices, Doctor's offices, etc.

#### Side Road Access Control

While the CSAS Design, controls the minimum distance from the highway to the first access or a side road at a commercial site, all side road access is subject to the approval of the authority controlling the side road. The dimensions indicated on the CSAS Designs are intended as a guide and represent the set back required to permit a WB-17.5 design vehicle exiting from the commercial site side road access and stopping at the stop block, without obstructing traffic on the side road.



**Visibility Requirements**

Visibility requirements represent a most important factor when the location of a new commercial entrance is being considered. Rock cuts, buildings, trees, structure railings, piers and abutments are typical examples which require consideration when assessing visibility.

A new commercial entrance will only be approved if it meets all of the minimum requirements listed below:

- (a) Where speed limit is 80 km/h or more:
- (i) Minimum sight distance\* of Table 1 is available.
  - (ii) Horizontal curve is 1200 m radius or more.
  - (iii) Highway grade is 4% or less.

**Table 1**

**MINIMUM SIGHT DISTANCE**

Design Speed km/h	Sight Distance** m
50	120
60	140
70	160
80	180
90	200
100	230
110	250
120	270

- (b) Where speed limit is less than 80 km/h:

- (i) Minimum sight distance\* of Table 1 is available.
- (ii) Horizontal curve is 300 m radius or more.
- (iii) Highway grade is 6% or less.

New commercial entrances will not be allowed upon, or to cross, a daylighting or visibility area. In addition, new commercial entrances should be discouraged where they would enter upon an exiting or proposed speed change lane at intersection/interchange areas. However, denial of all permits in these areas may, in effect, landlock a property and, consequently, not be practical. Each case will, therefore, have to be treated on its own merits.

**When this Policy is to be Used**

Applications for access or modification to an existing access may be approved subject to the design of the entrance meeting the requirements of the CSAS design. Compliance to the approved design is a condition of approval and should be stated as such on the permit.

Where roadway construction requires reconstruction or modification of an existing entrance, the entrance shall conform to the appropriate CSAS design. On resurfacing projects, updating of existing entrances to conform with these CSAS designs shall be restricted to those establishments which have an existing operational problem.

\* See definition of Sight Distance (visibility) on page 2.

\*\* Sight Distance for passenger vehicle turning left into 2-lane highway across passenger vehicle approaching from the left. Line "C", Figure E3-6, Chapter E, "Geometric Design Standards For Ontario Highways".

**COMMERCIAL  
SITE ACCESS  
STANDARD  
DESIGNS**

MINISTRY OF TRANSPORTATION  
ONTARIO

CSAS — 1

URBAN  
2 & 4 LANE HIGHWAY

NEAR SIDE LOCATION — DOUBLE ACCESS  
THIS STANDARD SHALL BE TREATED  
AS A SINGLE ENTRANCE FOR PERMIT APPLICATION

DATE: 1994-01

REV:

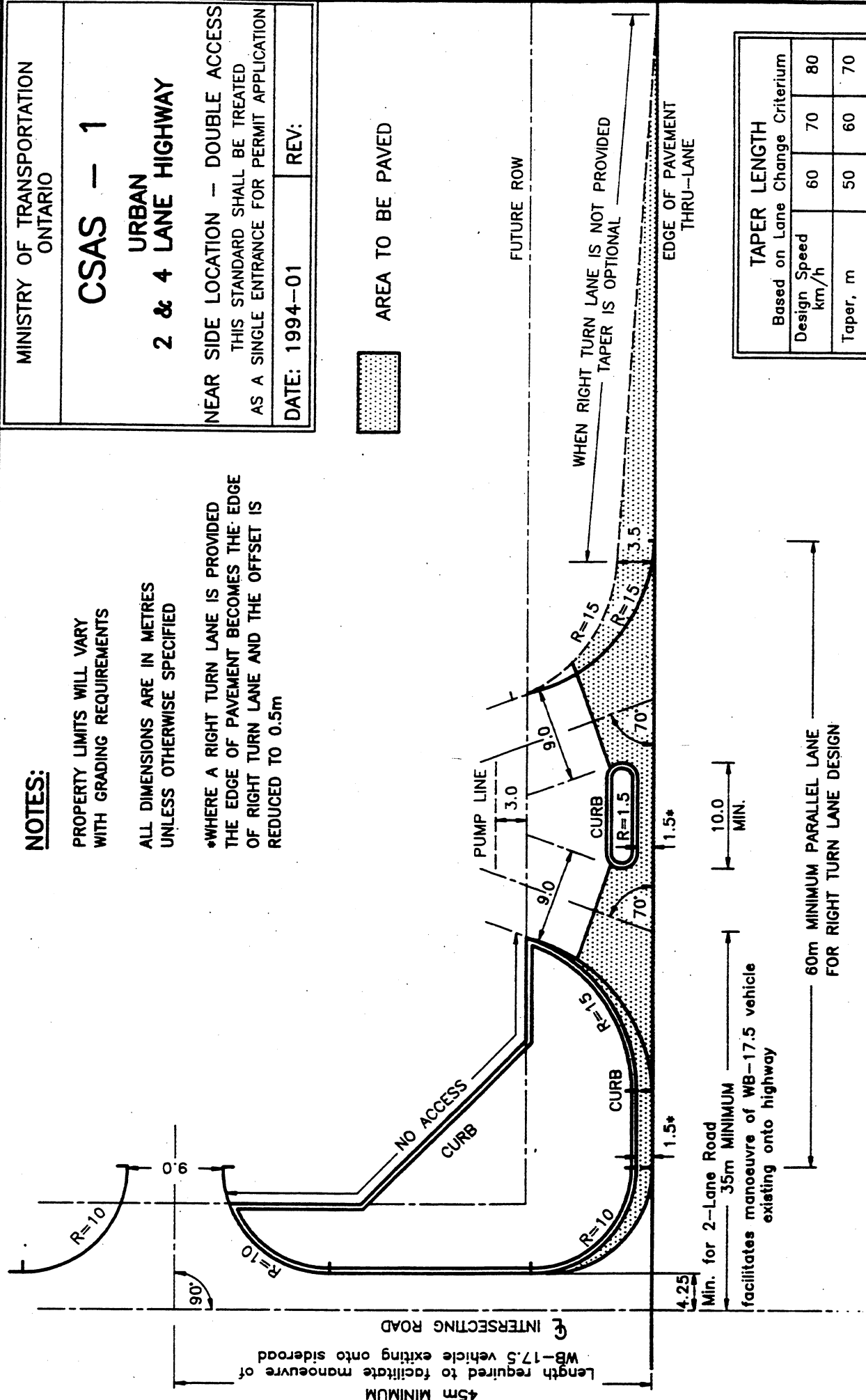
# NOTES:

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED

•WHERE A RIGHT TURN LANE IS PROVIDED  
THE EDGE OF PAVEMENT BECOMES THE EDGE  
OF RIGHT TURN LANE AND THE OFFSET IS  
REDUCED TO 0.5m

AREA TO BE PAVED



TAPER LENGTH		
Based on Lane Change Criterion		
Design Speed km/h	60	70
Taper, m	50	60
	60	70

SCALE 1:500

MINISTRY OF TRANSPORTATION  
ONTARIO

CSAS - 2

URBAN  
2 & 4 LANE HIGHWAY

NEAR SIDE LOCATION - SINGLE ACCESS

DATE: 1994-01

REV:

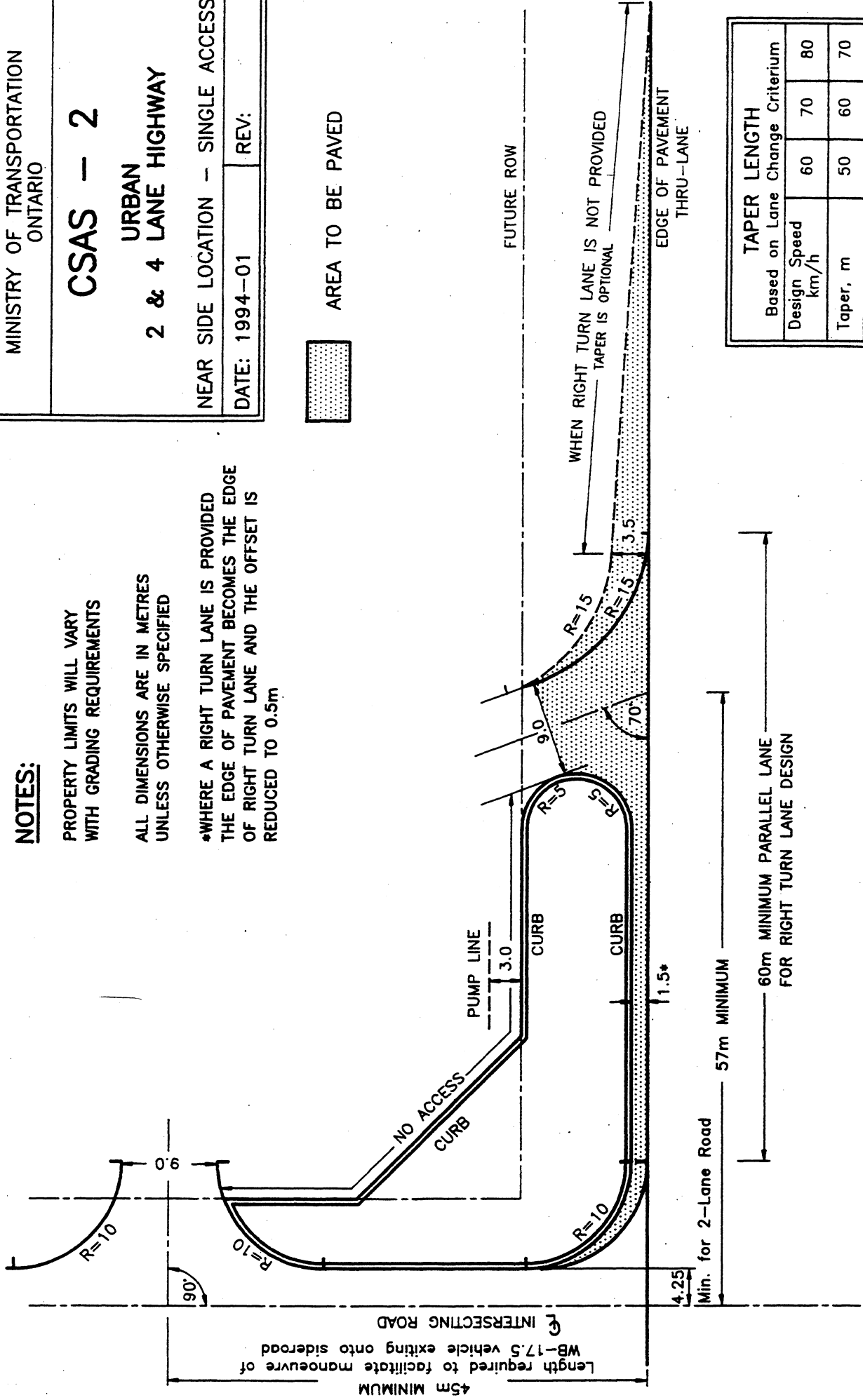
AREA TO BE PAVED

# NOTES:

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ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED

\*WHERE A RIGHT TURN LANE IS PROVIDED  
THE EDGE OF PAVEMENT BECOMES THE EDGE  
OF RIGHT TURN LANE AND THE OFFSET IS  
REDUCED TO 0.5m



TAPER LENGTH		
Based on Lane Change Criterion		
Design Speed km/h	60	70
Taper, m	50	60
	60	70

SCALE 1:500

SCALE 1:500

# CSAS - 4

URBAN  
4 - LANE CURBED HIGHWAY

NEAR SIDE LOCATION - SINGLE ACCESS

DATE: 1994-01

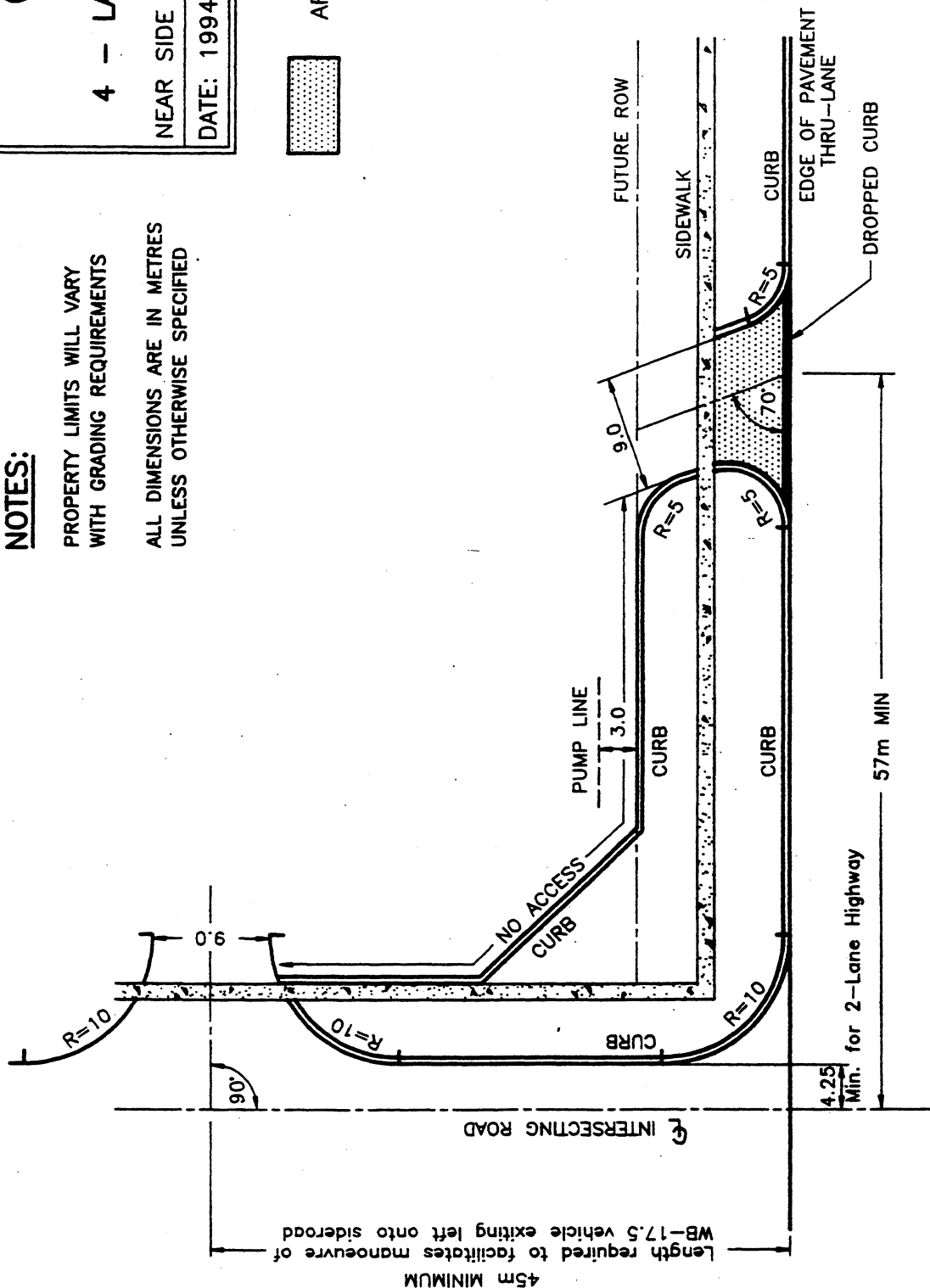
REV:

## NOTES:

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED

AREA TO BE PAVED



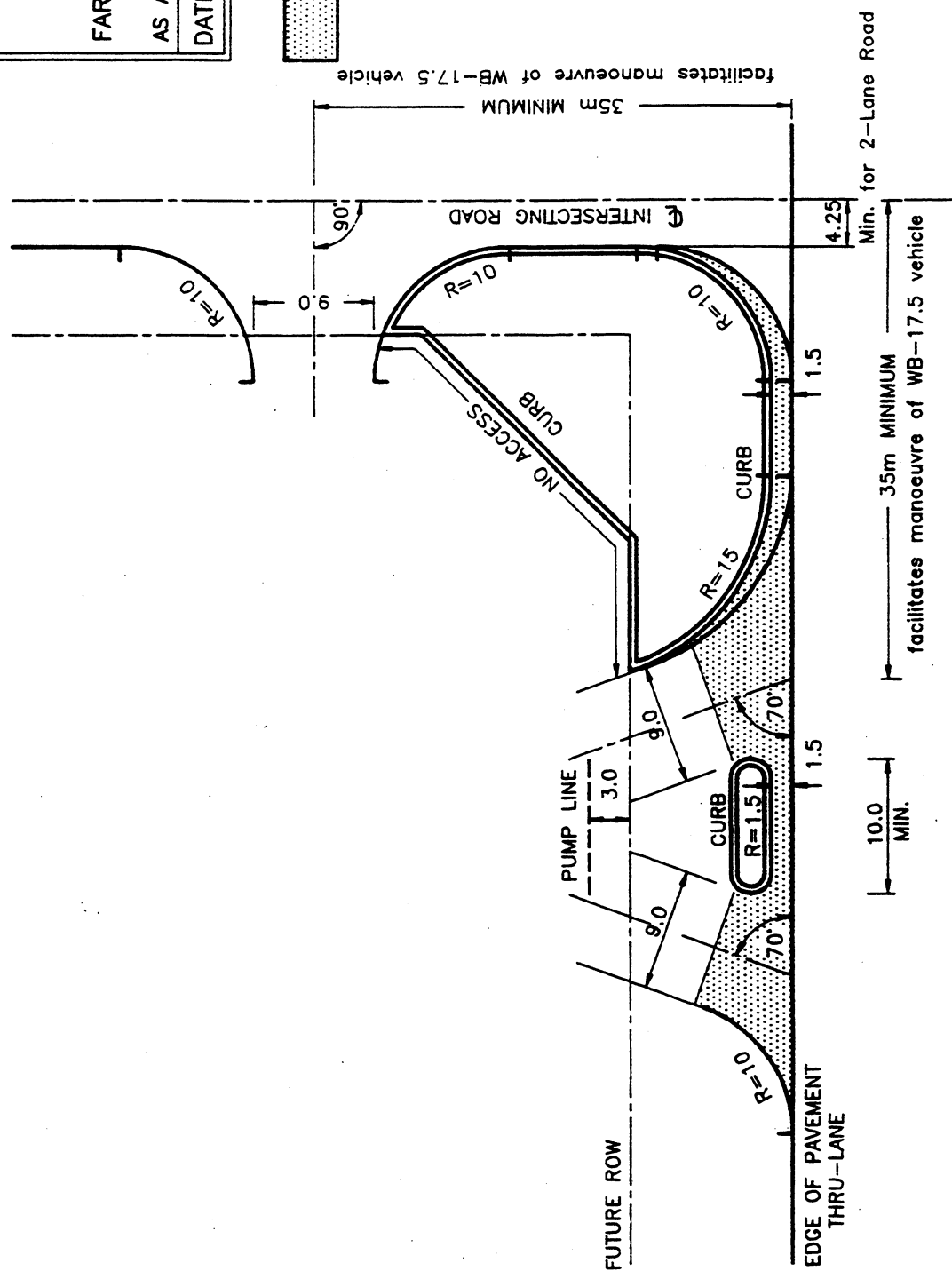
## CSAS - 5

URBAN  
2 & 4 LANE HIGHWAY

FAR SIDE LOCATION - DOUBLE ACCESS  
THIS STANDARD SHALL BE TREATED  
AS A SINGLE ENTRANCE FOR PERMIT APPLICATION

DATE: 1994-01

REV:



AREA TO BE PAVED

**NOTES:**

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED

MINISTRY OF TRANSPORTATION  
ONTARIO

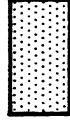
CSAS - 6

URBAN  
2 & 4 LANE HIGHWAY

FAR SIDE LOCATION - SINGLE ACCESS

DATE: 1994-01

REV:

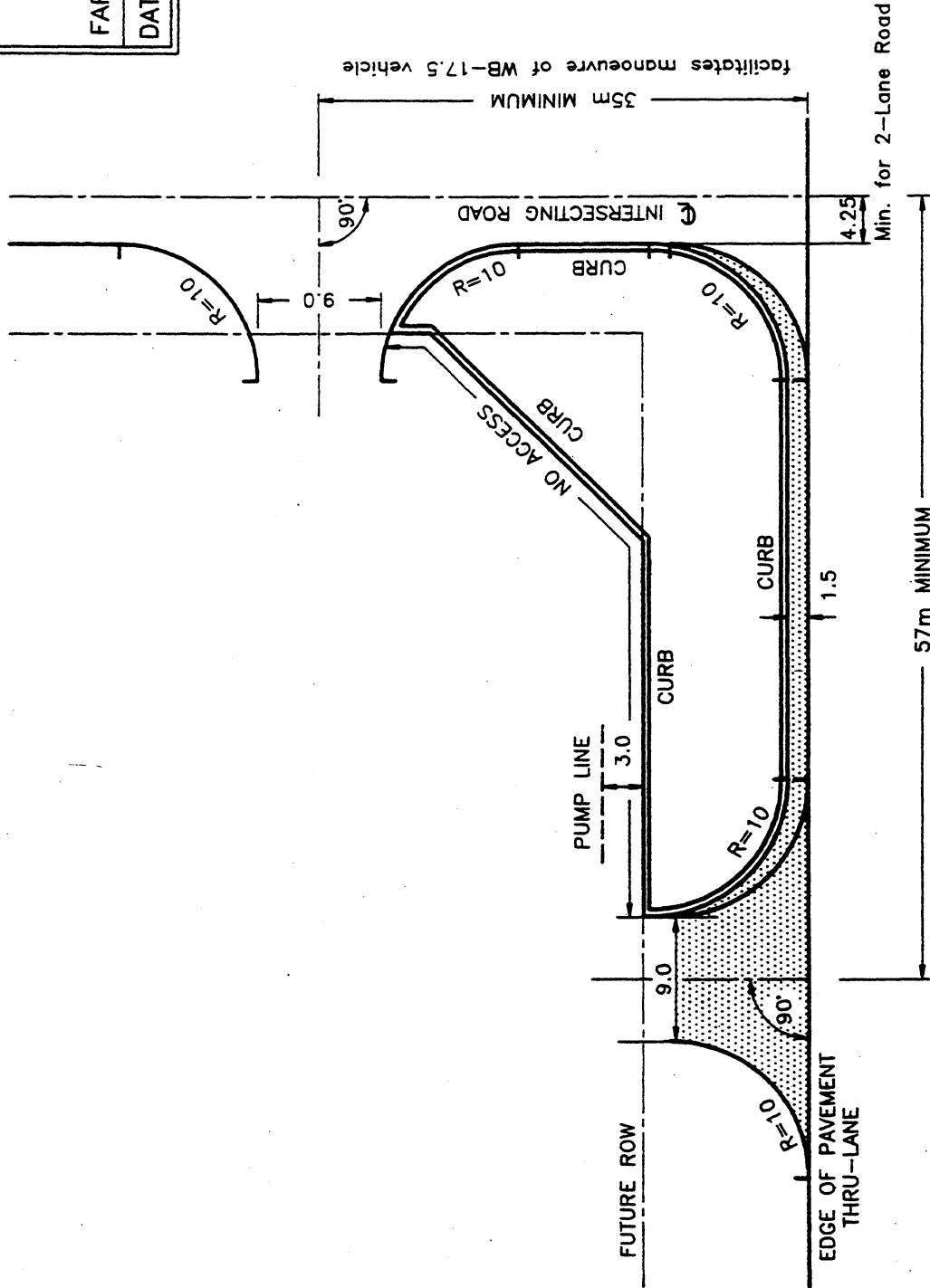


AREA TO BE PAVED

**NOTES:**

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



SCALE 1:500



MINISTRY OF TRANSPORTATION  
ONTARIO

## CSAS - 7

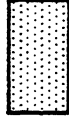
### URBAN 4 - LANE CURBED HIGHWAY

FAR SIDE LOCATION - DOUBLE ACCESS  
THIS STANDARD SHALL BE TREATED  
AS A SINGLE ENTRANCE FOR PERMIT APPLICATION

DATE: 1994-01

REV:

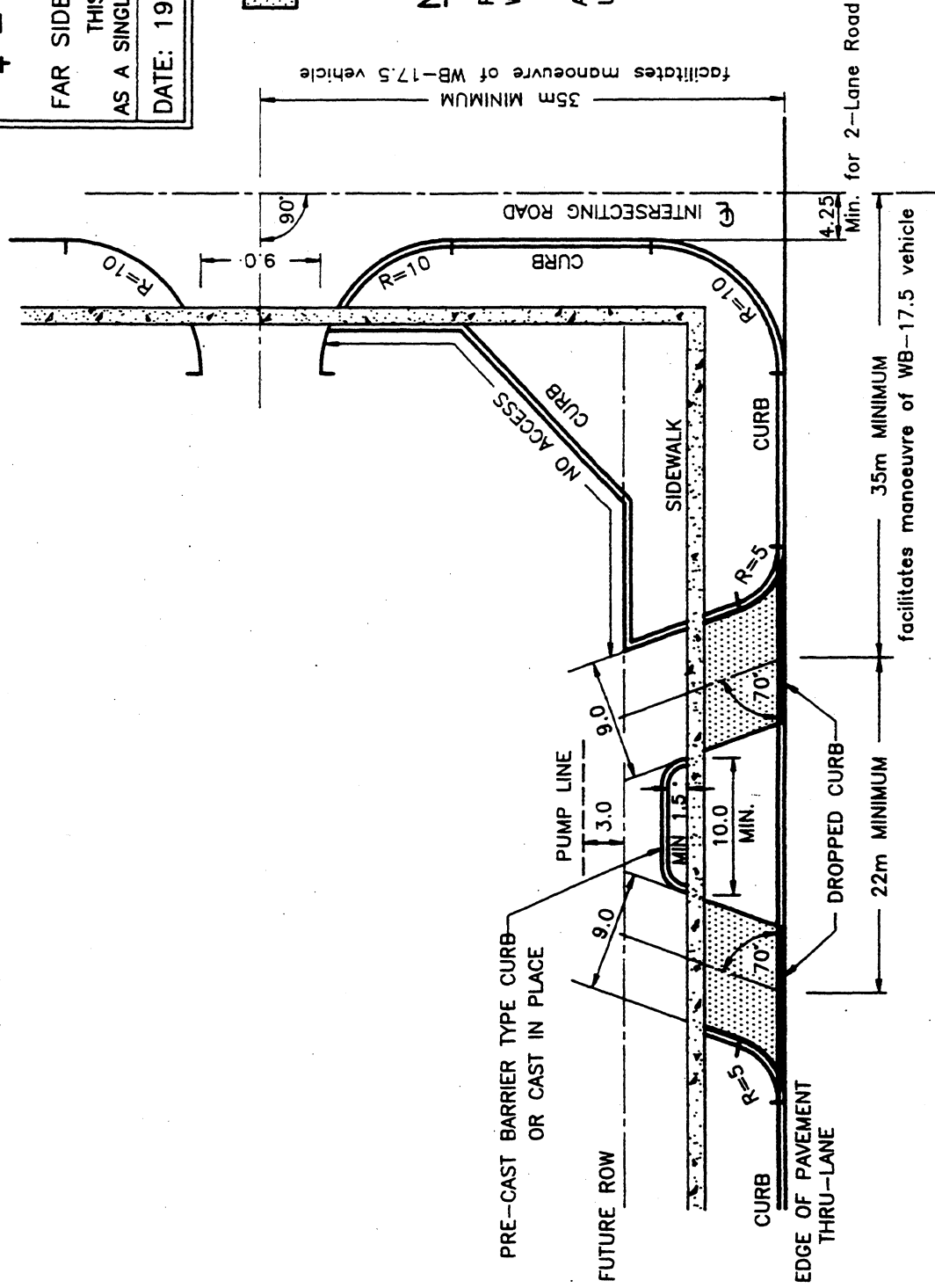
AREA TO BE PAVED



#### NOTES:

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



SCALE 1:500

MINISTRY OF TRANSPORTATION  
ONTARIO

CSAS - 8

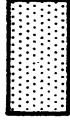
URBAN  
4 - LANE CURBED HIGHWAY

FAR SIDE LOCATION - SINGLE ACCESS

DATE: 1994-01

REV:

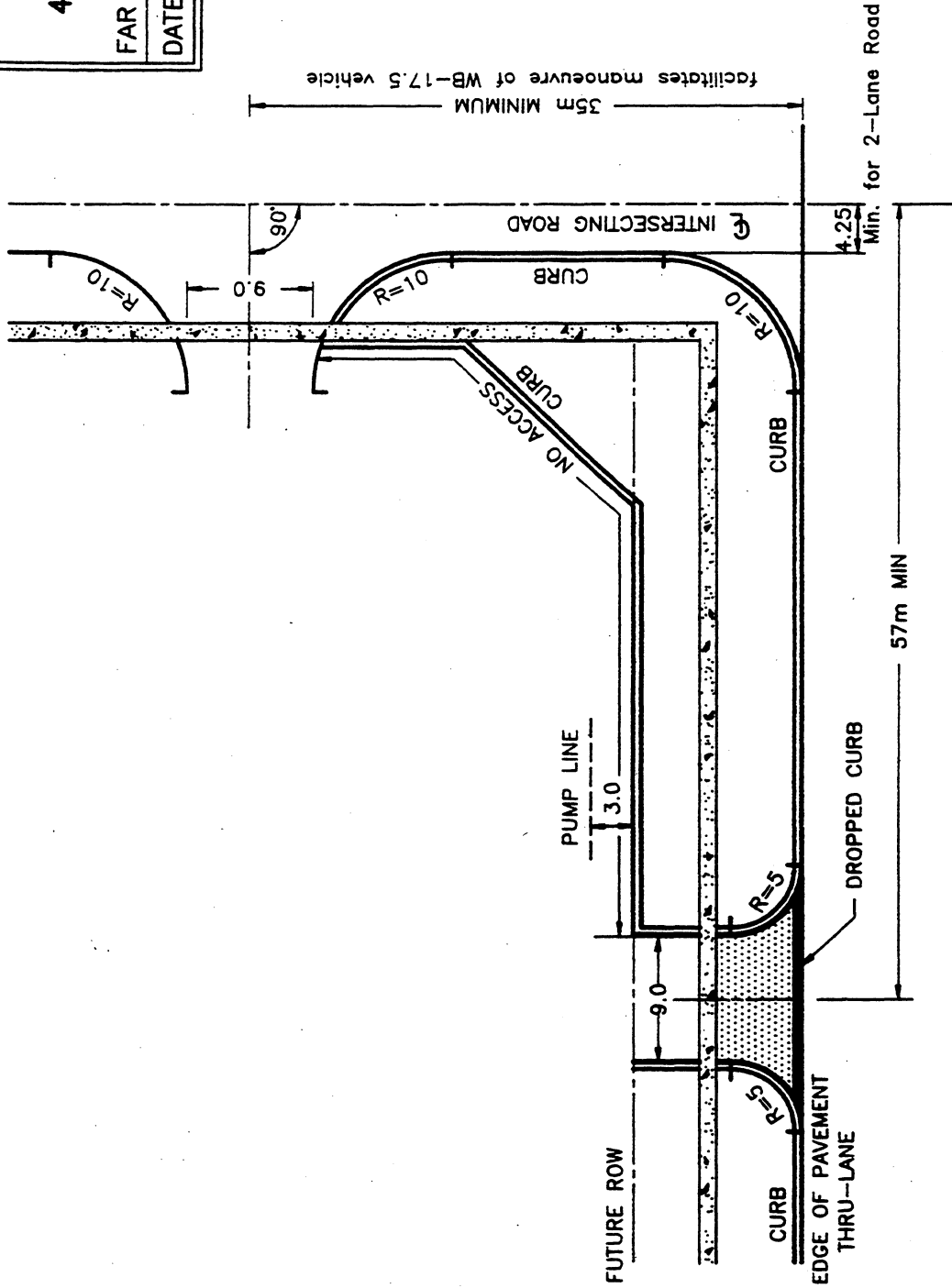
AREA TO BE PAVED



**NOTES:**

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



SCALE 1:500

MINISTRY OF TRANSPORTATION  
ONTARIO

CSAS - 9

URBAN

2 & 4 LANE HIGHWAY

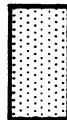
BETWEEN INTERSECTIONS - DOUBLE ACCESS  
THIS STANDARD SHALL BE TREATED  
AS A SINGLE ENTRANCE FOR PERMIT APPLICATION

DATE: 1994-01

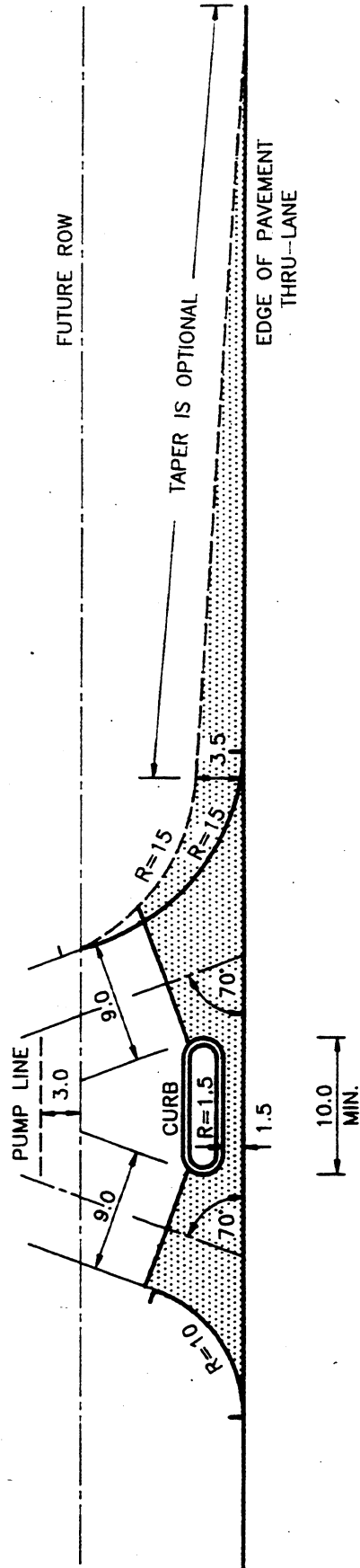
REV:

**NOTES:**

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS  
ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



AREA TO BE PAVED

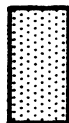


TAPER LENGTH			
Based on Lane Change Criterium			
Design Speed km/h	60	70	80
Taper, m	50	60	70

SCALE 1:500

**REV:**

AREA TO BE PAVED

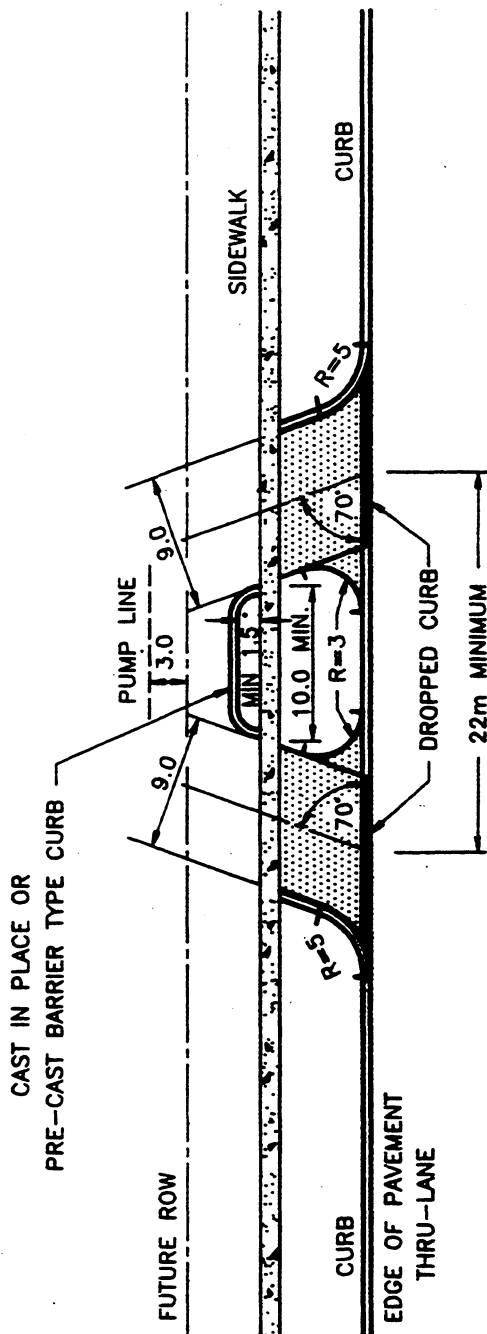


**NOTES:**

**PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS**

**ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED**

**SCALE 1:500**



# CSAS - 11

## URBAN

### 2 & 4 LANE HIGHWAY BETWEEN INTERSECTION

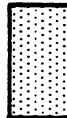
ADJACENT COMMERCIAL SITES - DOUBLE ACCESS  
THIS STANDARD SHALL BE TREATED  
AS A SINGLE ENTRANCE FOR PERMIT APPLICATION

DATE: 1994-01

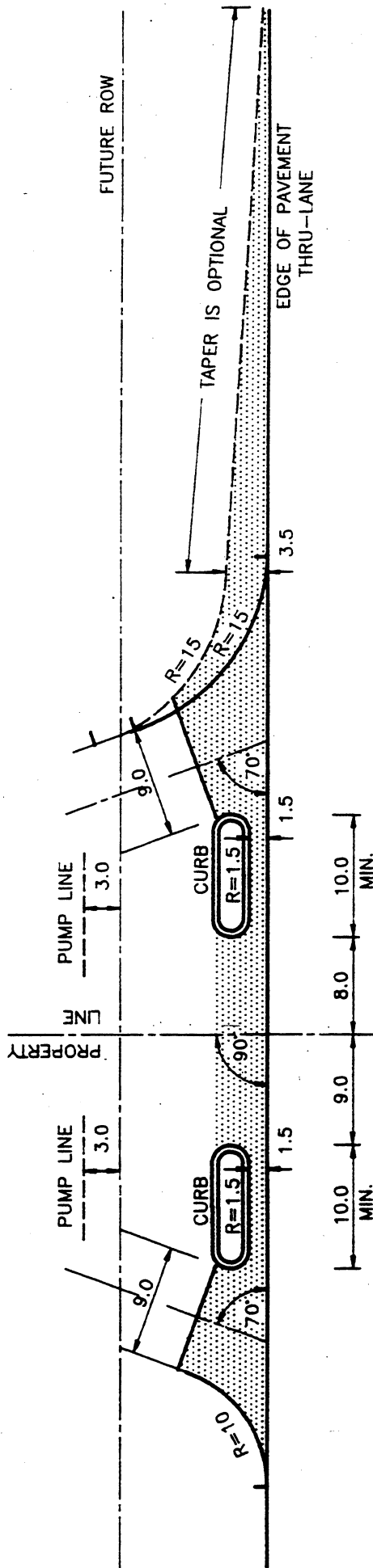
REV:

#### NOTES:

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS  
ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



AREA TO BE PAVED



TAPER LENGTH		
Based on Lane Change Criterion		
Design Speed km/h	60	70
Taper, m	50	60
	60	70

SCALE 1:500

# CSAS - 12

## URBAN

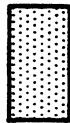
### 4 - LANE CURBED HIGHWAY BETWEEN INTERSECTION

ADJACENT COMMERCIAL SITES - DOUBLE ACCESS  
THIS STANDARD SHALL BE TREATED  
AS A SINGLE ENTRANCE FOR PERMIT APPLICATION

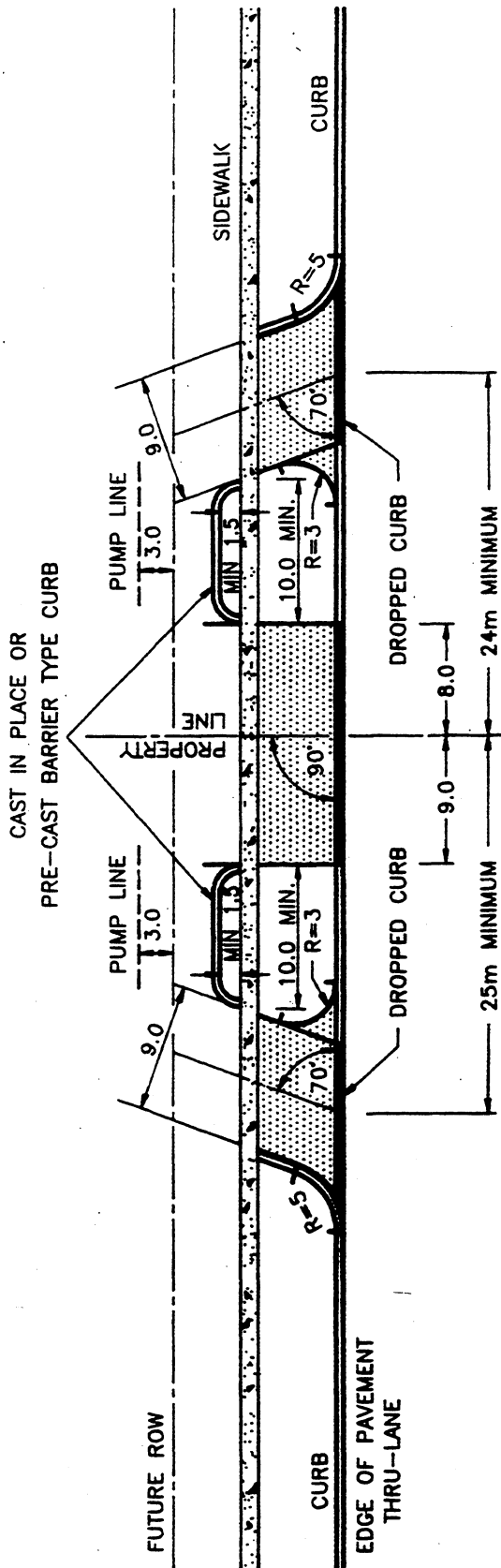
DATE: 1994-01 REV:

#### NOTES:

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS  
ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



AREA TO BE PAVED



SCALE 1:500



# CSAS - 14

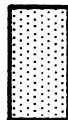
## RURAL 2 & 4 LANE HIGHWAY OPEN DITCH DESIGN

NEAR SIDE LOCATION - DOUBLE ACCESS  
THIS STANDARD SHALL BE TREATED  
AS A SINGLE ENTRANCE FOR PERMIT APPLICATION

DATE: 1994-01

REV:

TAPER LENGTH		
Based on Lane Change Criterion		
Design Speed km/h	80	90
Taper, m	70	75
	80	80



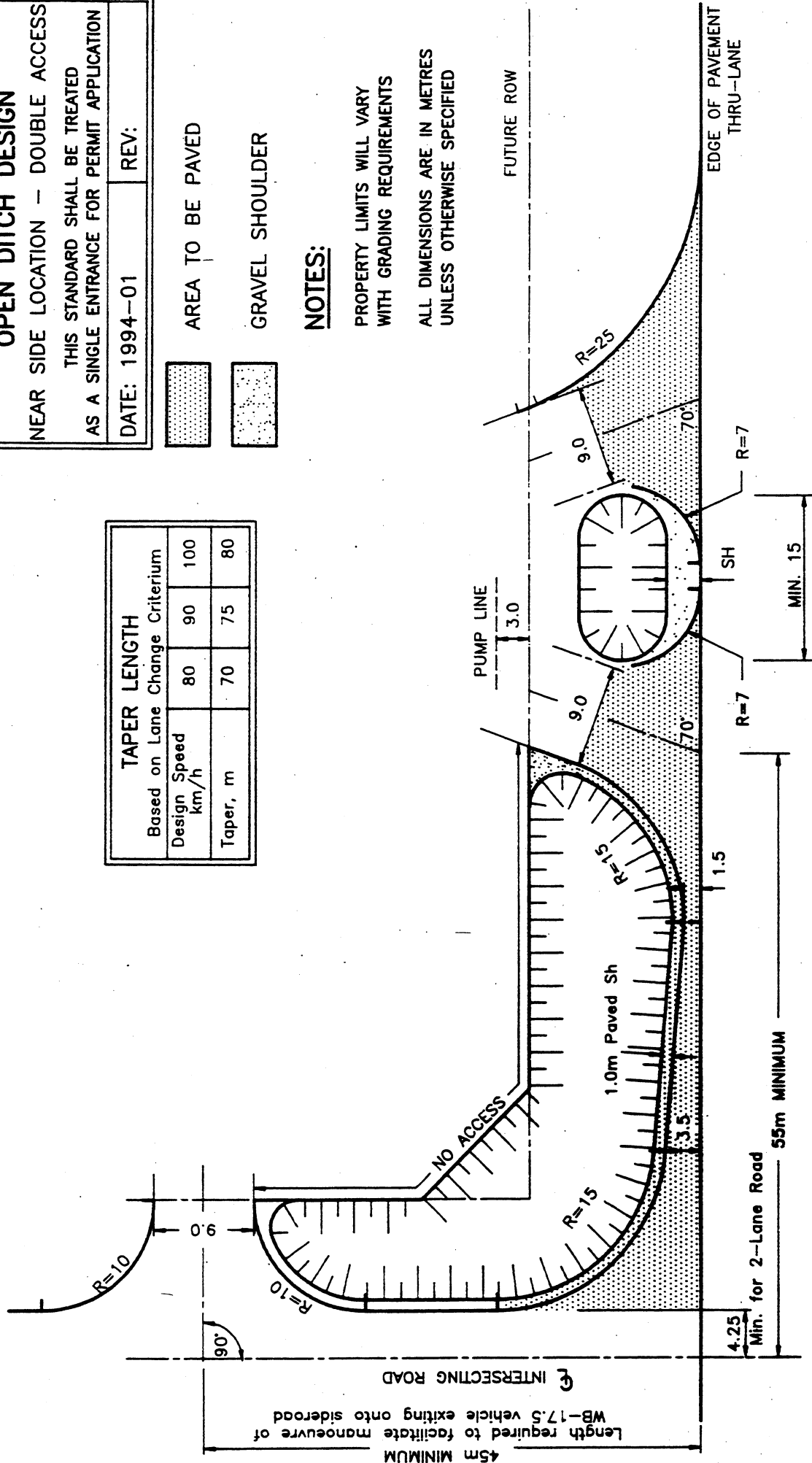
AREA TO BE PAVED



GRAVEL SHOULDER

### NOTES:

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS  
ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED





MINISTRY OF TRANSPORTATION  
ONTARIO

CSAS - 15

RURAL  
2 & 4 LANE HIGHWAY  
OPEN DITCH DESIGN

NEAR SIDE LOCATION - SINGLE ACCESS

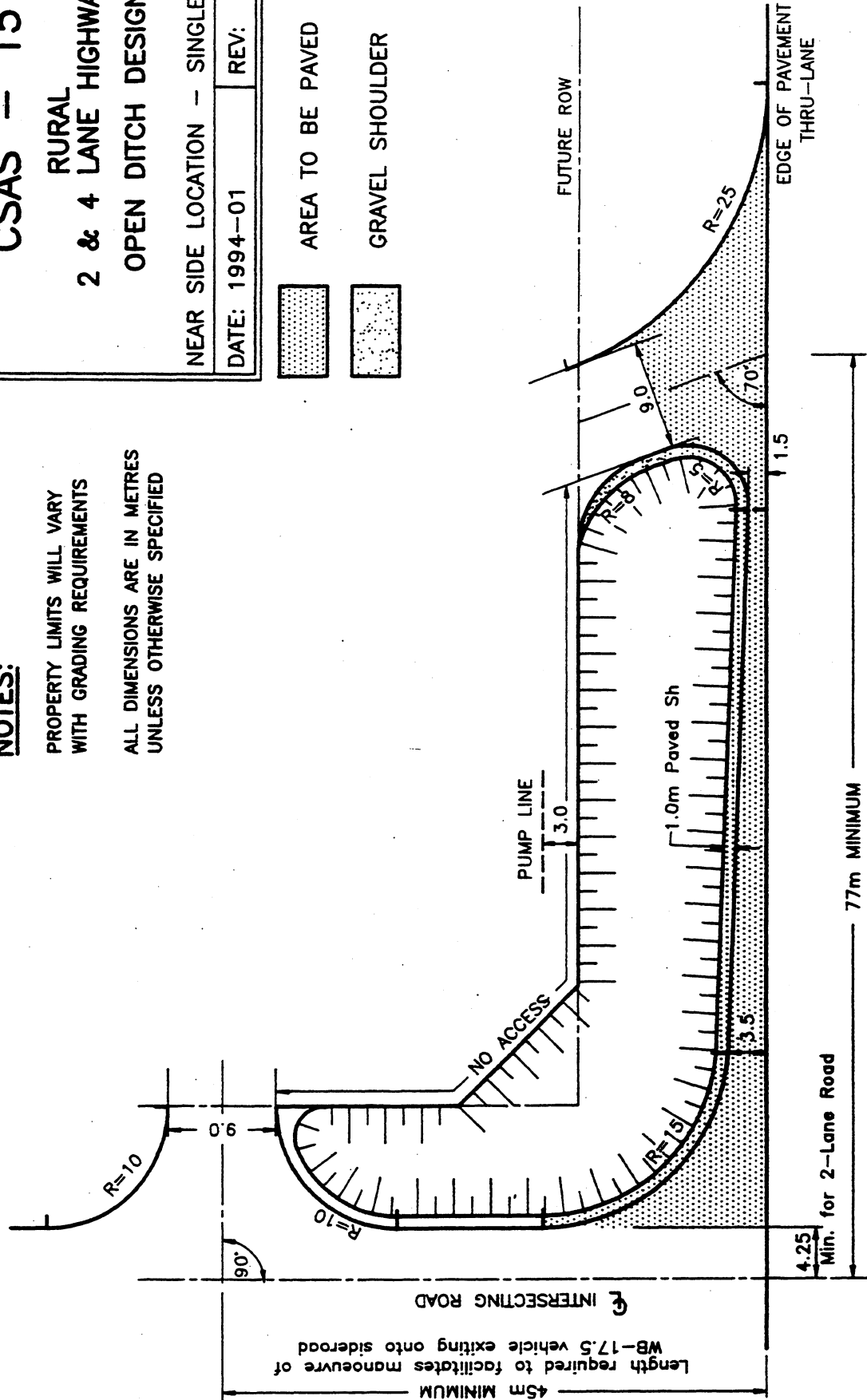
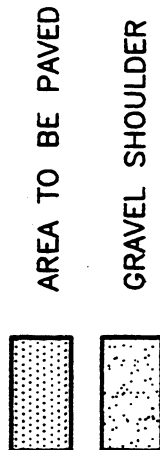
DATE: 1994-01

REV:

NOTES:

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



SCALE 1:500

**SCALE 1:500**

# CSAS - 17

RURAL

2 & 4 LANE HIGHWAY

OPEN DITCH DESIGN

FAR SIDE LOCATION - DOUBLE ACCESS

THIS STANDARD SHALL BE TREATED

AS A SINGLE ENTRANCE FOR PERMIT APPLICATION

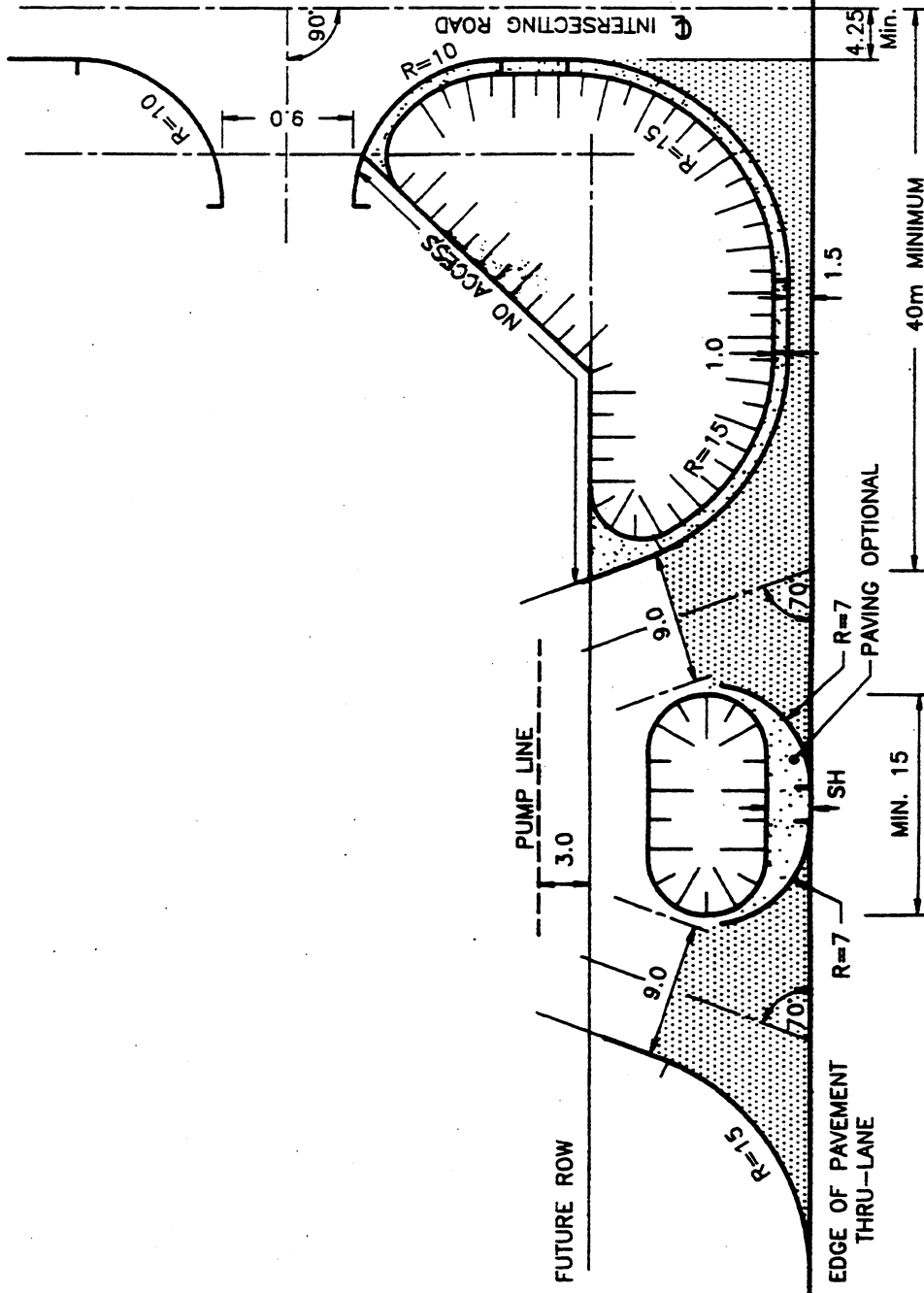
DATE: 1994-01

REV:

## NOTES:

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



SCALE 1:500

MINISTRY OF TRANSPORTATION  
ONTARIO

CSAS - 18

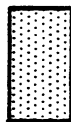
RURAL  
2 & 4 LANE HIGHWAY

FAR SIDE LOCATION - SINGLE ACCESS

DATE: 1994-01

REV:

AREA TO BE PAVED



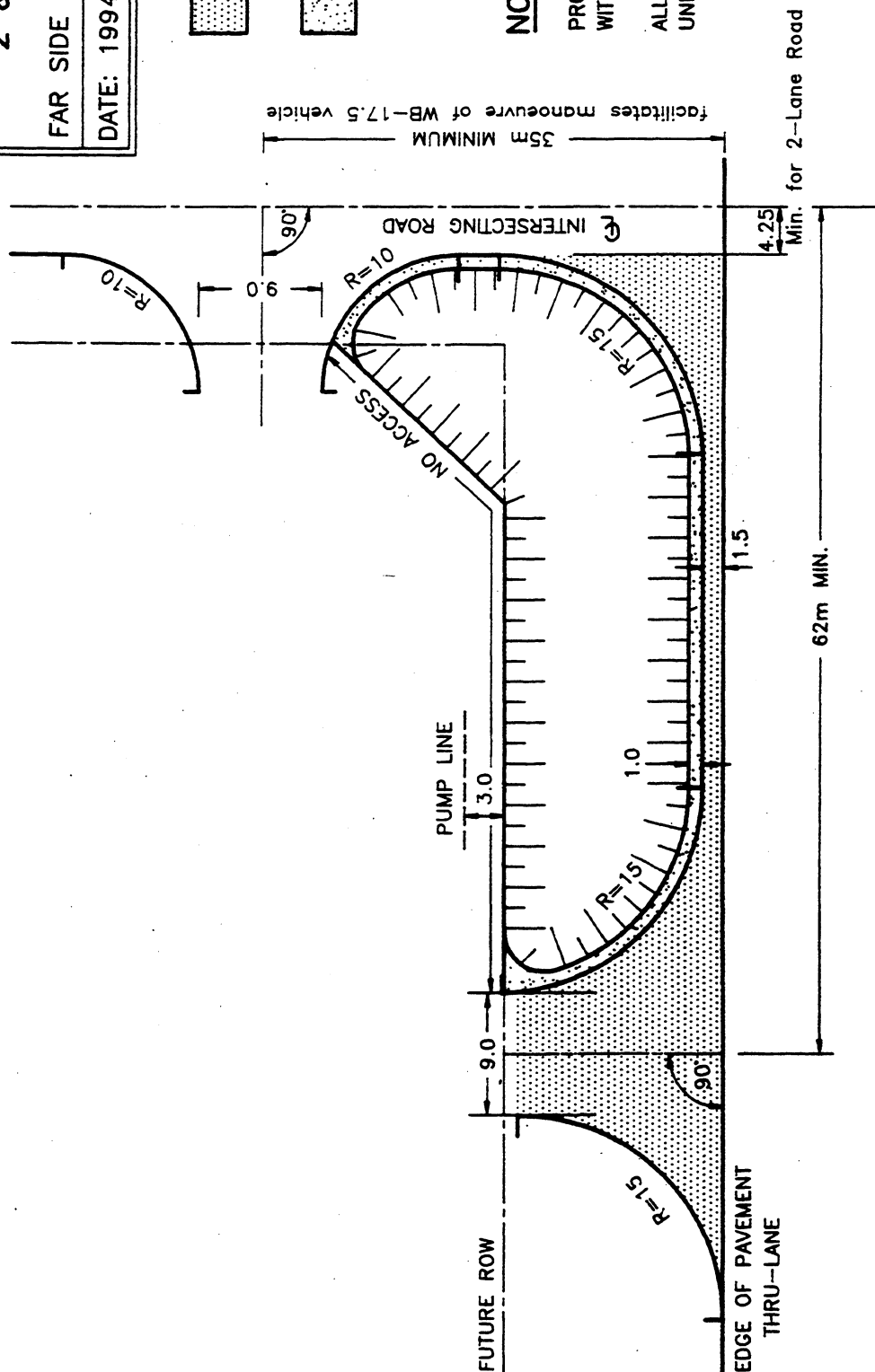
GRAVEL SHOULDER



**NOTES:**

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



SCALE 1:500

# CSAS - 19

## RURAL

### 2 & 4 LANE HIGHWAY

#### RAISED ISLAND DESIGN

BETWEEN INTERSECTIONS - DOUBLE ACCESS  
THIS STANDARD SHALL BE TREATED  
AS A SINGLE ENTRANCE FOR PERMIT APPLICATION

DATE: 1994-01

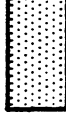
REV:

#### TAPER LENGTH

Based on Lane Change Criterion

Design Speed km/h	80	90	100
Taper, m	70	75	80

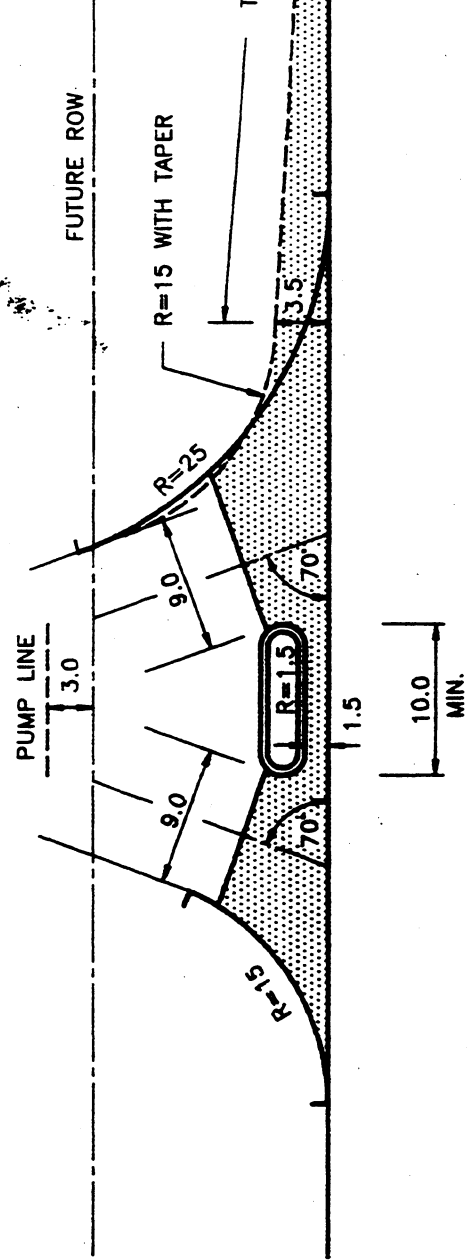
AREA TO BE PAVED



#### NOTES:

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



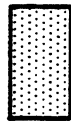
SCALE 1:500

**CSAS - 20**  
**RURAL**  
**2 & 4 LANE HIGHWAY**  
**OPEN DITCH DESIGN**  
BETWEEN INTERSECTIONS - DOUBLE ACCESS  
THIS STANDARD SHALL BE TREATED  
AS A SINGLE ENTRANCE FOR PERMIT APPLICATION

DATE: 1994-01

REV:

TAPER LENGTH Based on Lane Change Criterion			
Design Speed km/h	80	90	100
Taper, m	70	75	80



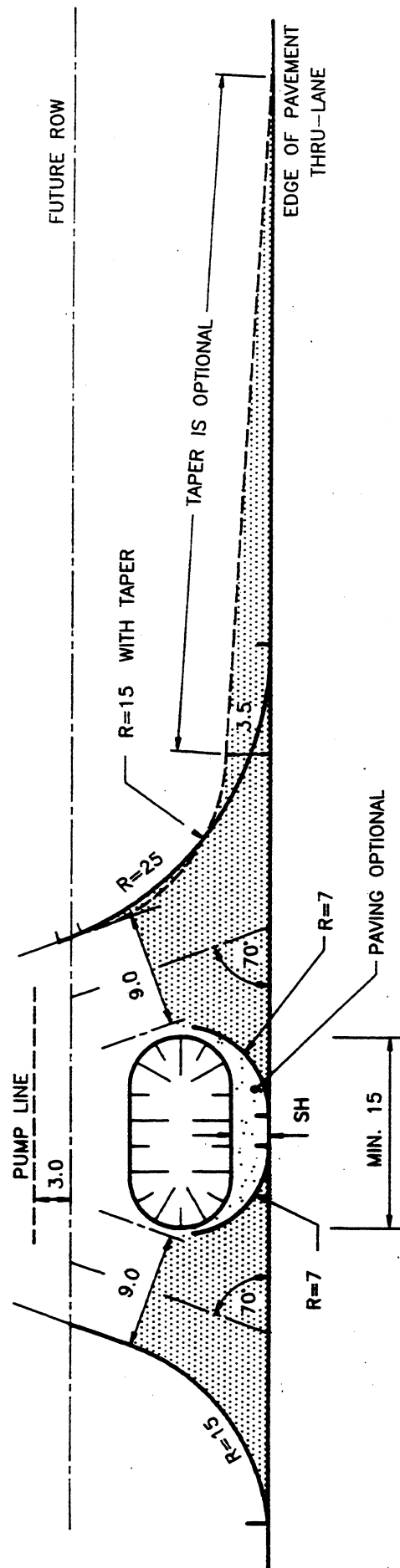
AREA TO BE PAVED



GRAVEL SHOULDER

**NOTES:**

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS  
  
ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



MINISTRY OF TRANSPORTATION  
ONTARIO

# CSAS - 21

RURAL

2 & 4 LANE HIGHWAY

BETWEEN INTERSECTION

RAISED ISLAND DESIGN

ADJACENT COMMERCIAL SITES - DOUBLE ACCESS  
THIS STANDARD SHALL BE TREATED

AS A SINGLE ENTRANCE FOR PERMIT APPLICATION

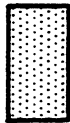
DATE: 1994-01

REV:

## TAPER LENGTH

Based on Lane Change Criterion

Design Speed km/h	80	90	100
Taper, m	70	75	80

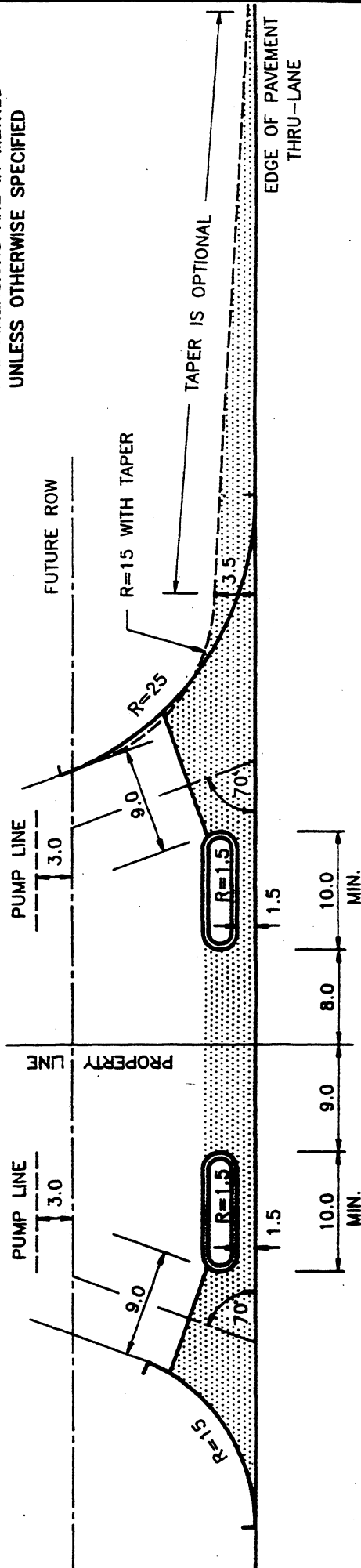


AREA TO BE PAVED

## NOTES:

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



SCALE 1:500

# CSAS - 22

RURAL

## 2 & 4 LANE HIGHWAY BETWEEN INTERSECTION OPEN DITCH DESIGN

ADJACENT COMMERCIAL SITES - DOUBLE ACCESS  
THIS STANDARD SHALL BE TREATED  
AS A SINGLE ENTRANCE FOR PERMIT APPLICATION

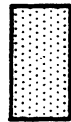
DATE: 1994-01

REV:

### TAPER LENGTH

Based on Lane Change Criterion

Design Speed km/h	80	90	100
Taper, m	70	75	80



AREA TO BE PAVED

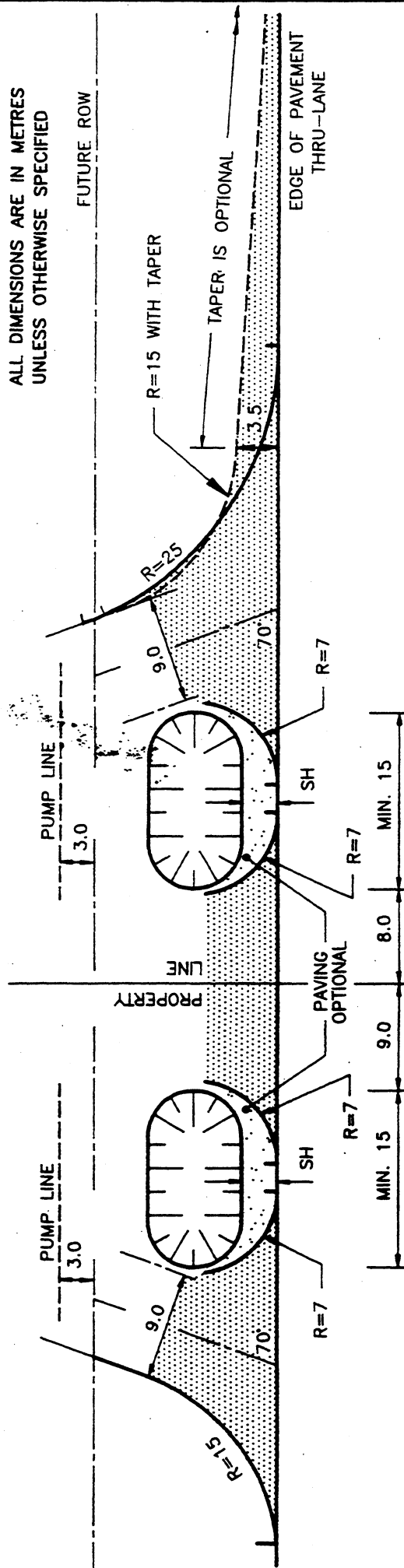


GRAVEL SHOULDER

### NOTES:

PROPERTY LIMITS WILL VARY  
WITH GRADING REQUIREMENTS

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



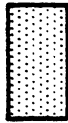
SCALE 1:500



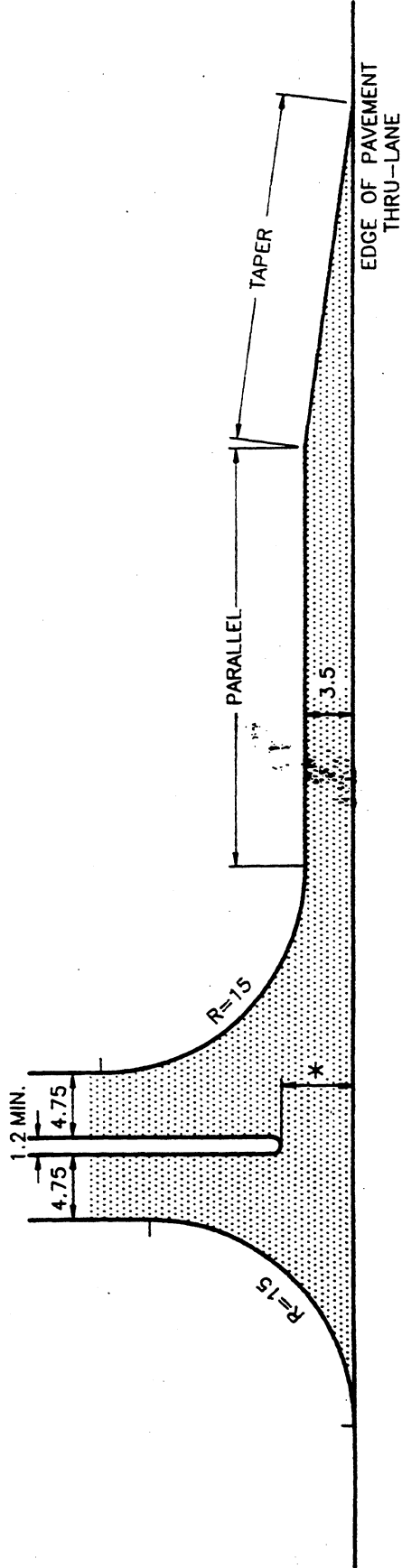


MINISTRY OF TRANSPORTATION ONTARIO	
CSAS - 24	
ENTRANCE TO SHOPPING CENTRE	
FOR RURAL AND URBAN AREAS	
DATE: 1994-01	REV:

DECELERATION LANE LENGTHS			
Highway Design Speed (km/h)	Length of Taper (m)	Length of Parallel Lane(m)	Total Length of Deceleration Lane(m)
50	40	20	60
60	50	30	80
70	60	45	105
80	70	60	130
90	75	70	140
100	80	85	165



AREA TO BE PAVED



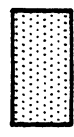
\* OFFSET DISTANCE: 5.0m FOR 4-LANE HIGHWAYS  
8.5m FOR 2-LANE HIGHWAYS

SCALE 1:500

**CSAS -- 25**  
**ENTRANCE TO SHOPPING**  
**CENTRE**

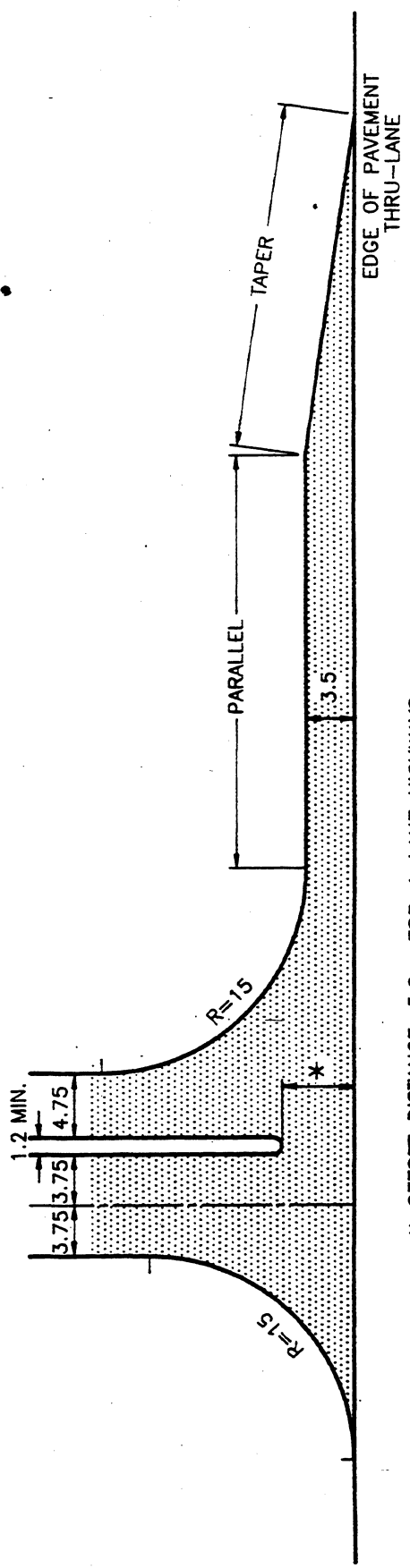
FOR RURAL AND URBAN AREAS -- SIGNALIZED

DATE: 1994-01 REV:



AREA TO BE PAVED

DECELERATION LANE LENGTHS			
Highway Design Speed (km/h)	Length of Taper (m)	Length of Parallel Lane (m)	Total Length of Deceleration Lane (m)
50	40	20	60
60	50	30	80
70	60	45	105
80	70	60	130
90	75	70	140
100	80	85	165



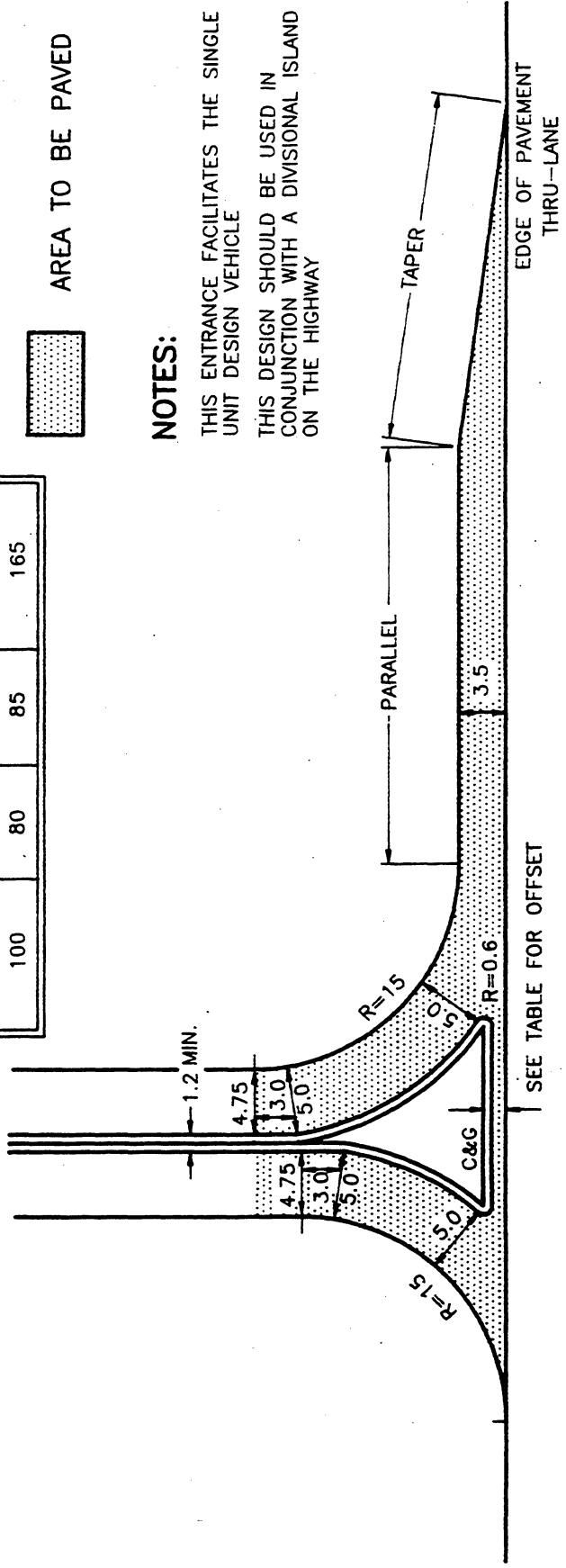
\* OFFSET DISTANCE: 5.0m FOR 4-LANE HIGHWAYS  
8.5m FOR 2-LANE HIGHWAYS

DECELERATION LANE LENGTHS			
Highway Design Speed (km/h)	Length of Taper (m)	Length of Parallel Lane (m)	Total Length of Deceleration Lane (m)
50	40	20	60
60	50	30	80
70	60	45	105
80	70	60	130
90	75	70	140
100	80	85	165

MINISTRY OF TRANSPORTATION  
 ONTARIO

CSAS - 26  
 ENTRANCE TO SHOPPING CENTRE  
 DESIGN VEHICLE - SU  
 FOR RURAL AND URBAN AREAS

DATE: 1994-01  
 REV:



**NOTES:**

THIS ENTRANCE FACILITATES THE SINGLE UNIT DESIGN VEHICLE

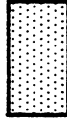
THIS DESIGN SHOULD BE USED IN CONJUNCTION WITH A DIVISIONAL ISLAND ON THE HIGHWAY

DESIGN SPEED km/h	50	60	70	80	90	100
OFFSET	1.0	1.2	1.4	1.6	1.8	2.0

SEE TABLE FOR OFFSET

DECELERATION LANE LENGTHS			
Highway Design Speed (km/h)	Length of Taper (m)	Length of Parallel Lane (m)	Total Length of Deceleration Lane (m)
50	40	20	60
60	50	30	80
70	60	45	105
80	70	60	130
90	75	70	140
100	80	85	165

MINISTRY OF TRANSPORTATION ONTARIO	
CSAS - 27	
ENTRANCE TO SHOPPING CENTRE	
DESIGN VEHICLE - WB-15 FOR RURAL AND URBAN AREAS	
DATE: 1994-01	REV:



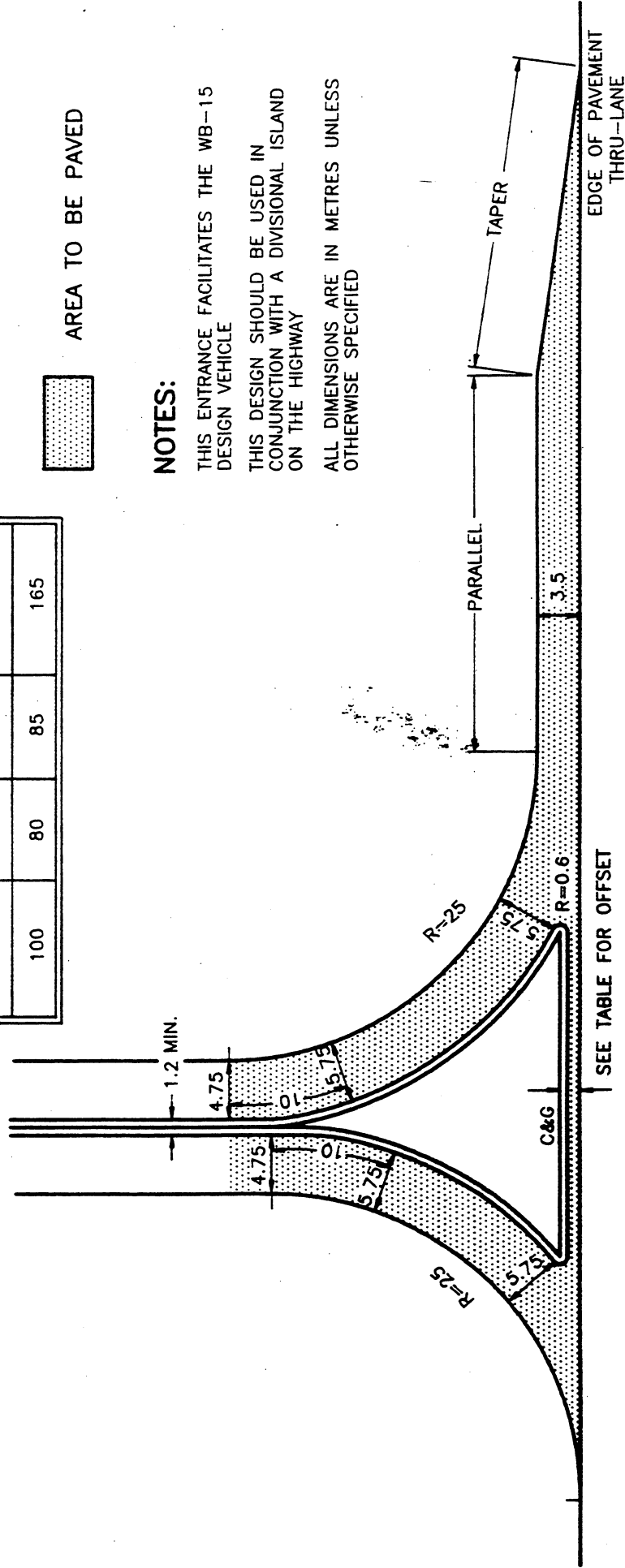
AREA TO BE PAVED

### NOTES:

THIS ENTRANCE FACILITATES THE WB-15 DESIGN VEHICLE

THIS DESIGN SHOULD BE USED IN CONJUNCTION WITH A DIVISIONAL ISLAND ON THE HIGHWAY

ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SPECIFIED



SEE TABLE FOR OFFSET

DESIGN SPEED km/h	50	60	70	80	90	100
OFFSET	1.0	1.2	1.4	1.6	1.8	2.0

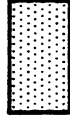
SCALE 1:500

# CSAS - 28

## ENTRANCE TO RECREATIONAL AREA

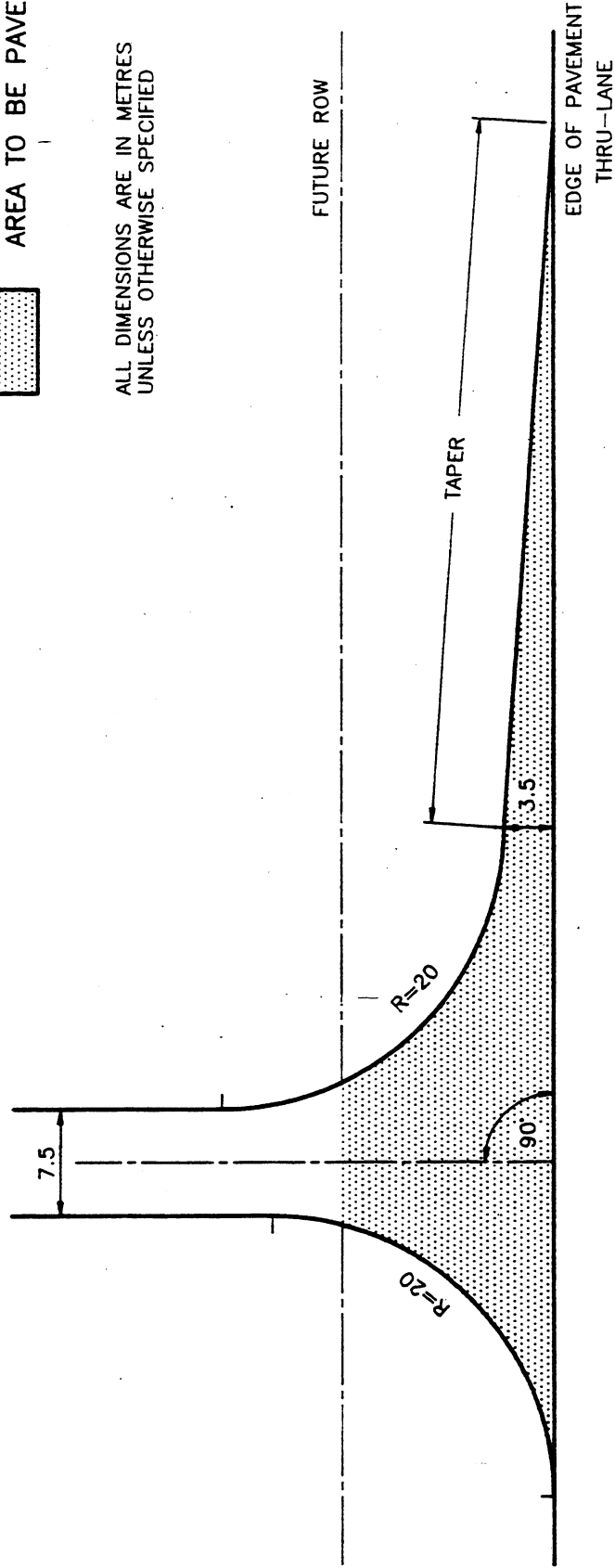
DATE: 1994-01 REV:

TAPER LENGTH Based on Lane Change Criterion			
Design Speed km/h	80	90	100
Taper, m	70	75	80



AREA TO BE PAVED

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



SCALE 1:500

MINISTRY OF TRANSPORTATION  
ONTARIO

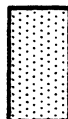
CSAS - 29

ENTRANCE TO SMALL UTILITY  
STATION

FOR RURAL & URBAN AREAS

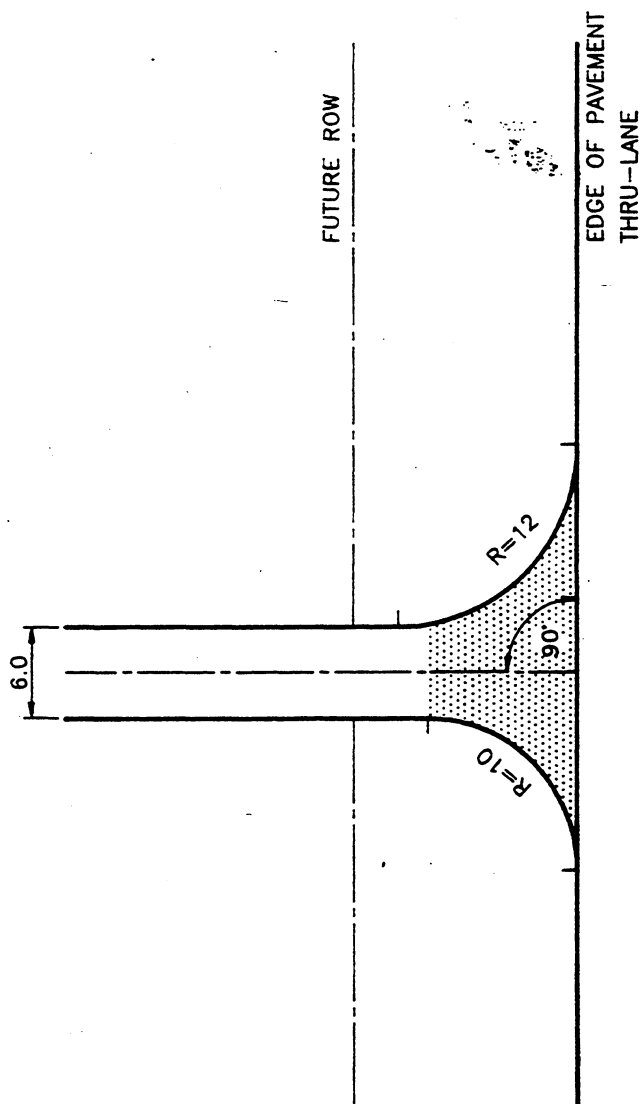
DATE: 1994-01

REV:



AREA TO BE PAVED

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



SCALE 1:500

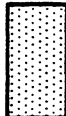
# CSAS - 30

## ENTRANCE TO LARGE UTILITY STATION

FOR RURAL & URBAN AREAS

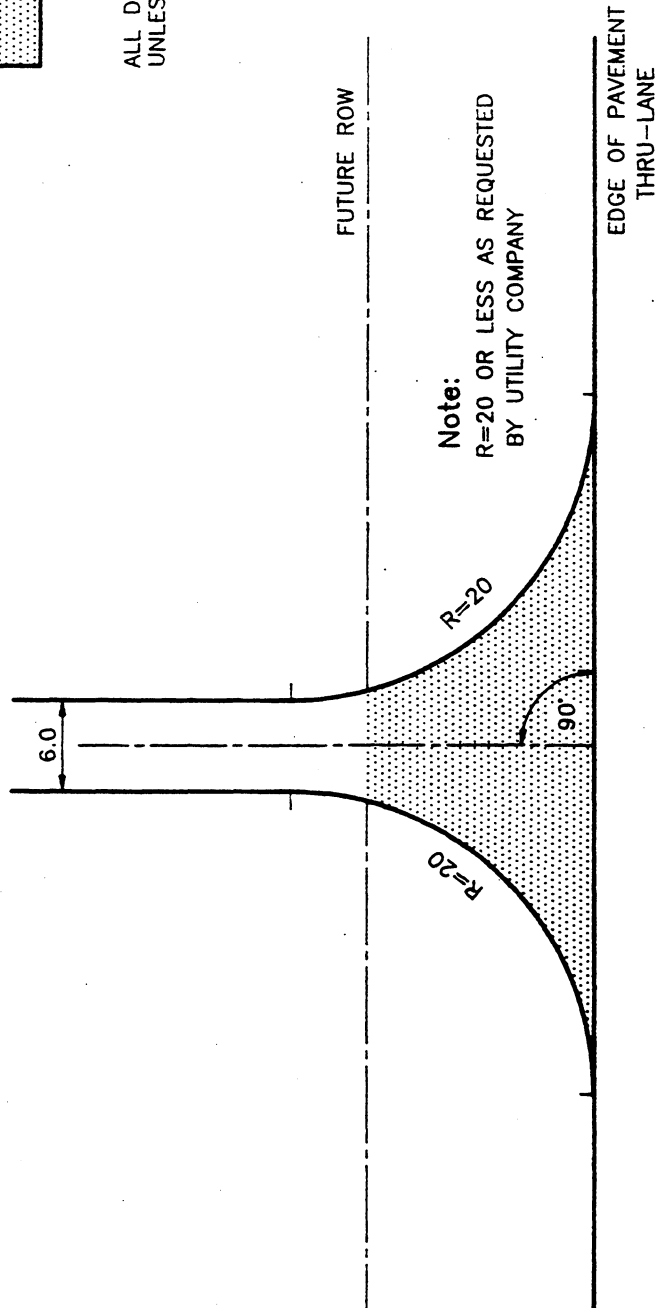
DATE: 1994-01

REV:



AREA TO BE PAVED

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



SCALE 1:500



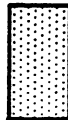
# CSAS - 31

## ENTRANCE TO SMALL BUSINESS

FOR RURAL AREAS

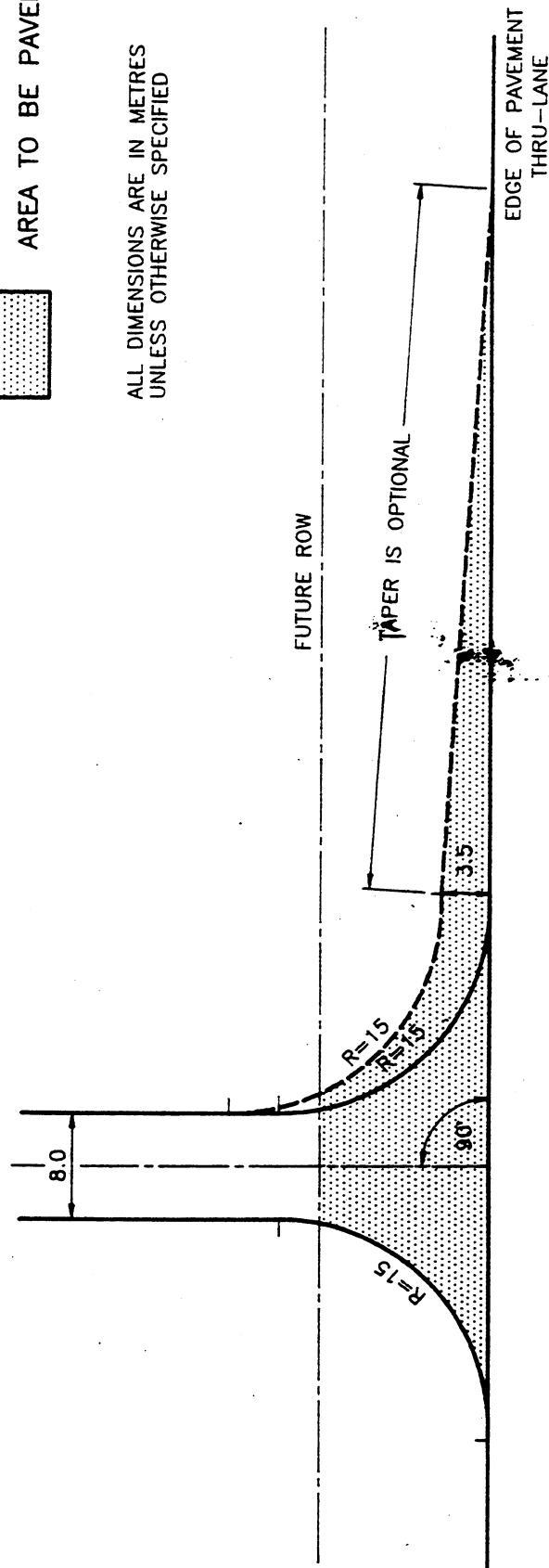
DATE: 1994-01

REV:



AREA TO BE PAVED

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



SCALE 1:500

MINISTRY OF TRANSPORTATION  
ONTARIO

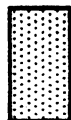
CSAS - 32

ENTRANCE TO SMALL BUSINESS

FOR URBAN AREAS

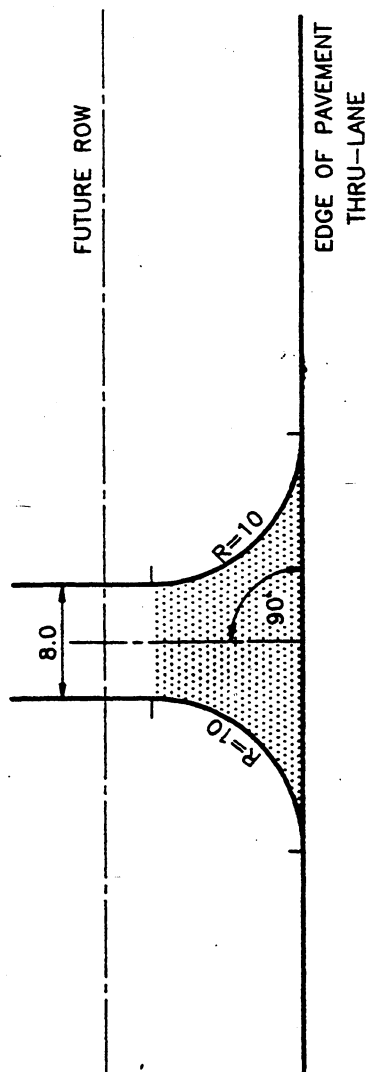
DATE: 1994-01

REV:



AREA TO BE PAVED

ALL DIMENSIONS ARE IN METRES  
UNLESS OTHERWISE SPECIFIED



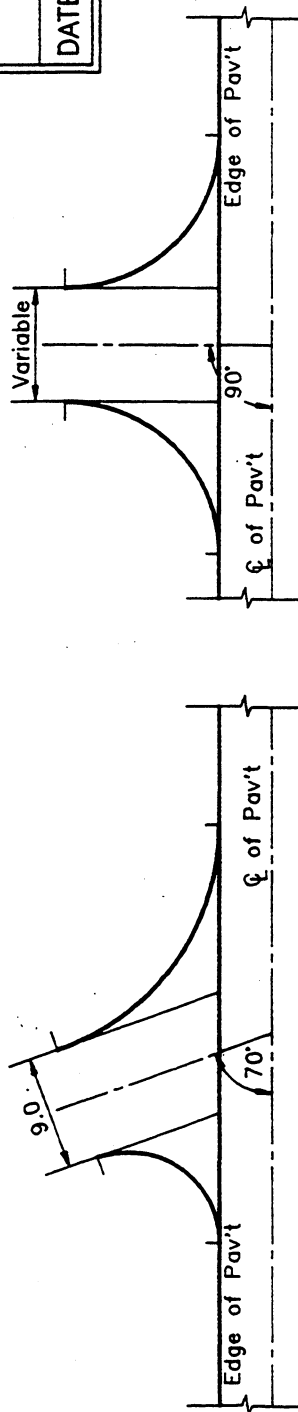
SCALE 1:500

# CSAS - PROF

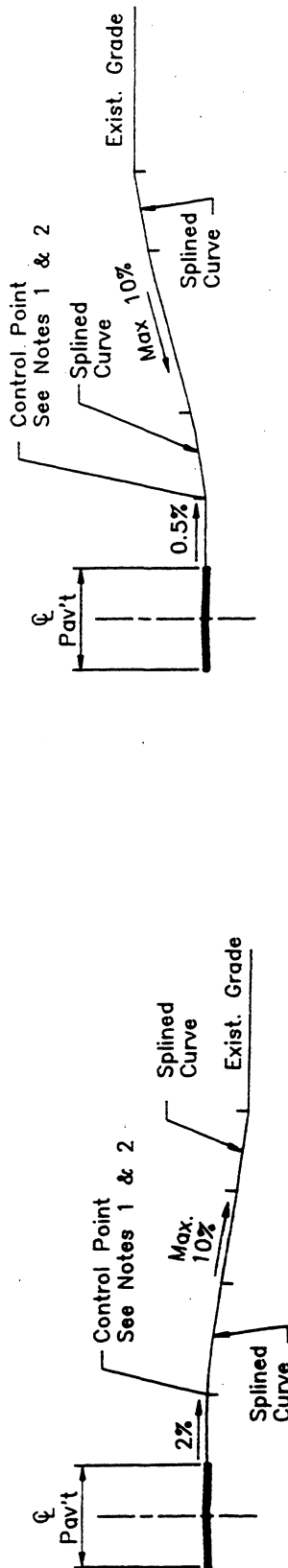
COMMERCIAL SITE  
PROFILE STANDARD

DATE: 1994-01

REV:



## TYPICAL ENTRANCES



## TYPICAL PROFILE IN FILL

## TYPICAL PROFILE IN CUT

### NOTES:

- 1 For CSAS Designs with islands, the control point is the curb line adjacent to the edge of pavement.
- 2 For CSAS Designs without islands, the control point is the edge of shoulder.
- 3 Profiles apply to entrances from 70' to 90'.
- 4 All dimensions are in metres unless otherwise specified.