

## CASE SUMMARIES

RS 01 - RS 80

**GENERAL CHARACTERISTICS:**

CRASH TYPE: Side impact intersection collision - (Non-Fatal)  
 VEHICLES: 2 cars  
 DAY: Tuesday TIME: 1245 hours  
 WEATHER: Fine LIGHTING CONDITIONS: Daylight, overcast  
 ROAD SURFACE: Unsealed, damp  
 OCCUPANTS: unit 1, 1; Unit 2, 1  
 SPEED LIMIT: 110 km/h

**CRASH DESCRIPTION:**

Unit 1 was travelling west at approximately 80 km/h on a damp unsealed road. Unit 2, also on a damp unsealed road was travelling south at approximately 60 km/h. The driver of Unit 1, travelling on the road for the first time and in a borrowed car he had not driven before, was distracted by the illumination of a dashboard warning light. He slaved slightly, continuing into the intersection. When he looked up at the road again, Unit 2 was directly ahead. He braked violently and tried to swerve to the right. The front of his vehicle struck the left rear of Unit 2 square on, causing it to tear apart. After the impact, Unit 1 continued through the intersection, caning to rest facing north east having rotated clockwise through 110°. The front half of Unit 2 rolled through 360° and came to rest facing west. The detached rear section also continued along the road in the original direction of travel, rotating as it went. The driver of Unit 2 stated that, while she was aware of Unit 1 approaching the intersection, it appeared to **slow**, which she **assumed** indicated he was slowing to allow her right of way. She therefore continued into the intersection. The driver of Unit 1, a salesman on business in the area, stated that due to the absence of warning signs he was not even aware that he was approaching an intersection.

UNIT 1:      Vehicle Type : 1983 VH Commodore station wagon  
                  Driver: Male, 25 years, salesman, BAC: zero, inertia reel seat belt worn  
                  Injuries: Shock. Transported to hospital, not admitted. **MAIS**: 1

---

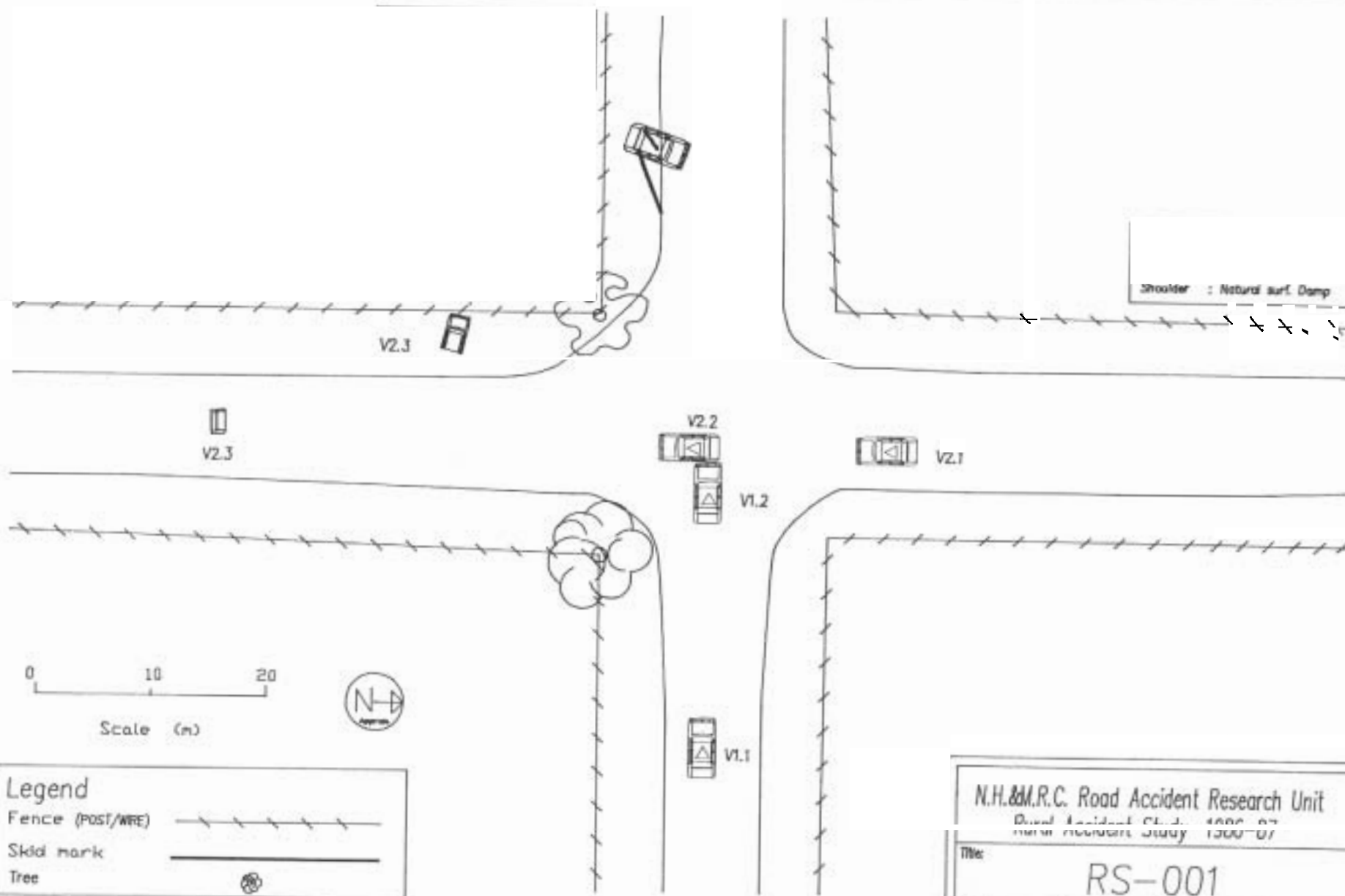
NOTE: BAC is measured in gm/100ml, unless otherwise stated.

UNIT 2:

Vehicle Type : 1974 Datsun 120Y sedan

Driver: Female, 41 years, hane duties, BAC: zero, inertia  
reel seat belt worn

Injuries: Neck strain; bruising to left side and  
across chest from seat belt. Bruising to both  
knees from dashboard. Bruised right shoulder and  
small laceration to superior right scalp.  
Hospitalized 24 hours. MAIS: 1



Acc. No.:

Mapped by:

Mapping Date:

Scale:

N.H.&amp;M.R.C. Road Accident Research Unit

Road Accident Study 1996-97

Title:

RS-001

Dep.No.

RS001-1

Issue:

4

Projection:

Scale:

Internal

GENERAL CHARACTERISTICS:

CRASH TYPE: Side impact intersection collision - (Non-Fatal)

VEHICLES: 2 cars

DAY: Sunday TIME: 1130 hours

WEATHER: Fine LIGHTING CONDITIONS: Daylight, clear

ROAD SURFACE: Sealed, dry

OCCUPANTS: unit 1, 2; Unit 2, 1

SPEED LIMIT: 80 km/h

CRASH DESCRIPTION:

Unit 1, towing a small four-berth caravan, was proceeding west on a two-lane road at approximately 80 km/h towards an intersection controlled by a Stop sign. Its occupants were an elderly retired couple on a round-Australia holiday. The driver had not travelled on the road before. Not seeing the Stop sign, or the intersection, the driver of Unit 1 proceeded into the intersection and into the path of Unit 2. The driver stated later that he was talking to his wife at the time of the crash. Unit 2, whose driver was returning to Adelaide to visit his family, was travelling south at approximately 80 km/h. When confronted with Unit 1 directly in front, he braked and turned the steering wheel clockwise to try to avoid the collision. Unit 2 struck the right side of Unit 1 on the front right wheel and the left side of Unit 2 then contacted the right side of Unit 1. Unit 2 yawed through 110° clockwise before coming to rest on a traffic island. The impact caused Unit 1 to yaw through 90° anti-clockwise, caning to rest on the shoulder on the western side of the road. The caravan remained attached, sustaining damage principally to the left front where it contacted the rear of unit 1.

UNIT 1: Vehicle Type: 1970 Ford Fairlane sedan towing a four berth caravan

Driver: Male, 63 years, retired, BAC: zero<sup>\*</sup>, 3 point static belt worn

Injuries: Shock: small abrasion to right forehead and back of right hand. Remained at scene. MAIS: 1

Front Seat Passenger: Fanale, 60 years, home duties, BAC:  
zero, 3 point static belt worn

Injuries: Traumatic laceration to liver from seat  
belt. Hospitalised for 12 days. MAIS: 4

UNIT 2:

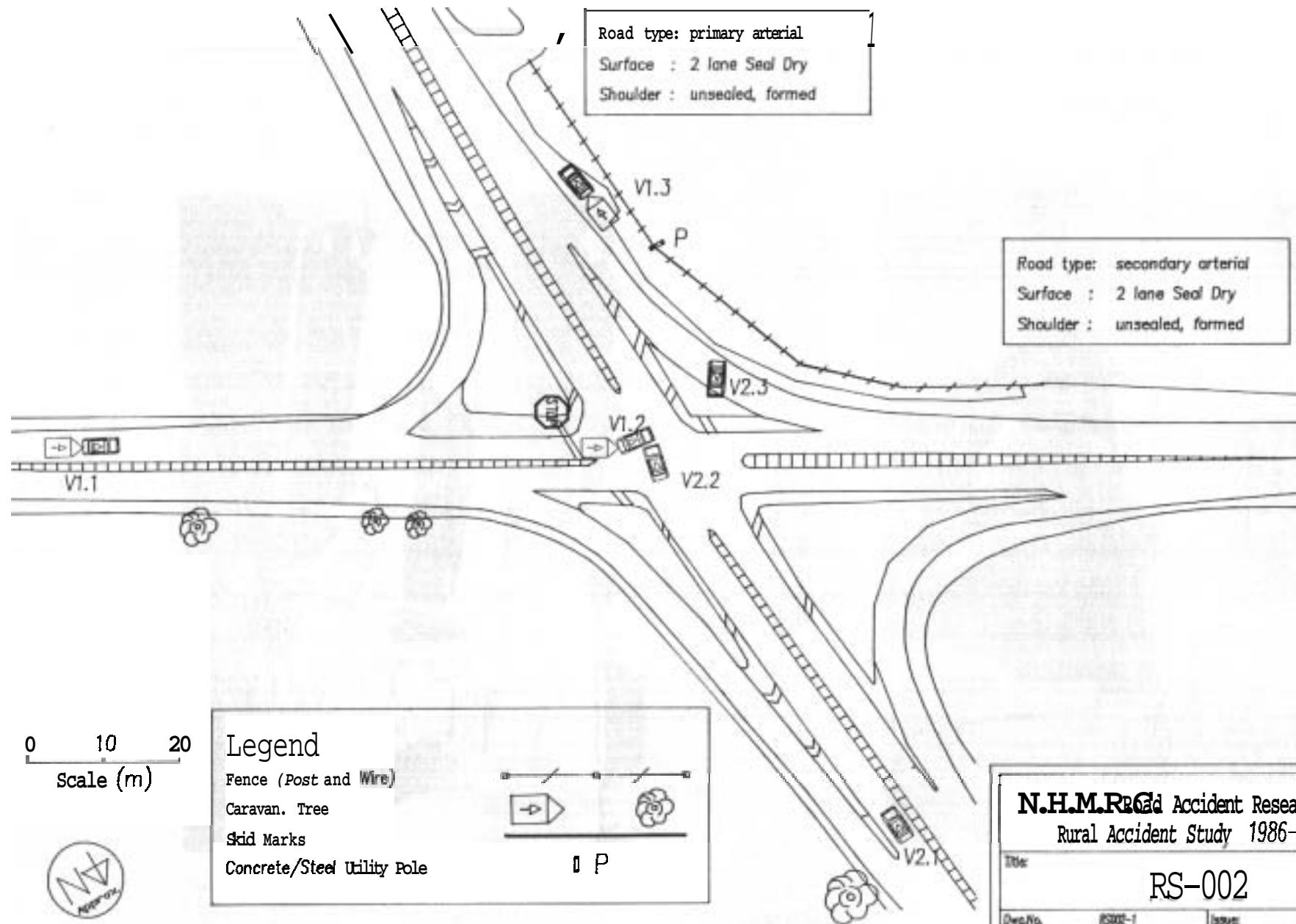
Vehicle Type : 1982 Nissan Bluebird sedan

Driver : Male, 31 years, clerk, BAC: zero, inertia reel 3  
point seat belt worn

Injuries: Neck strain; bruising to right shoulder,  
abdomen and hips bilaterally; laceration to left  
knee; fractured toes 1-3 on left foot. Trans-  
ported to hospital, not admitted. MAIS: 1

\*

self-reported BAC



0 10 20  
Scale (m)

**Legend**

- Fence (Post and Wire)
- Caravan, Tree
- Skid Marks
- Concrete/Steel Utility Pole

Road type: secondary arterial  
Surface : 2 lane Seal Dry  
Shoulder : unsealed, formed

Road type: primary arterial  
Surface : 2 lane Seal Dry  
Shoulder : unsealed, formed

<b>N.H.M.R.C.</b> Road Accident Research Unit			
Rural Accident Study 1986-87			
Title: RS-002			
Orig.No.	RS002-1	Issue:	1
Projection:	-	Scale:	Internal
Drawn By:	ATSV & RH	Date Drawn:	6 Jan 88
Sheet no.:	-	Sheet:	1 of 1 sheets



FIGURE A1: Crash 01. Detached rear section of Datsun 120Y Sedan with front section and Unit 1 visible in background.



FIGURE A2: Crash 02. Ford Fairlane and caravan in rest position showing impact damage to right side.



GENERAL CHARACTERISTICS:

CRASH TYPE: Head-on collision - (Non-Fatal)

VEHICLES: 2, motorcycle and car

DAY: Friday TIME: 1600 hours

WEATHER: Fine LIGHTING CONDITIONS: Daylight, shadows on road from adjacent trees

ROAD SURFACE: Dry, sealed with occasional wet patches at edge

OCCUPANTS: unit 1, 1; unit 2, 1

SPEED LIMIT: 80 km/h

CRASH DESCRIPTION:

The rider of Unit 1 was travelling home after work along a winding, two-lane section of road across undulating terrain at a speed, estimated by the rider, of 50 km/h. It was only the second time he had travelled along the road. He had just negotiated a right hand bend and, in attempting to negotiate a left hand bend, he ran wide on to the centre line where the rear wheel lost adhesion. The motorcycle began to slide down to the left, crossing fully onto the right side of the road as it did so. The rider was able to regain control of the motorcycle, and was in the process of crossing back to the correct side of the road when he was confronted by Unit 2 travelling in the opposite direction (speed unknown). Both Units braked, with Unit 1 also trying to manoeuvre out of the path of Unit 2. The vehicles struck head on. At impact, the rider of Unit 1 struck the roof of the car. He came to rest on the shoulder of the road behind Unit 2 with his motorcycle in front of the car.

UNIT 1:      Vehicle Type:    Honda CX 500 motorcycle

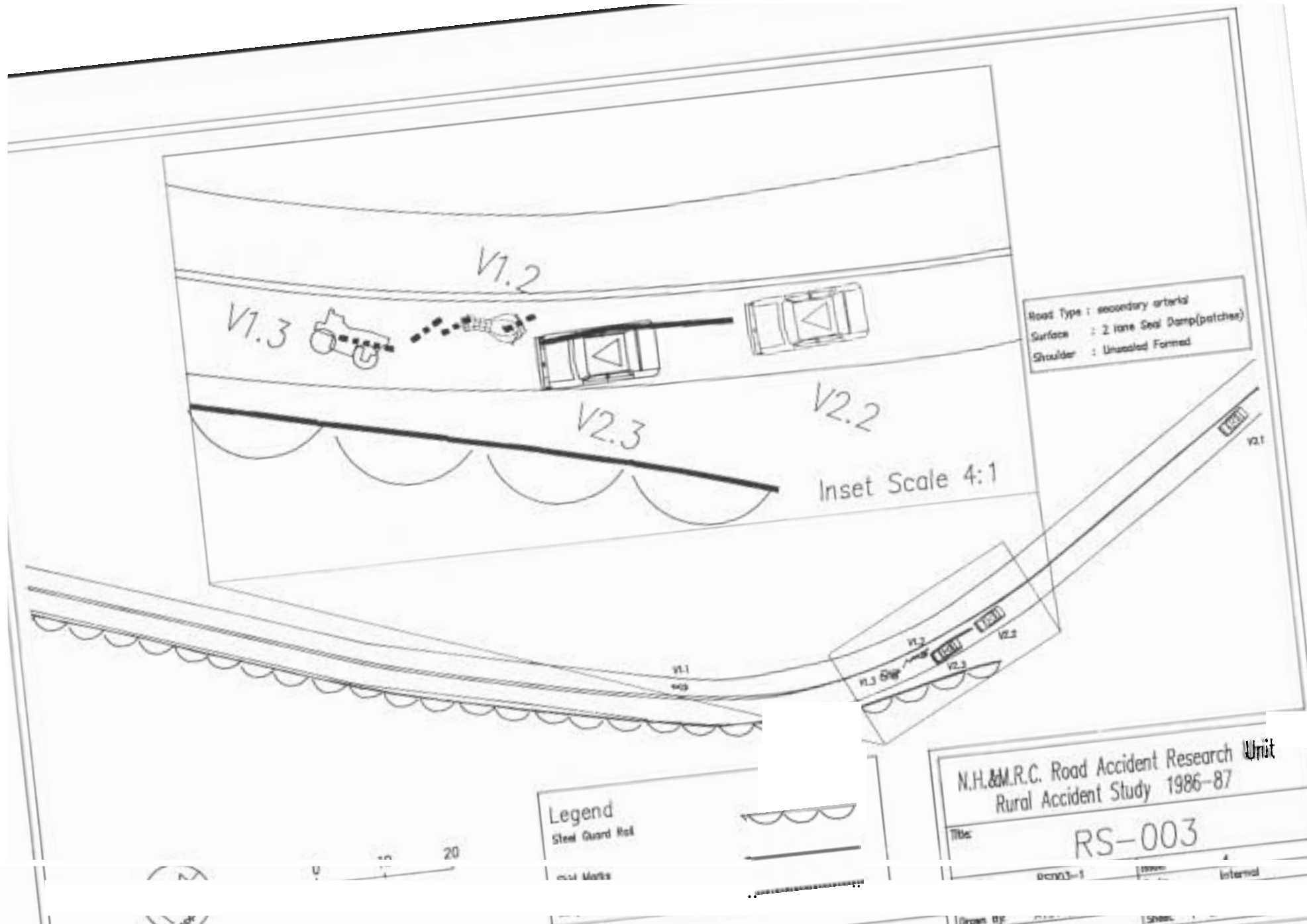
Driver:      Male, 26 years, tradesman, BAC: zero, full face helmet worn

                 Injuries: Anterior dislocation of right shoulder: rupture of lateral collateral ligament and anterior cruciate on right knee: deep abrasions bilaterally to lower legs; extensive bruising bilaterally to medial surface of thighs: abrasions to back. Hospitalized more than 28 days. MAIS: 3

UNIT 2:      Vehicle Type:    1972 Holden Monaro 2 door sedan

Driver:      Male, 21 years, BAC: not known

                 Injuries: Shock, remained at scene



Road Type : secondary arterial  
 Surface : 2 lane Seal Damp(patchee)  
 Shoulder : Unsealed Formed

Inset Scale 4:1

Legend  
 Steel Guard Rail

N.H.&M.R.C. Road Accident Research Unit  
 Rural Accident Study 1986-87

RS-003

Title:

RS-003-1

Internal

Drawn By

Sheet

GENERAL CHARACTERISTICS:

CRASH TYPE: Collision with tree - (Fatal)  
 VEHICLES: 1 car  
 DAY: Saturday TIME: 2300 hours  
 WEATHER: Fine LIGHTING CONDITIONS: Night, road not lit  
 ROAD SURFACE: Sealed, dry with boggy unsealed shoulder  
 OCCUPANTS: 1  
 SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

The vehicle was travelling east along a straight, two-lane section of road at an unknown speed but thought to be in excess of 110 km/h. For reasons unknown, the driver braked and the vehicle yawed increasingly anti-clockwise. It travelled off the bitumen to the left, and slid sideways across the shoulder and then into a paddock where it struck a large tree, killing the driver. The impact was concentrated on the driver's door, and the engine compartment tore away at the firewall. After striking the tree the body of the car rebounded and rotated clockwise through approximately 110°. The unrestrained driver was found with his head on the driver's seat and his feet in the passenger's footwell. The driver, who had an elevated BAC, was known to have been emotionally distressed at the time of the crash. He had been drinking heavily, and was also receiving medication for depression. He had a history of drink driving offences, and had had a number of prior crashes while intoxicated.

UNIT 1: Vehicle Type : 1973 XA Falcon station wagon

Driver: Male, 41 years, showman, BAC: 0.250, inertia reel  
 3 pint seat belt available but not worn

Injuries: There were extensive lacerations to the right side of the face associated with comminuted fractures of the lower jaw. There were faint abrasions on the trunk from the right shoulder to the sternum. Left and right forearms had extensive abrasions, with a large laceration on the inner side of the right arm near the elbow. The skull had extensive comminuted fracturing of the vault, and also of the base. There was a separation and avulsion of the vertebral column from the articulation with the skull at the foramen magnum. The brain showed extensive lacerated areas at the base. There were also multiple anterior and posterior rib fractures, and comminuted fractures of the right clavicle. Dead at scene. MAIS: 6

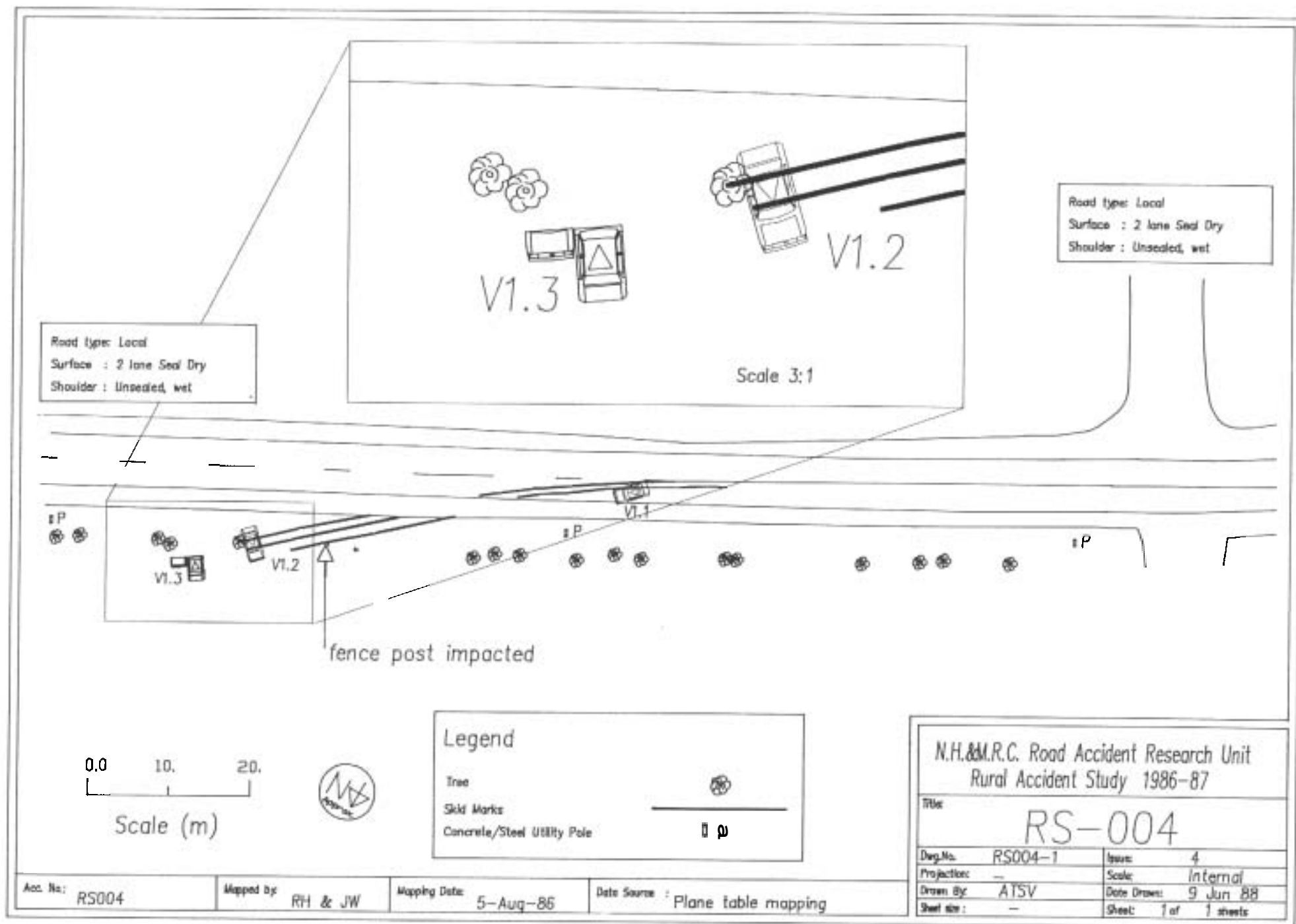




FIGURE A3: Crash 03. View of crash site showing motorcycle in foreground and Holden Monaro in background.



FIGURE A4: Crash 04. Damage to Ford Falcon stationwagon following impact with tree. The front of the car has been torn off exposing the passenger compartment. Note that the driver's seat is detached from its mounting.

CASE: RS 05

GENERAL CHARACTERISTICS:

CRASH TYPE: Head-on collision - (Fatal)  
VEHICLES: 2, motorcycle and dump truck  
DAY: Sunday TIME: 1200 hours  
WEATHER: Fine LIGHTING CONDITIONS: Daylight, sunny  
ROAD SURFACE: Sealed, dry  
OCCUPANTS: Unit 1, 1; Unit 2, 1  
SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

Unit 1 was travelling west at approximately 80 km/h on a winding, two-lane section of road. The teenage rider was returning to Adelaide having spent the day on a recreational ride through the Adelaide Hills with a friend. The friend was travelling some 100 metres ahead of Unit 1. As Unit 1 negotiated a deceptively sharp left bend with an advisory speed of 45 km/h it ran wide and travelled into the opposing lane. The rider leant his motorcycle at an acute angle to the left. It lost adhesion and slid diagonally out of control along the bitumen and into the path of a truck travelling towards him at 10 km/h on impact. The motorcycle slid for approximately 5 metres before striking low down on the right front of the truck. The rider, still astride the motorcycle, came to rest wedged under the right front of the truck. The rider was dead at the scene. According to his friend, it was the first time he had travelled along the section of road.

UNIT 1: Vehicle Type : Honda GL 400 motorcycle

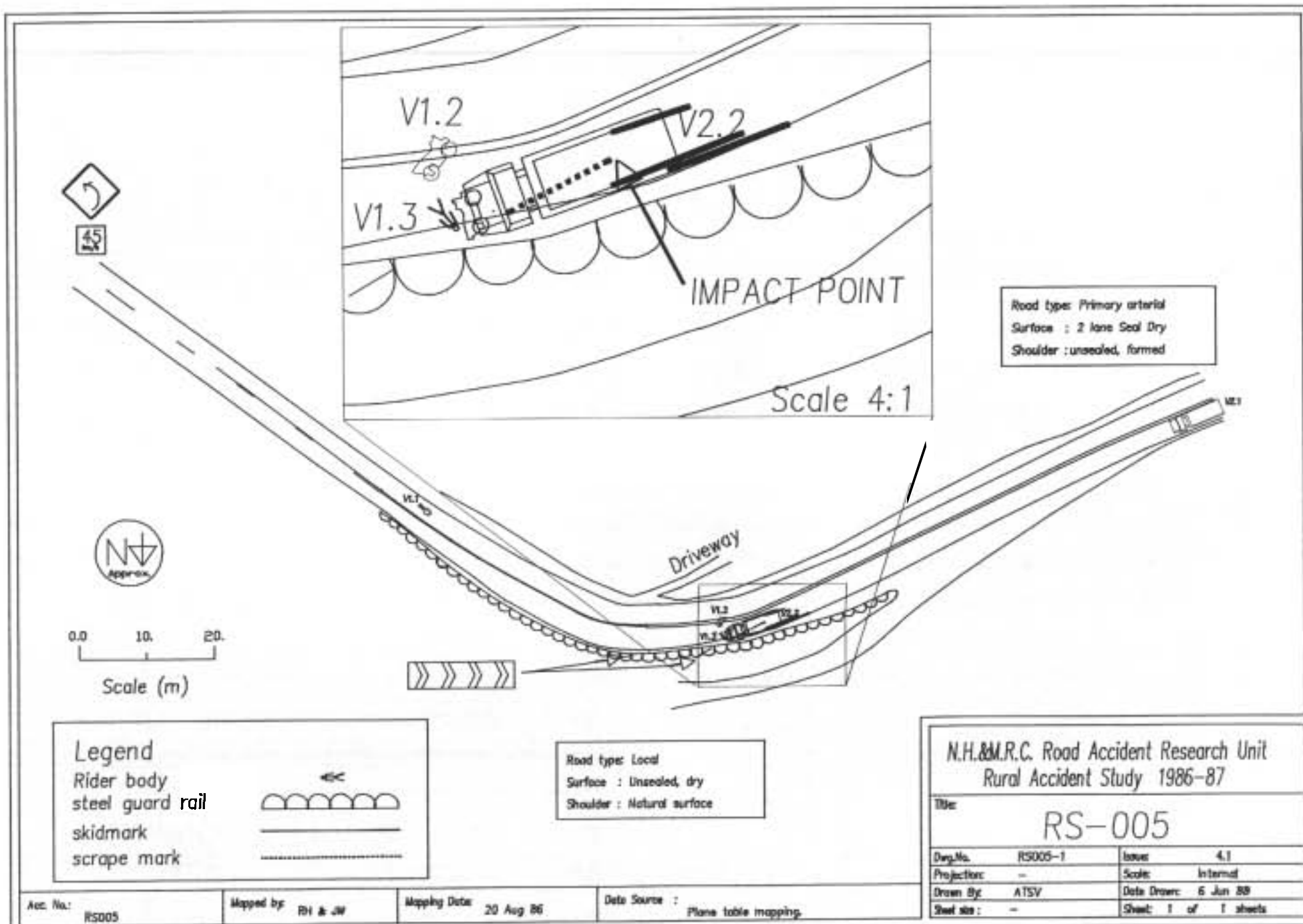
Driver: Male, 17 years, tradesman, BAC: zero, full face helmet worn

Injuries: Abrasions on the right arm and legs, and a laceration above the right eye. There were fractures to the left clavicle, left fourth rib, right femur and right supra-orbital ridge. There was an extensive internal haemorrhage resulting from a rupture of the aorta. A closed head injury was also evident. Dead at scene. MAIS: 6

UNIT 2: Vehicle Type : Ford Cargo 1515 forward control dump truck -  
unladen

Driver: Male, 41 years, self employed truck driver, BAC: zero, seat belt available, not worn

Injuries: Shock, remained at scene, MAIS: 1



GENERAL CHARACTERISTICS:

CRASH TYPE: Rear-end collision - (Non-Fatal)  
 VEHICLES: 2, car and semi-trailer  
 DAY: Friday TIME: 1445 hours  
 WEATHER: Fine LIGHTING CONDITIONS: Daylight, sunny  
 ROAD SURFACE: Sealed, dry  
 OCCUPANTS: Unit 1, 3: Unit 2, 1  
 SPEED LIMIT: 100 km/h

CRASH DESCRIPTION:

Unit 1, containing three middle aged males on a day's social outing, was travelling south at approximately 80 km/h in the left lane of a four lane carriageway divided by a raised median. The car, the occupants of which were talking at the time of the collision, crossed from the left to the right lane, the driver intending to turn right at a break in the median. In doing so, it moved into the path of a semi-trailer, travelling in the right lane at approximately 100 km/h. The driver of the semi-trailer, confronted with a slower moving vehicle on which he was rapidly closing, braked: his vehicle skidded for 23 metres before striking the rear centre and left corner of the car with the centre and right edge of its 'bull bar'. After the collision, the semi-trailer veered to the left, skidding for a further 38 metres before caning to rest on the left shoulder. The impact crushed the rear of Unit 1, locking the back wheels. It skidded 60 metres after the impact, caning to rest at a break in the median facing east, having rotated clockwise through 270°.

UNIT 1: Vehicle Type : HJ Holden, Kingswood sedan (year not known)

Driver: Male, 63 years, tradesman, BAC: 0.04, 3 point static seat belt worn

Injuries: Crush fracture of 8th thoracic vertebra: comminuted fracture of right scapula: bruising to right antero-lateral side of chest wall from 4th to 7th ribs. Unconscious for approximately ten minutes after crash. Hospitalized for 5 days.

MAIS: 2

Front Seat Passenger: Male, 55 years, tradesman, BAC: zero ,  
 3 point static seat belt probably not worn

\*

self-reported BAC



Injuries: Neck strain; abrasion to right side of forehead; concussion. Hospitalized < 24 hours.  
MAIS: 2

Rear Left Passenger: Male, 59 years, unemployed, BAC: zero, 3 point static seat belt not worn

Injuries: A laceration to the left forehead and vertex of skull also on the left. Unconsciousness for an unspecified period with neurological deficit. Hospitalized for 10 days. MAIS: 3

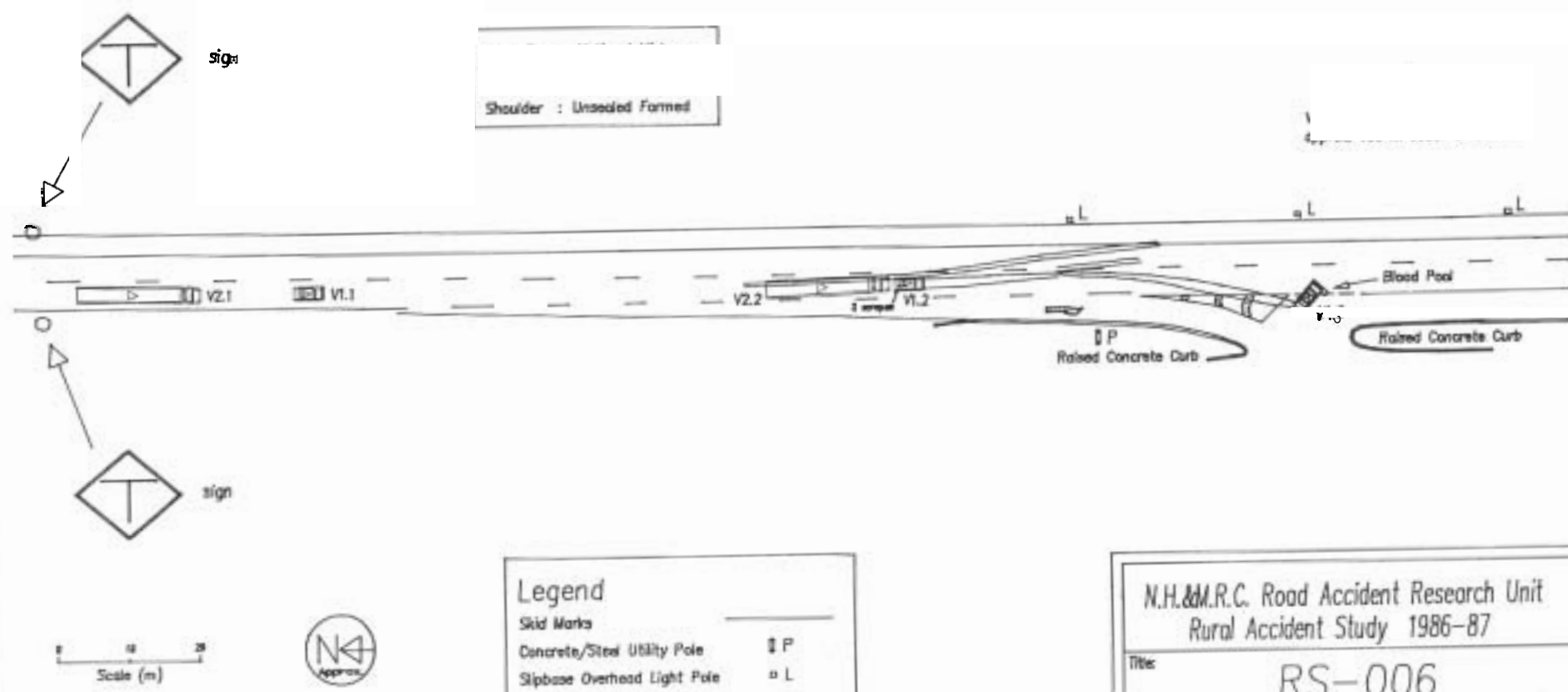
UNIT 2: Vehicle Type: Kenworth Prime Mover with trailer. Gross weight 38 tonnes

Driver: Male, 34 years, haulage contractor, BAC: zero, no seat belt available

Injuries: Shock. Remained at scene. MAIS: 1

\*

self-reported BAC



**Legend**  
 Skid Marks  
 Concrete/Steel Utility Pole    P  
 Slipbase Overhead Light Pole    L

N.H.&M.R.C. Road Accident Research Unit Rural Accident Study 1986-87	
Title: RS-006	
Dwg.No. RS006-1	Issue: 4
Projection: -	Scale: Internal
Drawn By: CK	Date Drawn: 6 Jun 88
Sheet no: -	Sheet: 1 of 1 sheets



FIGURE A5: Crash 05. Final positions of motorcycle and dump truck. The motorcycle came to rest wedged under the front of the dump truck.



FIGURE A6: Crash 06. Impact damage to Holden Kingswood Sedan. Note impressions on the compressed boot from the bull bar of the semi-trailer.

GENERAL DESCRIPTIONS:

CRASH TYPE: Collision with fixed object - (Non-Fatal)  
VEHICLES: 1 car  
DAY: Thursday TIME: 0815 hours  
WEATHER: Passing showers LIGHTING CONDITIONS: Daylight, overcast  
ROAD SURFACE: Sealed, wet  
OCCUPANTS: 1  
SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

The car, travelling south, was negotiating a sweeping right hand bend on a damp, two-lane road divided at an intersection by a raised median. The driver, on his way to a meeting and running slightly behind schedule, was travelling at approximately 120 km/h. The rear wheels lost adhesion on the damp road and the car yawed clockwise, crossing onto the median. It slid in an increasing clockwise yaw, striking a large road sign located on the southern edge of the median with the left rear door and left rear corner. In the impact the driver, who claimed to be restrained, slewed to the left, coming to rest contorted about the left hip over a parcel compartment mounted between the front seats. The poles supporting the struck sign had been partially sawn through at the base providing them with a 'break away' capability. This considerably reduced the severity of the impact.

UNIT 1: Vehicle Type : 1979 Mazda 626 sedan

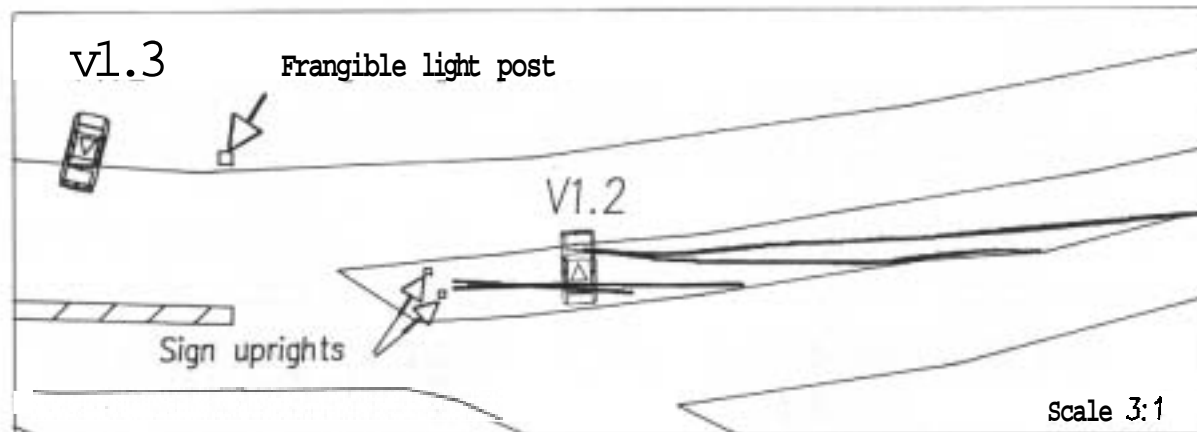
Driver: Male, 24 years, engineer, BAC: zero, inertia reel  
3 point seat belt available, probably worn

Injuries: Bruising over left postero-lateral chest wall; mild contusion to left kidney. Hospitalized  
< 24 hours. MAIS: 1

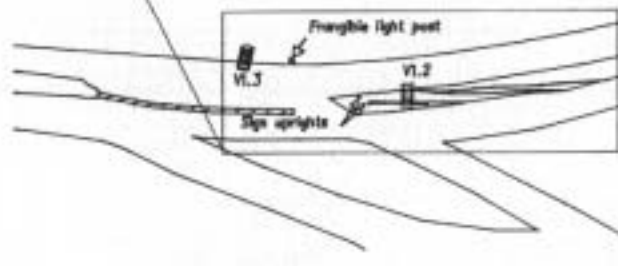
0.0 10. 20.  
Scale (m)



Road type: secondary arterial  
Surface : 2 lane Seal Wet  
Shoulder : formed, wet



Scale 3:1



N.H.&M.R.C. Road Accident Research Unit  
Rural Accident Study 1986-87

Title:

RS-007

Dwg.No.	RS007-1	Issue:	4
Projection:	-	Scale:	Internal
Drawn By:	ATSV	Date Drawn:	9 Feb 88
Sheet size:	-	Sheet:	1 of 1 sheets

acc. No.: RS007

Mapped by: RH & JW

Mapping Date: 30 Jul 87

Data Source : Plane table mapping

CASE: RS 08

GENERAL CHARACTERISTICS:

CRASH TYPE: Single vehicle rollover - (Non-Fatal)  
VEHICLES: 1 car  
DAY: Thursday TIME: 1700 hours  
WEATHER: Heavy rain LIGHTING CONDITIONS: Dusk  
ROAD SURFACE: Sealed, wet (water flowing across road)  
OCCUPANTS: 1  
SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

The car was proceeding west up a long, steep grade through a cutting in the left lane of a four-lane divided road. The driver was returning home after a business trip. It was dusk with drizzling rain. It had been raining heavily, and water formed streams that ran diagonally across the road. The car had moved to the right lane with the intention of passing a slower moving vehicle when it drove through a stream of water and lost adhesion. It yawed anti-clockwise and crossed back to the left lane, crossed the sealed shoulder, and mounted the left curbing. It continued yawing to the left and struck the face of the cutting with the front right side, and rode up the embankment slightly, striking it with rear right corner. It then travelled down the embankment and was pitched onto the left curb, striking it with the left door sill and bouncing back onto its wheels. It came to rest straddling the concrete curb and angled at 60° to the left from its original direction of travel.

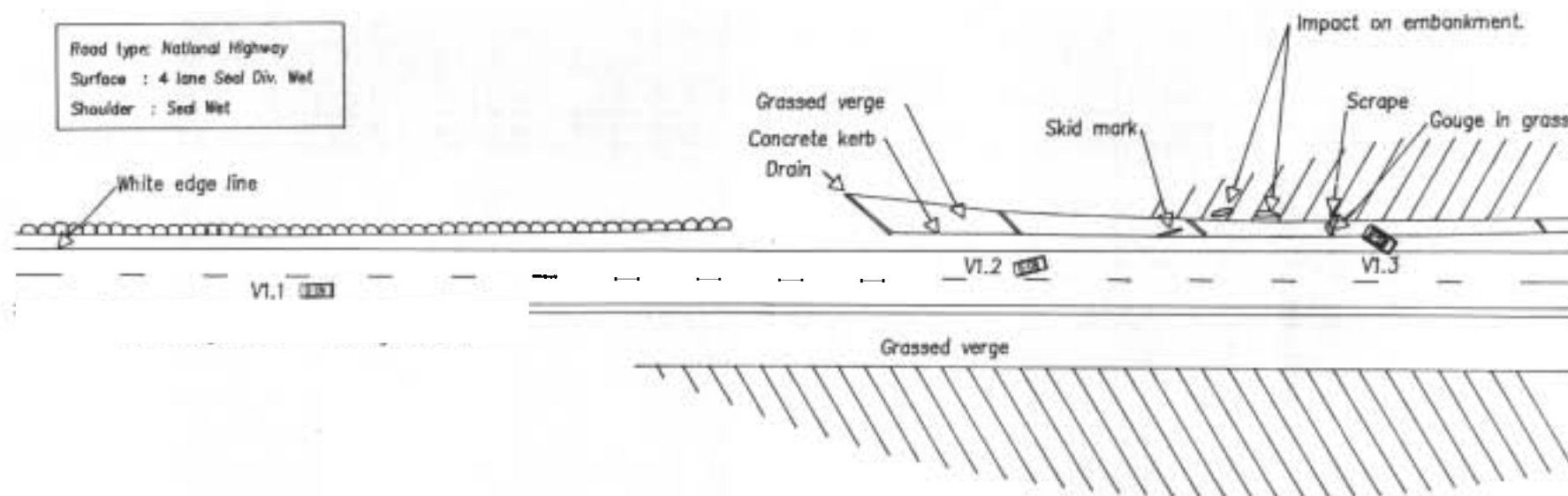
UNIT 1: Vehicle Type: 1984 Mitsubishi Sigma station wagon

Driver: Male, 44 years, business manager, BAC: zero ,  
inertia reel 3 point seat belt worn

Injuries: A laceration to right side of scalp;  
bruising to right shoulder and ribs from striking  
right door; abrasions to both knees from underside  
of dashboard. Transported to hospital but not  
admitted. MAIS: 1

\*

self-reported BAC



0.0 10. 20.  
Scale (m)



### Legend

Steel Barrier

Skid Marks

Cutting

N.H.M.R.C. Road Accident Research Unit  
Rural Accident Study 1986-87

Title:

RS-008

Drawn By	ATSV	Date Drawn	6 Jun 88
Sheet size	-	Sheet	1 of 1 sheets

Acc. No.: RS008

Mapped by: RH & JW

Mapping Date: 9-Aug-86

Data Source: Plane table mapping



FIGURE A7: Crash 07. Final position of the car. Note impact damage to the left rear door and corner from impact with road sign.



FIGURE A8: Crash 08. Final position of the station wagon showing impact damage to the right side.



GENERAL CHARACTERISTICS:

CRASH TYPE: Collision with tree - (Non-Fatal)

VEHICLES: 1 car

DAY: Sunday TIME: 0300 hours

WEATHER: Dry LIGHTING CONDITIONS: Night, road not lit

ROAD SURFACE: Sealed, dry

OCCUPANTS: 1

SPEED LIMIT: 80 km/h

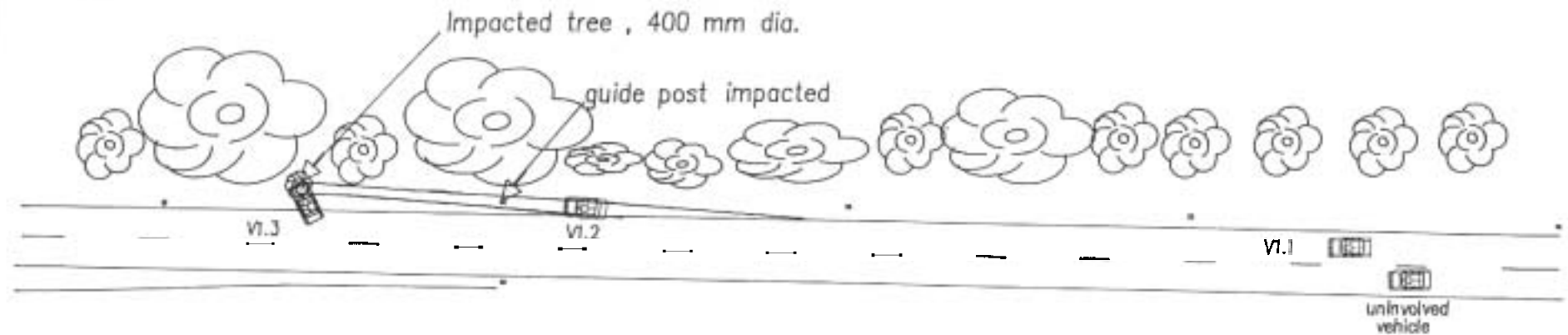
CRASH DESCRIPTION:

The driver was returning home for a work on a two-lane road winding through undulating terrain. Travel speed was probably in excess of 80 km/h, the speed limit for the road. As the driver approached a slower moving vehicle on one of the few straight sections of the road he decided to overtake it. He moved into the right lane and began the passing manoeuvre. As the car began to move past the slower vehicle the driver turned and looked to see if it was clear to move back into the left lane. The driver does not recall any of the subsequent events. Braking skid marks indicate that the car veered from the right lane onto the gravel shoulder on the right. It then travelled along the shoulder for 60 metres veering slightly to the right and struck a tree with the front right of the vehicle. After impact the car yawed through 90° clockwise so that at rest the rear was facing out onto the road. The driver was trapped in the vehicle after impact, his left foot wedged under the brake pedal.

UNIT 1: Vehicle Type : 1977 Ford Escort 2 door sedan

Driver: Male, 25 years, tradesman, BAC: 0.042, inertia reel 3 point seat belt worn

Injuries: Laceration to right side of face, possibly from front bonnet projecting through the windscreen; bruises to chest from seat belt; laceration to right axilla, cause unknown; bruising and small lacerations to both knees from underside of the dashboard; a fracture and bruising of the left foot which was trapped under the brake pedal. Hospitalized 24 hours. **MAIS:** 2



Road type: secondary arterial  
 Surface : 2 lane Seal Dry  
 Shoulder : formed, dry



0.0 10. 20  
 Scale (m)

#### Legend

Tree line  
 Skid Marks  
 Guide post



N.H.&M.R.C. Road Accident Research Unit  
 Rural Accident Study 1986-87

Title:

RS-009

Dwg. No.	RS009-1	Issue	4
Projection:	-	Scale	internal
Drawn By:	ATSV	Date Drawn:	6 Jun 88
Sheet size:	-	Sheet:	1 of 1 sheets

Acc. No.: RS009

Mapped by: RM & JW

Mapping Date: 21 Aug 86

Data Source : Plane table mapping

GENERAL CHARACTERISTICS:

CRASH TYPE:	Side impact intersection collision - (Non-Fatal)
VEHICLES:	2, car and semi-trailer
DAY: Wednesday	TIME: 1400 hours
WEATHER: Fine	LIGHTING CONDITIONS: Daylight, sunny
ROAD SURFACE:	Sealed, dry
OCCUPANTS:	unit 1, 1; Unit 2, 2
SPEED LIMIT:	110 km/h

**CRASH DESCRIPTION:**

The driver of Unit 1, an elderly male, was waiting to turn right at a turn right lane of a two-lane road at a complex intersection. There was a vehicle situated behind Unit 1 also waiting to turn right, and another vehicle to the right of Unit 1 on the road into which Unit 1 was waiting to turn. This vehicle was stationary at a Give Way sign. The driver of Unit 1 states that he was concentrating on these two vehicles and not on-coming traffic. He set off, moving into the path of Unit 2, a partially laden milk tanker travelling at between 80 and 90 km/h. At impact the right front corner of the tanker struck and rode over the right front corner of the car. After impact, the car rotated clockwise through 300° coming to rest 25 metres behind the point of impact. The tanker, swerving to the left in an attempt to avoid colliding with the car, went off onto the left shoulder, striking several guide posts. The trailer jack-knifed, yawed clockwise and rolled onto its left side. The tanker then slid along the bitumen coming to rest 67 metres beyond the point of impact. It came to rest on its left side, the cab facing the original direction of travel, with the tanker, still attached, approximately 20° to the left. A subsequent examination revealed that the trailer brakes were unconnected at the time of the crash, and had been for some time. Further, the centre bolt in the right rear spring of the prime mover had failed prior to the crash, causing the rear axle to be 10 mm further back on the right side and the spring rates to differ. These characteristics, particularly the former, are likely to have contributed to the tanker jack-knifing.

UNIT 1:

Vehicle Type: 1978 Volkswagen Golf 4 door sedan hatch back  
\*

Driver: Male, 74 years, retired, BAC: zero , inertia reel 3 point seat belt worn

Injuries: Neck strain, shock; superficial bruising to chest. Transported to hospital but not admitted.

MAIS: 1

\* self-reported BAC



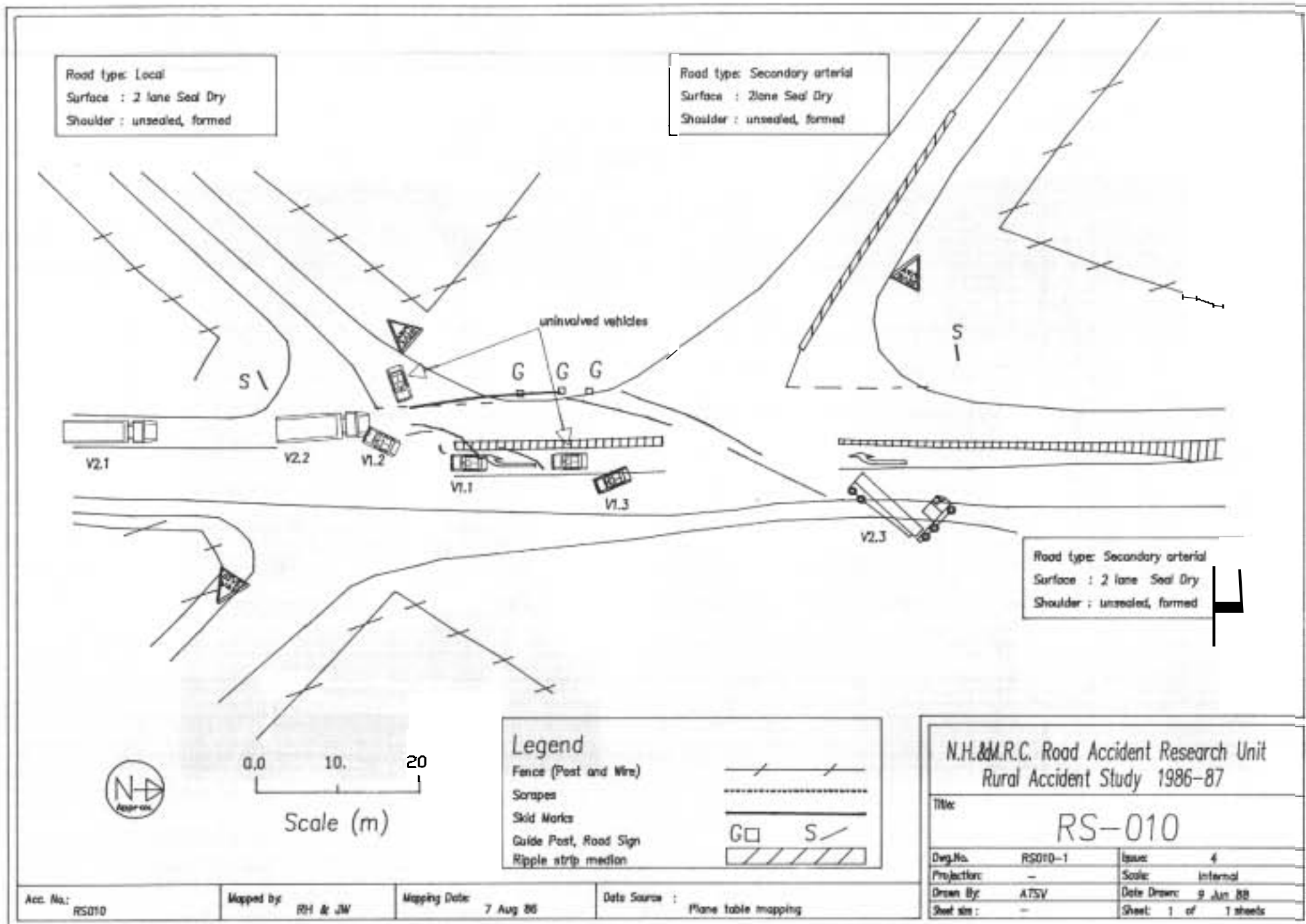




FIGURE A9: Crash 09. Final position of the car showing impact damage to the front right corner.

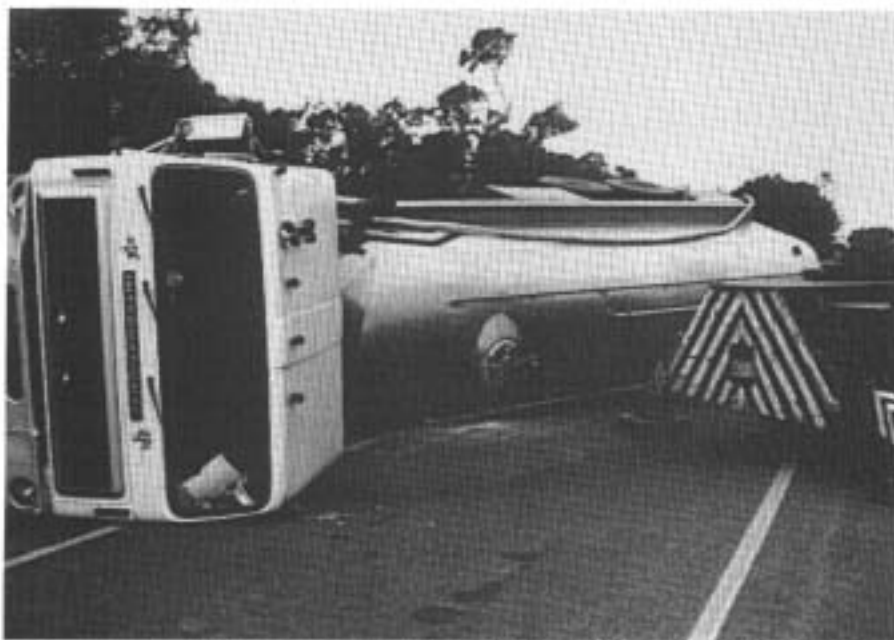


FIGURE A10: Crash 10. The final position of milk tanker.

GENERAL CHARACTERISTICS:

CRASH TYPE: Collision with tree - (Non-Fatal)  
 VEHICLES: 1 car  
 DAY: Tuesday TIME: 2330 hours  
 WEATHER: Fine LIGHTING CONDITIONS: Night, road not lit  
 ROAD SURFACE: Sealed, dry  
 OCCUPANTS: 1  
 SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

The car was proceeding north on a straight, two-lane section of road at approximately 80 km/h at night. The driver was returning home after visiting friends. The left front tyre deflated rapidly, pulling the vehicle sharply to the left and onto the damp, grassed, shoulder. The driver braked hard but made no attempt to steer back onto the bitumen surface, thinking that doing so would cause the vehicle to go increasingly out of control. The vehicle skidded on the grassed verge for 43 metres before striking a large tree with the left front. The vehicle sustained only minor damage. Speed at impact is estimated to be between 10 and 20 km/h. After impact the driver was slumped forward and to the left. An examination of the left front tyre revealed a 7/32" steel twist drill bit embedded in the tyre.

UNIT 1: Vehicle Type : 1973 VJ Chrysler Ranger sedan

Driver: Male, 30 years, school teacher, BAC: zero, 3 point static seat belt worn

Injuries: Right sided neck strain; retrograde and antegrade amnesia; bruises to right forehead and right parietal region; bruises to chest and left knee. There were no marks on the interior of the car except a smear on the right front side window suggesting the driver went forwards and to the left on impact, striking his right forehead and left knee, and then rebounded to the right and rear striking his head on the right side window, also causing the right sided neck strain. Hospitalised < 24 hours. MAIS: 2

Road type: Local  
 Surface : 2 lane Seal Dry  
 Shoulder : Unsealed Grassed

1.0 m diameter gum tree

V1.1



V1.2

V1.3

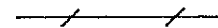


0.0 10 20.

Scale (m)

### Legend

Fence (Post and Wire)



Skid Marks  
 tree



N.H.&M.R.C. Road Accident Research Unit  
 Rural Accident Study 1986-87

RS-011

Acc. No: RS011

Mapped by: R.H. A/W

Mapping Date: 12 Aug 86

Date Source: Plane table mapping

Dwg. No.	RS011-1	Issue	4
Projection	-	Scale	Internal
Drawn By	ATSV	Date Drawn	6 Jun 88
Sheet size	-	Sheet	1 of 1 sheets



CASE: RS 12

GENERAL CHARACTERISTICS:

CRASH TYPE: Single vehicle rollover - (Non-Fatal)  
VEHICLES: 1 car  
DAY: Thursday TIME: 0920 hours  
WEATHER: Rain LIGHTING CONDITIONS: Daylight, overcast  
ROAD SURFACE: Sealed, wet (water flowing across road)  
OCCUPANTS: 1  
SPEED LIMIT: 80 km/h

CRASH DESCRIPTION:

The car was travelling downhill in the right lane of a four-lane arterial road divided by a raised median. The driver, travelling at approximately 80 km/h, was commuting to work in moderately heavy traffic. It was raining, the road was wet, with water streaming across its surface. The car had just negotiated a left hand bend when the driver, concerned about his speed in the prevailing road conditions, braked slightly. The vehicle lost adhesion, yawed clockwise and crossed the median. In order to avoid on-coming traffic, the driver said that he steered up a cutting on the right, striking it with the left front corner. The impact caused the car to continue rotating clockwise so that it was 180° from the original direction of travel. It then proceeded backwards, riding up the cutting, and rolled onto its roof. It came to rest on its roof on the left shoulder of the east bound lanes. As it rode up the cutting the driver, restrained by a sash belt only, said that he gripped the base of the seat with both hands and crouched down. When it came to rest the driver let go of the seat base and slipped through the belt striking his head on the roof. An examination of the tyres revealed a maximum tread depth of 2 mm, which probably contributed to the initial loss of adhesion.

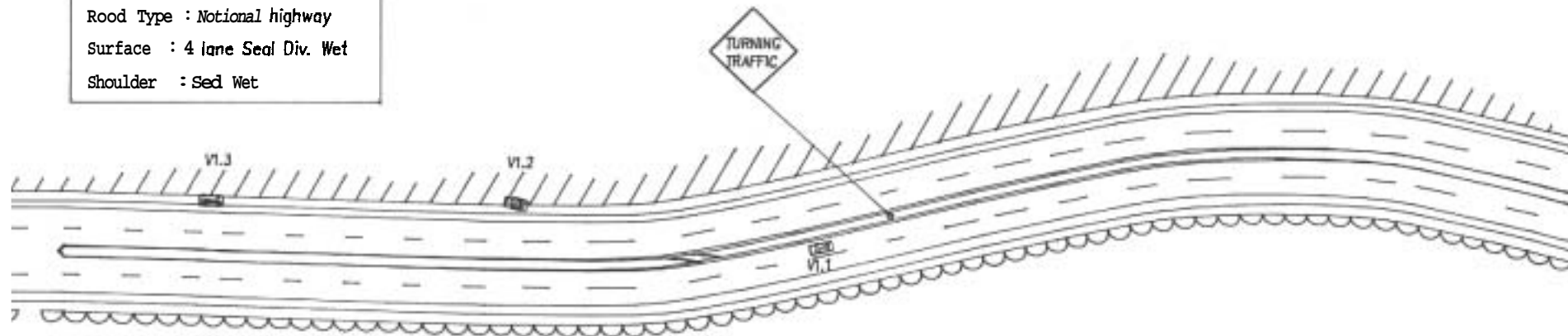
UNIT 1: Vehicle Type: 1968 Ford Fairmont XT sedan

Driver: Male, 20 years, labourer, BAC: zero , static sash belt worn \*

Injuries: Shock and mild concussion. Remained at scene. MAIS: 1

\* self-reported BAC

Road Type : *Notional highway*  
 Surface : 4 lane Seal Div. Wet  
 Shoulder : Sed Wet



0 10 20  
 Scale (m)

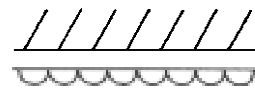


### Legend

Cut face, soft rock

Steel guard rail

Solid Marks



N.H.&M.R.C. Road Accident Research Unit  
 Rural Accident Study 1986-87

Title:

RS-012

Dwg.No.	RS012-1	Issue	4
Projection:	-	Scale	Internal
Drawn By:	ATSV	Date Drawn:	6 Jun 88



FIGURE A11: Crash 11. Impact damage to the left side of the car. Note deflated left front tyre.



FIGURE A12: Crash 12. Final position of the car. Note scrape marks down right side from impact with embankment.

**CASE: RS 13**

GENERAL CHARACTERISTICS :

**CRASH TYPE:** Head-on collision - (Non-Fatal)  
**VEHICLES:** 2, car and forward control van  
**DAY:** Thursday **TIME:** 1000 hours  
**WEATHER:** Rain **LIGHTING CONDITIONS:** Daylight, overcast  
**ROAD SURFACE:** Sealed, wet (water flowing across road)  
**OCCUPANTS:** unit 1, 1; unit 2, 2  
**SPEED LIMIT:** 80 km/h

CRASH DESCRIPTION:

Unit 1, a courier van, **was** proceeding downhill in the right lane of a four-lane arterial road divided by a raised median. The driver, who routinely drove on the road as part of his work, was travelling at between 80 and 90 km/h. It was raining, the road wet with sheets of water lying on its surface. Unit 1 had almost completed negotiating a left hand bend when it struck a sheet of water and lost adhesion. It yawed anti-clockwise through 45° and mounted the median to the right, striking a road sign located there. Unit 1 then continued in an anti-clockwise yaw and crossed into the path of Unit 2 which was travelling up hill, in the left lane at approximately 70 km/h. The driver of Unit 2, a retiree on holiday with his wife, seeing that the van was going to collide with his vehicle, braked and steered to the left. The right front corner and door of the van struck the right front corner of the car. At impact the unrestrained driver of the van struck the window glass and right door frame with the right side of his face, shattering the glass. The van then rebounded, coming to rest on its wheels in the east bound left lane having rotated approximately 30° anticlockwise from its original direction of travel. The car came to rest straddling the left lane and shoulder.

UNIT 1: Vehicle Type: Mitsubishi L300 Express forward control van  
(year not known)

Driver: Male, 27 years, courier driver, BAC; zero, inertia  
reel 3 pint seat belt available but not worn

Injuries: Concussion, fractures to the right side of the face through the zygomatic arch, the floor of the orbit and the anterior and lateral walls of the maxillary antrum. There were also lacerations above the right eyebrow and just below the right eye. Hospitalized for 11 days. MAIS: 2

UNIT 2:

vehicle Type : 1982 Honda Accord, 3 door hatchback.

\*

Driver: Male, 75 years, retired, BAC: zero , inertia reel 3 point seat belt worn

Injuries: Bruising across right shoulder from seat belt. Bruising to right elbow from door. Abrasion and slight swelling of right knee from underside of dashboard. Remained at scene. MAIS: 1.

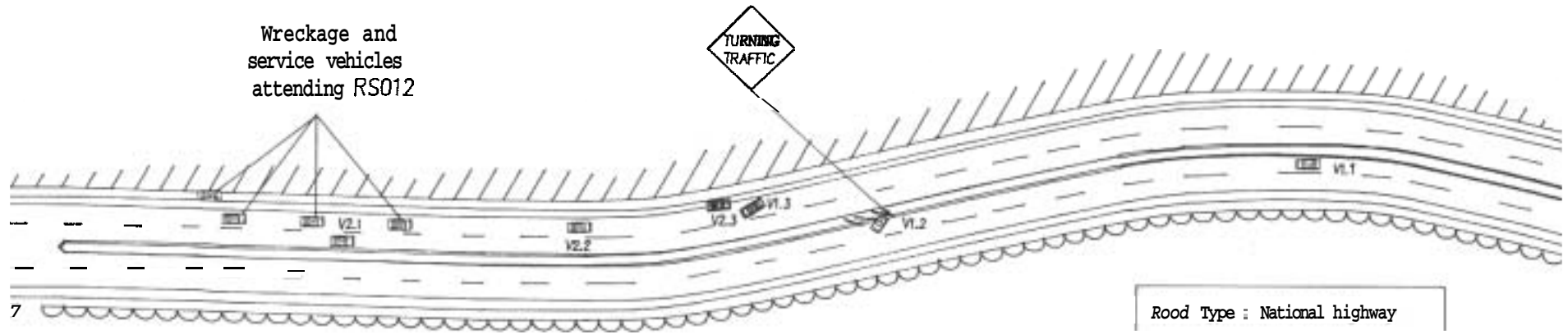
\*

Front Seat Passenger: Fanale, 70 years, retired, BAC: zero , inertia reel 3 point seat belt worn

Injuries: Slight neck strain; bruising across chest from seat belt. Remained at scene. MAIS: 1

\*

self-reported BAC



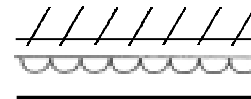
Road Type : National highway  
 Surface : 4 lane Sep Div. Wet  
 Shoulder : Seal Wet

### Legend

Cut face, soft rock

Steel guard rail

Skid Marks



**N.H.W.R&A** Road Accident Research Unit  
 Rural Accident Study 1986-87

Title:

RS-013

Org.No.

RS013-1

Issue:

4

GENERAL CHARACTERISTICS:

**CRASH TYPE:** Collision with embankment - (Non-Fatal)  
**VEHICLES:** 1 car  
**DAY:** Friday **TIME:** 2230 hours  
**WEATHER:** Rain, hail, **snow** **LIGHTING CONDITIONS:** Night, road not lit  
**ROAD SURFACE:** Sealed, wet (hail on road)  
**OCCUPANTS:** 2  
**SPEED LIMIT:** 80 km/h

CRASH DESCRIPTION:

The car was proceeding west, at night, down hill in the left lane of a four-lane arterial road divided by a raised median. The driver, a young male, was travelling hane with his girl friend after visiting relatives. The driver still had his probationary licence and estimated his speed to be less than 80 km/h. The road was wet, and at the time of the crash it was hailing. The car was approaching a gentle right hand bend when the rear wheels lost adhesion. It yawed clockwise, crossed the median and struck a cutting on the right side of the road with the left front corner. The car then continued rotating clockwise, travelling through 180° from the original direction of travel. It travelled backwards along the cutting a short distance before the left rear corner dug in, causing it to rotate clockwise a further 60°. The car came to rest with the rear against the cutting and the front over the curb of the left eastbound lane.

UNIT 1: Vehicle Type : 1971 LC Torana 4 door sedan

Driver: Male, 16 years, student, BAC: zero<sup>\*</sup>, 3 point static seat belt worn

Injuries: Mild neck strain and lower back pain, possibly from flexing over the seatbelt in the initial impact. Remained at scene. **MAIS:** 1

Front seat Passenger: Female, 16 years, student, **BAC:** zero<sup>\*</sup>, 3 point static seat belt worn

Injuries: Mild neck strain and lower back pain, possibly from flexing over the seatbelt in the initial impact. Remained at scene. **MAIS:** 1

\* self-reported BAC

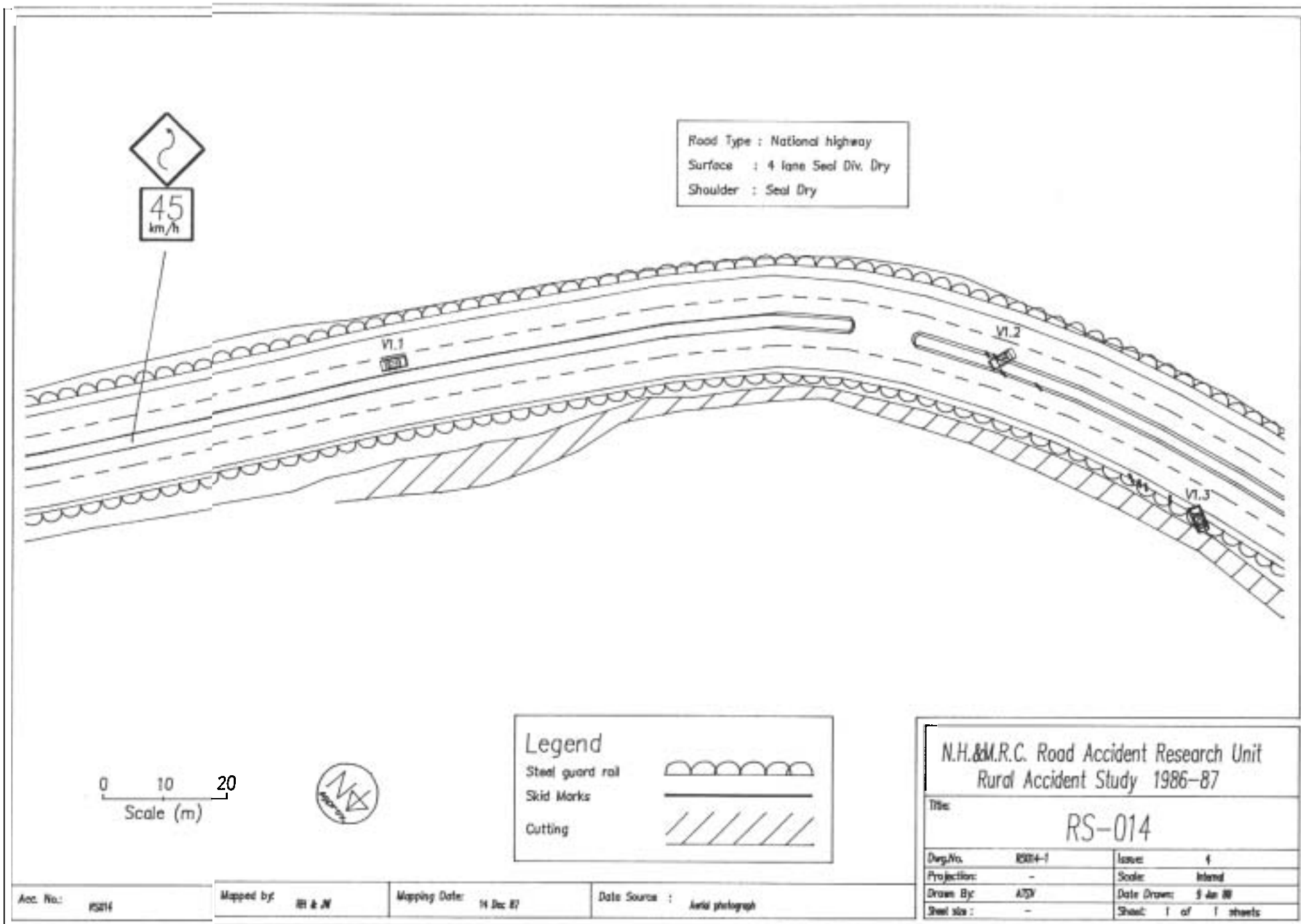






FIGURE A13: Crash 13. Final positions of forward control van and Honda Accord.



FIGURE A14: Crash 14. Final position of Holden Torana.

GENERAL CHARACTERISTICS:

CRASH TYPE: Collision with tree - (Non-Fatal)  
 VEHICLES: 1 car  
 DAY: Monday TIME: 1830 hours  
 WEATHER: Fine LIGHTING CONDITIONS: Dusk, road not lit  
 ROAD SURFACE: Sealed, dry with boggy shoulders  
 OCCUPANTS: 1  
 SPEED LIMIT: 110 km/h

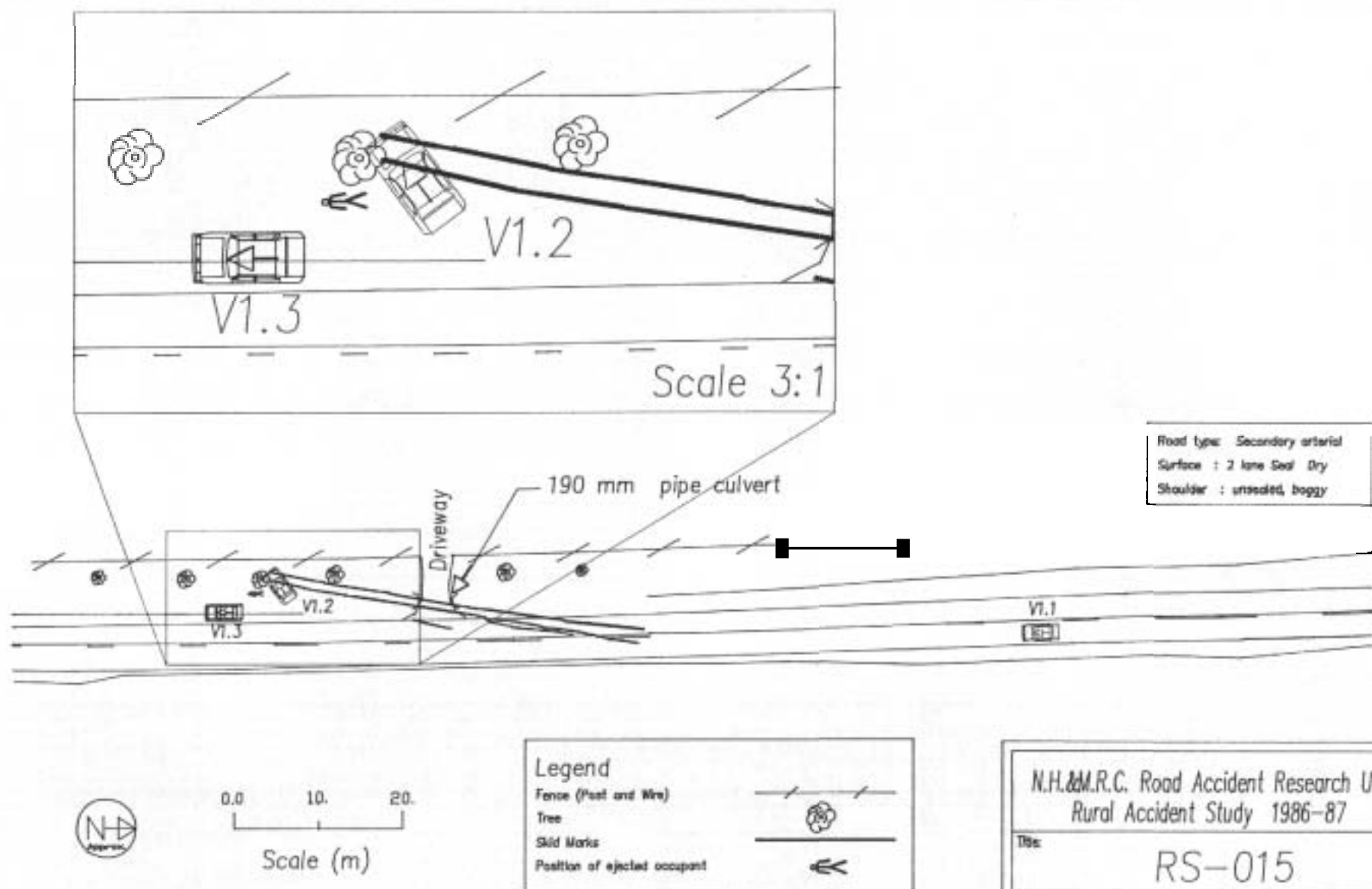
CRASH DESCRIPTION:

The car was travelling south over a crest on a straight, two-lane section of road at approximately 110 km/h. The driver was returning home after spending the day playing golf with friends. He had been drinking and was feeling tired. The driver stated that due to work commitments he had been sleeping only 3-4 hours each night in the six days up to the crash. He has no recollection of the crash. Skid marks indicate that the car veered from the left lane across the centre line. It continued in a slight clockwise yaw, travelling onto the right shoulder where it struck a large tree with the left front wheel. The impact force pushed the wheel back into the left front seat passenger space. After impact, the car yawed through a further 300°, coming to rest on the right shoulder next to the edge of the bitumen facing in the original direction of travel. At impact, the unrestrained driver was catapulted to the left side of the vehicle, contacting the roof, 'B' pillar and the grab handle, and the left front door. High impact forces were transmitted through the left side of the vehicle, probably causing the failure of the door latch and allowing the driver to be ejected through the open door. The driver came to rest on the shoulder between the impacted tree and the final position of the vehicle.

UNIT 1: Vehicle Type : 1985 Holden Commodore Berlina sedan

Driver: Male, 40 years, business manager, BAC: 0.099, inertia reel 3 point seat belt available but not worn

Injuries: Antegrade and retrograde amnesia; fracture of left parietal region, and left clavicle; fracture of right ulna with a dislocation of the radius; lacerations to the lateral aspect of the right thigh and left lower leg. Hospitalised for 4 days. MAIS: 2



Acc. No.: 20004

Mapped by: RH &amp; JW

Mapping Date: 8 Aug 86

Data Source: Plane table mapping

CASE: RS 16

GENERAL CHARACTERISTICS:

CRASH TYPE: Single vehicle rollover - (Fatal)  
VEHICLES: 1 four wheel drive utility  
DAY: Thursday TIME: 1400  
WEATHER: Fine LIGHTING CONDITIONS: Daylight, sunny  
ROAD SURFACE: Sealed, dry  
OCCUPANTS: 1  
SPEED LIMIT: 110 km/h

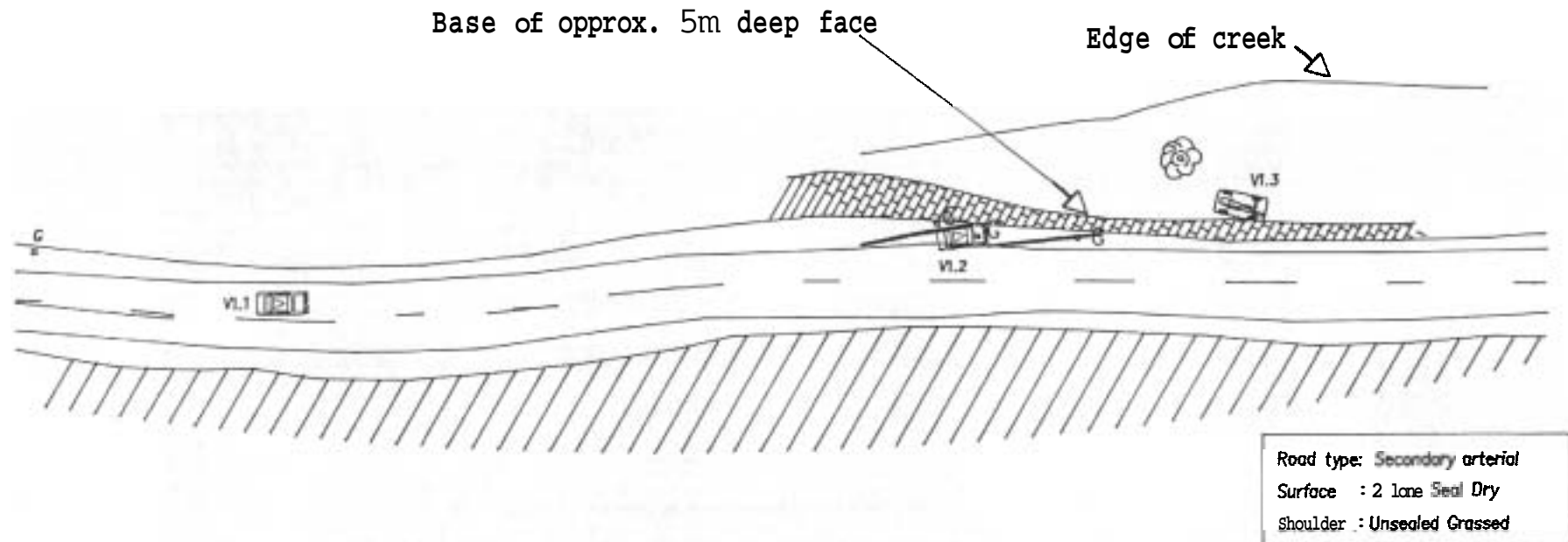
CRASH DESCRIPTION:

The utility was travelling east on a winding, two-lane road abutted on the left by a 5 metre vertical drop and on the right by a steep-faced cutting. The driver, returning home from work, had told his wife he would be home later than usual as he was going to have a few drinks with some friends. The utility, travelling at an unknown speed, failed to negotiate a slight right hand bend. Instead it continued in a straight line, crossing the narrow grassed shoulder to the left where it struck several guide posts before going over the edge and falling 5 metres. While air borne it rolled to the left through 180° and then landed on its roof. The driver was found in the inverted cab still held in his seat by his seatbelt which had to be cut to remove him. His injuries suggested that he died soon after the vehicle impacted the ground. An examination of the vehicle revealed that the left front shock absorber connecting bolt had possibly failed prior to the crash. This, in combination with the wide sand tyres fitted, was likely to have affected the directional stability of the utility, which may in turn have contributed to the vehicle initially leaving the road.

UNIT 1: Vehicle Type : 1983 Toyota Hi-Lux 4 WD utility

Driver: Male, 31 years, labourer, BAC: 0.138, inertia reel  
3 point seat belt worn

Injuries: A deep laceration to the forehead and left side of head; abrasions to the left shoulder, abdomen and forearm; abrasions to the left and right lower legs; fractured maxilla: comminuted compound fracture of nasal bone; bilateral fractures of zygomatic arch. Blood was found in the lungs and bronchial passages suggesting cause of death was asphyxiation. Dead at scene. MAIS 2



0.0 10. 20.

Approx.

Scale (m)

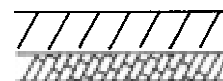
## Legend

Cutting face

Face of retaining wall

Silt Mark

Guide post, Tree



□ G



N.H.&M.R.C. Road Accident Research Unit  
Rural Accident Study 1986-87

RS-016

Dep. No.	RS016-1	Issue	4
Projection	-	Scale	Internal
Drawn By	ATSV	Date Drawn	6 Jun 88
Check By		Check Date	

Acc. No.	Mapped by	Mapping Date	Data Source
----------	-----------	--------------	-------------



FIGURE A15: Crash 15. Final position of the car showing impact damage from striking a tree. Note distortion of door frame which was struck by the driver as he was ejected from the vehicle.



FIGURE A16: Crash 16. The final position of the utility at the bottom of a 5m. drop.

GENERAL CHARACTERISTICS:

CRASH TYPE: Single vehicle rollover - (Non-Fatal)

VEHICLES: 1 car

DAY: Friday TIME: 2015 hours

WEATHER: Fine LIGHTING CONDITIONS: Night, road not lit

ROAD SURFACE: Sealed, with loose gravel at edges, damp

OCCUPANTS: 5

SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

The car was travelling west at night on a damp, two-lane road at approximately 100 km/h. The edges of the sealed surface were littered with loose aggregate. The vehicle's occupants, four young males and a female, were bred and decided to 'go for a drive'. They bought some 'stubbies' of beer which they drank in the vehicle as they drove. The driver, still with a probationary licence, had not driven on the road before. On a right hand bend the left wheels ran into the loose aggregate accumulation at the edge of the sealed surface. The left rear yawed clockwise, sliding onto the shoulder and into a slight ditch. The driver attempted to regain the sealed surface by powering out of the ditch and steering back onto the road. This increased the angle of rotation bringing the car almost at right angles to the road. At this stage the rim of the left rear wheel dug in, causing the vehicle to roll to the left onto its roof, striking the left front corner on the bitumen as it did so. It then slid across the road on its roof for 40 metres, caning to rest on the right shoulder at right angles to the road.

UNIT 1: Vehicle Type : 1970 Ford Capri coupe

Driver: Male, 17 years, labourer, BAC: 0.025, inertia reel  
3 pint seat belt available, probably not worn

Injuries: Laceration to left side of head probably from striking the right roof rail; deep multiple abrasions to left side of face from the road surface as the left side of his head was projected out of the right window when the car was inverted. Hospitalised for 3 days. MAIS: 1

\*

Front Seat Passenger : Female, 17 years, BAC: unknown, 3  
point static seat belt available, probably not worn

\*

Left Rear Seat Passenger : Male, 18 years, BAC: unknown, no  
seat belt available

\*

Middle Rear Seat Passenger : Male, 16 years, BAC: unknown,  
no seat belt available

\*

Right Rear Passenger : Male, 15 years, BAC: unknown, no seat  
belt available

\*

The driver stated that none of the passengers **were** injured in the crash. It is unlikely that they sustained no injuries, however the driver was the only occupant to go to hospital.



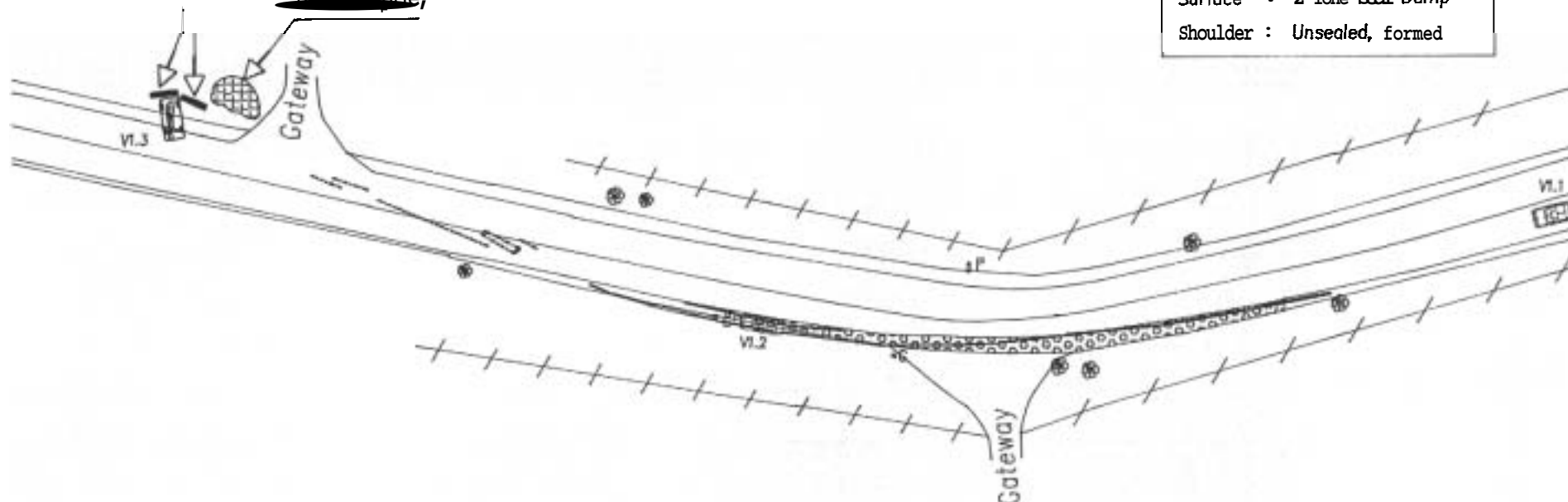
600mm dia logs

Debris pile,

Road type: Local

Surface : 2 lane Seal Damp

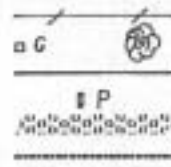
Shoulder : Unsealed, formed



0 10 20  
Scale (m)

## Legend

Fence (Post and Wire)  
Gate post, Tree  
Solid Mark  
Concrete/Steel Utility Pole  
Loose screenings  
Scrape marks



N.H.&M.R.C. Road Accident Research Unit  
Rural Accident Study 1986-87

Title:

RS-017

Acc. No.: RS017

Mapped by: RH &amp; JW

Mapping Date: 15 Sep 87

Data Source: Plane table mapping

Dwg.No.	RS017-1	Issue	4
Projection	-	Scale	internal
Drawn By	ATSV	Date Drawn	9 Jun 88
Sheet size	-	Sheet	1 of 1 sheets

GENERAL CHARACTERISTICS:

CRASH: Collision with utility pole - (Non-Fatal)  
VEHICLES : 1 car  
DAY: Thursday TIME: 2040 hours  
WEATHER: Fine LIGHTING CONDITIONS: Night, road not lit  
ROAD SURFACE: Unsealed, dry  
OCCUPANTS: 1  
SPED LIMIT: 110 km/h

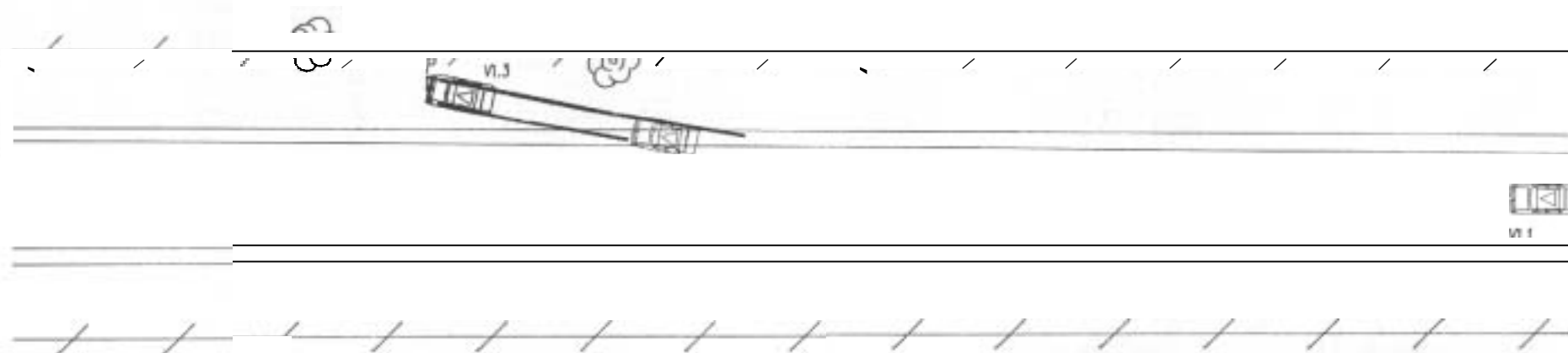
CRASH DESCRIPTION:

Very little detail is **known** concerning this crash. The vehicle was stolen earlier in the evening from a hospital car park. The owner was unaware that it **was** missing until notified of the crash by Police. At the time of writing the driver had not been caught. From skid marks it appears that the car drove off the right side of a formed gravel road into a steel and concrete utility pole. Damage to the vehicle was only slight, indicating a very low impact speed. A witness stated that prior to the crash he saw two cars, one behind the other, weaving over the road. For no apparent reason the second car left the road **and** struck the stobie pole. The witness stated that it appeared as though the car was deliberately driven into the pole. The driver then got out of the car and was seen to run away.

UNIT 1: Vehicle Type : 1975 **HJ** Holden Kingswood sedan

No other details known.

Road type: Local  
 Surface : Unsealed Gravel Dry  
 Shoulder : Natural surface



0.0 10. 20.  
 Scale (m)

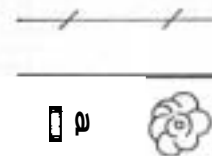
### Legend

Fence (Post and Wire)

Wheel marks

Concrete/Steel Utility pole

Tree



N.H.&M.R.C. Road Accident Research Unit  
 Rural Accident Study 1986-87

Title:

RS-018

Drawn By:	RS018-1	Issue:	4
Projection:	-	Scale:	Internal
Date Drawn:	ATSY	Date Drawn:	6 Jun 88

Acc. No.: RS018

Mapped by: [signature]

Mapping Date: 28 Jun 87

Data Source: [signature]



FIGURE A17: Crash 17. Ford Capri after being righted showing distortion of roof resulting from rollover, and scrape marks on the right front mudguard from contacting the road surface.



FIGURE A18: Crash 18. The final position of the car with impact damage to the front from impact with the pole.

GENERAL CHARACTERISTICS:

CRASH: Head-on collision - (Non-Fatal)

VEHICLES: 3 cars

DAY: Sunday TIME: 1730 hours

WEATHER: Fine LIGHTING CONDITIONS: Daylight, sunny

ROAD SURFACE: Sealed, dry

OCCUPANTS: unit 1, 2; Unit 2, 3; unit 3, nil

SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

Unit 1, facing west, was stopped on the left shoulder of a straight two-lane section of road. The driver was waiting to do a U-turn to cross to the other side of the road where a friend's car (Unit 3) which had broken down was parked. The sun was setting so that the driver of Unit 1 had difficulty seeing on-coming traffic. She checked behind her and waited for several cars to pass, and then put on her right indicator, checked for on-coming traffic, saw none, and set off. Just as Unit 1 was crossing the centre line the front seat passenger yelled that a vehicle was coming towards them. The driver of Unit 1, the front of which was positioned over the centre line and almost at right angles to it, stopped and was attempting to put the vehicle into gear to reverse out of the way when the right front corner of Unit 2 struck the left front of Unit 1, pushing Unit 1 backwards on to the left shoulder. At impact the occupants of Unit 1 were thrown to the left. The driver of Unit 2, which was travelling at approximately 100 km/h immediately prior to impact, stated that he saw Unit 1 pull out from the shoulder but did not realise that it intended to do a U-turn. When he realised that Unit 1 was doing a U-turn, which was only immediately before impact, he braked and veered to the left. After impact Unit 2 continued in an anti-clockwise yaw onto the northern shoulder where it struck the rear of Unit 3 pushing it out onto the road. After striking Unit 3, Unit 2 continued skidding, coming to rest with the front half in a ditch and having rotated approximately 60° anti-clockwise.

UNIT 1: Vehicle Type : Fiat 500 (year not known)

Driver: Female, 28 years, farm manager, BAC: zero, 3 point static seat belt available but not worn

Injuries: Neck strain; fracture of two bones in right hand. Treated at hospital, not admitted.  
MAIS: 1

Front Seat Passenger: Female, 24 years, **BAC**: unknown, 3 point static seat belt available but not worn

Injuries: Neck strain; bruising down right arm and shoulder from contacting driver. Remained at scene. **MAIS**: 1

UNIT 2:

Vehicle Type : 1979 Chrysler Sigma sedan

Driver: Male, 20 years, clerk, **BAC**: zero, inertia reel 3 point seat belt available and **worn**

Injuries: Shock. Transported to hospital but not admitted. **MAIS**: 1

Front Seat Passenger: Male, 25 years, **BAC**: zero, inertia reel 3 point seat belt available and worn

Injuries: Severe chest and abdominal bruising probably from seat belt. Hospitalised for 3 days. **MIS**: 2

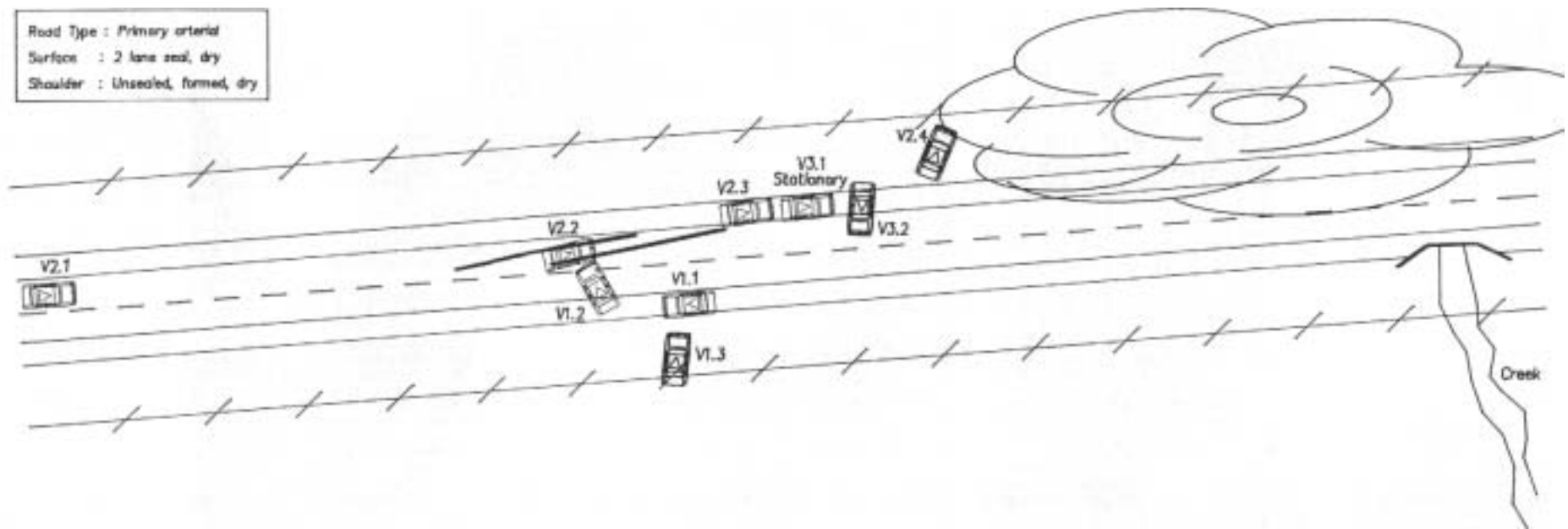
Left Rear Seat Passenger: Male, 21 years, **BAC**: unknown, 3 point static seat belt available, probably not worn

Injuries: Nil stated. Transported to hospital but not admitted. **MAIS**: 0

UNIT 3:

Vehicle Type : VW Karmann Ghia Coupe. Year not known. No occupants.

Road Type : Primary arterial  
 Surface : 2 lane seal, dry  
 Shoulder : Unsealed, formed, dry

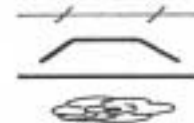


0 10 20  
 Scale (m)



#### Legend

Fence (Post and Wire)  
 Steel guard rail on culvert  
 Skid Marks  
 Tree



N.H.&M.R.C. Road Accident Research Unit  
 Rural Accident Study 1986-87

Title:

RS-019

Dwg.No. RS019-1

Projection:

Drawn By:

Sheet size:

Date Drawn: 11 Jan 88

Sheet: 1 of 1 sheets

Mapped by: R. A. J. W.

Mapping Date:

Data Source : photograph



FIGURE A19: Crash 19. Impact damage to front of Fiat 500.



FIGURE AZO: Crash 19. Impact damage to front of Sigma sedan.



GENERAL CHARACTERISTICS:

CRASH: Head-on collision - (Fatal)

VEHICLES: 2, car and truck

DAY: Monday TIME: 0600 hours

WEATHER: Fine LIGHTING CONDITIONS: Dawn

ROAD SURFACE: Sealed, dry

OCCUPANTS: Unit 1, 1; unit 2, 1

SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

Unit 2, a delivery truck, was travelling north at approximately 80 km/h on a two-lane road. The driver, routinely on the road for work, was one third of the way through a slight right hand bend when he noticed Unit 1 travelling in the opposite direction at a speed he estimated to have been not more than 80 km/h. The driver of Unit 1 was travelling to work. He had spent the previous evening drinking with friends and because of his intoxicated state had decided to stay the night, get up early the following morning and travel directly to work. As the car approached the bend, instead of turning, it continued in a straight line. The truck moved as far as possible to the left so that its left wheels were positioned on the gravel shoulder. It was not possible to move over further because the shoulder dropped away into a culvert. The car continued straight ahead, crossing the centre line and struck the right front corner of the truck. The impact tore out the right front wheel of the truck and grossly deformed the right front and side of the car. The right front corner of the truck caught the right 'A' pillar of the car peeling the roof back to the rear window. The collision severed the right arm of the driver of the car just below the shoulder. The right side of the driver's head was crushed and the cranial contents avulsed. The driver's seat, which was from a Torana and mounted on improvised rails, broke away, and the driver was found on the rear seat. After the impact, the car rotated clockwise through 90° and came to rest on the eastern shoulder. The force of the impact knocked the truck onto its left wheels. It yawed clockwise back onto the bitumen where it rolled onto its left side and slid along the road. It came to rest on its left side straddling the eastern shoulder and lane, when the driver, unhurt, climbed out of the windscreen area. The initial impact with the car ruptured a side mounted fuel tank which caught fire, totally gutting the truck.

UNIT 1: Vehicle Type : 1971 HG Holden Monaro coupe

Driver: Male, 20 years, BAC: 0.142, 3 point seat belt available, and probably worn

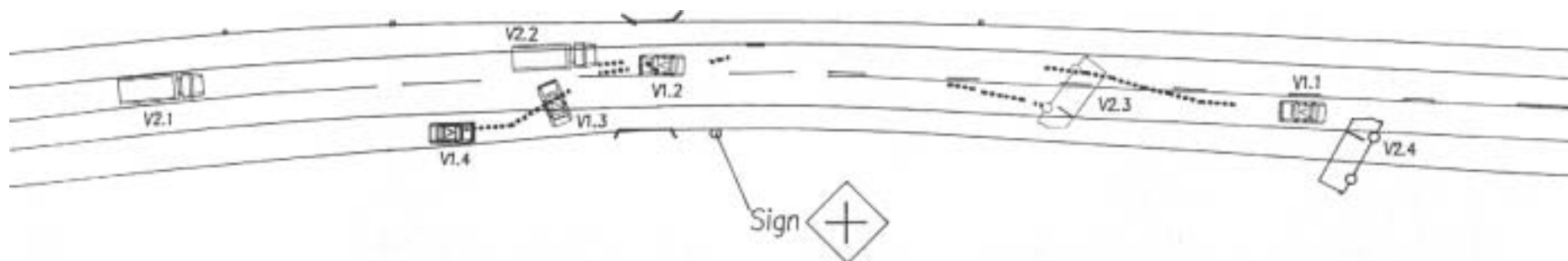
Injuries: Avulsion of right arm below shoulder joint; massive laceration to the right side of head with a ragged laceration 15 cms in length extending from the right ear to the vertex. The frontal bones had collapsed backwards. No brain tissue was present within the cranial vault. Bilateral mandibular fractures; fractured right maxilla; fractured zygomatic arches; fractured right clavicle and right ribs 1-4 posteriorly; fractured left humeral shaft. Dead at scene. MAIS: 6

UNIT 2: Vehicle Type: International truck (Year not known)

Driver: Male, 22 years, truck driver, BAC; zero, no seat belt available

Injuries: Shock. Transported to hospital but not admitted, MAIS: 1

Road Type : Secondary Arterial  
 Surface : Sealed, dry  
 Shoulder : Formed, dry

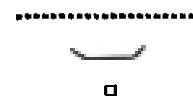


0 10 20  
 Scale (m)



### Legend

Scrape Marks  
 Concrete Culvert  
 Post



**N.H.M. Road Accident Research Unit**  
 Rural Accident Study 1986-87

Title:

**US-020**

Loc. No.: RS020 Mapped by: JW & RH Mapping Date: 15th Jan 1987 Date Source: Plane Table Mapping

Dwg. No.	RS020-1	Issue:	1
Projection:	—	Scale:	Internal
Drawn By:	OK	Date Drawn:	9 Jan 88
Sheet No.:	—	Sheet:	1 of 1 sheets

GENERAL CHARACTERISTICS:

**CRASH:** Single vehicle rollover - (Non-Fatal)  
**VEHICLES:** 1 four wheel drive towing a laden trailer  
**DAY:** Wednesday **TIME:** 1300 hours  
**WEATHER:** Fine **LIGHTING CONDITIONS:** Daylight, sunny  
**ROAD SURFACE:** Sealed, dry  
**OCCUPANTS:** 2  
**SPEED LIMIT:** 60 km/h (speed restriction for road works)

CRASH DESCRIPTION:

The vehicle, towing a laden two wheel trailer, was travelling south west on a straight two-lane road. It had entered a section of road works and was slowing from 110 km/h to 60 km/h when to his right the driver noticed another vehicle stopped in the north east bound lane by the centre line, waiting to turn right into an adjacent driveway. This vehicle moved forward over the centre line and into the path of Unit 1. To avoid a collision, the driver of Unit 1 braked hard and swerved to the left, travelling off the sealed surface onto a narrow, loose, dirt shoulder and down a slight embankment. At the point of evasive action the driver stated that his speed was 65 km/h. The driver attempted to steer up the embankment and back onto the road but the trailer jack-knifed to the left, causing the vehicle to roll onto its left side. As it rolled it rotated clockwise through 180°, coming to rest facing north east 40 metres from where it left the road. The driver and passenger, both restrained, were jolted to the left side of the vehicle receiving superficial injuries. The trailer separated from the vehicle during rollover. The vehicle left skid marks on the sealed surface measuring 13 metres indicating that it had been travelling considerably in excess of 65 km/h.

UNIT 1: Vehicle Type: 1985 Holden Jackaroo towing a hane-made two wheel trailer. Weight of trailer plus load approximately 500 kgs

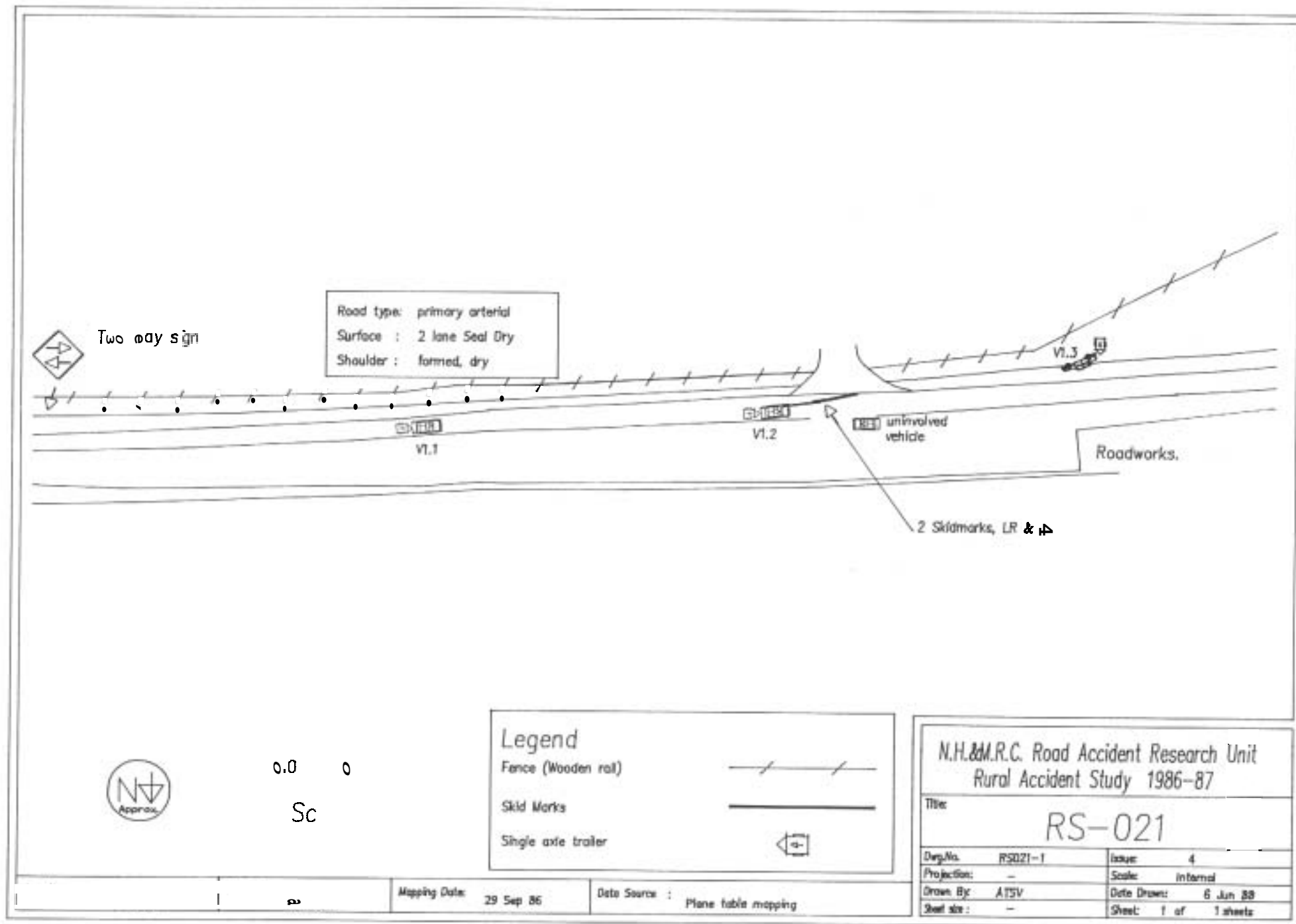
Driver: Male, 45 years, manager, BAC: zero<sup>\*</sup>, inertia reel 3 pint seat belt available and worn

Injuries: Neck strain: bruising to left shoulder and across chest bilaterally. Transported to hospital but not admitted. MAIS = 1

\* self-reported BAC

Front Seat Passenger: Female, 45 years, BAC: zero, inertia  
reel 3 point seat belt available and worn

Injuries: Bruising to left shoulder, chest,  
abdomen, arms bilaterally; severe bruising to  
right hip. Transported to hospital but not  
admitted. MAIS: 1



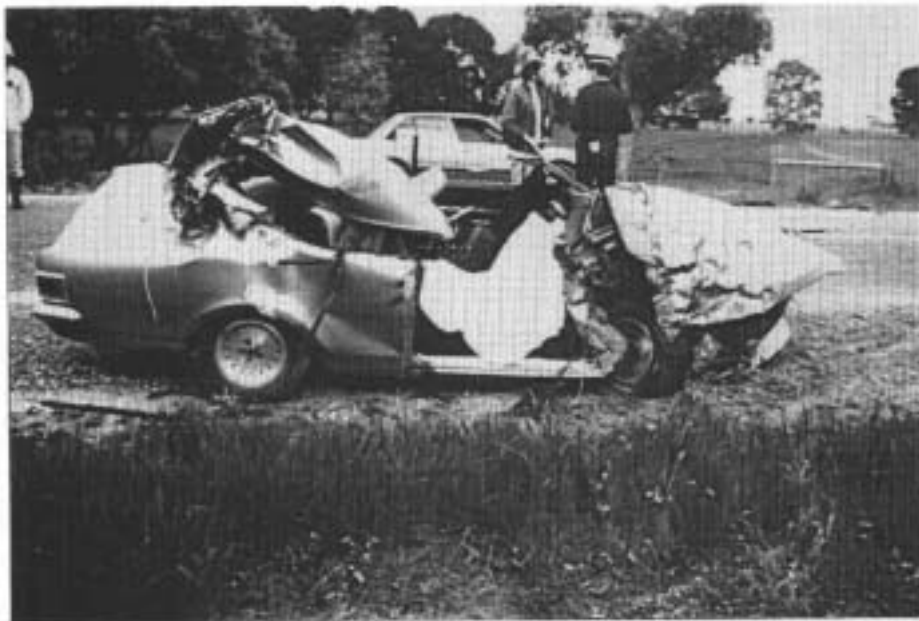


FIGURE A21: Crash 20. Final position of Holden Monaro showing extensive impact damage to right side and roof.



FIGURE A22: Crash 21. The final position of the Holden Jackaroo which came to rest on its left side and has been rolled back onto its wheels.

GENERAL CHARACTERISTICS :

CRASH: Collision with tree - (Non-Fatal)  
 VEHICLES: 1 car  
 DAY: Friday TIME: 2200 hours  
 WEATHER: Fine LIGHTING CONDITIONS: Night, road not lit  
 ROAD SURFACE: Sealed, dry  
 OCCUPANTS: 3  
 SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

The car was travelling north on a two-lane road at a speed thought to have been less than 80 km/h. The occupants were returning home after a 'happy hour' at work. The party started at 1630 hours and they stayed there until 2130, drinking almost continuously. Neither the driver nor either passenger has any recollection of the crash, and the events leading up to and following it are also unclear. It appears that the car was in a car park near where the party was being held. It was parked on a rise and when the driver and front seat passenger tried to drive away, it rolled backwards and became stuck on a curb. The driver and front seat passenger could not free the car and went back to the party for help. Several people came and pushed the vehicle clear of the obstruction. It was at this point that the rear seat passenger got into the car. The car then turned left out of the car park and onto the road. While descending a hill over a crest only 500 metres from the car park it failed to negotiate a sharp left hand bend. Instead it continued straight ahead striking a large tree with the right front. After impact it rotated 80° clockwise coming to rest with the front still against the tree and the rear facing out onto the bitumen surface. Short skid marks leading up to the tree indicated braking immediately prior to impact. None of the occupants were restrained. After the impact the driver and rear seat passenger were unconscious. There was extensive intrusion into the passenger space on the right front of the floor pan and the steering column. From contact marks within the vehicle it appears that the rear passenger, seated in the middle, was catapulted forward at impact, striking his head. The front seat passenger, dazed and inebriated, was able to extricate herself from Unit 1 and went in search of help. She wandered around the crash site for about one hour before she was found. It was the first time the driver had driven along the road, and she indicated that she did not know why they were travelling on it at all.

UNIT 1: Vehicle Type : 1971 Datsun 180B SSS coupe

Driver: Female, 18 years, labourer, BAC: 0.137, 3 point static seat belt available, not worn



Injuries: Unconscious at scene: severe closed chest injury involving fractures of the right ribs 4-8; left pneumothorax; contused right lung; lacerated liver. These injuries are thought to have resulted from impacting the steering column. There were also fractures of the right femur, left and right patellae, left and right ankles. These injuries resulted from striking the instrument panel area and from floor pan intrusion. Deep lacerations were present over the right forehead and chin. Hospitalized for 32 days with 17 days in intensive care. MAIS: 4

Front Seat Passenger: Female, 16 years, labourer, BAC: 0.071, 3 pint static seat belt available, not worn

Injuries: Concussion: multiple superficial lacerations to face bilaterally; fractured right wrist. Hospitalised 2 days. MAIS: 2

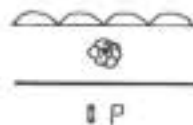
Middle Rear Seat Passenger: Male, 25 years, labourer, BAC: 0.142, no seat belt available

Injuries: Fractured right ulna; unconscious > 2 hours: severe closed head injury. CT scan revealed multiple contusions of the front-parietal region and generalized cerebral oedema. Residual effects of the head injury include memory disturbance, personality change and mild right sided weakness. These changes are expected to be permanent. The discharge letter indicated that this person is likely to remain an invalid pensioner. Hospitalised 135 days. MAIS: 4



0.0      10.      20.  
|-----|-----|  
Scale (m)

Steel guard rail  
Tree  
Skid Marks  
Concrete/Steel Utility Pole



RS-022

Proj.No.	R5022-1	Issues	4
Projection:	-	Scale:	internal
Drawn By:	ATSV	Date Drawn:	8 Jun 88
Sheet size:	-	Sheet:	1 of 1 sheets

Acc. No: R5022

Mapped by: M1 &amp; JW

Mapping Date: 7 Oct 86

Date Source :	Plane table mapping
---------------	---------------------

GENERAL CHARACTERISTICS:

CRASH TYPE: Single vehicle rollover - (Fatal)

VEHICLES: 1 car

DAY: Saturday TIME: 0600 hours

WEATHER: Dry LIGHTING CONDITIONS: Dawn

ROAD SURFACE: Sealed, dry

OCCUPANTS: 1

SPEED LIMIT: 110 km/h

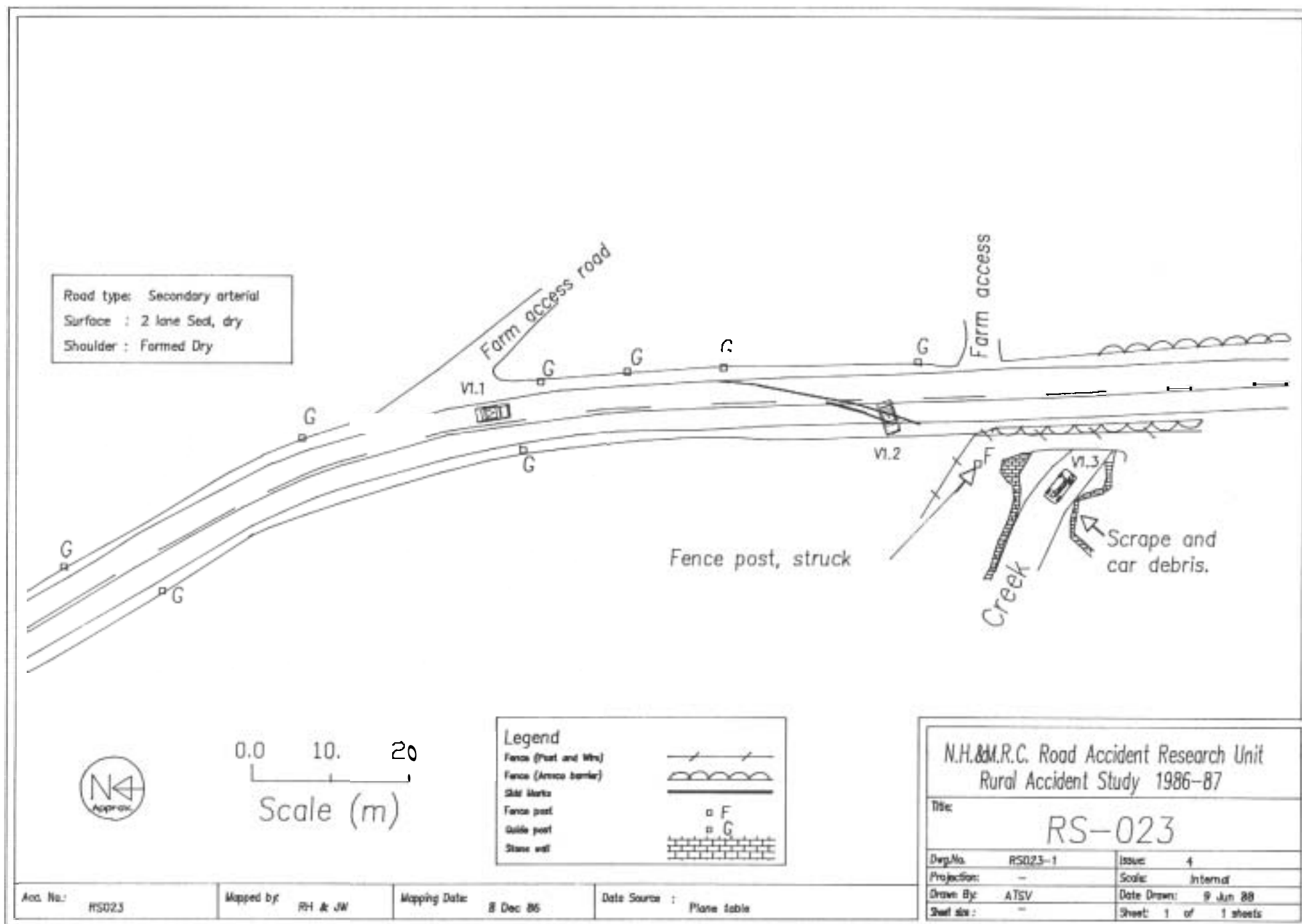
CRASH DESCRIPTION:

The car was travelling south on a winding, two-lane road at an unknown speed. It was early in the morning and the driver was returning home. He had spent the previous evening, until setting out to return home, drinking with relatives. He was known to be emotionally upset at that time. On a moderate right hand bend the car ran off the sealed surface onto the loose gravel shoulder to the left. It travelled for approximately 20 metres with both left wheels in the gravel before it regained the sealed surface and then travelled across the road in an increasing clockwise yaw to the opposite shoulder where it struck a large gate post with the left front corner. It then became airborne and travelled for 11 metres across a creek where it struck the top of an old bridge abutment with the left front. Calculations based on this trajectory indicate that the car was travelling at approximately 80 km/h when it became airborne. After impacting the bridge abutment the car rolled to the right and landed inverted in the rapidly flowing creek. A farmer who lived nearby was awakened by the noise, and waded into the creek, broke the left front window of the car and dragged the driver up onto the creek bank. The driver was unconscious and attempts at resuscitation were unsuccessful. The post mortem examination indicated the cause of death as fresh water drowning in the presence of alcoholic intoxication. Contact marks within the vehicle indicated that the driver was unrestrained and at impact was thrown to the left, which is where he was found by the farmer.

UNIT 1: Vehicle Type : 1978 TE Ford Cortina sedan

Driver: Male, 32, self employed labourer, BAC: 0.219, inertia 3 point reel seat belt available but not worn

Injuries: Superficial bruising of the right forehead probably from contacting the left A-pillar; bruise over the left thigh probably from contacting the hand brake; abrasions of the medial aspect of the left forearm and anterior aspect of left lower leg. The liver also showed evidence of cirrhosis. Dead at scene. MAIS: 2



CASE: RS 24

GENERAL CHARACTERISTICS :

CRASH: Single vehicle rollover - (Non-Fatal)  
VEHICLES: 1 tray top truck  
DAY: Friday TIME: 1210 hours  
WEATHER: Fine LIGHTING CONDITIONS: Daylight, sunny  
ROAD SURFACE: Sealed, dry  
OCCUPANTS: 1  
SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

A loaded tray top truck was travelling south east descending a steep grade on a winding, two-lane road. The road was cut into the side of a hill so that on the left there was a slight embankment and to the right a steep down slope. The right side was bounded by a guard rail. The driver of the truck estimated his speed at the time of the crash to have been 30 km/h. As the truck approached a sharp left hand bend the driver found that when he attempted to brake the pedal went to the floor. In an effort to slow the vehicle, which was travelling at a speed which would not permit safe negotiation of the corner, the driver steered up the embankment to the left. This failed to slow the truck sufficiently. It then travelled back onto the bitumen and crossed to the other side of the road where it struck the guard rail with its right front corner. The truck rode up over the guard rail, yawed to the right and rolled, travelling for 190 metres before coming to rest on its roof against a tree. The driver stated that when he realized the vehicle was going to roll he lay across the cab extending his arms and legs to brace himself. In this position he was struck by loose objects which flew about the cab as the vehicle rolled. An examination of the truck revealed it to be poorly maintained. The rear tyres had minimal tread. At the time of inspection the brake system had already been dismantled so that it was not possible to ascertain the condition of the brakes.

UNIT 1:      Vehicle Type : 1975 Leyland tray top, gross weight 7 tonnes  
                 Driver:      Male, 25 years, truck driver, BAC: zero, no seat belt available  
  
                 Injuries:      Concussion; bruises and lacerations to face and scalp; bruising to back of neck; bruising of anterior and posterior ribs; abrasions to left and right elbow; bruising to left knee and ankles. Hospitalized < 24 hours. MAIS: 1

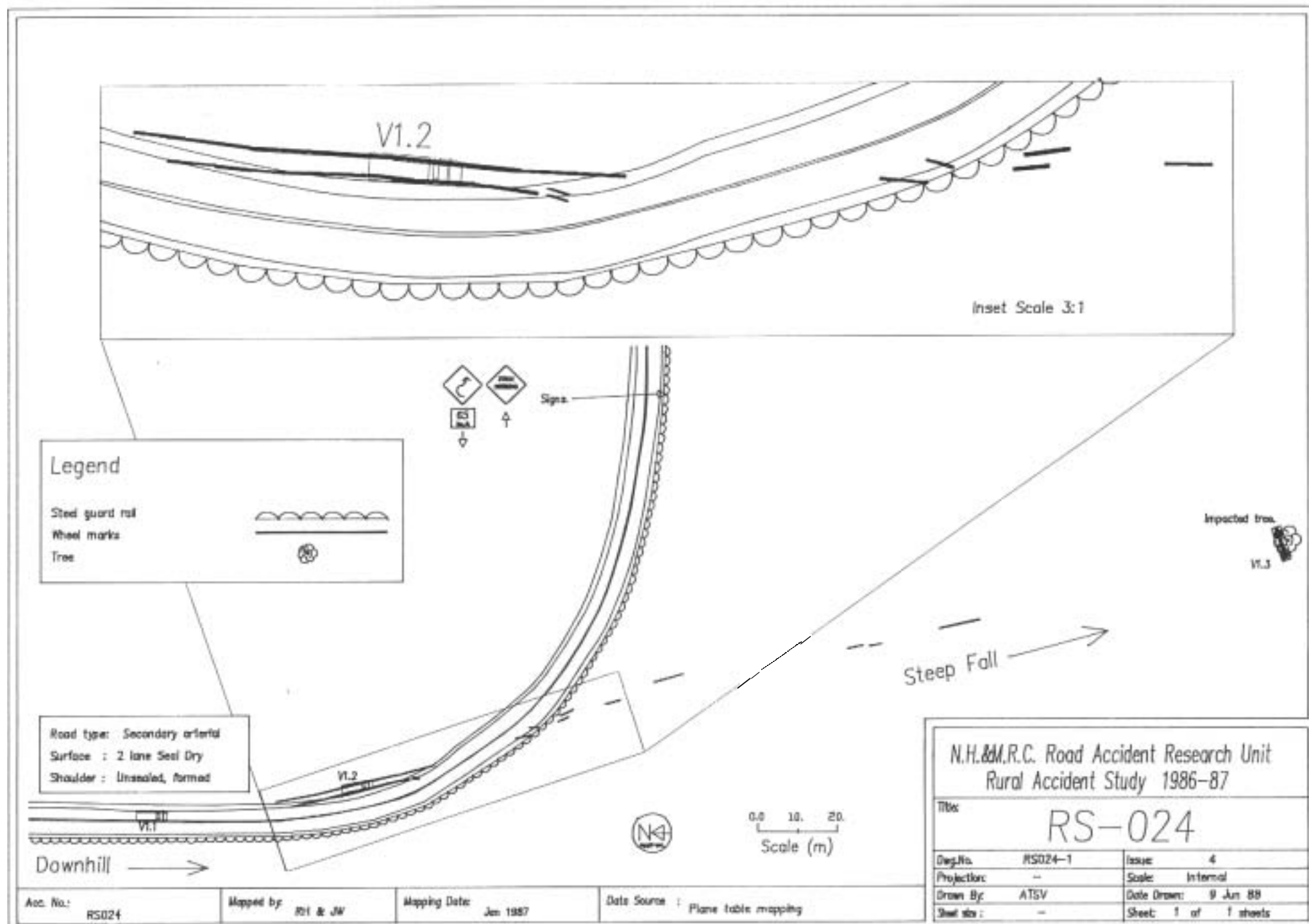




FIGURE A23: Crash 23. The final position of the car on its roof in a stream.



FIGURE A24: Crash 24. The final position of the tray top truck which came to rest against a large tree, after rolling down a steep hill.

CASE: RS 25

GENERAL CHARACTERISTICS :

CRASH : Collision with tree - (Non-Fatal)  
VEHICLES: 1 motorcycle  
DAY: Saturday TIME: 1600 hours  
WEATHER: Fine LIGHTING CONDITIONS: Daylight, sunny  
ROAD SURFACE: Sealed, dry  
OCCUPANTS: 1  
SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

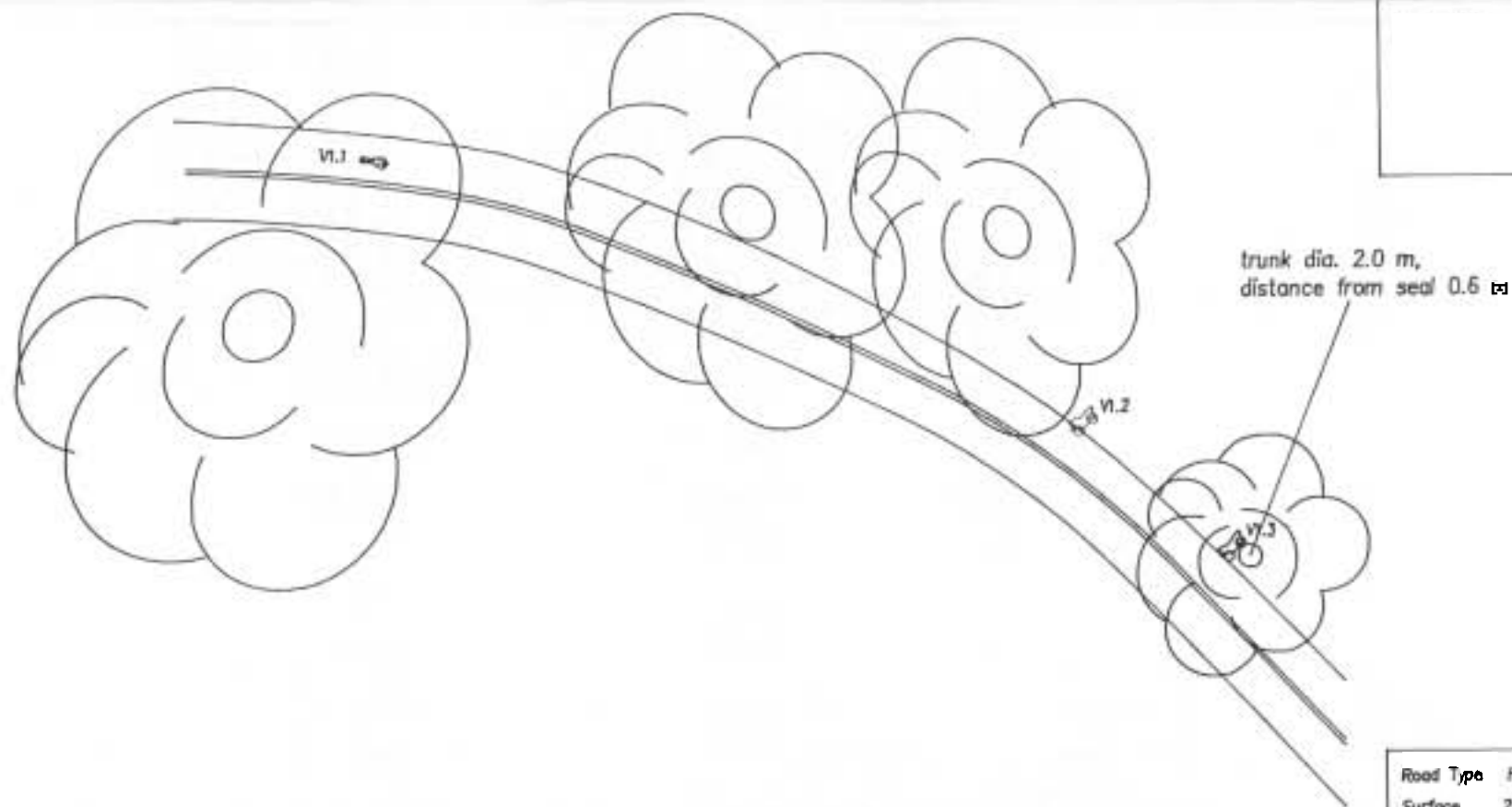
The circumstances of this crash are unclear as the motorcyclist has no recollection of the events leading up to, during or immediately after the crash. There were also no witnesses. From the limited information available, the motorcycle was travelling south east negotiating a sweeping right hand bend on a two-lane road. The rider was travelling home having spent the day as a check point marshal for an economy run held by a motorcycle club. Whilst negotiating the bend the motorcycle ran off the bitumen and onto the gravel shoulder on the left. The motorcycle then lost adhesion and slid down out of control striking the base of a large tree located approximately half a metre from the edge of the bitumen at the exit from the corner. Scrape marks indicate that the motorcycle was on its right side in a slight clockwise yaw when it impacted the tree. It struck first with the front wheel and then with the underside of the crankcase and rear wheel. The rider's injuries indicate that he was still astride the motorcycle when it struck the tree. At impact, his right leg flexed over the tank, fracturing his right thigh. He then struck the tree with his left arm, trunk and head.

UNIT 1: Vehicle Type : Yamaha 650 special

Driver: Male, 26 years, storeman, BAC: zero, full face helmet worn

Injuries: Concussion; compound fracture of right femur; fracture to left elbow, left index finger, right wrist and right scaphoid; laceration to left upper lip; abrasions to right lower leg and foot; laceration to left lower leg and bruising to posterior aspect of left thigh. Hospitalised 30 days. MAIS: 3





N.H. & M.R.C. Road Accident Research Unit  
Rural Accident Study 1986-87

Title: RS-025

Dep. No.	RS025-1	Issue:	1
Projection:	-	Scale:	Island
Drawn By:	ATSV	Date Drawn:	7 Jun 88
Sheet no.:	-	Sheet:	1 of 1 sheets

Acc. No.: RS025

Mapped by: M1 & JH

Mapping Date: 12 Jun 88

Data Source: Aerial photograph

**CASE: RS 26**

GENERAL CHARACTERISTICS:

CRASH: Side impact intersection collision - (Non-Fatal)  
VEHICLES: 2 cars  
DAY: Wednesday TIME: 1430 hours  
WEATHER: Fine LIGHTING CONDITIONS: Daylight, sunny  
ROAD SURFACE: Sealed, dry  
OCCUPANTS: Unit 1, 2; Unit 2, 1  
SPEED LIMIT: 80 km/h

CRASH DESCRIPTION:

Unit 1, driven by an elderly male driver accompanied by his wife, was travelling east on a two-lane road approaching a clearly marked T-Junction controlled by a Give Way sign. The driver of Unit 1, intending to make a right turn, stated that he stopped at the intersection and both he and his wife checked for traffic. He noticed a vehicle on his right moving slowly and a long way off. The driver and his wife concurred that it was safe to proceed and set off into the intersection. A witness following behind Unit 1 stated that the driver did not stop before entering the intersection. The witness estimated the speed of Unit 1 to be between 30 and 40 km/h. Unit 2, travelling north and slightly down hill in the right lane of a four-lane road divided by a raised median at approximately 80 km/h, saw Unit 1 approach the T-Junction and expected it to stop and give way. Instead it continued directly into his path. Unit 2 braked, skidding for 17 metres, before striking Unit 1. At impact, the right front corner of Unit 2 struck the right rear wheel arch of Unit 1. Unit 1 rotated 180° clockwise and travelled through the break in the median, caning to rest facing west and straddling the eastern shoulder and lane. Unit 2 came to rest on the median approximately 25 metres past the point of impact having veered to the right slightly. The driver of Unit 1 stated later that he did not see Unit 2 which he described as being a 'blue camouflaged colour' which merged into the background. The vehicle that the occupants of unit 1 did see was travelling behind Unit 2, but in the left lane.

UNIT 1: Vehicle Type : 1973 VJ Chrysler Valiant station wagon

Driver: Male, 81 years, retired, BAC: zero, 3 point static seat belt, probably worn

Injuries: Neck strain; laceration to left side of forehead, possibly from striking right door frame; bruising to left side of face and left upper arm. Treated at hospital but not admitted. MAIS: 1

Front Seat Passenger: Female, 15 years, retired, BAC: zero<sup>\*</sup>,  
3 point static seat belt, probably worn

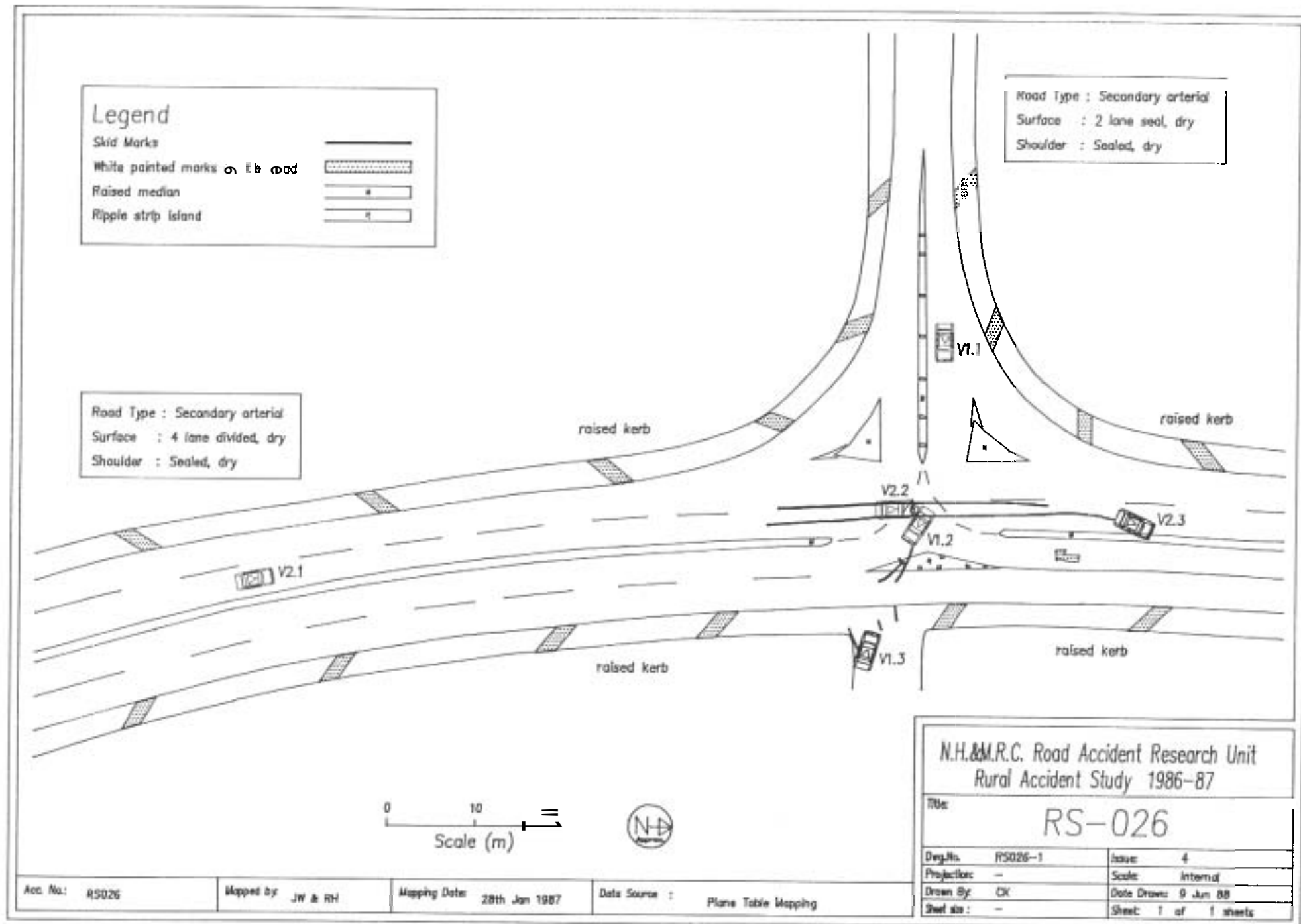
Injuries: Shock. Transported from the scene but  
not hospitalized. MAIS: 1

UNIT 2: Vehicle Type: 1974 XB Falcon two door hardtop

Driver: Male, 20 years, labourer, BAC: zero<sup>\*</sup>, inertia reel  
3 pint seat belt worn

Injuries: Shock. Remained at the scene. MAIS: 1

\*  
self-reported BAC



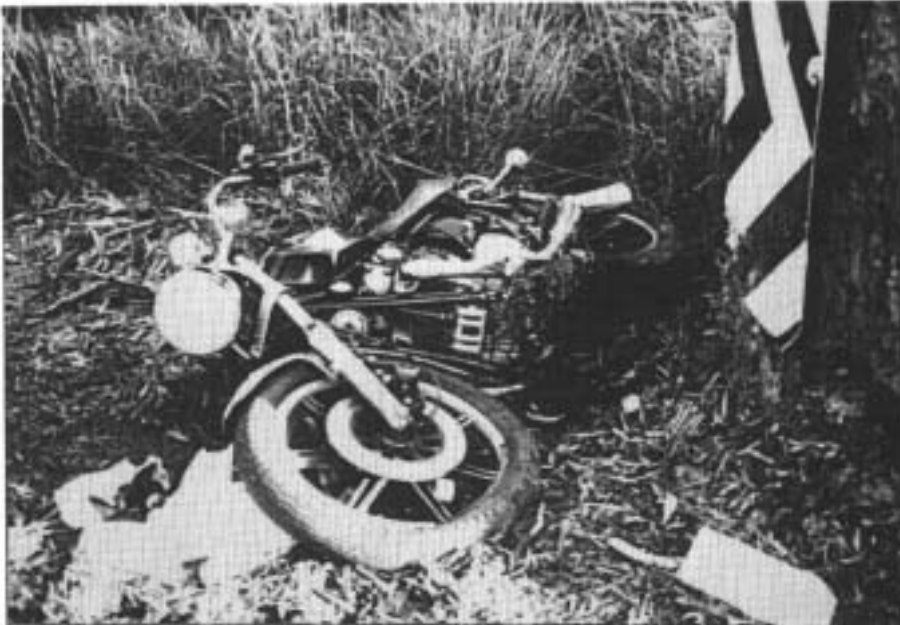


FIGURE A25: Crash 25. The final position of the motorcycle against a tree at edge of the bitumen surface.



FIGURE A26: Crash 26. Impact damage to the right side of Valiant station wagon.

CASE: RS 27

GENERAL CHARACTERISTICS:

CRASH: Sideswipe collision - (Non-Fatal)  
VEHICLES: 2, car and articulated truck  
DAY: Wednesday TIME: 2200 hours  
WEATHER: Fine LIGHTING CONDITIONS: Night, road not lit  
ROAD SURFACE: Sealed, dry  
OCCUPANTS: Unit 1, 2; Unit 2, 1  
SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

Unit 1 was proceeding uphill on a winding, two-lane section of road at night. It was travelling at approximately 40 km/h and negotiating a left hand bend. The **two** male occupants were returning home having spent the previous few hours drinking at a hotel. Unit 2, a fully laden, articulated milk tanker, was travelling in the opposite direction also at approximately 40 km/h. The two vehicles met on the bend. The road was 9 metres wide, and as Unit 1 passed the cab of Unit 2 the tanker driver checked in his side mirror to make sure that the tanker was on the correct side of the road. He stated that this was his usual practice on bends as it was possible for the tanker to cross onto the incorrect side of the road if the driver was not vigilant. Whilst watching in the side mirror, the driver of Unit 2 saw Unit 1 cross the centre line and with its right front corner strike a side mounted tool box and right rear bogie wheels of the tanker trailer. The impact bent the tie-rod on the right front wheel of the car turning the wheel outwards. Unit 1 continued forwards in a clockwise yaw striking a low embankment at the edge of the bitumen. It came to rest having rotated clockwise through 60° with the front up on the embankment and the rear facing out onto the road. At impact the unrestrained front seat passenger of Unit 1 was propelled forwards, striking the windscreen. After impact, the truck, which sustained only minimal damage, came to rest in its correct lane several metres beyond the point of impact. Markings on the road were consistent with the car having crossed the centre line and struck Unit 2. At the Scene the driver of Unit 1 was clearly intoxicated. He was tested by the Police by 'blowing in the bag' and registered over 0.08. An actual BAC for the driver is not available, however, as the two hour testing period after the crash was exceeded before the Breath Analysis Unit arrived.

UNIT 1: Vehicle Type : 1980 XD Ford Falcon sedan

Driver: Male, 41 years, labourer, BAC probably greater than 0.08, inertia reel 3 point seat belt available, probably worn

Injuries: Shock. Remained at scene. **MAIS:** 1

Front Seat Passenger: Male, 33 years, BAC: 0.250, inertia  
reel 3 point seat belt available, not worn

Injuries: Concussion; ragged laceration to left  
side of forehead; 'black-eyes' bilaterally.  
Hospitalized for 13 days. MAIS: 2

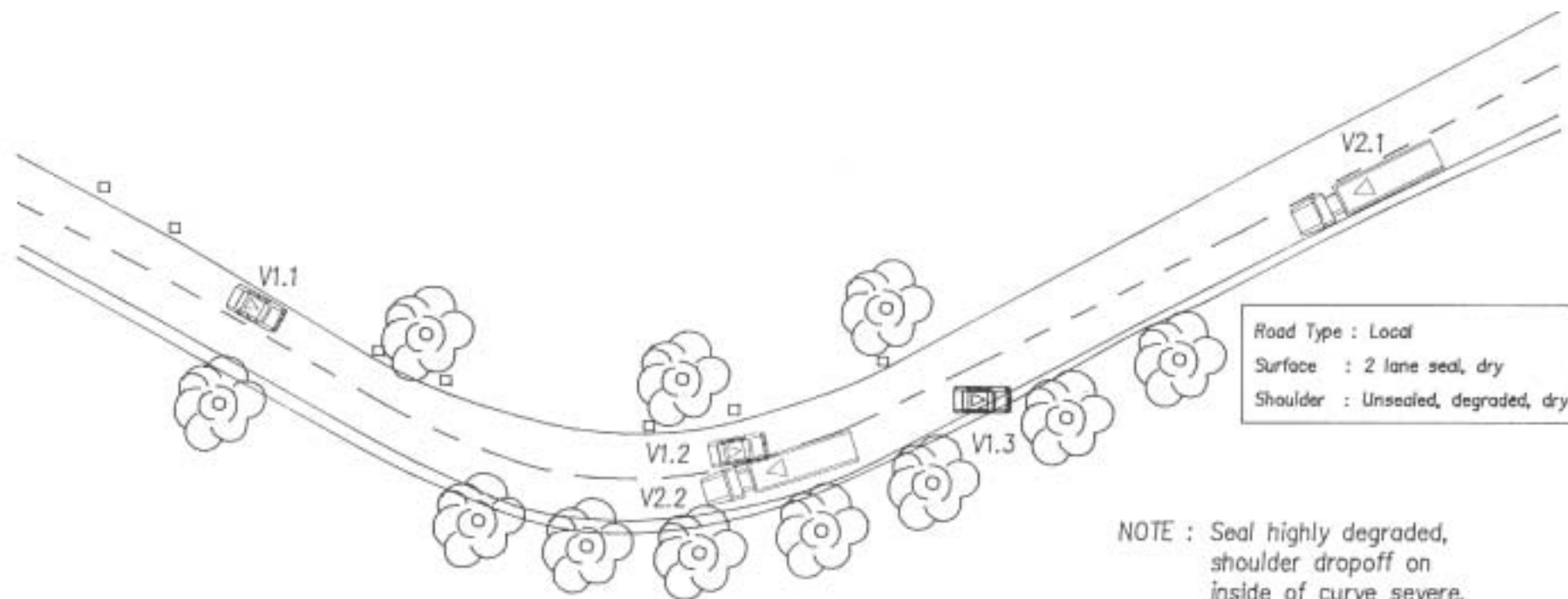
UNIT 2: Vehicle Type: Scania 112M prime mver with milk tanker  
trailer. Gross weight 28 tonnes

Driver: Male, 22 years, tanker driver, BAC: zero<sup>\*</sup>, not  
known if seat belts fitted, none worn

Injuries: Shock. Remained at scene. MAIS: 1

\*

self-reported BAC



Road Type : Local  
 Surface : 2 lane seal, dry  
 Shoulder : Unsealed, degraded, dry

NOTE : Seal highly degraded,  
 shoulder dropoff on  
 inside of curve severe,  
 road markings very faded  
 faint edgeline virtually  
 invisible.

0 10 20  
 Scale (m)



### Legend

Tree

Scrape

Guide post



N.H.M.R.C. Road Accident Research Unit  
 Rural Accident Study 1986-87

RS-027

Acc. No: RS027

Mapped by: M & J

Mapping Date: 11 Dec 87

Data Source: Please refer mapping

Original:	RS027-1	Issue:	1
Projection:	-	Scale:	Isoterial
Drawn By:	ASV	Date Drawn:	8 Jun 88
Sheet size:	-	Sheet:	1 of 1 sheets





FIGURE A27: Crash 26. Impact damage to the right front and side of Ford Falcon.



FIGURE A28: Crash 27. Impact damage to the right side of Ford Falcon. Note shattered windscreen, struck by front seat passenger.

**CASE: RS 28**

**GENERAL CHARACTERISTICS:**

**CRASH:** side impact intersection collision - (Nan-Fatal)  
**VEHICLES:** 2 cars  
**DAY:** Saturday **TIME:** 0200 hours  
**WEATHER:** Fine **LIGHTING CONDITIONS:** Night, road not lit  
**ROAD SURFACE:** Sealed, dry  
**OCCUPANTS:** unit 1, 1; Unit 2, 2  
**SPEED LIMIT:** 110 km/h

**CRASH DESCRIPTION:**

Unit 1 was travelling south on a straight, two-lane section of road late at night at approximately 110 km/h. The driver of Unit 1 was returning home having spent the evening (approximately four hours) drinking at a hotel with friends. Feeling tired and slightly inebriated (the driver described himself as being in a 'sleep daze') he missed his turnoff. Noticing a side road ahead on the right, he slowed, to a speed which he could not recall, and turned into it, intending to complete a U-turn there and go back to the turnoff that he had missed. In turning across the road Unit 1 travelled directly in front of Unit 2 which was travelling north at approximately 100 km/h. The front left corner of Unit 2 struck the left front and rear doors of Unit 1 which then rotated anti-clockwise through 120° coming to rest on the western shoulder facing north-east. After the impact, Unit 2 continued north coming to rest on the eastern shoulder facing west approximately 30 metres beyond the point of impact. The young female driver of Unit 2, travelling home after work with her sister, stated that Unit 1's turn was so abrupt that she had no time to brake or initiate any avoidance manoeuvre. Instead she let go of the steering wheel and covered her face. The driver of Unit 1 stated that he was not aware of Unit 2 until the impact occurred. The front seat passenger of Unit 2 was trapped in the vehicle after the crash as a result of intrusion of the floor pan which wedged her right lower leg beneath an under-dash-mounted cassette player.

**UNIT 1:** Vehicle Type : 1975 HJ Holden Kingswood sedan

Driver: Male, 24 years, labourer, BAC: 0.08, inertia reel  
3 point seat belt probably worn

Injuries: Bruising to left thigh probably from striking centre mounted console; graze to forehead above left eye. Remained at scene. MAIS: 1

UNIT 2:

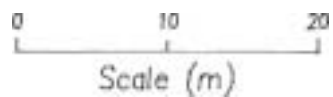
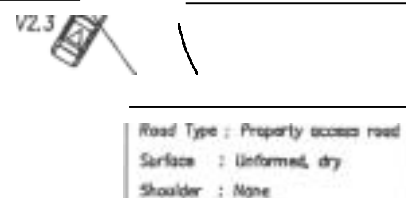
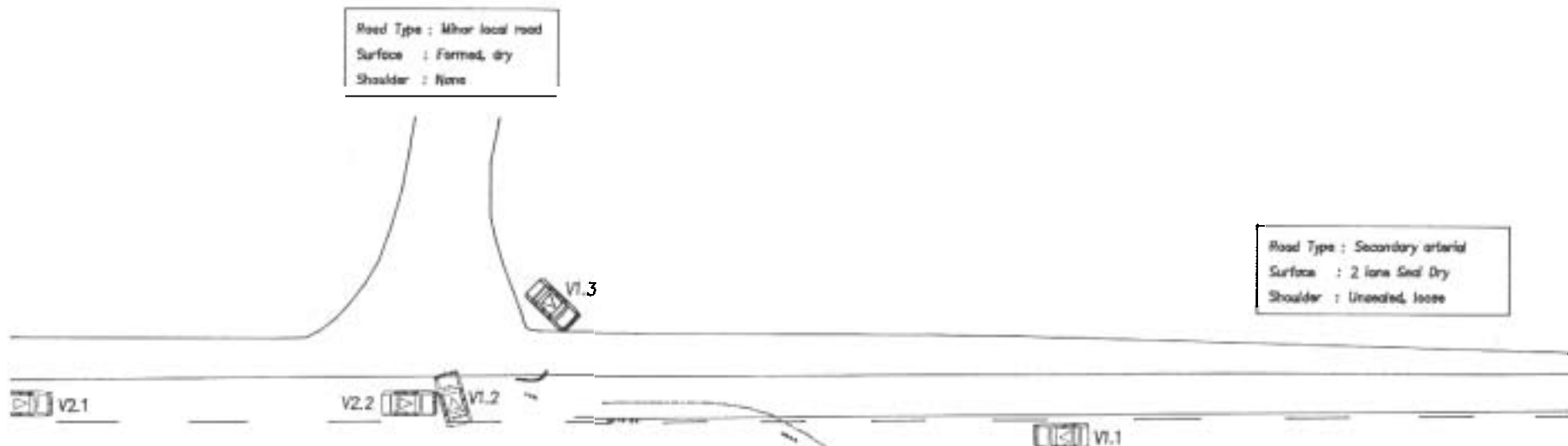
Vehicle Type : Holden Gemini sedan (year not determined)

Driver: Female, 19 years, waitress, BAC: zero, inertia reel  
3 point seat belt worn

Injuries: Bruising over sternum and lower abdomen  
probably from seatbelt; cuts to left lower leg  
possibly from striking heater ducting; bruise on  
left thigh possibly from handbrake. Transported to  
hospital but not admitted. MAIS: 1

Front Seat Passenger: Female, 19 years, waitress, BAC:  
zero, inertia reel 3 point seatbelt probably worn

Injuries: Abrasions to right side of face;  
laceration to left knee possibly from underside of  
dashboard; fractured right ankle due to intrusion  
of floor pan and entrapment. Hospitalized < 24  
hours. MAIS: 2



Legend

Tyre mark

Oil drops left by V2

Scrape marks

N.H.&M.R.C. Road Accident Research Unit  
Rural Accident Study 1986-87

Title

RS-028



FIGURE A29: Crash 27. Milk tanker struck in front of right rear wheels by a car.



FIGURE A30: Crash 28. Holden Kingswood in its final position with damage to its left side.

GENERAL CHARACTERISTICS:

CRASH: Collision with tree - (Non-Fatal)  
 VEHICLES: 1 car  
 DAY: Saturday TIME: 1915 hours  
 WEATHER: Fine LIGHTING CONDITIONS: Daylight, sunny  
 ROAD SURFACE: Sealed, dry  
 OCCUPANTS: 1  
 SPEED LIMIT: 110 km/h

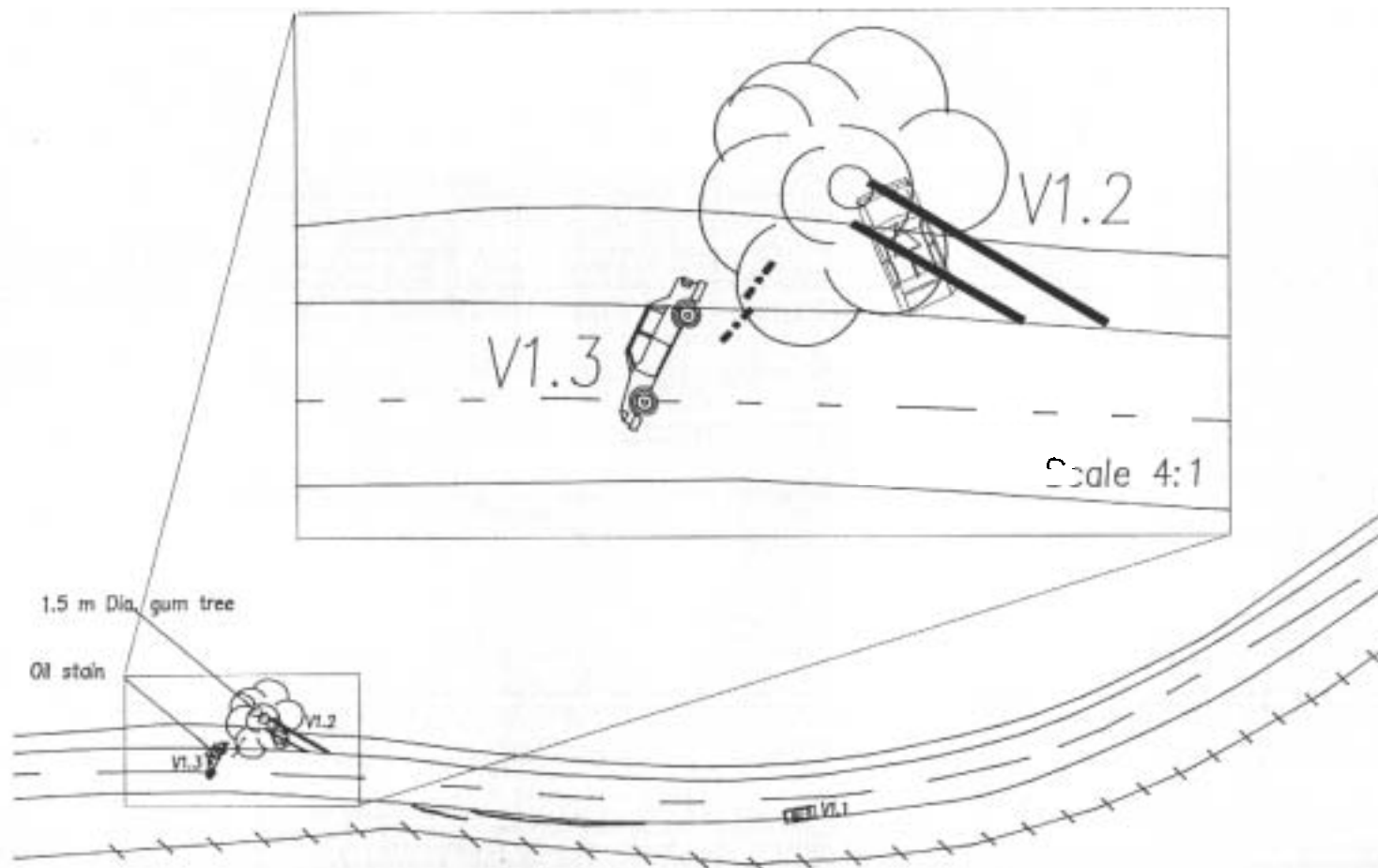
CRASH DESCRIPTION:

The car was travelling north, on a two-lane road, negotiating a sweeping right hand bend. The driver was on his way home having spent the afternoon drinking at a hotel. The driver has no recollection of the crash or the events leading to or following it. From marks on the road surface and shoulder, the car ran wide near the exit of the bend and travelled onto the **loose** gravel shoulder on the left. The driver overcontrolled in attempting to regain the bitumen and crossed to the other side of the road in a slight clockwise yaw and then struck a large tree with the left front corner. The car then rotated through 270° and rolled onto its left side, coming to rest in the south bound lane facing north west. At impact the unrestrained driver was thrown to the left, striking the windscreen and the window sill of the left front door. Both right hand side tyres were seriously under-inflated.

UNIT 1: Vehicle Type : 1984 Nissan Pulsar sedan

Driver: Male, 43 years, tradesman, SAC: 0.142, inertia reel  
 3 point seat belt available, not worn

Injuries: Antegrade and retrograde amnesia;  
 unconscious (period unknown); fracture to upper  
 portion of sternum; fractured second and third  
 ribs on the right side: compression fracture of  
 the body of the third thoracic vertebrae;  
 abrasions to both hands and back of neck.  
 Hospitalized 10 days. MAIS: 3



Acc. No: RS029

Mapped by: R-T &amp; J-W

Mapping Date: 7 Nov 86

Data Source: Plane table mapping

Drawn By:

Sheet size:

Sheet: 1 of 1 sheets



FIGURE A31: Crash 28. Holden Gemini in its final position with damage to the left front corner from striking Holden Kingswood.



FIGURE A32: Crash 29. Damage to the left front of Nissan Pulsar from striking tree. Note occupant contacts on windscreen.



CASE: RS 30

GENERAL CHARACTERISTICS:

CRASH: Head-on collision - (Fatal)  
VEHICLES: 2, motorcycle and school bus  
DAY: Monday TIME: 1615 hours  
WEATHER: Fine LIGHTING CONDITIONS: Daylight, high overcast  
ROAD SURFACE: Sealed, dry  
OCCUPANTS: unit 1, 1; Unit 2, 3  
SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

Unit 2, a school bus, was travelling south, downhill on a winding, tm-lane road at approximately 40 km/h, returning to its depot. As the bus driver braked approaching a sharp right hand bend, the motorcycle, travelling north, appeared around the bend approximately 30 metres in front and leaning sharply to its left. The motorcycle had just left a 60 km/h urban speed restriction zone and had entered a 110 km/h zone. The driver said that ~~some~~ part of the motorcycle scraped on the road; the motorcycle then lost adhesion and slid down onto its left side. ~~The~~ rider and motorcycle separated, with the motorcycle crossing the road in front of Unit 2 and sliding down into a ditch where it came to rest on its right side facing south-east. The rider, wearing leathers and a full face helmet, slid along the road behind the motorcycle and was struck by the bus. When the bus driver saw the motorcycle slide down he braked hard and veered slightly to the left. The bus came to rest with the left front wheel on the left shoulder and the remainder of the vehicle on the bitumen. At impact the rider's head struck the centre of the bus's bumper bar, and his trunk and legs then rotated anti-clockwise so that his body was oriented east-west. The left front wheel of the bus then ran over the rider who was dragged along the road as the bus passed over him. The rider came to rest on his right side with his head facing west and **legs** east. His helmet remained on. ~~The~~ rider was on holiday fran interstate and it was the first time he had travelled along the road.

UNIT 1: Vehicle Type : 1984 Yamaha FJ 1100 motorcycle

Driver: Male, 26 years, labourer, BAC: zero, full face helmet worn

Injuries: Abrasions over dorsum of right foot, right lateral thigh, left **legs**, left knee, left trunk, right and left shoulders and right neck. There was a compound fracture of the left tibia and fibula at the mid-shaft level, a fracture of the distal end of the right tibia and fibula. The right 4th to 9th ribs were fractured, and there was a transverse basal skull fracture. The lower lobe of the right lung **was** extensively lacerated as a result of the adjacent rib fractures. The ascending aorta had a 20 mm full thickness transverse tear. The lateral aspect of the right lobe of the liver was extensively lacerated. Dead at scene. **MAIS:** 6

UNIT 2:      Vehicle Type: Bedford school bus

Driver:      Male, 42 years, bus driver, BAC: zero , no seat belt available \*

Injuries: Shock. Not transported to hospital.  
**MAIS:** 1

Passenger 1: Male, 7 years, student, BAC: zero , no seat belt available. \*

Injuries: Shock. Not transported to hospital.  
**MAIS:** 1

Passenger 2: Female, 12 years, student, BAC: zero , no seat belt available \*

Injuries: Shock. Not transported to hospital.  
**MAIS:** 1

\*  
self-reported BAC

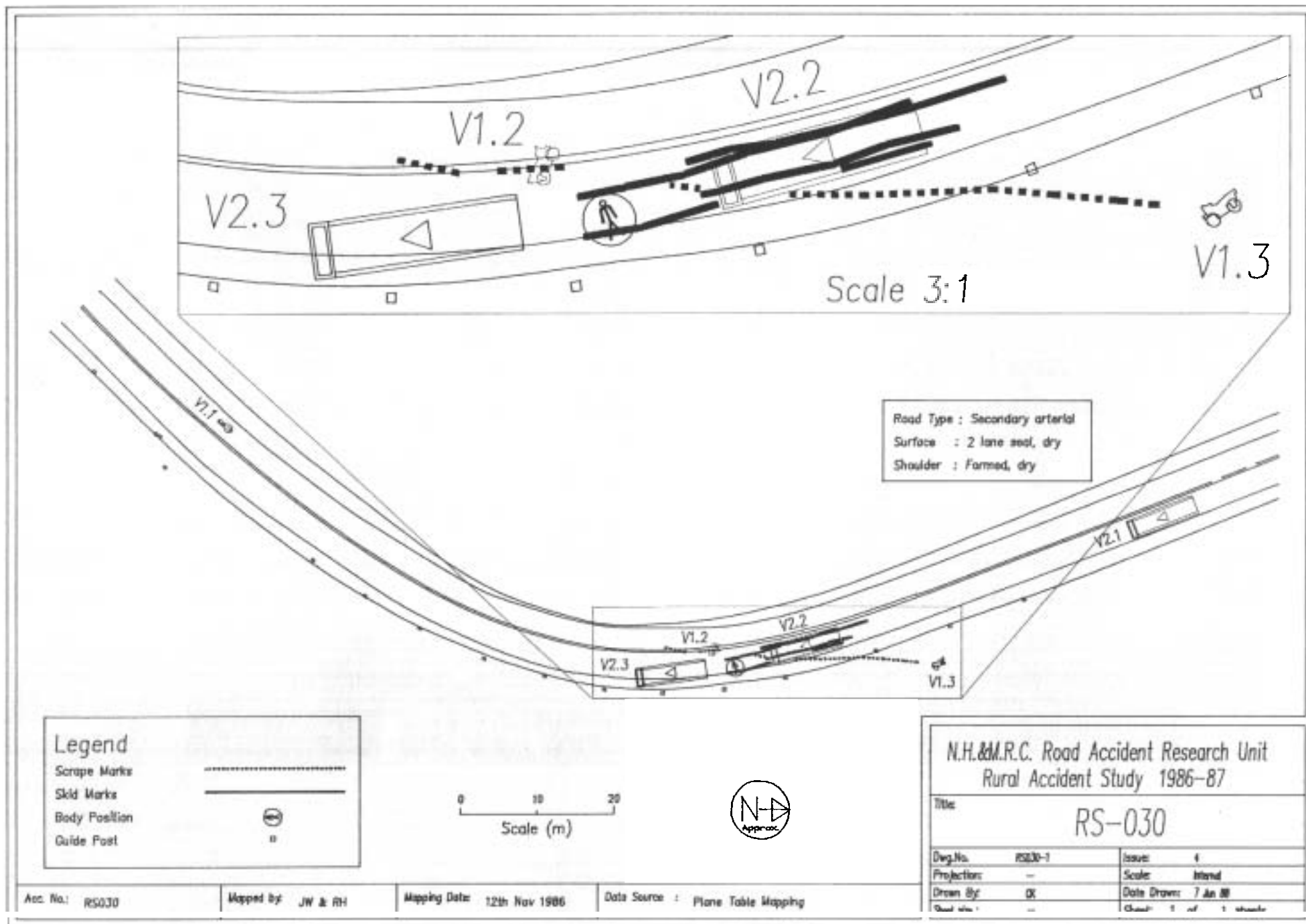




FIGURE A33: Crash 30. Final position of the motorcycle.



FIGURE A34: Crash 30. School bus. Damage above left end of bumper bar due to contact with motorcycle, which was on its left side.

GENERAL CHARACTERISTICS:

CRASH: Side impact intersection collision - (Non-Fatal)

VEHICLES: 2 cars

DAY: Thursday TIME: 2120 hours

WEATHER: Fine LIGHTING CONDITIONS: Night, road not lit

ROAD SURFACE: Unit 1 = unsealed, dry; Unit 2 = sealed, dry

OCCUPANTS: Unit 1, 3; unit 2, 2

SPEED LIMIT: 100 km/h

CRASH DESCRIPTION:

Unit 1 was travelling west at night at approximately 40 km/h. The young female driver was unlicensed and had only very limited driving experience. The front seat passenger, who was the vehicle's owner, told the driver when to depress the clutch and he then changed gears. As it entered an intersection with a four lane arterial road, where the driver intended to turn left, the engine stalled. Unit 1 came to rest angled 45° to the left with the front half projecting out onto the bitumen. The driver attempted to restart the engine, and while doing this the car was struck by Unit 2, which was travelling south in the left lane of a four-lane arterial road at approximately 100 km/h. The left front corner of Unit 2 struck the right front door and wheel of Unit 1 causing it to rotate through 360° anti-clockwise. Unit 1 came to rest facing west on the eastern shoulder a few metres south of the point of impact. At impact the driver's seat back failed. The driver fell rearward, caning to rest supine against the rear seat. The initial impact damaged the front left suspension and steering of Unit 2. It travelled in an increasing anti-clockwise yaw onto the eastern shoulder where it struck several fence posts with the right front and a steel and concrete utility pole with the driver's side 'B' pillar. It came to rest 60 metres beyond the point of initial impact, facing south. The driver of Unit 2, who had been talking to the front seat passenger immediately prior to striking Unit 1, stated that he was completely unaware of any object protruding into his lane. Consequently he did not initiate any evasive action.

UNIT 1: Vehicle Type : 1978 Datsun 120Y sedan

Driver: Female, 17 years, unemployed, BAC > zero but level unknown, inertia reel 3 point seat belt available, probably not worn

Injuries: unconscious approximately 5 minutes; neck strain; bruising to face and chest; abrasions to left and right knees and lower legs. Transported to hospital but not admitted. **MAIS:**  
2

Front Seat Passenger: Male, 21 years, BAC: zero, inertia  
reel 3 point seat belt probably **worn**

Injuries: Concussion. Transported to hospital but  
not admitted. MAIS: 1

Right Rear Seat Passenger: Female, 17 years, BAC: > zero  
but level unknown, 3 point static seat belt  
available, not worn

Injuries: Laceration to left side of head; no  
other injuries stated. Transported to hospital,  
not admitted, MAIS: 1

UNIT 2:

Vehicle Type : 1983 Ford Fairlane sedan

Driver: Male, 27 years, proprietor, BAC: zero , inertia  
reel 3 point seat belt available but not worn

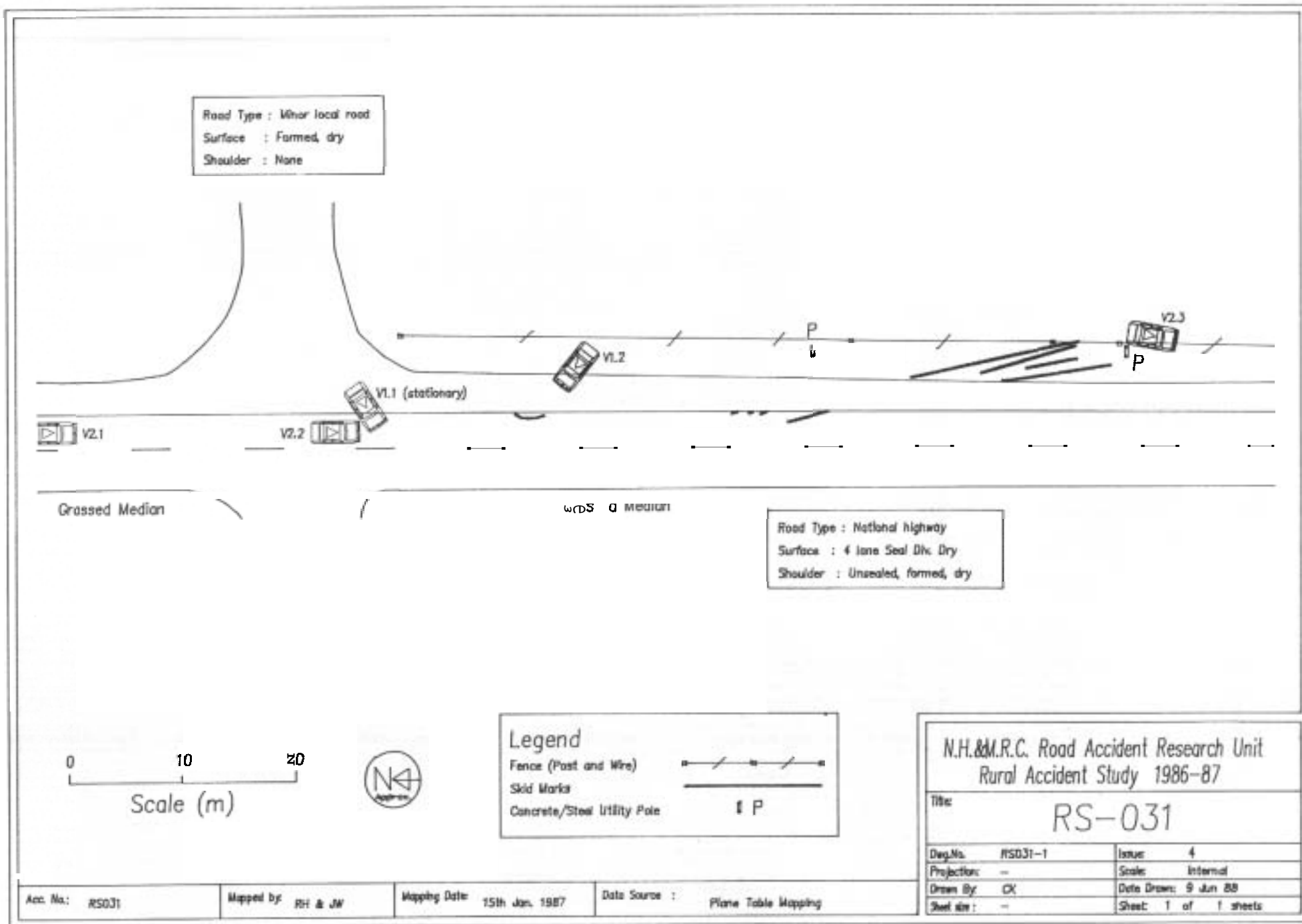
Injuries: Concussion; laceration to bridge of  
nose from striking steering wheel: bruising to  
medial aspect of upper ~~arms~~ bilaterally; bruise to  
left hip from striking centre mounted console:  
bruising to left and right knees from underside of  
dashboard. Transported to hospital, not admitted.  
MAIS: 1

Front Seat Passenger: Male, 27 years, RAC: zero , inertia  
reel 3 point seat belt available, not worn

Injuries: Neck strain: bruised right hip from  
striking centre mounted console: bruising to left  
and right knees from underside of dashboard.  
Transported to hospital but not admitted. MAIS: 1

\*

self-reported BAC



CASE: RS 32

GENERAL CHARACTERISTICS:

CRASH TYPE: Collision with fixed railway carriage - (Non-Fatal)  
VEHICLES: 1 car  
DAY: Thursday TIME: 2315 hours  
WEATHER: Fine LIGHTING CONDITIONS: Night, road not lit  
ROAD SURFACE: Sealed, dry  
OCCUPANTS: 1  
SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

The driver was returning home having spent most of the day drinking in a hotel with friends. The driver has no recollection of the crash. He travelled on the road daily. Marks on the sealed road surface and shoulder indicate that the car had negotiated a sweeping left hand bend on a two-lane road when it veered to the right, in an anti-clockwise yaw. It crossed onto the right shoulder and travelled through the front garden of a house until the right front corner struck a railway carriage owned by the householder. The car then rotated clockwise, coming to rest facing the side of the railway carriage. At impact the unrestrained driver was thrown to the passenger's side, striking his chest on the steering wheel and his face on the glove box. The driver's first recollection after the crash is lying on the floor of the vehicle with his face in the left front seat passenger's foot well.

UNIT 1: Vehicle Type : 1971 HQ Holden sedan

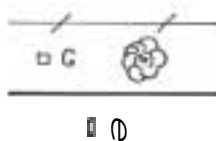
Driver: Male, 24 years, unemployed, **BAC:** 0.261, 3 point static seat belt available but not worn

Injuries: Concussion; unconscious < 10 minutes; compound fracture of nose: bi-lateral maxilla fractures; fracture of the left lateral margin of the second lumbar vertebra: fracture of the left 9th rib: bruise on left hip. Hospitalized for 14 days. **MAIS:** 3



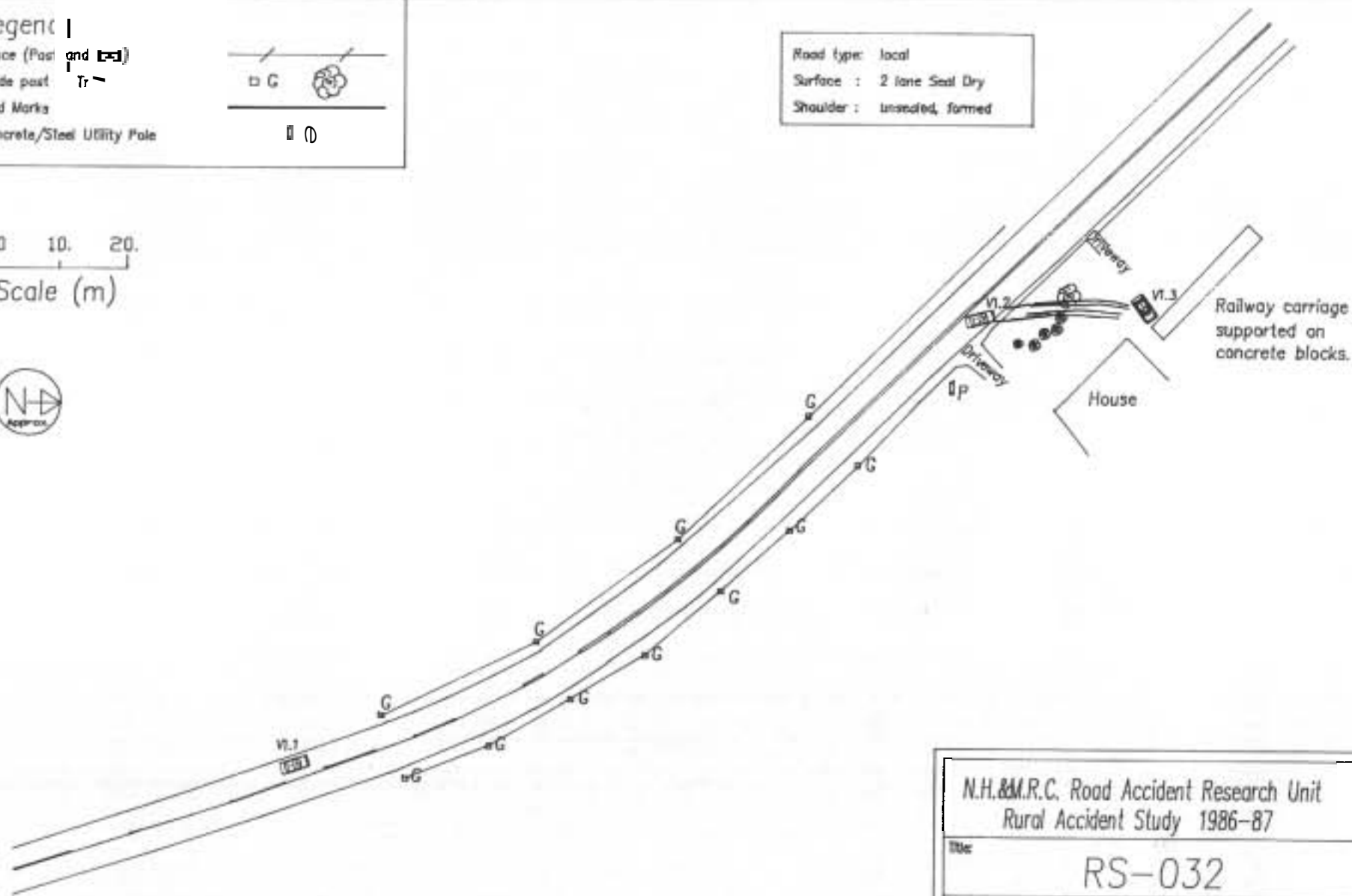
# Legend

Fence (Post and Rail)  
Guide post  
Skid Marks  
Concrete/Steel Utility Pole



Road type: local  
Surface : 2 lane Seal Dry  
Shoulder : unsealed, formed

0.0 10. 20.  
Scale (m)



N.H.&M.R.C. Road Accident Research Unit  
Rural Accident Study 1986-87

Title

RS-032

Orig. No. RS032-1

Issue 4

Projection -

Scale Internal

Drawn By ATSV

Date Drawn 9 Jun 88

Sheet Size -

Sheet 1 of 1 sheets

Acc. No. RS032

Mapped by RH & JW

Mapping Date 18 Dec 86

Date Source Plane table mapping.

GENERAL CHARACTERISTICS:

CRASH TYPE: Rear-end collision - (Non-Fatal)

VEHICLES: 2, car and tray top truck with loaded trailer

DAY: Tuesday TIME: 1400 hours

WEATHER: Fine LIGHTING CONDITIONS: Daylight, sunny

ROAD SURFACE: Sealed, dry

OCCUPANTS: Unit 1, 3: Unit 2, 1

SPEED LIMIT: 100 km/h

CRASH DESCRIPTION:

Unit 1 was travelling north in the right lane of a four-lane arterial road divided by a grassed median. It was following two car lengths behind a large semi-trailer travelling at approximately 100 km/h. The semi-trailer put on its left indicator and moved into the left lane. As it did so Unit 1 was confronted by Unit 2 which was stationary in the right lane approximately 100 metres ahead of Unit 1. Unit 2, a flat topped truck with a four wheel trailer carrying steel and concrete utility poles, **was** stopped at a break in the median waiting to complete a U-turn. The utility poles protruded approximately 3 metres from the end of the trailer. The driver of the car braked violently and veered slightly to the right in an attempt to avoid striking the poles. The left front of the car struck the right rear tyre and mudguard on the trailer of Unit 2. The car came to rest against the rear right wheel of the trailer at the point of impact. The force of the impact did not shift the truck from its original position, suggesting that the impact speed was relatively low. Immediately prior to impact the unrestrained rear seat passenger crouched on the floor behind the left front passenger's seat. The driver of the truck stated that he was not aware of the approach of the car until he heard the screech of tyres and he looked in his rear vision mirror and saw it strike the rear of his vehicle.

UNIT 1: Vehicle Type: 1971 Holden Kingswood sedan

Driver: Male, 24 years, tradesman, BAC: zero<sup>\*</sup>, 3 point static seat belt available, probably **worn**

Injuries: Abrasion to left forehead: bruising and abrasions to left and right knees from underside of instrument panel: bruising to upper arms bilaterally: abrasions to knuckles on left hand. Remained at the scene. MAIS: 1

\* self-reported BAC

\*

Front Seat Passenger: Male, 25 years, labourer, BAC: zero ,  
3 point static seat belt available, probably worn

Injuries: Bruising to left knee from instrument  
panel. Remained at the scene. MAIS: 1

\*

Rear Seat Passenger: Male, 20 years, labourer, BAC: zero ,  
seat belt not worn

Injuries: Bruising to left cheek and temple.  
Remained at the scene. MAIS 1

UNIT 2:

Vehicle Type: 5 tonne tray top truck with 4 wheel trailer  
containing steel and concrete utility poles. Gross  
weight 7 tonnes

\*

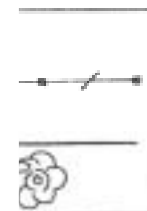
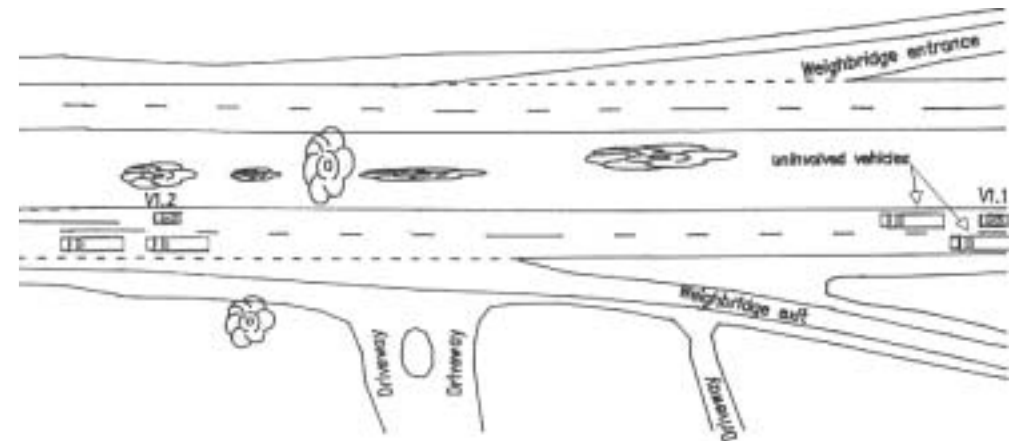
Driver: Male, 23 years, tradesman, BAC: zero , no seat  
belt available

Injuries: Shock. Remained at the scene. MAIS: 1

\*  
self-reported BAC

umed Dry  
ace

Road type: national highway  
Surface : 4 lane Seal Dk. Dry  
Shoulder : Unsealed formed



Source : Aerial photograph, site measurement

**N.H.M. Road Accident Research Unit**  
Rural Accident Study 1986-87

Title RS-033		
Orig. No.	RS033-1	Issue: 4
Projection:	-	Scale: Internal
Drawn By	ATSV	Date Drawn: 9 Jun 88
Sheet size:	-	Sheet: 1 of 1 sheets



FIGURE A35: Crash 32. Final position of Holden Kingswood after impact with fixed carriage used as railway museum.



FIGURE A36: Crash 33. Final position of Holden Kingswood. Frontal damage due to striking right rear wheels of the trailer of a tray top truck.

CASE: RS 34

GENERAL CHARACTERISTICS:

CRASH TYPE: Rear-end collision - (Fatal)  
VEHICLES: 2, bicycle and semi-trailer  
DAY: Wednesday TIME: 2115 hours  
WEATHER: Fine LIGHTING CONDITIONS: Night, road not lit  
ROAD SURFACE: Sealed, dry  
OCCUPANTS: unit 1, 1; unit 2, 2  
SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

unit 2, a laden semi-trailer, was travelling east at night on a two-lane road at approximately 90 km/h. The driver, who travelled the road five nights per week, had dipped his head lights because of an approaching truck. As the two vehicles were about to pass the driver of Unit 2 noticed a bicyclist approximately 20 metres in front and riding 1 metre from the edge of the sealed surface. The bicycle had no lights, only a single rear reflector, and the rider was clad in dark clothing. The rider gave no indication that he was aware of Unit 2's approach. The truck driver moved his vehicle as far as possible to the right but was limited in how far he could travel due to the on-caning vehicle. He crossed the centre line causing the other truck to swerve off the road and onto the shoulder. The left edge of the semi-trailer's 'bull-bar' struck the right side of the rider and bicycle, causing both to somersault into the air. The driver of the truck then heard some object strike the left side of the cab. The rider came to rest on the left shoulder approximately 45 metres north-east of the point of impact, and the bicycle was also found on the left shoulder approximately 20 metres north east of the point of impact. The rider, who had an elevated BAC, sustained predominantly right sided injuries and was dead at the scene. He frequently travelled along the road at night on his way home. A new lighting system for a bicycle was found at the crash scene amongst the rider's belongings.

UNIT 1: Vehicle Type : Bicycle

Driver: Male, 44 years, unemployed, BAC 0.166, no helmet worn

Injuries: Abrasions to right forehead and trunk posteriorly; compound fracture of the neck of the right femur; closed fracture of right femoral shaft; closed fracture of right tibia and fibula; compound fracture of right ankle; extensive laceration of the posterior aspect of the right lung; right hamthorax; laceration to right lobe of the liver; subdural haematoma. Death at scene.  
MAIS: 5

UNIT 2

Vehicle Type : White prime mover with trailer. Gross weight  
28 tonnes

Driver: Male, 29 years, haulage contractor, BAC: zero, no  
seat belt available

Injuries: Shock. Remained at the scene. MAIS: 1

Front Seat Passenger: Male, 21 years, BAC: zero, no seat  
belt available

Injuries: Shock. Remained at the scene. MAIS: 1







FIGURE A37: Crash 33. Tray top truck. Note poles protruding from rear of trailer.



FIGURE A38: Crash 34. Damage to bicycle struck from the rear by a semi-trailer.

GENERAL CHARACTERISTICS:

CRASH TYPE: Motorcycle slide down - (Non-Fatal)

VEHICLES: 1 motorcycle

DAY: Sunday TIME: 1800 hours

WEATHER: Fine LIGHTING CONDITIONS: Daylight, sunny

ROAD SURFACE: Sealed, dry, slightly uneven

OCCUPANTS: 1

SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

The motorcycle was negotiating a sweeping left hand bend commencing over a crest on a two-lane road at a speed in excess of 100 km/h. This motorcyclist was leading a group of three other riders. They had spent the day on a social ride and were returning to Adelaide. The riders had spent several hours drinking in a hotel before setting off on the return trip. As the motorcycle was negotiating the bend the rider felt the rear wheel begin to slide out to the right. To try to control the motorcycle the rider braked, locking up the rear wheel. The motorcycle then 'highsided', flipping back to the right and onto its right side. The motorcycle then slid across the road on its right side, coming to rest in a ditch beyond the right shoulder. When the motorcycle flipped back to the right the rider was thrown off. He recalls landing on his left wrist, and sliding along the shoulder and into a grassed ditch front first. He lost consciousness briefly. When he regained consciousness he was lying prone in the ditch with the motorcycle some 5 to 10 metres away. The rider was wearing jeans, desert boots, a jumper and waxed cotton jacket, forearm length leather gloves and a full face helmet. The helmet sustained multiple abrasions and remained in place.

UNIT 1: Vehicle Type : Kawasaki Z 1000

Rider: Male, 23 years, tradesman, BAC: 0.08, full face helmet worn

Injuries: **Loss** of consciousness; bruising to upper chest bilaterally; bruising to inner surface of left upper arm; abrasion to right hip; sprained left and right ankles; fractured right wrist. Transported to hospital and admitted overnight. MAIS: 2

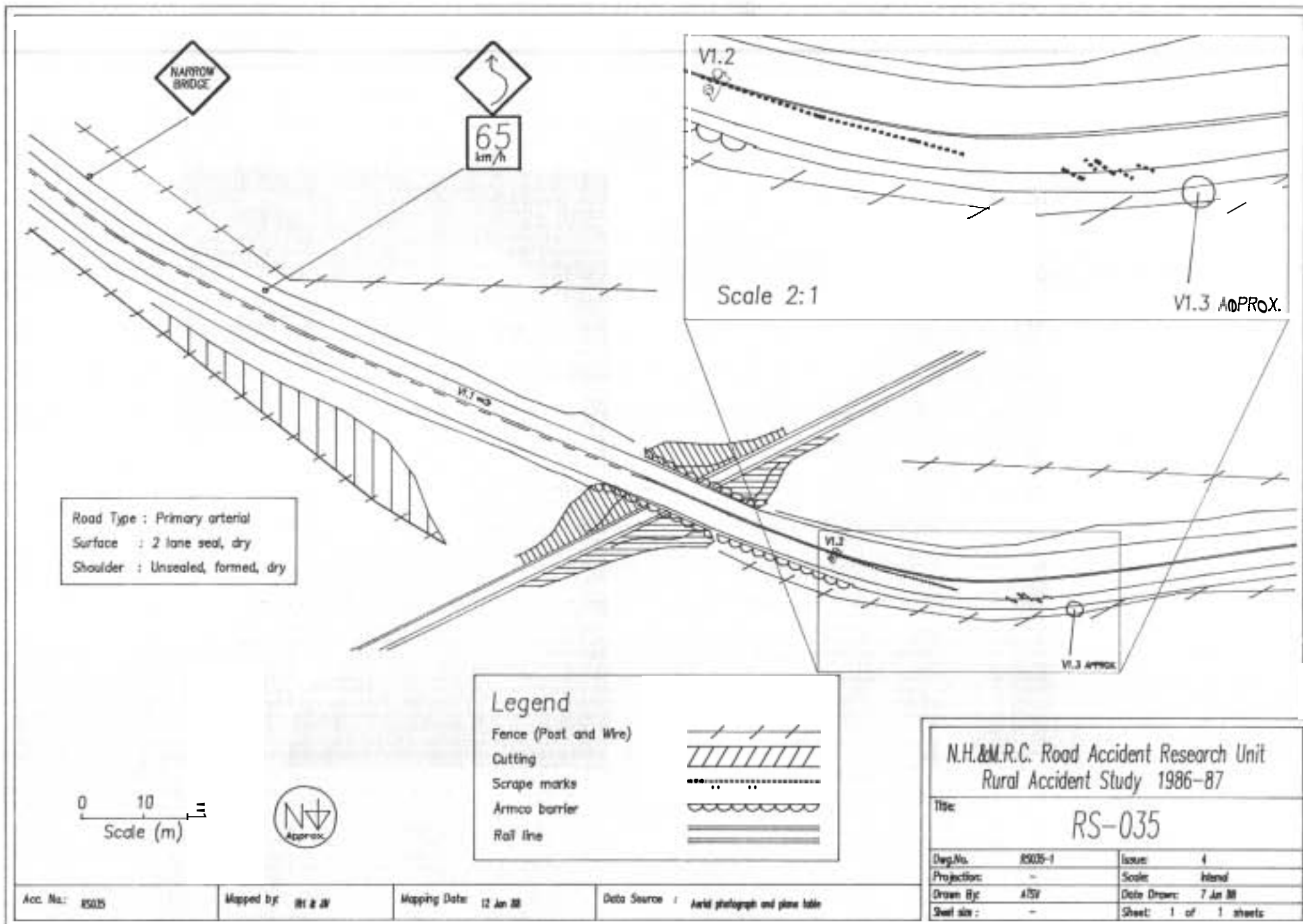




FIGURE A39: Crash 34. Laden semi-trailer which struck rear of bicycle.

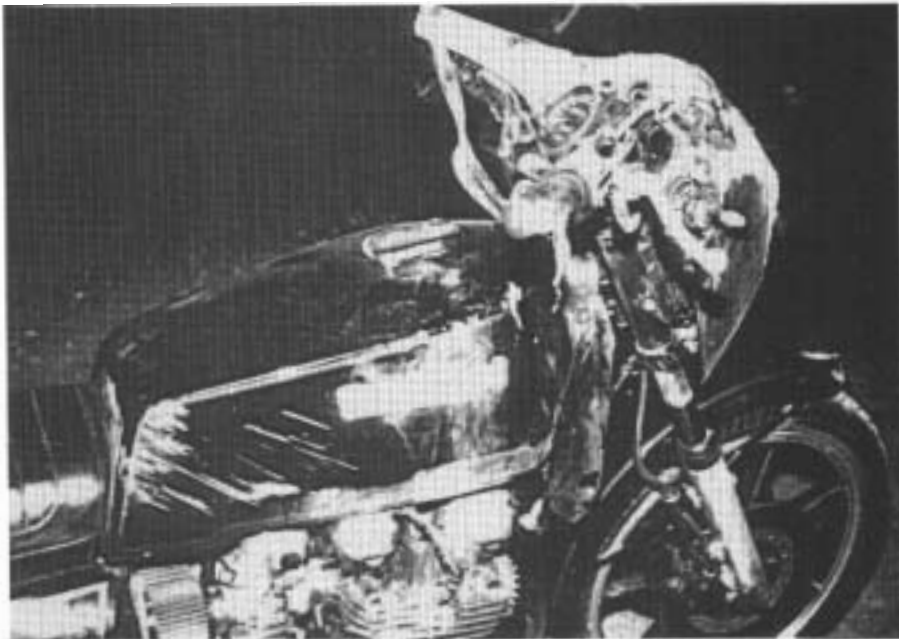


FIGURE A40: Crash 35. Damage to right side of motorcycle. Note scrapes to fuel tank from contact with road surface.

# CASE RS 36

## GENERAL CHARACTERISTICS:

CRASH TYPE: Collision with trees - (Fatal)

VEHICLES: 1 car

DAY: Tuesday TIME: 1130 hours

WEATHER: Fine LIGHTING CONDITIONS: Daylight, sunny

ROAD SURFACE: Sealed, dry

OCCUPANTS: 2

SPEED LIMIT: 110 km/h

## CRASH DESCRIPTION:

The car was travelling south on a four-lane arterial road divided by a wide, grassed median planted with trees. It is not known in which lane it was travelling prior to the crash. The driver, an invalid pensioner accompanied by his wife, was on a shopping trip. The car had just negotiated a slight left hand bend when it yawed clockwise, travelling off the sealed surface and onto the median where the left front corner struck a large tree. It continued rotating clockwise and struck a second tree on or about the left front wheel causing the engine and passenger compartment to separate at the firewall. The engine compartment lodged at the base of the tree while the passenger compartment continued forward, rotating clockwise, coming to rest facing in the original direction of travel approximately seven metres beyond the engine compartment. There were two postulated causes for the crash. The driver was said to have been taking large quantities of therapeutic drugs for an existing spinal injury, and the post mortem examination indicated that the driver may have had a heart attack immediately prior to the crash.

UNIT 1: Vehicle Type : 1970 VG Chrysler Valiant sedan

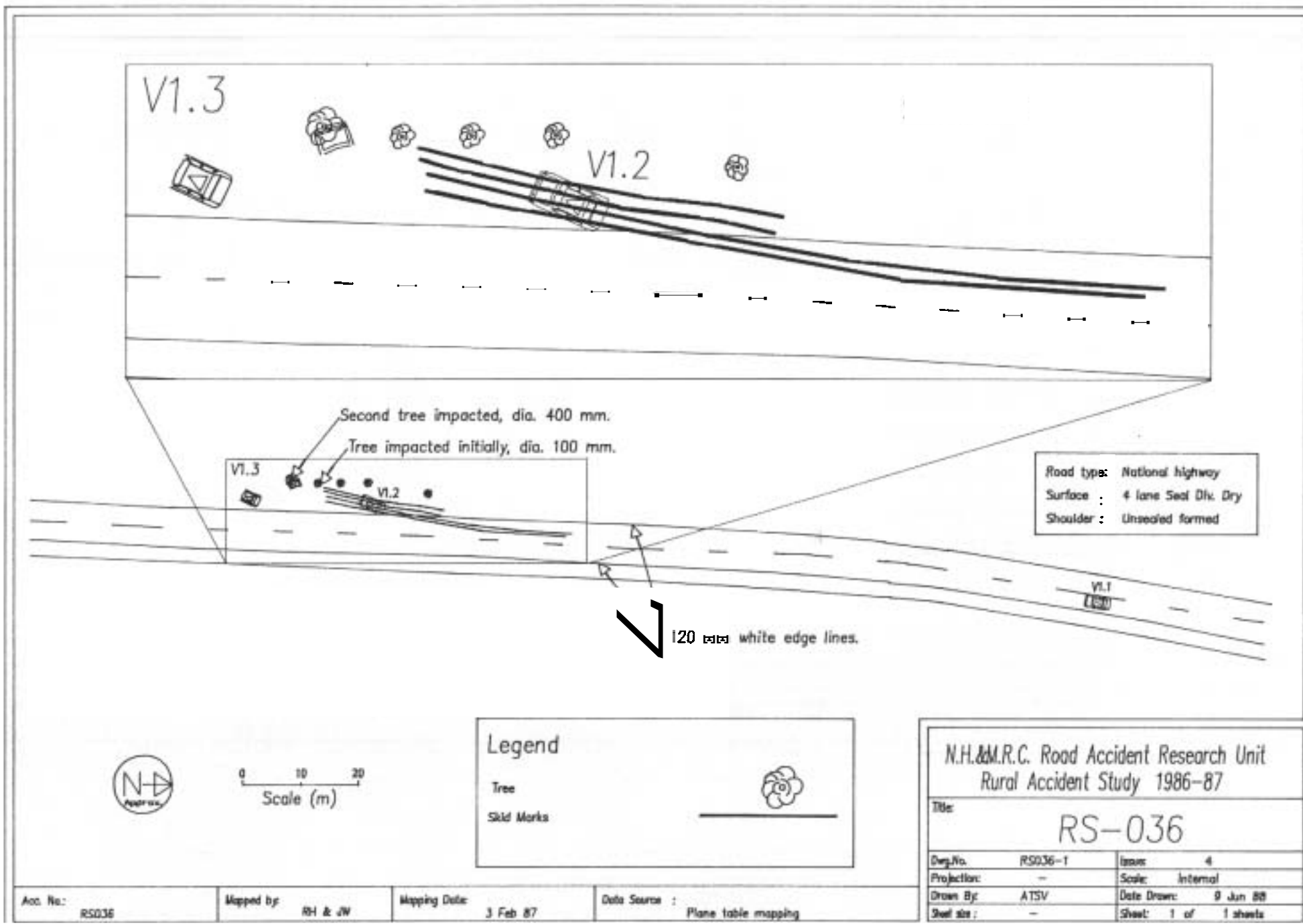
Driver: Male, 59 years, invalid pensioner, BAC: zero, 3 point static seat belt worn

Injuries: Laceration to forehead from striking windscreen or tree: left and right hemothorax; fracture right anterior ribs 4-8; fracture left anterior ribs 5-7; 12 cm tear of the mesentery in the region of the mid ileum; compound fracture of left and right femurs: fracture left and right ankles. The chest and abdominal injuries probably resulted from contact with the steering column and rim, and the lower limb injuries from contact with the instrument panel and floor and fire wall which

intruded into the passenger space. Examination of the coronary arteries revealed an acute tear in the intimal lining of the right main artery partially occluding the lumen. The other coronary arteries had chronic blockage. Died in hospital 1 hour after crash. **MAIS:** 5

Front Seat Passenger: Fanale, 50 years, home duties, BAC: zero, 3 point static seat belt **worn**

Injuries: Severe bruising on the thorax and abdomen in the line of seat belt sash: abrasion on crossing the base of the neck on the left side: fracture of the cervical vertebrae at C6 and C7 with considerable contusion of the spinal cord: compound fracture of right tibia and fibula; fracture of right femur, Dead at scene. **MAIS:** 5



GENERAL CHARACTERISTICS :

CRASH TYPE: Single vehicle rollover - (Fatal)

VEHICLES: 1 utility

DAY: Tuesday TIME: 2315 hours

WEATHER: Fine LIGHTING CONDITIONS: Night, road not lit

ROAD SURFACE: Sealed, dry

OCCUPANTS: 3

SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

A utility was travelling east at night, on a two-lane road, at a speed estimated by one of the occupants to have been 80 km/h. The three male occupants had spent the day on a fishing trip and were returning home. On the way hane they stopped at a friend's place where they consumed 'a few beers' and smoked **some** cannabis. After leaving the friend's house the three then stopped at a hotel where they drank more beer. They had been travelling for approximately five minutes after leaving the hotel when, after negotiating a right hand bend and approaching a slight bend to the left, the car crossed to the right side of the road and left the bitumen, rolling into a 2.3 metre deep gully and landing on its right side. It then slid on its right side for approximately 5 metres up a slight embankment and rolled onto its left side. The vehicle came to rest partly on its left side and roof. Two of the occupants were found dead, partially ejected through the left door. The only survivor was ejected from the vehicle and sustained only superficial soft tissue injuries. It should be noted that there is some uncertainty regarding the occupants' seating positions as described by the survivor. The engineer's inspection of the vehicle revealed extensive rusting. An electric welder had been used to re-attach the front of the right rear spring attachment which had rusted through shortly before the crash. This weld was found to have failed. If this separation occurred immediately prior to the crash it would have caused the vehicle to deviate to the right.

UNIT 1:      vehicle Type : 1970 Holden HT utility

\*

Occupant 1:      Male, 33 years, unemployed, **BAC:** 0.168, tetrahydrocannabinol found in blood, 3 point static seat belt available, not worn

Injuries: Linear abrasions extended across the right side of the back crossing the right anterior chest obliquely; abrasions to left and right shin; right lateral rib fractures 1-6 with protrusion into the pleural cavity producing a small right haemothorax; death resulted from asphyxia due to the aspiration of vomit. Dead at scene. **MAIS:** 4



\*

Occupant 2: Male, 28 years. unemployed, BM3 0.098, tetrahydrocannabinol was noted in the blood, no seat belt available

Injuries: An abrasion extended up the nape of the neck above the left shoulder; abrasions were also present extending obliquely from the left groin to the left knee; extensive bruising on the lateral aspect of the left upper arm; a three centimetre laceration was present on the lateral aspect of the upper lobe of the left lung; there was a left haemothorax containing approximately 850 mls of fluid blood secondary to the lung laceration. Dead at scene. MAIS: 5

\*

Occupant 3: Male, 38 years, unemployed, BAC: 0.10, 3 point static seat belt available, not worn

Injuries: Concussion; neck strain; laceration to right side of head; bruising to right side of arm, chest and thigh. Wounds were contaminated with weeds, dirt and fragments of glass. He was found by St. John Ambulance officers wandering dazed about the crash scene. MAIS: 1

\*  
Seated positions uncertain, see text.

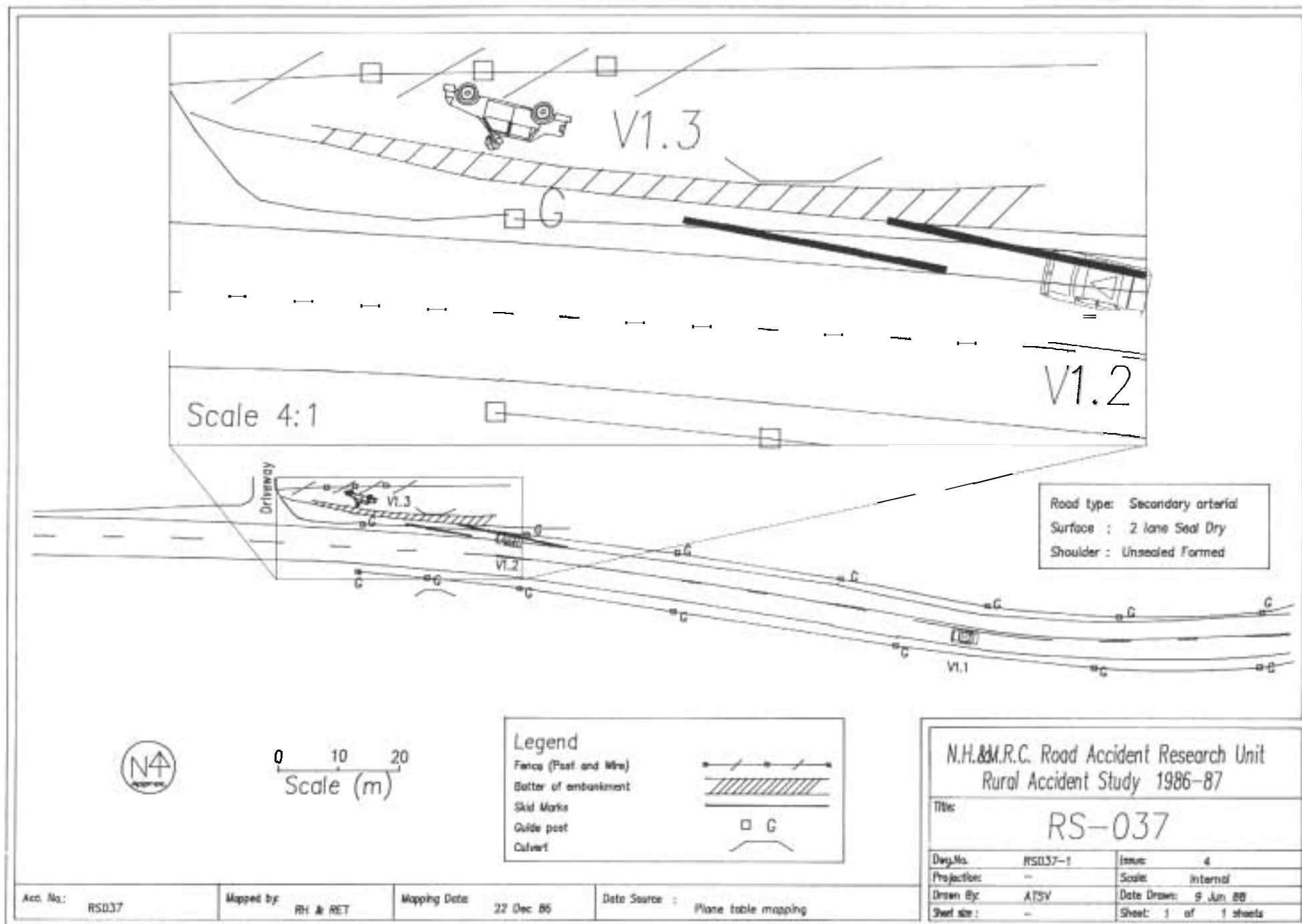




FIGURE A41: Crash 36. The passenger compartment of the car in its final position. The engine compartment, which separated in the second impact with a tree, came to rest in the trees behind the passenger compartment.



FIGURE A42: Crash 37. Final position of the utility. Note open left door through which two of the occupants, who both died, were partially ejected; and the severe rusting of floor pan of the rear load compartment.

GENERAL CHARACTERISTICS:

CRASH TYPE: Head-on collision - (Fatal)

VEHICLES: 2 cars

DAY: Thursday TIME: 1840 hours

WEATHER: Fine LIGHTING CONDITIONS: Daylight, sunny

ROAD SURFACE: Sealed, dry

OCCUPANTS: Unit 1, 2; Unit 2, 6

SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

Unit 1 was travelling east, on a two-lane road, at a speed estimated by the driver to have been 80 km/h. The occupants of Unit 1, a young male driver and young male friend were returning to the friend's house after a shopping trip. Unit 1 had successfully negotiated a right hand bend and was travelling on a generally straight section of road when the left wheels ran off the bitumen surface and onto the gravel shoulder. As the driver attempted to regain the bitumen Unit 1 yawed clockwise. It travelled in an increasing clockwise yaw across the centre line to the other side of the road where it was struck by Unit 2, travelling west at approximately 100 km/h. The occupants of Unit 2, a young family, were on a shopping trip. At impact, Unit 1 had rotated clockwise through 45° and was partially off the sealed surface. The right front corner of Unit 2 struck the left front door of Unit 1. The impact caused the front of Unit 1 to separate at the firewall. The passenger compartment continued rotating clockwise through a further 270° coming to rest on the southern shoulder. The driver of Unit 1 stated that when the vehicle came to rest he was lying on the floor with his face in the driver's footwell. The passenger's door came open in the impact. The front seat passenger's torso was leaning out of the vehicle. After the impact the engine compartment rotated a further 90° coming to rest on the northern side of the road. Unit 2 travelled backwards for approximately five metres after the impact and yawed clockwise through 45° also coming to rest on the southern shoulder. The driver of Unit 1 had a probationary licence and had owned the vehicle for only four weeks. Examination of the crash site revealed that the road deviated to the right slightly at the point where Unit 1 left the bitumen surface, with a significant difference in height between the bitumen surface and the clay shoulder being present.

UNIT 1: vehicle Type : 1968 XW Ford Falcon sedan

Driver: Male, 17 years, apprentice, BAC: zero, 3 point static seat belt worn, failed in crash

Injuries: Loss of consciousness; bruising to right shoulder, chest and abdomen from seat belt; fracture of right second metacarpal; bruising of right elbow and right ankle. Hospitalized < 24 hours. MAIS: 2

Front Seat Passenger: Male, 18 years, student, BAC: zero; 3 point static seat belt **worn**

Injuries: **Loss** of consciousness; laceration to left forehead and occiput from impact with left side window or 'B' pillar; bruising of left clavicle, chest and abdomen; fracture left tibia probably from direct impact by door at impact. Hospitalized for 12 days. MAIS: 2

**UNIT 2:**

Vehicle Type : 1985 XF Ford Falcon sedan

Driver: Male, 35 years, engineer, BAC: zero, inertia reel 3 point seat belt **worn**, failed in crash

Injuries: Concussion; laceration of right eyebrow; severe mid-facial fractures probably from striking steering wheel; fractured right wrist; dislocation of right hip with a fracture of the acetabulum; right pneumothorax; fractures of right and left ribs probably from impacting steering wheel; laceration of right and left lower legs. Hospitalized > 42 days. MAIS: 3

Centre Front Seat Passenger: Male, 4 years, lap belt worn

Injuries: Laceration of right side of scalp; abrasions to face; fracture of both sides of lower jaw; fracture third thoracic vertebra; right pneumothorax. Quadriplegia resulted from spinal injury. Hospitalized > 100 days. Transferred to rehabilitation unit for spinal injuries. **MAIS: 5**

Left Front Seat Passenger: Female, 13 years, inertia reel 3 point seat belt available but not worn

Injuries: Abrasions and lacerations to right side of face and forehead with embedded fragments of glass; laceration to right shoulder; large contusion on posterior aspect of right **lung**; traumatic rupture of posterior aspect of right atrium; fracture of vertebral column at C6; fracture of third right rib. Death at scene. **MAIS: 5**

Right Rear Seat Passenger: Female, 33 years, inertia reel 3 point seat belt worn

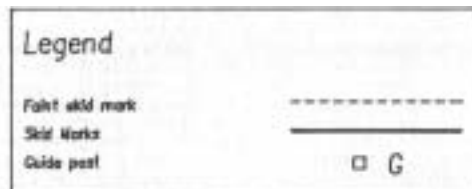
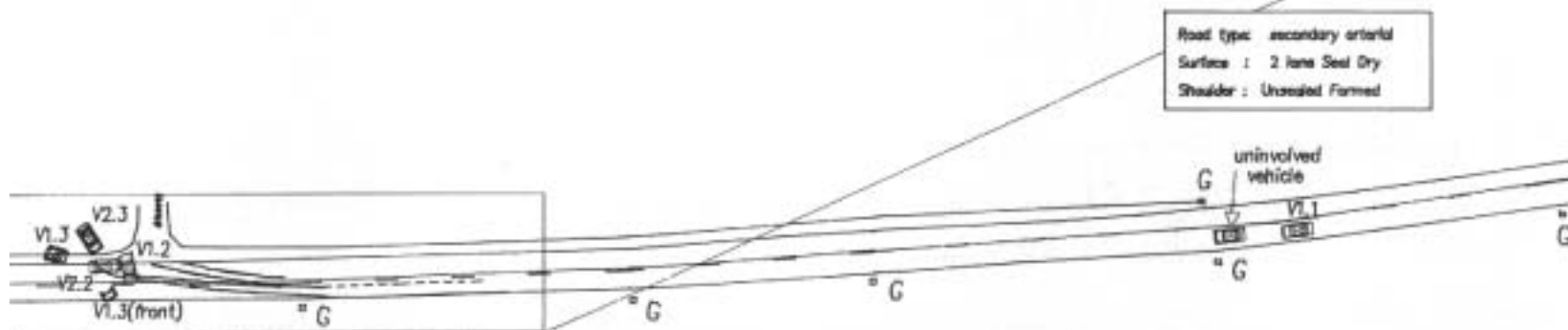
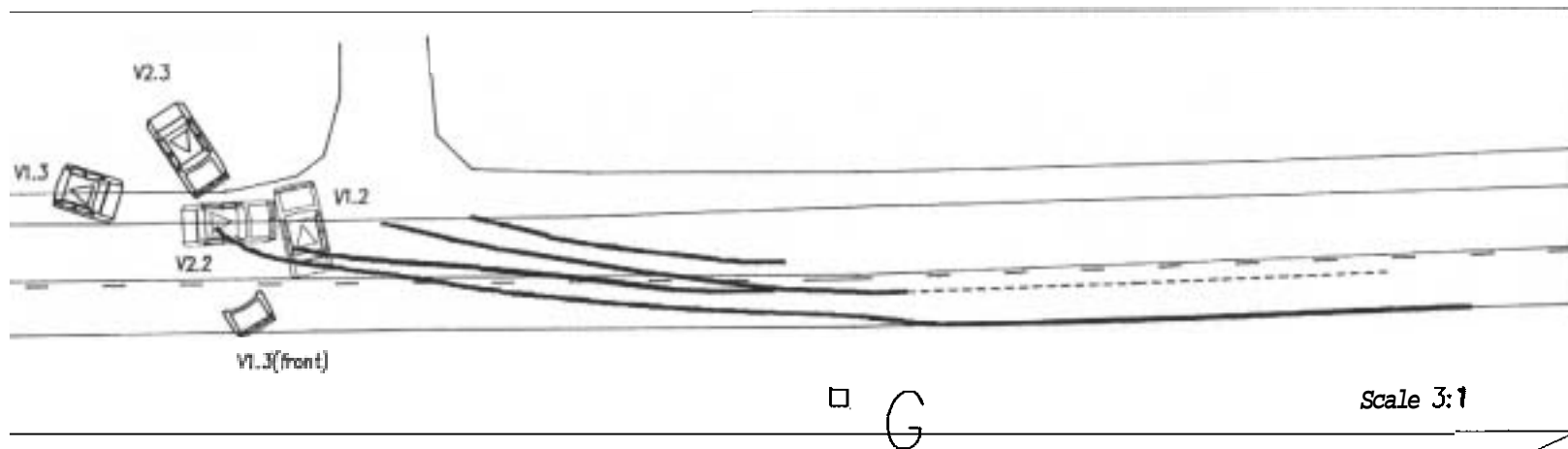
Injuries: Concussion; bruising of right side of neck, chest, lower abdomen and left hip, all probably from seat belt; fracture of left ribs 2-5 laterally and right ribs 1-2 posteriorly; small left pneumothorax. Hospitalized 6 days. **MAIS: 3**

Baby Nursed by Right Rear Seat Passenger: Male, 18 months

Injuries: Superficial bruising. MAIS: 1

Centre Rear Seat Passenger: Female, 6 years, lap belt worn

Injuries: Fracture of second and third lumbar vertebrae with distraction of vertebral bodies and complete tearing of paraspinal muscles and ligaments of the spine, and transection of the spinal cord at that level; contusion of caecum with a laceration of the mesentery requiring caeectomy. Paraplegia resulted from spinal injury. These abdominal and spinal injuries resulted from extreme flexion and axial loading on the spine at impact and compression of the abdominal contents by the lap belt. Hospitalized > 100 days. Transferred to rehabilitation unit for spinal injuries. MAIS: 5



0 10 20  
Scale (m)

N.H.&M.R.C. Road Accident Research Unit Rural Accident Study 1986-87		
Title: RS-038		
Dep.No.	RS038-1	Issue: 4
Projection:	-	Scale: Internal
Drawn by:	ATM	Rev. Drawn: 11/88

GENERAL CHARACTERISTICS:

CRASH TYPE: Single vehicle rollover - (Non-Fatal)

VEHICLES: 1 car

DAY: Friday TIME: 1520 hours

WEATHER: Fine LIGHTING CONDITIONS: Daylight, clear sky

ROAD SURFACE: Sealed, dry

OCCUPANTS: 1

SPEED LIMIT: 110 km/h

CRASH DESCRIPTION:

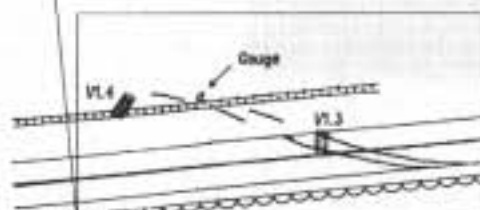
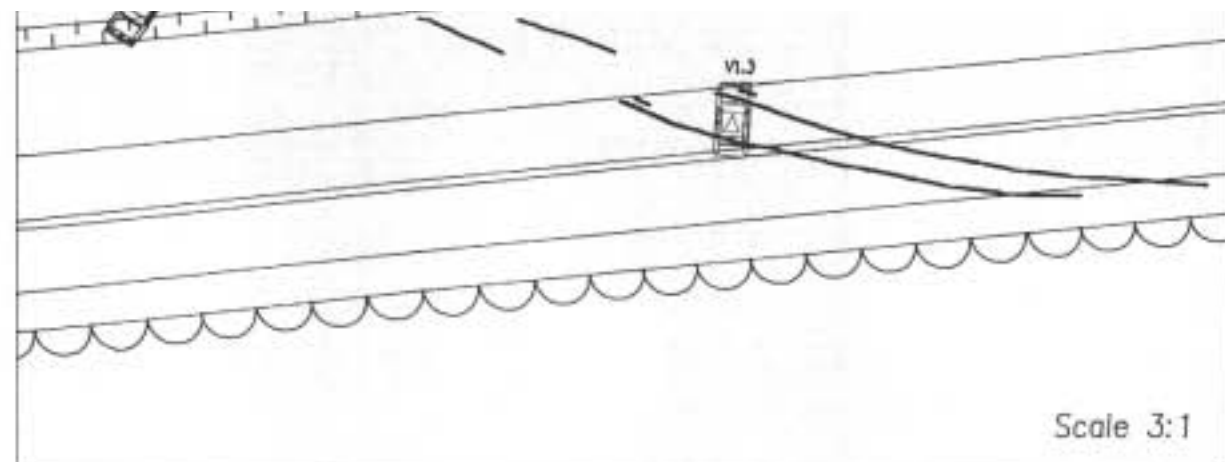
The vehicle was travelling north on a two-lane road negotiating a sweeping right hand bend over a slight crest at approximately 100 km/h. The elderly male driver was returning home alone after a private business trip. The vehicle ran wide and travelled completely off the sealed surface and onto the gravel shoulder to the left. As the driver attempted to regain the sealed surface the vehicle yawed clockwise. It continued across the road in a clockwise yaw to the opposite shoulder where it struck a shallow drainage ditch with the left wheels. The impact with the ditch caused it to roll to the left. As it rolled the right side of the **roof** and right rear struck the ground. The vehicle landed on its wheels and continued north in a clockwise yaw and came to rest facing west with the front wheels in the ditch. The driver stated that he only drove infrequently, and when he did drive it was only on short trips in the city. Mostly his wife drove, particularly on the open road, as he had a habit of becoming drowsy and losing concentration. When he set off to return home his wife had told him to make sure that he drove with his window open and the air-conditioner on so that he would remain alert.

UNIT 1: Vehicle Type : 1978 Mazda 626 sedan

Driver: Male, 72 years, retired, BAC: zero, inertia reel 3 point seat belt **worn**

Injuries: Concussion; laceration to top of head probably from striking roof; bruising to front **of** chest from striking steering wheel; laceration to finger on right hand. Remained at scene. MAIS: 1





Mapped by: JW & RH

Mapping Date: Nov. 1987

Data Source: Plane Table Mapping

N.

Title:

NO. 100000-1

Drawn

Scale:

1:100000



FIGURE A43: Crash 38. The final positions of both cars and the damage to each.



FIGURE A44: Crash 39. Final position of the car and damage to roof sustained during rollover.

GENERAL CHARACTERISTICS:

CRASH TYPE: Collision with tree - (Non-Fatal)

VEHICLES: 1 car

my: Sunday TIME: 0015 hours

WEATHER: Fine LIGHTING CONDITIONS: Night, road not lit

ROAD SURFACE: Sealed, dry

OCCUPANTS: 1

SPEED LIMIT: 110 km/h

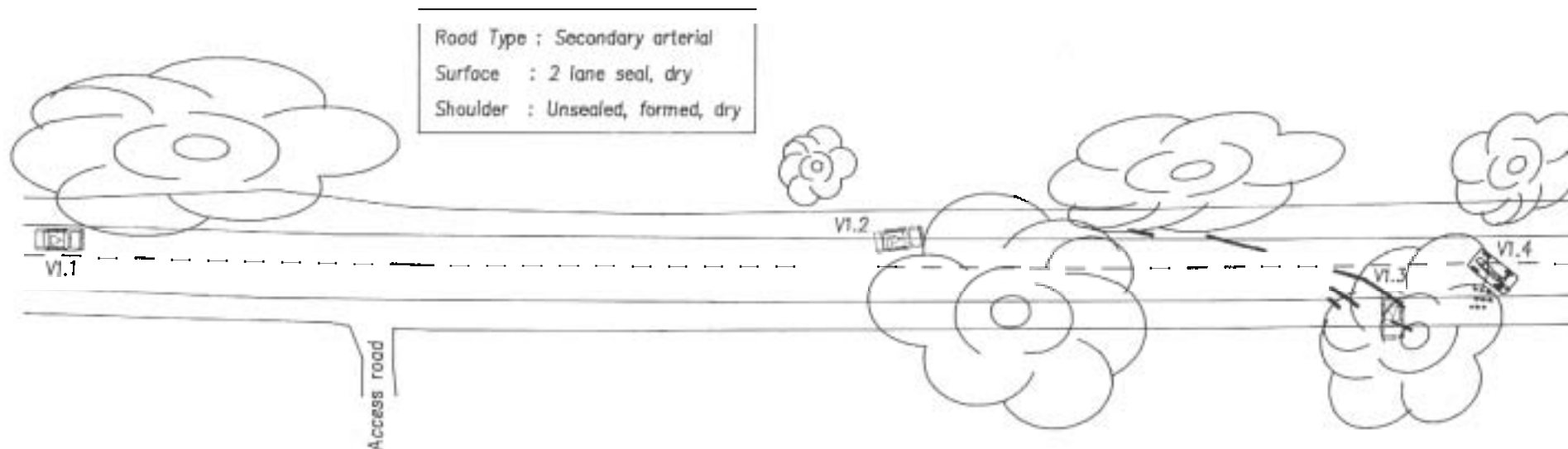
CRASH DESCRIPTION:

The vehicle was travelling north, late at night, at an unknown speed on a two-lane road. The driver, who was unemployed and feeling depressed, was returning home from a hotel where he had spent the evening drinking with friends. The car had been lent to him by a friend and he had only driven it a few times before. The driver had no recollection of the crash and there were no witnesses. Marks on the road indicate that after negotiating a left hand bend and entering a straight section of road the vehicle ran off onto the gravel shoulder on the left. In attempting to regain the seal it yawed clockwise across the road to the opposite shoulder where it ran up a slight dirt embankment. The front left wheel dug into the embankment and the car pitched forward striking a large tree with the top of the right front mud guard and bonnet. It then continued north in a clockwise yaw and rolled to the right and onto its roof. It continued rotating on the road surface on its roof, coming to rest on its roof and facing in the original direction of travel.

UNIT 1: Vehicle Type : 1983 AR Ford Telstar hatchback

Driver: Male, 52 years, unemployed, BAC: 0.214, inertia reel 3 point seat belt available but not worn

Injuries: Concussion; a 15 cm laceration of the right side of right heel and lower leg: small laceration on the anterior surface of right lower leg: minor lacerations and abrasions on abdomen, right temple and nose. It is not possible to establish the cause of these injuries but the driver appears to have struck the gear lever and inside of right front door. Hospitalized for 11 days. MAIS: 2



0 10 20  
 Scale (m)

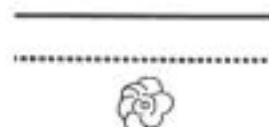


### Legend

Skid Marks

Scrape Marks

Tree



N.H. & M.F.D. Road Accident Research Unit  
 Rural Accident Study 1986-87

Title

RS-040

Dwg. No.	RS040-1	Issue	4
Projection	-	Scale	Internal
Drawn By	ATSV	Date Drawn	9 Jun 88
Sheet size	-	Sheet	1 of 1 sheets

Acc. No.: RS040

Mapped by: M & W

Mapping Date: 14 Dec 87

Data Source: Aerial photograph and plane table mapping