University of South Australia

2006 End of Year Examination

School	NBE	Subject Area & Catalogue number	CIVE 5016
Course Name		Road Safety Engineering	

Student ID	☐☐☐☐☐☐☐☐☐			
Given Name/s		Surname		
If you are required to use a calculator, please note the make and model here	Make:	Any	Model	Any

Official Reading Time: 10 Minutes
Writing Time: 2 Hours

Instructions to Candidates:

1 Attempt ALL FOUR (4) questions
2 Marks for each question are shown in brackets

Permitted Materials

1 Calculators are permitted
2 This is an OPEN BOOK examination

DO NOT COMMENCE WRITING UNTIL INSTRUCTED TO DO SO

QUESTION 1

(a) Explain the use of the Critical Crash rate in determining if an intersection or road section should be considered as a hazardous road location.

[15 Marks]

(b) The road network for a rural region has an average annual crash rate of 63.17 casualty crashes/year/10^8 VKT. Two sections (X and Y) of a highway in this network are being considered for improvement on the basis of their crash record. Section X has an average of 120 crashes p.a. over the last three years. It is 20 km long and carries an AADT of 15000 veh/day. Section Y had a total of 60 casualty crashes over the last three years. It is 5 km long and carries an AADT of 12500 veh/day. By using the Critical Crash Rate method, indicate if either or both of these road sections should be considered as a hazardous road location.

[15 Marks]

QUESTION 2

(a) Describe the applications of collision diagrams in traffic accident studies.

[5 Marks]

(b) Describe the general procedures in identifying hazardous location in road safety engineering.

[5 Marks]

(c) What are the 4 E's in road safety engineering? Discuss the functions of each of them.

[10 marks]

QUESTION 3

(a) To undertake traffic conflict studies, conflict definitions and data collection methods need to be developed. What are the two commonly used conflict definition and data collection methods? Describe their applications and associated advantages and disadvantages with each method.

[10 marks]

(b) What are the major differences between conflict method and road safety audit?

[10 marks]

QUESTION 4

(a) What is a Road Safety Audit?

[5 Marks]

(b) The following sketch is a Schematic Plan view of a design for a road safety barrier, footbridge and bicycle path on an arterial road 2km out of a township. The Plan is NOT TO SCALE, and shows a North Point to assist you to identify features of the design. The School has yet to be moved to the location shown, but the proposed position of the School is 'fixed'.

The arterial road is zoned at 110km/hr and carries 6000 vehicles per day; 10% of the vehicles comprise heavy trucks and long-distance buses.

The proposed road safety barrier is suitable for redirecting cars, will be the length as indicated, and be installed to current Standard.

(1) From a road safety point of view, do you consider the situation shown would be safe or unsafe? List the features/locations which you think are not safe.

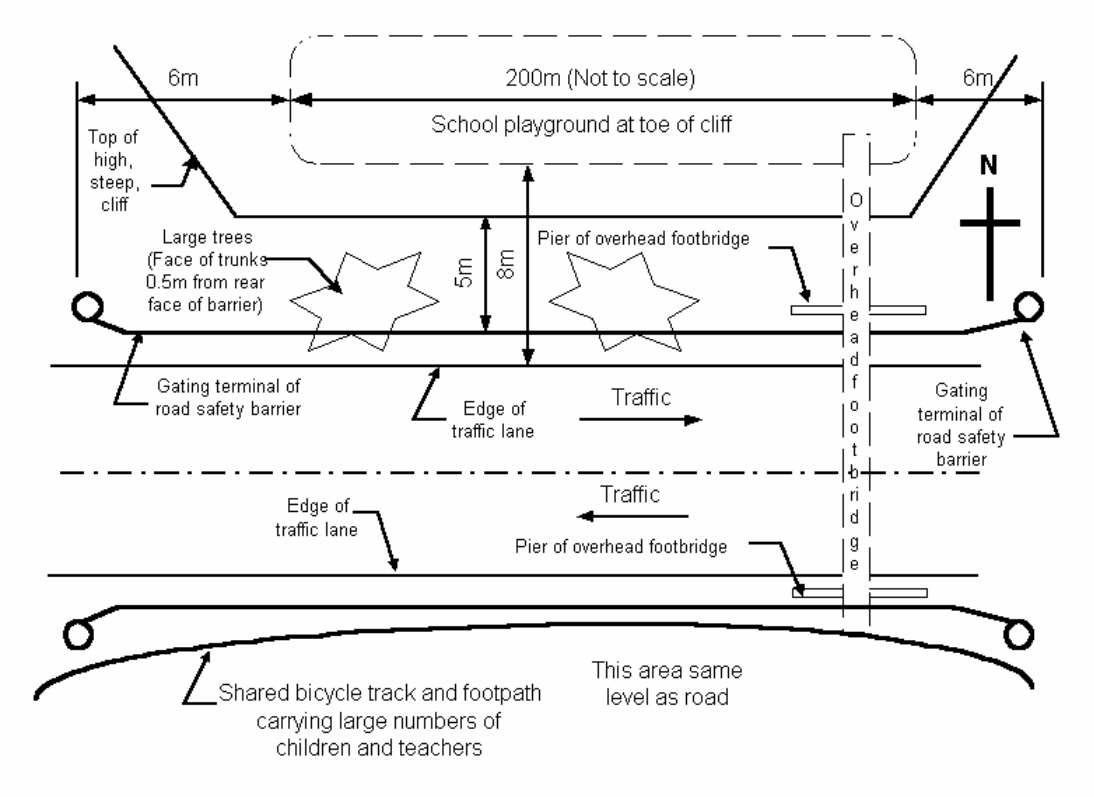
[10 Marks]

(2) State the reasons for your answer to (1). If you consider the situation would be unsafe, identify the points of concern, and of possible concern, and indicate their importance.

[15 Marks]

Your answer to (2) should state the types of crashes you consider might occur and their possible consequences.

[Note: You are not required to suggest specific solutions to improving any safety concerns you discussed above].



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