CACHE CREEK
TO THE
ROCKIES PROGRAM

Trans Canada Highway
Existing Conditions Report

APPENDIX 1
HIGHWAY CONDITIONS

Fall, 1998

BRITISH COLUMBIA

Ministry of Transportation
and Highways

TRANS CANADA HIGHWAY
CACHE CREEK TO THE ROCKIES PROGRAM

APPENDIX 1 – HIGHWAY CONDITIONS
Table of Contents

INTRODUCTION

1.0 BACKGROUND

In 1995 the British Columbia Ministry of Transportation and Highways (MoTH) initiated a Corridor Management Plan (CMP) with the objective to develop a twenty-five year highway investment strategy focussing on the Trans Canada Highway (TCH) between Cache Creek and the Rockies. In 1998, a Program Management Team (PMT) was formed to advance MoTH's commitment to corridor improvements by initiating ten functional planning/preliminary design assignments.

The corridor was divided into ten, distinct sections with functional planning/preliminary design assignments offered to ten British Columbia consulting engineering (highway) firms. The sections and corresponding engineering firms were, from west to east:

1. Cache Creek to Monte Creek – Urban Systems Limited
2. Monte Creek to Sorrento West – Stantec Consulting Limited
3. Sorrento West to Carlin – McElhanney Consulting Services Limited
4. Carlin to Canoe – Reid Crowther and Partners Limited
5. Canoe to Perry River – Graeme and Murray Consultants Limited
6. Perry River to Victor Lake – Associated Engineering (B.C.) Limited
7. Victor Lake to Mount Revelstoke National Park West Gate – Delcan Corporation
8. Mount Revelstoke National Park West Gate to Donald – UMA Engineering Limited
9. Donald to Roth Creek – SNC-Lavalin Incorporated
10. Roth Creek to Brake Check – ND Lea Consultants Limited

In addition, MoTH Region 3 (Nelson) commenced design on an eleventh section at the easternmost end of the corridor – Brake Check to Yoho National Park's west gate – concurrent with award of the aforementioned ten sections.

Within each of these sections the PMT hired, either directly or indirectly through the consulting engineering (highway) firms, geotechnical and environmental expertise. Comprehensive design teams were formed, and work on the existing conditions report commenced.

While the Highway passes through two federally operated National Parks along the corridor, Mount Revelstoke and Glacier, these areas were excluded from the functional planning and preliminary design.

2.0 EXISTING CONDITIONS REPORT

As the first deliverable in the functional planning component of work, the PMT requested each design team to produce an Existing Conditions Report. This report includes the following information:

a. the highway's cross-sectional and alignment elements, including right-of-way width;
b. intersection and access locations;
c. posted/regulatory and advisory speeds;
d. average annual and seasonally adjusted daily traffic volumes;
e. bridge locations and condition;
f. geotechnical data including pavement condition, natural hazards and general geotechnical issues; and
g. environmental data including areas of agricultural land, and archaeological, fisheries and wildlife sensitivities.

Each Consultant set about obtaining and reviewing data from numerous sources and, modelled on a format prescribed by the PMT, summarised such into a compendium of sheets complemented with 1:10,000 scale un-rectified mosaics of the corridor.

As a supplement to the mosaic and data sheets six appendices were compiled: the first, this appendix, speaks to the highway conditions, the second to geotechnical conditions, the third to agricultural conditions, the fourth to archaeological conditions, the fifth to fisheries conditions and the sixth to wildlife conditions.

This highway conditions appendix includes references from each of the highway consultants with respect to (i) the sources from which information was obtained to complete the report; (ii) the physical limits (i.e., length and width) of any noted dimensions; and (iii) any noteworthy anomalies or features suggested by the data.

2.1 Data Sources

Each Consultant obtained the aforementioned information from any one, or a combination, of sources. For sake of brevity these sources will not be repeated here. Rather, the reader is referenced to the following pages, wherein the source is identified for each section.

2.2 Mosaic Sheet

The objective of the PMT and the Consultants was to provide as much relevant information as possible on one 11"x17" sheet of paper without sacrificing readability and usability. It was agreed that three kilometres of data on one sheet would meet such criteria.

2.2.1 Mosaic

Early in the Program, the PMT hired McElhanney Consulting Engineering to provide 1:16,000, 1:8,000 and 1:4,000 scale aerial photography. From this photography the Consultants were provided also with digital 1:10,000 scale un-rectified mosaics from which to compile the existing conditions reports.

The PMT requested that each Consultant identify on the mosaic the Trans Canada Highway, the Canadian Pacific Railway, LKI markers, major intersecting street names, a north arrow, a scale bar, lakes/rivers/creeks/streams/debris torrents and agricultural land reserve limits.

2.2.2 Data Rows

Following initial submissions from the Consultants to the PMT, a meeting was convened with representation from the PMT and each highway consultant to reach agreement on what data should be presented in the report, and how best to present it in the reports without sacrificing readability and usability. Consensus was reached between the PMT and the Consultants that the information contained in the as-published report provided a comprehensive summary of the Highway's existing conditions in 1998 that pulled together much fragmented information into one document. The following summarises the data presented in the report:

Intersections / Accesses: Symbols are used to represent access type, and aligned on the data row to coincide with the appropriate LKI reference;

Segment/LKI: The appropriate segment and LKI reference as provided by MoTH are noted on the data row;

Cut/Fill: Areas of cut and fill are noted as C and F, respectively.

Note: All cross-section elements are shown from project orientation of west to east direction. For example, the top-most cut/fill row references the left side of the Highway looking east and the bottom-most cut/fill row references the right side of the Highway looking east.

Clear Zone: Clear zone is represented by (i) a numerical dimension to the tenth of a metre where a "standard" clear zone was constructed, (ii) the letter O (meaning open shoulder) where a non-traversable side slope existed and (iii) CRB where concrete roadside barrier lay adjacent to the roadway;

Shoulder Width: This data is rounded to the nearest half metre and noted;

Right Turn Lane: Three pieces of information are noted on this data row. Firstly, the turning direction noted by an arrow, secondly the width of the lane to the nearest tenth of a metre, and thirdly the length of the parallel portion of the lane to the nearest five metres (where a direct taper existed, the direction arrow and the lane width at its widest point before entering the intersection radius was noted);

Lane Width: Lane widths are noted to the nearest tenth of a metre with the number of lanes in brackets beside the width. Gaps between lane width references indicate merge/diverge points between multiple and single lanes;

Left Turn Lane: This data row is consistent with the Right Turn Lane noted above. Any two-way-left-turn-lanes are identified in the Median Width row (see below);

Median Width/Type: This data is presented as one, or combination, of the following. Where median separation width existed, it is noted to the nearest tenth of a metre, where median separation did not exist the data row is left blank, and where a flush median separation exists with no physical, barriered separation only the median separation width is shown. The letters CMB are noted where concrete median barrier separates traffic; the letter D added where a depressed median exists; the letters RI added where a concrete/asphalt raised island separates traffic; and bi-directional turn arrows noted in areas of two-way-left-turn-lanes;

Horizontal Alignment: Curve data noted as, for example, 500R indicating a 500m radius right hand curve or 700L indicting a 700m radius left hand curve. No spiral data is presented. Where accurate information was available to the Consultants, rates of superelevation are provided to the nearest hundredth and sections of reverse crown are noted with the letters RC. Any tangent sections are noted with the letter T.

Vertical Alignment: Grades are noted to the nearest tenth of a percent with "plus" signs indicating a rising grade to the east, or right along the page, and with "minus" signs indicating a falling grade to the east, or right along the page. K factors are noted if accurate information was available, and noted to the nearest five metres;

Posted and Advisory Speed: Where the posted/regulatory speed or the advisory speed was equal for both directions, only one value is noted. Differing speed zones are

identified with the value preceded by EB or WB to indicate an eastbound or westbound speed zone change, respectively;

AADT (SADT): Current Average Annual Daily Traffic (AADT) and Seasonally Adjusted Daily Traffic (SADT) volumes are noted on each sheet. The dates and sources of traffic information are elaborated upon in this appendix;

Accidents: Symbols are used to represent the severity of traffic accidents at 100 metre intervals, as reported in MoTH's Highway Accident Summary database between January 1, 1991 and December 31, 1995. Where no number follows the incident symbol, assume one incident occurred at that site. Where a number does follow the incident symbol, such a number indicates the number of incidents at that site during the reported period;

Electrical: Roadside illumination is noted with the letter I, advance warning flashers with the letters AWF, changeable message signs with the letters CMS, and single flashing ball intersection control signals with the letter F.

Drainage: Culverts with diameter greater than or equal to 600mm and carrying natural watercourses under the Highway are noted by culvert size and material type;

Structures: Bridges and tunnels are referenced by the appropriate symbol, and its corresponding MoTH assigned bridge condition index. Generally, an index of two or less indicates good condition, two to three is fair condition and greater than three is poor condition; and

Right-of-way: Overall consistent rights-of-way are noted. Any irregular areas that exceeded the standard width are noted as VARIES. Where the right-of-way width was less than the overall standard, the width was noted. Also, boundaries of Indian Reserves and Agricultural Land Reserves with the Highway were noted.

SECTION 1.0

CACHE CREEK TO MONTE CREEK

SECTION 1.0
CACHE CREEK TO MONTE CREEK

1.0 COMMENTS ON DATA REVIEW

1.1 Cache Creek to Afton
Segment 0920 (LKI 0.00 to 71.94)

ROW HEADING	SOURCE OF INFORMATION	COMMENTS
Intersections / Accesses	Video Logs, As-Built Drawings, Aerial Photographs	
Cut / Fill	Video Logs	- Segment has some long sections with little or no cut and fill and some long high cut / fill sections. - High rock cuts from LKI 20.0 to 20.5, 38.2 to 38.9 and 43.0 to 48.5.
Clear Zone	Video Logs	- Clear zones have not been provided on this section.
Shoulder Width	Video Logs and Field Measurements at Each Horizontal Curve	- Shoulder widths vary greatly over this section. - Several areas have shoulder widths less than 1 metre wide. - Eastbound climbing lane east of Deadman River LKI 32 has narrow shoulder (0.5 m ±) on the outside of a horizontal curve with a high embankment and no C.R.B.
Auxiliary Lanes	Video Logs, Aerial Photographs	
Lane Width (m) (number)	Field Measurements and Video Logs	
Median Width (m) Type	Video Log	

1.1 Cache Creek to Afton
Segment 0920 (LKI 0.00 to 71.94) (Continued)

ROW HEADING	SOURCE OF INFORMATION	COMMENTS
Horizontal & Vertical	- Project 648 – Cache Creek to Lemonade Flats – As-Built Drawing - Project 476 – Lemonade Flats to Thompson River – As-Built Drawings - Project 06828-0002 – Thompson River Crossing at Savona – As-Built Drawings - Project 410 – Savona Bypass Section - Project 226 – Savona – Cherry Creek Section - Project 667 – Savona – Cherry Creek Section - Project 113 – Cherry Creek to Cornwall Lodge - Project 563 – Cornwall Lodge Pumping Station - TCH Relocation (Afton Mines) LKI 65.31 to 69.74 (Ripley, Klohn & Leonoff Design Drawings) - Project C 3559 – Afton Interchange (Moose Lake to Highway 1) As-Built Drawings	- Radius and location of curves determined from as-builts. - Super-elevation was field surveyed on each curve at the center point of the curve. - Data for section from LKI 65.31 to 69.74 derived from drawings prepared for Teck Corp. by Ripley, Klohn and Leonoff for the relocation of TCH around Afton Mine. - As-built data for the 4 lane section from LKI 69.2 to 71.99 is not available. Discussions with MoTH staff determined the 4 laning was done by MoTH with day labour and the horizontal and vertical followed the old alignment. Horizontal and vertical data for this section has been derived from the as-builts of the Cornwall Lodge to Pumping Station, Project #563.
Posted Speed (Advisory)	MoTH LKI – List and Video Log Confirmation	
AADT (SADT) 1996	TCH – CMP (Cache Creek to Afton) Community Impact and Development Study Appendix B – Traffic Forecasts (in progress)	
Accidents	MoTH Highway Accident System	
Electrical	Field Pick-Up	
Drainage	As-Built Drawings (see above)	
Structures (BCI)	MoTH	
Right-of-Way (Total)	As-Built Drawings (see above)	

1.2 Afton to Highway 5
Segment 2050 (LKI 0.00 to 6.70)

ROW HEADING	SOURCE OF INFORMATION	COMMENTS
Intersections / Accesses	As-Built Drawings (see below)	- Freeway section.
Cut / Fill	Video Logs	
Clear Zone	Video Logs – As-Built Drawings (see below)	- Clear zones not provided in design.
Shoulder Width	As-Built Drawings (see below)	
Auxiliary Lanes	As-Built Drawings (see below)	
Lane Width (m) (number)	As-Built Drawings (see below)	
Median Width (m) Type	As-Built Drawings (see below)	
Horizontal & Vertical	- Project 0-08246-0001 – Afton Eastbound Break Check – As-Built Drawings - Project C-3581 – Afton to Old Ski Hill – As-Built Drawings - Project C-2874 – Aberdeen Underpass – As-Built Drawings - Project C-3582 – Old Ski Hill to Columbia – As-Built Drawings	- Radius and location of curves determined from as-builts. - Super elevation was field measured at the center of each curve for both eastbound and westbound traffic. Differences in super elevation were found between eastbound and westbound lanes. Super elevation shown is for eastbound lanes.
Posted Speed (Advisory)	Field Check	
AADT (SADT) 1996	TCH – CMP (Kamloops to Alberta Border) Community Impact and Development Study Appendix B – Traffic Forecasts	
Accidents	MoTH Highway Accident System	
Electrical	As-Built Drawings (see below)	
Drainage	As-Built Drawings (see below)	
Structures (BCI)	MoTH	
Right-of-Way (Total)	As-Built Drawings (see below)	

1.3 Highway 5 to Valleyview Interchange Segment 2060 (LKI 0.00 to 5.37)

ROW HEADING	SOURCE OF INFORMATION	COMMENTS
Intersections / Accesses	Video Logs, As-Built Drawings (see below)	- Freeway section.
Cut / Fill	Video Logs	
Clear Zone	Video Logs, As-Built Drawings (see below)	- Clear zones not provided in design.
Shoulder Width	As-Built Drawings (see below)	
Auxiliary Lanes	As-Built Drawings (see below)	
Lane Width (m) (number)	As-Built Drawings (see below)	
Median Width (m) Type	As-Built Drawings (see below)	
Horizontal & Vertical	- Project C-3582 – Old Ski Hill to Columbia – As-Built Drawings - Project 3-2874 – Aberdeen Underpass – As-Built Drawings - Project 1840 – Merritt Junction to Valleyview – As-Built Drawings	- Radius and location of curves determined from as-builts. - Super elevation was field measured at the center of each curve for both eastbound and westbound traffic. Differences in super elevation were found between eastbound and westbound lanes. Super elevation shown is for eastbound lanes. - Vertical information was determined from as-builts. A short section approximately 300 metres long at LKI 1.0 was not available from the data received from MoTH.
Posted Speed (Advisory)	Field Check	
AADT (SADT) 1996	TCH – CMP (Kamloops to Alberta Border) Community Impact and Development Study Appendix B – Traffic Forecasts	
Accidents	MoTH Highway Accident System	
Electrical	As-Built Drawings (see below)	

1.3 Highway 5 to Valleyview Interchange Segment 2060 (LKI 0.00 to 5.37) (Continued)

ROW HEADING	SOURCE OF INFORMATION	COMMENTS
Drainage	As-Built Drawings (see below)	
Structures (BCI)	MoTH	
Right-of-Way Total	As-Built Drawings (see below)	

1.4 Valleyview Interchange to Monte Creek Segment 0925 (LKI 0.00 to 25.90)

There are two projects under construction in this segment:

- Project 20005-0001 Tumbleweed Interchange to East Boundary Del Oro Subdivision Design – LKI 16.7 to LKI 22.2
- Project 21200-0001 Monte Creek Interchange Design – LKI 24.1 to 25.90

Cross-section and geometric information in these areas is taken from the contract drawings.

ITEM	SOURCE OF INFORMATION	COMMENTS
Intersections / Accesses	LKI listing, Video Logs, As-Built Drawings, Design Drawings	- Some discrepancy exists between the MoTH supplied LKI listing due to recent construction.
Cut / Fill	Video Logs, Design Drawings	- Video logs were used where as-built drawings exist. In all other areas, cut and fill was taken from the design drawings.
Clear Zone	Design Drawings	- Clear zones have not been provided on this section, except for in the Monte Creek Interchange area.
Shoulder Width	As-Built Drawings, Design Drawings	- Shoulder widths between LKI 0 and LKI 8.3 were taken from the typical section provided in the as-built drawings. In all other areas, shoulder widths were taken from the design drawings.
Auxiliary Lanes	Field Check, As-Built Drawings, and Design Drawings	- Auxiliary lanes between LKI 1 and LKI 8.3 were field checked. Design drawings, video log and as-built drawings were used in the remaining section.
Lane Width (m) (number)	As-Built Drawings, Design Drawings, Video Log	
Median Width (m) Type	As-Built Drawings, Design Drawings, Video Log	

1.4 Valleyview Interchange to Monte Creek Segment 0925 (LKI 0.00 to 25.90) (Continued)

ITEM	SOURCE OF INFORMATION	COMMENTS
Horizontal & Vertical	- Project #1840 Merritt Junction to Valleyview As Built - Project #2524-1 Valleyview to Campbell Creek As Built - Project 05523-0001 Barnhartvale to Campbell Creek Design - Project 20005-0001 Tumbleweed Interchange to East Boundary Del Oro Subdivision Design - Project 06843-0002 Sonora Rd to Monte Creek Rd Design - Project 21200-0001 Monte Creek Interchange Design	- Radius and location of curves determined from as-builts. - Super elevation was field measured at the center of each curve for both eastbound and westbound traffic. Some differences in super elevation were found between eastbound and westbound lanes. Super elevation shown is for eastbound lanes. - Vertical information was determined from as-builts and design drawings (where no as-builts exist).
Posted Speed (Advisory)	Video Log, Road Features Inventory List	
AADT (SADT) 1996	TCH – CMP (Kamloops to Alberta Border) Community Impact and Development Study Appendix B – Traffic Forecasts	
Accidents	MoTH Highway Accident System	
Electrical	Video Log, Design Drawings	- Extents of illumination differ depending on the direction of travel. The extents of illumination are shown for the eastbound direction.
Drainage	As-Built Drawings, Design Drawings	
Structures (BCI)	MoTH	
Right-of-Way Total	As-Built Drawings, Design Drawings and H plans	

SECTION 2.0

MONTE CREEK TO SORRENTO WEST

SECTION 2.0
MONTE CREEK TO SORRENTO WEST

2.1 INTERSECTIONS AND ACCESSES

i) Locations were measured in the field with a measuring wheel using LKI listings.

ii) Note that LKI 0 to 1.0 is the section which is presently under construction along with the Highway 1/Highway 97 (Monte Creek) Intersection.

2.2 SEGMENT/LKI

i) Because the distance between LKI points did not correspond with actual measurements in the field, the LKI distances were adjusted at each point.

2.3 CUT/FILL

i) Cuts and fills were measured in the field. Areas where the highway is constructed at or close to original ground were noted as cut areas.

ii) Rock cuts were noted but not included on these information sheets.

2.4 CLEAR ZONE

i) Clear zones were measured in the field.

ii) Note that no constructed clear zones exist in this section of Segment 0935. CRB's are noted as measured in the field.

2.5 SHOULDER WIDTH

i) The width of the shoulders was measured in the field at each LKI or wherever significant changes were noted.

ii) Measurements were taken from the white line to the edge of the gravel shoulder.

2.6 TRAVEL LANES

i) Right turn lanes, through lanes and left turn lanes were measured in the field at each LKI or where the width or number of lanes changed.

ii) Lane widths were measured from centreline of white line to centreline of white line.

2.7 HORIZONTAL ALIGNMENT

i) Curve radii were measured from the mapping prepared from air photos and confirmed from as-built drawings which were viewed in the MoTH in Kamloops. Superelevation was measured in the field.

ii) Radii were rounded to the nearest 10 metres. Spirals were not considered. Superelevation was measured with a 1.2 metre carpenters level at approximately the centre of each curve - three or four measurements were taken at each curve.

2.8 VERTICAL ALIGNMENT

i) Grades and vertical curves were obtained from as-built drawings viewed in MoTH offices in Kamloops.

ii) Grades were roughly checked in the field to ensure no gross errors exist.

2.9 POSTED SPEED LIMITS

i) Posted and advisory speed limits were as noted in the field.

ii) Note that LKI 0 to 1.0 has a temporary posted speed limit of 80 kph due to construction.

2.10 AADT AND SADT

i) Traffic count information was obtained from the Planning Branch of the MoTH in Kamloops.

ii) The information is circa 1996.

2.11 ACCIDENTS

i) Accidents information was obtained from the H.A.S. Accident Histogram received from MoTH.

ii) The accident reports are from 1991 to 1995.

2.12 ELECTRICAL

i) Street light luminaires were noted in the field as well as flashing lights and/or electrical signs.

2.13 DRAINAGE

i) The location of culverts, underpasses and structures were noted in the field as well as the size and type of each.

2.14 R/W (RIGHT OF WAY)

i) Legal right-of-way plans were viewed in the Land Titles Office and right-of-way widths confirmed from mapping obtained from MoTH and the Columbia Shuswap Regional District.

SECTION 3.0

SORRENTO WEST TO FORD ROAD

SECTION 3.0
SORRENTO WEST TO FORD ROAD

3.1 SEGMENT LKI

Sources: Information provided by MoTH

Description: LKI Indicated on photo mosaic and on information lines.

3.2 CUT FILL LEFT/RIGHT

Sources: Survey data and as-built drawings.

Description: DTM generated cross-sections used where surveyed.

3.3 CLEAR ZONE LEFT/RIGHT

Sources: Survey data.

Description: Information from DTM used to determine areas where side slopes are recoverable. Also used to check horizontal clearance to existing poles, etc.

3.4 SHOULDER WIDTH

Sources: Survey data (Sta. 530+00 to 612+00 and Sta. 625+00 to 642+00). Widths for remaining areas taken from 1:2000 mapping.

Description: Widths taken from paint line to edge of pavement.

3.5 RT LANE (M) / LENGTHS (M)

Sources: CCR Orthophoto, survey data.

Description: Orthophoto TIF images viewed on computer and plots to determine approximate location and length. Survey data used where available.

3.6 LANE WIDTH / NUMBER

Sources: Orthophoto, mapping, survey data.

Description: Orthophoto used to determine number of lanes. Survey used to determine lane widths Sta. 530+00 to 612+00 and Sta. 625+00 to 642+00. Remaining widths taken from 1:2000 mapping.

3.7 LEFT TURN LANE / LENGTH

Sources: CCR Orthophoto, survey data.

Description: Orthophoto TIF images viewed on computer and plots to determine approximate location and length. Survey data used where available.

3.8 MEDIAN WIDTH / TYPE

Sources: Survey data, survey photographs.

Description: Source information used to determine median types, etc.

3.9 HORIZONTAL (S/E)

Sources: As-constructed information. Survey data (Sta. 530+00 to 612+00 and Sta. 625+00 to 642+00).

Description: As-constructed plans used to calculate horizontal alignment. As-constructed horizontal alignment was compared to survey data and adjusted where necessary. Superelevation taken from DTM cross-sections where survey data was available. Superelevation shown is the average value for a curve as it was not consistent along curves.

3.10 VERTICAL

Sources: As-constructed information. Survey data (Sta. 530+00 to 612+00 and Sta. 625+00 to 642+00).

Description: As-constructed plans used to calculate vertical alignment. As-constructed vertical alignment was compared to survey data and adjusted where necessary.

3.11 POSTED ADVISORY

Sources: Survey data. Survey pictures.

Description: Survey data and pictures used to locate speed signs.

3.12 AADT (SADT)

Sources: MoTH 1996 count stations and Dec. 1998 field counts taken at intersections.

Description: Field counts taken were prorated to determine AADT & SADT.

3.13 ACCIDENTS

Sources: Information provided by MoTH.

Description: Summary of 1991 to 1995 information.

3.14 ELECTRICAL

Sources: Survey data. Survey photographs.

Description: Survey data and photographs used to locate existing street lights and traffic signals.

3.15 DRAINAGE

Sources: Culvert inventory provided by MoTH. Survey data.

Description: Culverts located by inventory and confirmed with survey data.

3.16 RIGHT-OF-WAY

Sources: Kamloops Land Title Office.

Description: Right-of-way widths determined from local plans.

All rights-of-way are equal to or >30 m.

SECTION 4.0

FORD ROAD TO CANOE

SECTION 4.0
FORD ROAD TO CANOE

4.1 INTRODUCTION

The existing highway condition between Ford Road and just east of Canoe Mill entrance has been determined from a review of the following:

- MoTH LKI listing;
- 1:10,000 and 1:2,000 orthophotos provided by McElhanney Engineering Services Ltd.;
- 1:8,000 and 1:4,000 aerial photos provided by McElhanney Engineering Services Ltd.;
- Road Features Inventory;
- Detailed design drawings provided by MoTH;
- The 1995 and 1996 photolog;
- From a field inspection undertaken the week of November 16, 1998. During this site inspection a series of videos and still photographs were taken. In addition, a number of typical cross sections were measured; and
- Information obtained from regional MoTH staff.

The existing highway conditions report covers the following segments:

SEGMENT	FROM	TO
0935	63.85, Ford Road	85.72, Hwy 97 B Intersection
0950	0.00, Highway 97 B Intersection	7.30, east of Canoe Mill

This appendix should be read in conjunction with the strip charts.

4.2 HIGHWAY CONDITION

Comments on the strip chart features follow.

FEATURE	SOURCE	COMMENT
Intersection/Accesses	• LKI • Field pick up	• All the intersections shown on the photolog are still in use except for those between 6th St. NE (LKI 82.08) and 30th St. NE (LKI 84.26). This section was reconstructed during the summer of 1998. • All minor accesses, including driveways have been included on the inventory. From discussions with Ron Stratton, MoTH Area Manager for Salmon Arm, there could be up to 30% of the accesses without permit.
Segment/LKI	• LKI	• The LKI stations and photolog stations do not match. The worst case is at the end of Segment 0935 where the LKI station is 85.72 and the photolog station is 85.15. The LKI stations have been used for the existing conditions report.
Cut/Fill	• Field pick up • Photos • Photolog • RCPL video	• The cut/fill location has been identified from the drive through, from photographs, and from the photolog. • Fill has been noted in the urban sections with curb and gutter.
Clear Zone	• Field pick up • Photolog	• An "O" has been noted where the clear zone is less than that required for the posted speed. • N/A is noted in 50 km/h urban areas where curb and gutter exists. • Clear zone greater than 7.0 m has been noted where it occurs. This is the current standard for a rural

FEATURE	SOURCE	COMMENT
Clear Zone (cont'd)		arterial undivided highway with 90 km/h design speed and AADT greater than 6000. • A 1.3 km long rock face, between approximately LKI 69.80 and 71.10, has been noted since it is a significant feature within the clear zone.
Shoulder Width	• Detailed design drawings • Digital air photos • Field measurement	• Paved shoulder width has been recorded from lane edge to edge of asphalt pavement or to face of concrete roadside barrier (CRB) and rounded to the nearest 0.5 m. • There is no shoulder on the urban section from Shuswap St. (LKI 81.48) to 10th St. NE (LKI 82.20). This section has curb and gutter. • Two pull outs have been indicated in this row.
Left (& Right) Turn Lanes	• Detailed design drawings • Orthophotos • Air photos	• Lane widths and approximate lengths are shown. Right turns with direct tapers are not recorded with a length. Left turn lengths between 5th St. S.W. and 10th St. N.E. are recorded in tabular form following this section.
Lane Width	• Field measurement • Detailed design drawings • Orthophotos • LKI	• Auxiliary lanes are included in this row. • LKI listing is incomplete for identifying auxiliary lanes.

FEATURE	SOURCE	COMMENT

Median Width	• Detailed design drawings
	• Field measurement
	• Orthophotos
		• There is raised median (noted as RI) between the following LKI stations in the urban section:
		  • 80.42 to 82.07
		  • 83.35 to 83.78
		  • 84.01 to 84.52
		• Painted medians (noted as P) have been shown where provided at rural intersections.
		• A feint line within a median taper indicates where the median attains maximum width preceding a left turn lane.

Horizontal	• Orthophotos • Photolog	• Horizontal curvature has been taken from a P-line plotted along the 1:2000 orthophotos. The radii have been cross-referenced with the photolog database. • The EB and WB photolog database for superelevation does not match, and in many cases does not match typical superelevation rates for the particular horizontal curve. Superelevation has not been field measured. • Horizontal curvature will be confirmed from the digital mapping to be provided by McElhanney at a later date.
Vertical	• Photolog • Detailed design drawings	• The photolog database shows the vertical curvature in decimal degrees. The beginning and end of the vertical curve cannot be readily obtained from a review of the database.

FEATURE	SOURCE	COMMENT
Vertical (cont'd)		• The vertical grade has been estimated from the photolog database, based on section lengths showing reasonably consistent grades. • It is not possible to estimate the K values from the information available except in areas where detailed design drawings exist. • Grades, vertical curvature and K values will be confirmed from the digital mapping to be provided by McElhanney at a later date.
Posted Speed (Advisory)	• Field pick up	The posted speeds are as follows: • 90 km/h: – From west of LKI 63.85 to 76.77 EB (Segment 0935) – LKI 63.85 and west, to 77.20 WB (Segment 0935) – LKI 0.38 to 7.30 and beyond, EB (Segment 0950) – LKI 0.80 to 7.30 and east, WB (Segment 0950) • 70 km/h: – LKI 77.12 to 80.20 EB (Segment 0935) – LKI 77.20 to 80.20 WB (Segment 0935) – LKI 83.00 (Segment 0935) to 0.38 EB (Segment 0950) – LKI 83.20 (Segment 0935) to 0.60 WB (Segment 0950)

FEATURE	SOURCE	COMMENT
Posted Speed (Advisory) (cont'd)		• 50 km/h – LKI 80.20 to 83.00 EB (Segment 0935) – LKI 80.20 to 83.20 WB(Segment 0935) Advisory speed zone of 60 km/h over the Salmon River Bridge.
AADT (SADT)	• MoTH data	1996 AADT and SADT volumes have been shown. • For the CMP Segment 80 (west of Salmon Arm) the volumes have been obtained from Short Count Station 22-001E/W, LKI 77.62. • For the CMP Segment 90 (through Salmon Arm) the volumes have been obtained from Short Count Station 22-009E/W, LKI 85.52. • For the CMP Segment 100 (east of Salmon Arm) the volumes have been obtained from Short Count Station 22-008E/W, LKI 0.47.
Accidents	• HAS database (MoTH)	MoTH data has been sorted by accident type. Data displayed has been taken from the period of January, 1991 to December, 1995 inclusive. Accident location is by increments of 100 m. It should be noted that the following changes to the highway have been made during/since this period: • Section of highway between 6th St. NE (LKI 82.08) and 30th St. NE (LKI 84.26) was upgraded to four lanes during the summer of 1998.

FEATURE	SOURCE	COMMENT
Accidents (cont'd)		• Intersection with Pierres Point Road / 50th Ave. NW upgraded in 1995 to incorporate WB and EB left turn lanes and a WB right turn lane.
Electrical	• Field pick up • Photos • Photolog	The following rural intersections are illuminated with one (1) luminaire only: • 65th Ave. NW • 46th Ave. NW • 20th Ave. NE • 50th St. NE • 70th Ave NE (this is a split intersection) • Canoe Beach Drive. In the urban section, Shuswap St. to 6th St. is continuously illuminated Advance warning signals are provided as follows: • Salmon River Bridge EB and WB approach (advisory speed warning). • EB approach to Picadilly/10th St. SW intersection. • EB and WB approach to 30th St. NE intersection.
Drainage	• MoTH district office as-built drawings. • Field pick up • RFI	• Culverts from the RFI have been identified and sizes added where available. • Creek crossing culvert sizes have been confirmed by MoTH.

FEATURE	SOURCE	COMMENT
Drainage (cont'd)		• Asphalt curbs and concrete curb and gutter have been shown. This information was identified during the field survey.
Structures (BCI)	• Field pick up • BCI • Detailed design drawings	• Two bridges and two pedestrian crossing structures have been identified. • BCI has been obtained for the two bridges on this section from the Bridge Condition Inventory.
R/W (Total)	• MoTH supplied R/W drawings	• The ROW varies considerably and a range of widths has been shown. • Indian Reserve has been shown by shading. • Where ALR crosses the highway it has been indicated with a line across the row. ALR boundaries appear on the plan portion of the drawings.

4.3 OTHER FEATURES

4.3.1 Pedestrian Facilities

Crosswalks

Crosswalks on the TCH are located as follows:

- Picadilly (west side of intersection only)
- 5th Street (east side only)
- Shuswap Street (west and east side)
- Alexander Street (west and east side)
- Ross Street (west and east side)
- 30th Street (west and east side)
- 50th Street NE (west side only, unsignalized), approx. LKI 4.42, Segment 0950

Pedestrian Underpasses

Pedestrian underpasses on the TCH are located as follows:

- To the school at 14th Street, approx. LKI 82.72
- At 21st Street NE, approx. LKI 83.60

Sidewalks

Sidewalks on the urban section are located as follows:

TYPE	LOCATION	SIDE
Concrete	5th St. (LKI 81.00) to 3rd St. (LKI 81.21)	South side
Concrete	Shuswap St. (LKI 81.48) to 6th St. NE (82.08)	Both sides, including all quadrants of Shuswap / TCH intersection, except SW.
Asphalt	3rd St (LKI 81.21) to Shuswap St. (LKI 81.48)	South side
Gravel	West of 5th St.	South side
Gravel	NW quadrant of Picadilly/TCH (LKI 80.57)	

4.3.2 Transit Facilities

Bus Routes

The bus routes in the Salmon Arm area are shown on the attached transit map.

Bus Stops

One transit stop is located on the TCH westbound at LKI 0.00.

4.3.3 Intersection LKI Listing

An intersection LKI listing has been included for quick reference. Five intersections were not picked up on this inventory and have been identified as 'Not Listed' on the listing, with approximate LKI stationing shown in brackets.

TCH: BALMORAL TO CANOE
LENGTH OF LEFT TURN STORAGE FROM 5TH TO 10TH STREET

INTERSECTION	LKI	NB LEFT (m)	SB LEFT (m)
5th Street S.W.	81.00	N/A	37
3rd Street N.W.	Not Listed (81.17)	40	N/A
3rd Street S.W.	81.21	N/A	32
Shuswap Street	81.48	52	20
McLeod Street	81.55	20	28
Alexander Street	81.74	35	22
Ross Street	81.84	18	24
4th Street N.E.	81.96	38	28
6th Street N.E.	82.08	27	N/A
10th Street N.E.	82.20	2 way Lt. 110	N/A

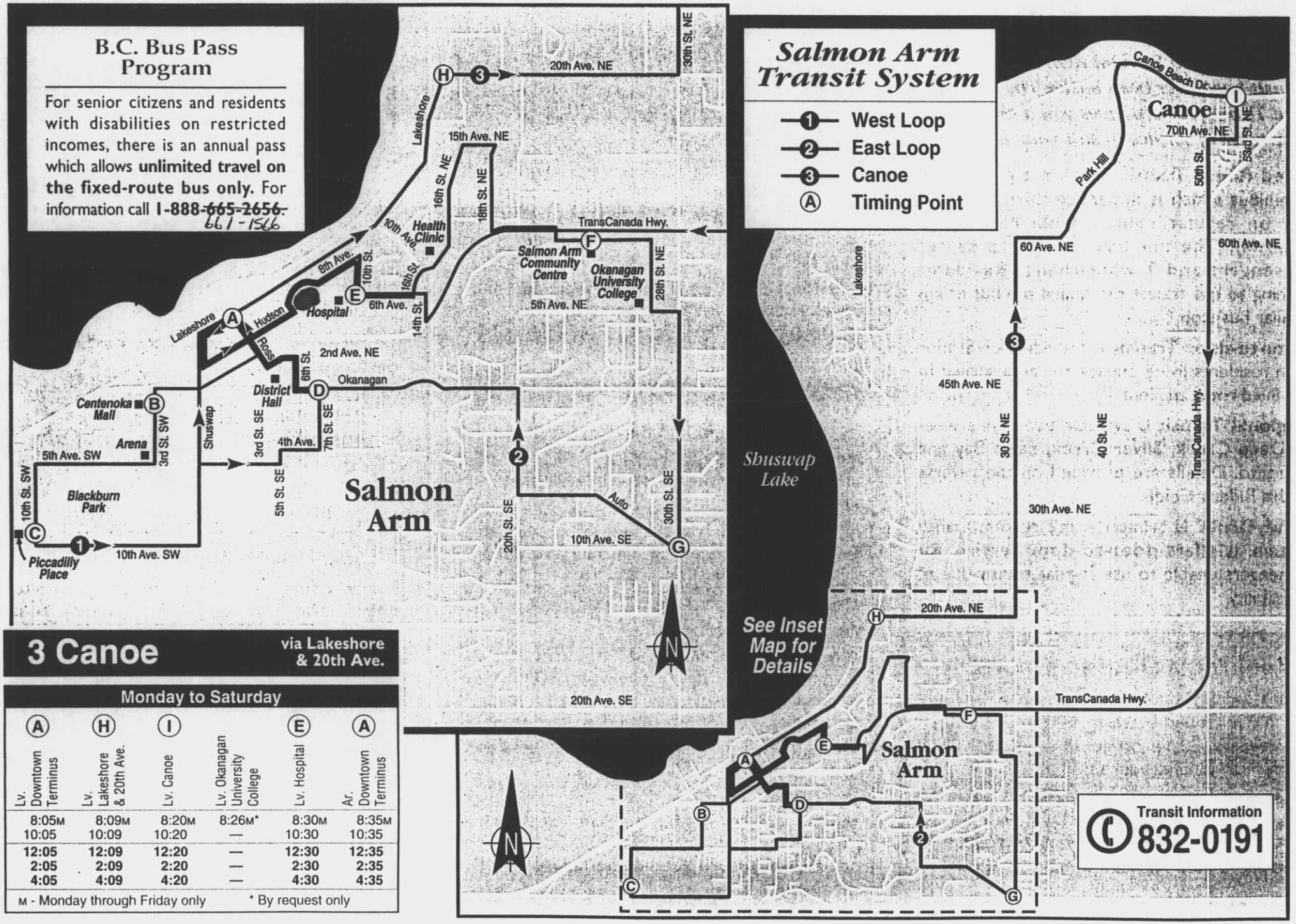
Note: Storage lengths have been scaled off digital orthophotos.

TCH: BALMORAL TO CANOE
LKI LISTING OF TCH INTERSECTIONS

INTERSECTION	LKI	INTERSECTION	LKI
Ford Road	63.85	Shuswap St.	81.48
Kirkpatrick Road	64.83	McLeod St. / 1st St. SE	81.55
James Road	65.25	Alexander St. / 2nd St. SE	81.74
Sunnybrae/Canoe Pt. Rd.	66.20	Ross St. / 3rd St. SE	81.84
Tappen Station Road	66.66	4th St. NE	81.96
Calhoun Road	66.66	6th St. NE	82.08
Tappen Valley Road	67.02	10th St. NE	82.20
Boulton Road	68.35	14th St. NE	82.75
Schneider Place	Not Listed (68.68)	21st St. NE	83.53
Tappen Beach Road	68.96	30th St. NE / Broadview	84.26
65th Ave. NW	71.53	40th St. NE	85.10
Gleneden Road / 50th Ave. NW	72.73	10th Ave. NE / W. access to 97B	85.72 = 0.00
Pierres Pt. Road	72.74	Hwy. 97B / E. access	0.27
Sandy Pt. Road / 46th Ave. NW	73.23	20th Ave. NE / Harper Road	0.87
2nd Nation Road	Not Listed (76.40)	40th Ave. NE	Not Listed (2.53)
Gleneden Road / 1st Ave. SW	77.35	50A St. NE / Peachy Hill W. Ent.	3.13
Salmon River Road	77.82	50A St. NE / Peachy Hill E. Ent.	3.54
30th St. SW	78.79	60th Ave. NE	4.15
Rotten ROW / 10th Ave. SW W. Ent.	79.45	50th St. NE	4.30
Rotten ROW / 10th Ave. SW E. Ent.	79.48	50th St. NE	4.44
17th St. SW	79.95	63rd Ave. NE	4.45
4th Ave. SW	80.45	Lyman Hill/70th Ave. NE	5.04
Picadilly Road / 10th St. SW	80.57	70th Ave. NE	5.13
Lakeshore Drive	Not Listed (80.98)	Canoe Beach Dr. W. Ent.	5.84
Power St. / 5th St. SW	81.00	Canoe Beach Dr. E. Ent.	5.86
3rd St. NW	Not Listed (81.17)	Mill Access	6.74
3rd St. SW / Arena Road	81.21	70th St. NE	7.00

B.C. Bus Pass Program

For senior citizens and residents with disabilities on restricted incomes, there is an annual pass which allows **unlimited travel on the fixed-route bus only.** For information call **1-888-~~665-2656~~** 661-1566



3 Canoe

via Lakeshore & 20th Ave.

Monday to Saturday

(A) Lv. Downtown Terminus	(H) Lv. Lakeshore & 20th Ave.	(I) Lv. Canoe	Lv. Okanagan University College	(E) Lv. Hospital	(A) Ar. Downtown Terminus
8:05M	8:09M	8:20M	8:26M*	8:30M	8:35M
10:05	10:09	10:20	—	10:30	10:35
12:05	**12:09**	**12:20**	—	**12:30**	**12:35**
2:05	**2:09**	**2:20**	—	**2:30**	**2:35**
4:05	**4:09**	**4:20**	—	**4:30**	**4:35**

M - Monday through Friday only * By request only

SECTION 5.0

CANOE TO TAFT ROAD

SECTION 5.0
CANOE TO TAFT ROAD

5.1 INTRODUCTION

The existing highway condition between Canoe and Taft Road, just east of Perry River, has been determined from a review of the following:

- MoTH LKI listing;
- Original as-built drawings provided by MoTH
  a) Canoe to Annis Section, Sheets 3 - 6
  b) Annis to Sicamous Section, Sheets 1 - 5, 1956
  c) Sicamous to Malakwa Section, Sheets 1 - 11, 1961
  d) Malakwa to Craigellachie Section, Sheets 1 - 4
  e) Craigellachie to Kay Falls Section, Sheets 1 -2
- 1:8,000 and 1:16,000 aerial photos provided by McElhanney Consulting Services Ltd.;
- GPS photo control mapping provided by McElhanney Consulting Services Ltd.;
- Existing conditions field survey by Graeme & Murray Consultants Ltd., undertaken November, 1998, and detailed design survey undertaken October to November, 1998. All elements relating to geometry, lane widths, etc. were determined by or confirmed by direct field survey;
- 1994/1995 photolog was used only for checking for completeness and confirmation of some of the field gathered data;
- *Trans Canada Highway Corridor (Kamloops to Alberta Border) Environmental Overview Assessment*, April, 1998;
- *Community Impact and Development Study*, May, 1998 (CMP);
- *'External' Traffic on the Trans Canada Highway: Kamloops to the Alberta Border*, April, 1998 (CMP);
- *Draft Options Generation and Evaluation Study*, September, 1998 (CMP);

- *Analysis Framework for the Trans Canada Highway Corridor Management Plan (Kamloops to Alberta Border),* August, 1997
- *H.A.S. Accident Summary Report*, September, 1998 (MoTH)
- *Bridge Condition TCH Corridor Segments/Pavement Condition TCH Corridor Segments* spreadsheets provided by MoTH; and
- Existing Conditions Reports provided by subconsultants as follows:

  a) Geotechnical and Natural Hazards - EBA Engineering
  b) Agricultural - Dan Schroeter Consulting Inc.
  c) Archaeological - Golder Associates
  d) Fisheries - P.A. Harder & Associates
  e) Wildlife - LGL Limited

The above sub-consultant reports are contained in the attached Appendix 2.

The existing highway conditions report covers the following segments:

SEGMENT	FROM	TO
0950	7.30, East of Canoe Mill	27.2, Junction Route 97A
0960	0.00, Junction Route 97A	32.03, Taft Road

5.2 HIGHWAY CONDITION

Comments on the strip chart features follow.

FEATURE	SOURCE	COMMENT
Intersection/Accesses	• LKI listing • Field Survey	• All driveways and accesses have been included in the inventory and are current. (See also 1.3 below.)
Segment/LKI	• LKI listing	• The LKI listings did not correspond to the field survey and had to

FEATURE	SOURCE	COMMENT
Segment/LKI (cont'd)		be realigned for the existing conditions report. • The largest discrepancies of up to 200m occur towards the east end of the assignment. LKI stationing has been used throughout this report. With stationing carried from left to right from preceding even kilometre LKI. Table 1.4 shows the relationship between MoTH LKI and this reports LKI in areas where discrepancy occurs. • All references to LKI, as used by the sub-consultants and elsewhere in this report, relate to the LKI as shown on the included photo mosaics.
Cut/Fill	• Geotechnical Sub-consultant field survey. November, 1998	• Cut and fill slopes have been tabulated by the geotechnical subconsultant, EBA, as a result of field review, October - November, 1998.
Shoulder Width	• Field Survey by G&M staff, October – November, 1998	• Shld widths for entire route measured from East of Canoe Mill to Taft Road. Widths shown are for paved surface and are rounded to the nearest 0.5m.

FEATURE	SOURCE	COMMENT
Turning Lanes (Left & Right)	• Field Survey by G&M staff, October - November, 1998	• Turning and auxilliary lanes from East of Canoe Mill to Taft Road be determined by field staff. Direct taper exists/entrance are not shown with a length.
Lane Widths	• Field Survey by G&M staff, October - November, 1998	• Lane widths for entire route measured by G&M field staff from East of Canoe Mill to Taft Road. • Includes auxiliary lanes.
Median Width/Type	• Field Survey by G&M staff, October - November, 1998	
Clear Zone	• Field Survey by G&M staff, October - November, 1998	• Clear zone for entire route measured by G&M staff from East of Canoe Mill to Taft Road.
Horizontal	• As-built Drawings • Field Survey by G&M staff, October - November, 1998	• Detailed survey conducted of Segment 0950 from LKI 14.35-16.10, 16.5 - 18.3 and 19.4-20.2 including super elevation. • Detailed survey conducted of Segment 0960 from LKI 2.83-4.43, 7.80-9.30, 25.55-26.28 and 29.28-31.32 including super elevation. • Other horizontal alignments taken from as-built drawing (confirmed visually in the field as being current). • Note also that the super elevation of all existing curves for the entire

FEATURE	SOURCE	COMMENT
Horizontal (cont'd)		route was directly measured by G&M field survey staff.
Vertical	• As-built Drawings • Field Survey by G&M staff, October - November, 1998	• Detailed survey conducted of Segment 0950 from LKI 14.35-16.10, 16.5 - 18.3 and 19.4-20.2. • Detailed survey conducted of Segment 0960 from LKI 2.83-4.43, 7.80-9.30, 25.55-26.28 and 29.28-31.32. • Other vertical geometry taken from as-built drawing (confirmed visually in the field as being current).
Posted Speed (Advisory)	• Field Survey by G&M staff, October - November, 1998	• Visually determined by field staff.
AADT (SADT)	• Community Impact and Development Study • 'External' Traffic on the TCH (CMP)	• AADT and SADT volumes shown.
Accidents	• Accident Summary Report • Analysis Framework for the TCH CMP	• MoTH data shows a high accident rate at Segment 0950 LKI 25.6, the intersection of Old Spallumchen Road with TCH.
Electrical	• Field Survey by G&M staff, October - November, 1998 • Intersections or accesses illuminated by single luminaire were determined by photolog data (photolog date was 1994).	• The following intersections or accesses are illuminated by a single luminaire - Kerr Road East - Old Spallumchen Road (30m East of Bruhn Bridge) - Gill Ave - Rauma Ave - Maclean/Macpherson Road

FEATURE	SOURCE	COMMENT
Electrical (cont'd)		- Maier Road - Stadnicki Road - Kerr Road East - Kerr Road West
Drainage	• Field Survey by G&M staff, October - November, 1998 • Air Photos • GPS Mapping	• Only culverts of 600 mm diameter or larger have been noted.
Structures (BCI)	• MoTH Database	• Six bridge structures have been noted: Bruhn Bridge over Sicamous Narrows, Yard Creek Bridge, Malakwa Bridge over Eagle River, Craigellachie Overpass over the CPR, Gorge Creek Bridge, and the Perry River Bridge.
R/W (Total)	• As-built Drawings	

5.3 ONGOING WORKS

At time of writing (January, 1999), a design for the improvement of the TCH/Solsqua intersection (LKI 960-0.22) is being finalized by MoTH staff for possible tender and construction in the spring of 1999.

5.4 AREAS OF DISCREPANCY BETWEEN MoTH LKI AND LKI USED IN THIS REPORT

FEATURE	MoTH LKI	LKI THIS REPORT	COMMENTS
Yard Creek Loop Road W Entrance	13.87	13.97	Entrance to road realigned.
Malakwa Road #640	18.20	18.65	Distance from Malakwa Loop Road #643 (17.79) is greater than MOTH LKI indicates.
Johnson/Howard Road #633	18.67		Distance from Malakwa Road is less than MOTH LKI indicates.
Ferguson Frontage Road W Entrance	31.00	30.87	Frontage road has been extended.

SECTION 6.0

TAFT ROAD TO VICTOR LAKE

SECTION 6.0
TAFT ROAD TO VICTOR LAKE

6.1 SOURCES OF INFORMATION

6.1.1 Reports

MoTH LKI Summary

Moth BCI Summary

Trans Canada Highway Corridor Management Plan (Kamloops to Alberta Border): Community Impact and Development Study - Appendix B - Traffic Forecasts.

H.A.S. Accident Summary Report for Period Jan 1, 1991 to Dec 31, 1995 (Highway Segment 0917 km 0.0 to Segment 0995 km 45.3)

6.1.2 Drawings

Contract 819 As-Built Drawings - Sheets 4 to 11

Contract 395 As-Built Drawings - Sheets 1 and 2

Contract 541 As-Built Drawings - Sheets 1 and 2

Trans Canada Highway Legal Plans, Plan #=s R298, R279, R271, R270

6.1.3 Field Inspections

Survey - September 24 & 25, 1998

Survey - October 19 to 23, 1998

Survey - November 23, 1998

6.2 SUMMARY OF INFORMATION

FEATURE	SOURCE	COMMENTS
Intersections/ Accesses	Site survey on Sept. 24 and 25, 1998	Accesses not on the Moth LKI Summary: LKI — Description — Dir 32.81 — Private Access Road — R 41.51 — Private Access Road — R 43.35 — Private Access Road — R 45.51 — Private Logging Access Road — L/R 46.60 — Private Access Road — R 47.50 — Private Access Road — L Accesses not in use or identifiable LKI — Description — Dir 47.38 — Private Access Road — L All minor roads maintained by the Ministry of Transportation and Highways, Selkirk District. Taft Road has a 100ft Right of Way. Logging Access Road at km 45.51 is also used by owners of property on the south-west side of Griffin Lake.
Cut/Fill	Site survey on Nov 23, 1998.	Sections of road adjacent to Eagle River, Griffin Lake and Three Valley Lake reported as fill.
Clear Zone	Site survey Oct. 19 to 23, 1998.	There are no new sections of highway constructed to current highway standards on this section as confirmed by field inspection.
Shoulder Width	Site survey Oct. 19 to 23, 1998 using a steel tape.	Shoulder width shown to nearest 0.5 m.

<table>
<tr><th>FEATURE</th><th>SOURCE</th><th>COMMENTS</th></tr>
<tr><td>Right and Left Turn Lanes</td><td></td><td>There are no turn lanes on this section of the highway.</td></tr>
<tr><td>Lane Width</td><td>Site survey Oct. 19 to 23, 1998 using a steel tape.</td><td>Lane widths shown to nearest 0.1 metre.

Taper lengths to increase or decrease the number of running lanes measured on site using a wheel</td></tr>
<tr><td>Median Width</td><td></td><td>The highway is undivided through this section.</td></tr>
<tr><td>Horizontal Alignment</td><td>As-built drawings & site survey Oct. 19 to 23, 1998. Superelevation surveyed by level and rod at all curve locations</td><td>Horizontal curves shown to nearest 10 metres. Curve lengths include any transition spirals.

There have been minor alterations to the original alignment, due to the replacement of the bridges at Eagle River (Kay Falls) and Camp Creek. Based on a design speed of 100 km/h for the posted speed of 90 km/h, the following horizontal curves are substandard or have inadequate superelevation.

<table>
<tr><th>Start LKI</th><th>End LKI</th><th>Radius(m)</th><th>e</th></tr>
<tr><td>36.22</td><td>36.33</td><td>250</td><td>0.08</td></tr>
<tr><td>36.95</td><td>37.12</td><td>290</td><td>0.08</td></tr>
<tr><td>39.60</td><td>39.78</td><td>290</td><td>0.09</td></tr>
<tr><td>40.37</td><td>40.65</td><td>290</td><td>0.09</td></tr>
<tr><td>40.67</td><td>40.98</td><td>350</td><td>0.07</td></tr>
<tr><td>43.02</td><td>43.45</td><td>350</td><td>0.07</td></tr>
<tr><td>43.45</td><td>43.74</td><td>350</td><td>0.08</td></tr>
<tr><td>44.44</td><td>44.66</td><td>440</td><td>0.05</td></tr>
<tr><td>44.69</td><td>44.87</td><td>440</td><td>0.03</td></tr>
<tr><td>45.79</td><td>46.05</td><td>350</td><td>0.07</td></tr>
<tr><td>46.05</td><td>46.43</td><td>350</td><td>0.06</td></tr>
<tr><td>46.52</td><td>46.91</td><td>350</td><td>0.07</td></tr>
<tr><td>47.74</td><td>47.98</td><td>350</td><td>0.07</td></tr>
<tr><td>48.32</td><td>48.59</td><td>290</td><td>0.04</td></tr>
<tr><td>49.01</td><td>49.19</td><td>290</td><td>0.05</td></tr>
<tr><td>49.58</td><td>49.89</td><td>290</td><td>0.04</td></tr>
<tr><td>50.55</td><td>50.77</td><td>350</td><td>0.04</td></tr>
<tr><td>51.83</td><td>52.00</td><td>350</td><td>0.04</td></tr>
<tr><td>52.64</td><td>52.85</td><td>290</td><td>0.06</td></tr>
<tr><td>53.09</td><td>53.32</td><td>290</td><td>0.09</td></tr>
<tr><td>53.34</td><td>53.62</td><td>290</td><td>0.06</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>FEATURE</th><th>SOURCE</th><th>COMMENTS</th></tr>
<tr><td>Vertical Alignment</td><td>As-built drawings</td><td>k values given to the nearest 5.

Based on a design speed of 100 km/h for the posted speed of 90 km/h, the following vertical curves are substandard.

<table>
<tr><th>Start LKI</th><th>End LKI</th><th>k Value</th><th>Type of Curve</th></tr>
<tr><td>36.51</td><td>36.63</td><td>20</td><td>Crest</td></tr>
<tr><td>34.73</td><td>47.00</td><td>35</td><td>Sag</td></tr>
<tr><td>47.13</td><td>47.34</td><td>40</td><td>Crest</td></tr>
<tr><td>48.83</td><td>49.15</td><td>25</td><td>Crest</td></tr>
</table>
</td></tr>
<tr><td>Posted Speed</td><td>Site survey on Sept. 24 and 25, 1998</td><td>70 km/h advisory speeds on curves between km 48.2 and km 49.8 are in eastbound direction only.

60 km/h advisory speed on curve at km 53.5 is on westbound direction only.

The section of Trans Canada Highway to the west km 32 has a posted speed of 100 km/h. This is outside the limits of the assignment but has an impact of vehicle speeds through this section.</td></tr>
<tr><td>AADT (SADT)</td><td>Trans Canada Highway Corridor Management Plan (Kamloops to Alberta Border): Community Impact and Development Study - Appendix B - Traffic Forecasts.</td><td>Traffic figures from 1996 data.</td></tr>
<tr><td>Accidents</td><td>H.A.S. Accident Summary Report</td><td>For period Jan 1, 1991 to Dec 31, 1995

Specific areas of concern are:
• Taft Overhead and east approach
• Enchanted Forest access
• Nineteen Mile Overhead and west approach
• Camp Creek approaches
• Substandard curve at km 46.2
• Three Valley Overhead</td></tr>
</table>

FEATURE	SOURCE	COMMENTS
Accidents (cont'd)		• Three speed advisory curves between km 48.2 and km 49.8 • Three Valley Motel access • Woods Overhead and both approaches
Electrical		There are no illuminated sections, changeable message signs or advanced warning flashers on this section of highway.
Drainage	Site survey Oct. 19 to 23, 1998 and as-built drawings	Only structures larger than 600 mm carrying natural watercourses shown Structures carrying Big Griffin Creek and South Pass Creek are not shown on the LKI summary sheet. With the exception of the twin concrete culvert at South Pass Creek, no drainage structure has the capacity to carry the 100 year flows.
Structures (BCI)	Summary sheet supplied by MoTH.	The bridge condition index (BCI) is a function of the structural condition of all parts of the bridge. The bridge condition is rated as good, fair or poor based on the following criteria: Number — Rating >3 — Poor 3> and >2 — Fair >2 — Good The BCI does not take into account the suitability of the road approaches, sightlines or hydraulic capacity.
Right of Way	As built drawings and legal plans	Areas where the right of way width is greater than the standard 30.5 m, are indicated as Avaries ≅ on the drawings. Where the widths is less than the standard, the dimension is given.

SECTION 7.0

VICTOR LAKE TO MT. REVELSTOKE NATIONAL PARK WEST GATE

SECTION 7.0
VICTOR LAKE TO MT. REVELSTOKE NATIONAL PARK
WEST GATE

7.1 EXISTING CONDITIONS REPORT

FEATURE	DESCRIPTION	SOURCE	COMMENT
Intersection / Accesses	• Intersections and accesses noted as per symbols outlined in Legend.	• Delcan site investigation November 2-13/98	
Segment / LKI	• MoTHs segment and land kilometre inventory	• MoTH	
Cut / Fill	• Noted as C (cut) or F (fill)	• Information supplied by EBA (see Geotechnical Appendix)	
Clear Zone	• Clear Zones are noted as x.xm to either the obstruction or to where roadside barrier exists (identified with letters CRB)	• Delcan site investigation November 2-13/98 • Delcan site investigation November 25/98	• Clear Zones widths are minimum distance(s) from edge of driving lane to obstruction.
Shoulder Width	• Noted as x.xm measured from the edge of driving lane to rounding.	• Delcan site investigation November 2-13/98 • Delcan site investigation November 25/98	• NC = Normal Crown • RC = Reverse Crown
Right Turn Lane (Length)	• Noted with an arrow to indicate the turning direction, the lane width as x.xm and the length of the parallel portion of the lane as xxm	• Delcan site investigation November 2-13/98 • Delcan site investigation November 25/98 • 1:2000 Rectified Photo Mosaic from McElhanney (Dec. 1998)	
Lane Width (Number)	• Noted as x.xm with the number of lanes	• Delcan site investigation November 2-13/98 • Delcan site investigation November 25/98 • 1:2000 Rectified Photo Mosaic from McElhanney (Dec. 1998)	

FEATURE	DESCRIPTION	SOURCE	COMMENT
Left Turn Lane (Length)	• Noted with an arrow to indicate the turning direction, the lane width as x.xm and the length of the parallel portion of the lane as xxm	• Delcan site investigation November 2-13/98 • Delcan site investigation November 25/98 • 1:2000 Rectified Photo Mosaic from McElhanney (Dec. 1998)	
Median Width / Type	• Median separation width noted as x.xm and type of separation	• Delcan site investigation November 2-13/98 • Delcan site investigation November 25/98 • 1:2000 Rectified Photo Mosaic from McElhanney (Dec. 1998)	
Left Turn Lane (Length)	• Noted with an arrow to indicate the turning direction, the lane width as x.xm and the length of the parallel portion of the lane as xxm	• Delcan site investigation November 2-13/98 • Delcan site investigation November 25/98 • 1:2000 Rectified Photo Mosaic from McElhanney (Dec. 1998)	
Lane Width (Number)	• Noted as x.xm with the number of lanes	• Delcan site investigation November 2-13/98 • Delcan site investigation November 25/98 • 1:2000 Rectified Photo Mosaic from McElhanney (Dec. 1998)	
Right Turn Lane (Length)	• Noted with an arrow to indicate the turning direction, the lane width as x.xm and the length of the parallel portion of the lane as xxm	• Delcan site investigation November 2-13/98 • Delcan site investigation November 25/98	
Shoulder Width	• Noted as x.xm measured from the edge of driving lane to rounding	• Delcan site investigation November 2-13/98 • Delcan site investigation November 25/98	

FEATURE	DESCRIPTION	SOURCE	COMMENT
Clear Zone	• Clear Zones are noted as x.xm to either the obstruction or to where roadside barrier exists (identified with letters CRB)	• Delcan site investigation November 2-13/98 • Delcan site investigation November 25/98	• Clear Zones widths are minimum distance(s) from edge of driving lane to obstruction.
Cut / Fill	• Noted as C (cut) or F (fill)	• Information supplied by EBA (see Geotechnical Appendix)	
Horizontal (e)	• Horizontal data noted as xxxR- indicating xxxm radius right of xxxL- indicating xxxm radius left. Rate of superelevation noted as 0.0x	• Construction Dwg. Project No. 31018 (Park Gate) • As-constructed Dwgs. (3 Valley Lake to Clanwilliam – Sheets 2 to 6) • As-constructed Dwgs. (Clanwilliam to 3 Mile Crossing - Sheets 1 to 4) • As-constructed Dwgs. (3 Mile Crossing to Revelstoke – Sheets 1 to 6) • As-constructed Dwgs. (Revelstoke to Greely – Sheets 1 to 5) • As-constructed Dwgs. (Greely to 3 Clachnacudainn Creek – Sheets 1 to 4) • Superelevation obtained from Smart Level Measurements Nov. 25/98	
Vertical (%)	Grade Percents noted as +/- x.x. K factors as Kxx	• Construction Dwg. Project No. 31018 (Park Gate) • As-constructed Dwgs. (3 Valley Lake to Clanwilliam – Sheets 2 to 6) • As-constructed Dwgs. (Clanwilliam to 3 Mile Crossing – Sheets 1 to 4) • As-constructed Dwgs. (3 Mile Crossing to Revelstoke – Sheets 1 to 6) • As-constructed Dwgs. (Revelstoke to Greely – Sheets 1 to 5)	

FEATURE	DESCRIPTION	SOURCE	COMMENT
Vertical (%) (cont'd)		• As-constructed Dwgs. (Greely to 3 Clachnacudainn Creek – Sheets 1 to 4)	
AADT (SADT)	• Annual average daily traffic and seasonally adjusted daily traffic	• Draft Options Generation and Evaluation Study by Urban Systems (September, 1998)	
Accidents	• Accidents noted as per symbols outlined in Legend	• MoTH Highway Accident System • Period from Jan. 1/91 to Dec. 31/95	
Electrical	• Changeable Message Signs noted by CMS, Traffic Signals noted by TS and Illumination noted by I	• Delcan site investigation November 2-13/98 • Delcan site investigation November 25/98	
Drainage	• Culverts greater than or equal to 600 mm are noted by culvert size and type	• Delcan site investigation November 2-13/98	
Structures (BCI)	• Bridges are noted in table. Bridge Condition Indices are noted to the right of bridge symbol.	• Delcan site investigation November 2-13/98 • BCI from MoTH	
R/W (Total)	• Overall consistent widths are noted. Any irregular areas are noted as Varies xxx to xxx	• As-constructed Dwgs. (3 Valley Lake to Clanwilliam – Sheets 2 to 6) • As-constructed Dwgs. (Clanwilliam to 3 Mile Crossing – Sheets 1 to 4) • As-constructed Dwgs. (3 Mile Crossing to Revelstoke – Sheets 1 to 6) • As-constructed Dwgs. (Revelstoke to Greely – Sheets 1 to 5) • As-constructed Dwgs. (Greely to 3 Clachnacudainn Creek – Sheets 1 to 4)	

SECTION 8.0

MT. REVELSTOKE NATIONAL PARK WEST GATE TO DONALD

SECTION 8.0
MT. REVELSTOKE NATIONAL PARK
WEST GATE TO DONALD

8.1 COMMENTS ON THE STRIP CHART

8.1.1 Intersections/Accesses

Information from the sources:

- MoTH Photolog
- MoTH Topographic Maps scale 1:2000

Notes relevant to location or features:

- The pullout locations are noted on the pictorial section only.

The accuracy of measurement:

- Approximately ± 50 metres.

Identified anomalies:

- No noted anomalies.

8.1.2 Segment/LKI

Information from the sources:

- MoTH Land Kilometre Inventory List.

Notes relevant to location or features:

- No noted features.

The accuracy of measurement:

- Approximately ± 50 metres.

Identified anomalies:

- The East gate of Glacier National Park is not located at the park boundary, therefore our LKI information begins at the park boundary with LKI 0.

8.1.3 Cut/Fill

Information from the sources:

- Video recording

- MoTH Photolog

Notes relevant to location or features:

- Several of the cuts are rock faces.

The accuracy of measurement:

- Approximately ± 100 metres.

Identified anomalies:

- No noted anomalies.

8.1.4 Clear Zone

Information from the sources:

- Video recording
- MoTH Photolog
- Topographic Maps scale 1:2000

Notes relevant to location or features:

- Some of the rockface cuts may impede sight distance.

The accuracy of measurement:

- Only the curb was measured to ± 50 metres

Identified anomalies:

- No noted anomalies.

8.1.5 Shoulder Width

Information from the sources:

- MoTH Photolog
- Topographic Maps scale 1:2000
- Width was measured in the field.

Notes relevant to location or features:

- No noted features.

The accuracy of measurement:

- ± 100 metres for location.
- ± 0.5 metres for width.

Identified anomalies:

- No noted anomalies.

8.1.6 Auxiliary Lanes

Information from the sources:

- MoTH Photolog
- Topographic Maps scale 1:2000

Notes relevant to location or features:

- No noted features.

The accuracy of measurement:

- ± 100 metres for location.
- ± 0.5 metres for width.

Identified anomalies:

- No noted anomalies.

8.1.7 Lane Width

Information from the sources:

- Measured in the field.

Notes relevant to location or features:

- No noted features.

The accuracy of measurement:

- ± 0.5 metres for width.

Identified anomalies:

- No noted anomalies.

8.1.8 Left Turn Lanes

Information from the sources:

- Measured in the field.

Notes relevant to location or features:

- No noted features.

The accuracy of measurement:

- ± 0.5 metres for width.

Identified anomalies:

- No noted anomalies.

8.1.9 Median Width

Information from the sources:

- Does not apply.

Notes relevant to location or features:

- Does not apply.

The accuracy of measurement:

- Does not apply.

Identified anomalies:

8.1.10 Horizontal Alignment

Information for the sources:

- As-built drawings
- Site visit
- Video tape
- Video log

Notes relevant to location or features:

- Required improvements west of Columbia Bridge
- Required improvements in the area of the Albert Canyon
- Improvement of SSD-S at the entire length of the section

The accuracy of the measurement:

- Medium

Identified anomalies:

- None

8.1.11 Vertical Alignment

Information from the source:

- As-built drawings
- Site visit
- Video tape
- Video log

Notes relevant to location or features:

- Required improvements west of Columbia Bridge
- Required improvements in the area of the Albert Canyon

The accuracy of the measurement:

- Medium

Identified anomalies:

- None

8.1.12 Posted (Advisory) Speed

Information from the source:

- Field visit
- Video tape

Notes relevant to location or features:

- None

The accuracy of the measurement:

- High

Identified anomalies:

- None

8.1.13 AADT (SADT)

Information from the source:

- Draft Options Generation and Evaluation Study
- Traffic Volumes in BC 1980-1994
- MoTH traffic counts at Albert Canyon, 1995, 1996

Notes relevant to location or features:

- None

The accuracy of the measurement:

- High

Identified anomalies:

- None

8.1.14 Accidents

Information from the source:

- H.A.S. Accident Summary Report
- H.A.S. Accident Histogram

Notes relevant to location or features:

- Required improvements of CRB's

The accuracy of the measurement:

- High

Identified anomalies:

- None

8.1.15 Drainage

Information from the source:

- As-built drawings
- Site visit
- Video tape

Notes relevant to location or features:

- None

The accuracy of the measurement

- High

Identified anomalies:

- None

8.2 LIST OF INFORMATION SOURCES

- Site reconnaissance from October 25 to October 27, 1998
- Video tape of the TCH taped from Mt. Revelstoke National Park, East Gate to Donald
- "External" Traffic on the Trans Canada Highway: Kamloops to Alberta Border, April 1998, by Actran Consultants
- Analysis Framework for the Trans Canada Highway, Corridor Management Plan (Kamloops to Alberta Border) August 7, 1997, by ADI Limited, Victoria, BC
- The Trans Canada Highway Corridor Plan for the Rocky Mountain National Parks, 1990, by T.C. Arnett and J.F. Morall
- Trans Canada Highway Corridor Management Plan, Kamloops to Alberta Border - Draft - Options Generations and Evaluation Study, September, by Urban Systems in association with Ward Consulting and ADI Limited
- Trans Canada Highway Corridor (Kamloops to Alberta Border) Environmental Overview Assessment, April 1998, by Acres International Limited
- Trans Canada Highway Management Plan (Kamloops to Alberta Border) Community Impact and Development Study - Summary Report, Final Report, May 1998, by Urban Systems
- Trans Canada Highway Corridor Management Plan (Kamloops to Alberta Border) Community Impact and Development Study - Appendix A - Community Profiles, Final Report, May 1998, by Urban Systems
- Trans Canada Highway Corridor Management Plan (Kamloops to Alberta Border) Community Impact and Development Study - Appendix B - Traffic Forecasts, May 1998, by Urban Systems
- Trans Canada Highway Corridor Management Plan Technical Option Generation and Evaluation Study, September 1998, by Urban Systems in association with Ward Consulting Group and ADI Limited
- MoTH, Highway Planning and Policy Branch:

  Traffic Information Management System (TIMS)

  Monthly Average Day of Week to Monthly Average Daily Traffic Report

  ◊ TM Point: P-37-1E, Year 1995

  ◊ TM Point P-37-1W, Year 1995

  ◊ TM Point P-22-1E, Year 1995

- ◊ TM Point P-22-1E, Year 1996
- ◊ TM Point, P-22-1W, Year 1995
- ◊ TM Point, P-22-1W, Year 1996

- Traffic Counts at:
  - ◊ TCH at Albert Canyon West Bridge Segment 975, km 33.76 start date: 1997 August 22; pick-up date: 1997 August 29
- Traffic Volumes in British Columbia, 1990 - 1994 by, Ministry of Transportation and Highways, Province of BC
- H.A.S. Accident Summary Report, 1998 September 14
- H.A.S. Accident Histogram, 1998 November 23
- TRIM maps, scale 1:20,000, 1987, by Digital Mapping Group Ltd.
- "As-Built" Drawings
  - ◊ Projects 902 and 969 - Trans Canada Highway, Revelstoke Park - Glacier Park, Section 1, 10 sheets; scale: horizontal - 1 inch = 200 feet, vertical - 1 inch = 20 feet, Completed November 23, 1960
  - ◊ Project 961 - Trans Canada Highway, Rogers - Quartz Creek, 7 sheets; scale: horizontal - 1 inch = 200 feet, vertical - 1 inch = 200 feet
  - ◊ Trans Canada Highway, Donald - Quartz Creek, 12 sheets; scale: horizontal - 1 inch = 200 feet, vertical - 1 inch = 20 feet
- Trans Canada Highway Cache Creek to Rockies, Rectified Mosaic, October - December 1998, scale: 1:16,000 by McElhanney Consulting Services Ltd.
- Trans Canada Highway Cache Creek to Rockies, Topographic Mapping, October - December 1998, by McElhanney Consulting Services Ltd.
- Geotechnical and Materials Engineering Kootenay Region, Glacier Park - Donald, Investigation - Phase 1, RFS No. A29425, April 1993, by T.R. Rutherglen and K. Richter
- Geotechnical and Materials Engineering Kootenay Region, Glacier Park - Donald, Investigation - Phase 2, RFS No. A29425, April 1993, by T.R. Rutherglen and K. Richter
- Comments from: Ministry of Forest, Columbia Forest District, December 1, 1998, by Ken Kriz

SECTION 9.0

DONALD TO ROTH CREEK

SECTION 9.0
DONALD TO ROTH CREEK

9.1 INTRODUCTION

The existing highway condition of the Trans Canada Highway for the Donald to Kicking Horse Canyon section has been determined from a review of the following:

- Ministry of Transportation & Highways (MoTH) Landmark Kilometre Inventory (LKI) listing
- 1:10,000 and 1:2,000 orthophotos provided by McElhanney Engineering Services Ltd.
- 1:8,000 and 1:4,000 aerial photos provided by McElhanney Engineering Services Ltd.
- Road Features Inventory (RFI)
- Detailed design drawings provided by MoTH
- The 1995 and 1996 photolog
- From a field inspection undertaken the week of October 26, 1998. During this site inspection a series of videos and still photographs were taken. In addition, a number of typical cross sections were measured
- Information obtained from regional MoTH staff.

The existing highway conditions report covers the following segments:

SEGMENT	FROM	TO
985	LKI 30.24 west end Donald overpass	LKI 56.06 Hwy 95 Intersection
990	LKI 0.00 Highway 95 Intersection	LKI 13.00 Vicinity Yoho Rest Area

This appendix should be read in conjunction with the bar charts.

9.2 HIGHWAY CONDITION

Comments on the bar chart features follow:

FEATURE	SOURCE	COMMENT
Intersection/Access	• LKI Listing • Field pick-up • As-built	• All the intersections from Donald o/p to Anderson Road (LKI 30.24 to LKI 53.85) shown on the photolog are still in use. The section of TCH through the Town of Golden (LKI 54.22 to LKI 56.06) was reconstructed during 1994, including frontage roads, concrete curb and gutter, median barriers, storm drainage and street lighting. • All minor access, including private driveways, pulloffs, and points of interest have been included on the inventory.
Segment/LKI	• LKI Listing	• Discrepancies were noted between the LKI and the photolog chainages. For example the LKI chainage at Donald o/p west end is 30.24, but the photolog chainage is 30.46. Similarly at the TCH/Hwy 95 junction, the LKI chainage is 56.06 compared to photolog chainage of 56.35. We have made appropriate adjustments to photolog chainages to match LKI chainages for the existing conditions report. • The length of TCH segment between Columbia River Bridge West End (LKI 29.66) and the junction at Hwy 95 (LKI 56.06) is 26400 and 26365 metres respectively from LKI chainages and computed from the 1:2000 mapping.
Cut/Fill (westbound)	• Photolog • Field visit • SNC-L video	• Information on cut/fill location was obtained primarily from the photolog and from the drive through of the assignment. • Information on cut/fill through the Town of Golden was obtained from SNC-L site video as well as the field observation notes.

FEATURE	SOURCE	COMMENT
Clear Zone (westbound)	• Site visit • Photolog • SNC-L video • Photos	• For the length of the section the clear zone is not to current standards. • It is possible that there are some areas of sufficient clear zone between Donald and Golden but in the canyon there are steep rock cuts and drop-offs directly beside the travelled lanes except in pull-off areas.
Shoulder Width (westbound)	• Field pick-up • As-builts	• The existing road shoulders were tape measured at the following LKI chainages: <u>Segment 985</u> LKI 30.24 (Donald o/p west end) LKI 31.30 LKI 38.20 LKI 40.60 (Blaeberry Bridge north end) KLI 53.30 LKI 55.28 <u>Segment 990</u> LKI 1.40 (Upper Golden Donald Road) LKI 1.83 LKI 2.83 LKI 3.93 LKI 7.63 LKI 7.83 LKI 9.45 (5 Mile Bridge - west end) LKI 11.10 LKI 11.83 • Shoulder measurements for the TCH segment through the Town of Golden were obtained from as-built drawings provided by MoTH.
Right Turn Lanes (westbound)	• Photolog • Field pick-up • As-builts	• The length of right-turn bays for the westbound lanes were obtained as follows: ◊ Donald Road (LKI 30.61) - Photolog ◊ Hartley Road (LKI 46.22) - Field pick-up ◊ Westerly signalized intersection (LKI 54.62) -As-builts ◊ Scale Entrance (LKI 55.54) - As-builts

FEATURE	SOURCE	COMMENT
Lane Width (westbound)	• Field pick-ups • As-builts	• The westbound lane widths were tape measured at the following locations: **Segment LKI Chainage** 985 30.24 (Donald o/p west end) 985 31.30 985 38.20 985 40.60 (Blaeberry Bridge N. end) 985 53.30 985 55.28 990 1.40 (Upper Golden Donald Road) 990 1.83 990 2.83 990 2.93 990 7.63 990 7.83 990 9.45 (5 Mile Bridge west end) 990 11.10 990 11.83 • Lane width measurements for the TCH segment through the Town of Golden were obtained from as-built drawings supplied by MoTH
Left Turn Lanes (west bound)	• Photolog • Field pick-up • As-builts	• The length of left-turn bays for the westbound lanes were obtained as follows: ◊ Westerly signalized intersection (LKI 54.62) - As-builts ◊ Easterly signalized intersection (LKI 55.70) - As-builts ◊ At Hwy 95 junction (LKI 56.06) - As-builts
Median Width and Type	• Field pick-up • As-builts • Photolog	• The median widths were tape measured at the following locations: **Segment LKI Chainage** 985 30.24 (Donald o/p west end) 985 31.30 985 38.20 985 40.60 (Blaeberry Bridge N. end) 985 53.30 985 55.28 990 1.40 (Upper Golden Donald Road) 990 1.83 990 2.83 990 2.93

FEATURE	SOURCE	COMMENT
Median Width and Type (cont'd)		**Segment** **LKI Chainage** 990 7.63 990 7.83 990 9.45 (5 Mile Bridge west end) 990 11.10 990 11.83 • Median widths for the TCH segment through the Town of Golden were taken from the as-built drawings supplied by MoTH
Left Turn Lanes (eastbound)	• Photolog • Field pick-up • As-builts	• The lengths of left-turn bays for the eastbound lanes were obtained as follows: ◊ Donald Road (LKI 30.61) - photolog ◊ Hartley Road (LKI 46.22) - field pick-up ◊ Westerly signalized intersection (LKI) - As-builts ◊ Easterly signalized intersection (LKI) – field pick-up ◊ Upper Donald Road (LKI 1.43) – field pick-up ◊ Lafontaine Road (LKI 1.77) - field pick-up ◊ Yoho Rest Area (LKI 12.53) – photolog
Lane Width (eastbound)	• Field pick-up • As-builts	• The eastbound lane widths were tape measured at the following locations: **Segment** **LKI Chainage** 985 30.24 (Donald o/p west end) 985 31.30 985 38.20 985 40.60 (Blaeberry Bridge N. end) 985 53.30 985 55.28 990 1.40 (Upper Golden Donald Road) 990 1.83 990 2.83 990 2.93 990 7.63 990 7.83 990 9.45 (5 Mile Bridge west end) 990 11.10 990 11.83

FEATURE	SOURCE	COMMENT
Lane Width (eastbound) (cont'd)		• The lane width measurements for the TCH segment through the Town of Golden were taken from the as-built drawings supplied by MoTH.
Right Turn Lanes (eastbound)	• Photolog • Field pick-up • As-builts	• Information on the right turn lanes was obtained as follows: ◊ Westerly signalized intersection (LKI) - As-builts ◊ Easterly signalized intersection (LKI) - As-builts ◊ At Hwy 95 junction (LKI 0.0) – As-builts ◊ Upper Donald Road (LKI 1.43) - Field pick-up ◊ Golden View Road E. end (LKI 2.40) - Field pick-up
Shoulder Width (eastbound)	• Field pick-up • As-builts	• The existing road shoulders were tape measured at the following LKI chainages: **Segment 985** LKI 30.24 (Donald o/p west end) LKI 31.30 LKI 38.20 LKI 40.60 (Blaeberry Bridge north end) KLI 53.30 LKI 55.28 Segment 990 LKI 1.40 (Upper Golden Donald Road) LKI 1.83 LKI 2.83 LKI 3.93 LKI 7.63 LKI 7.83 LKI 9.45 (5 Mile Bridge - west end) LKI 11.10 LKI 11.83 • Shoulder measurements for the TCH segment through the Town of Golden were obtained from as-built drawings provided by MoTH
Clear Zone (eastbound)	• Site visit • Photolog	• For the length of the section the clear zone is not to current standards

FEATURE	SOURCE	COMMENT
Clear Zone (eastbound) (cont'd)	• SNC video • Photos	• The clear zone is noted as "0" (for open shoulder) except in the locations where CRB is used. • It is possible that there are some areas of sufficient clear zone between Donald & Golden but in the canyon there are steep rock cuts and drop offs directly beside the traveled lanes except in pull-off areas.
Cut/Fill (eastbound)	• Photolog • Field Visit • SNC-L Notes, Video	• Information on cut/fill location was obtained primarily from the photolog and from the drive through of the assignment. • Information on cut/fill through the Town of Golden was obtained from SNC-L site video as well as the field observation notes.
Horizontal (e)	1:1000 mapping 1:2000 mapping 1:5000 mapping As-builts	<u>Alignment</u> • Donald to Golden: initial horizontal centreline alignment was created using 1:5000 digital information obtained from Nadir Mapping and using 1:1000 digital mapping received from MoTH (Region 3). These alignments were rejected due to the apparent discrepancies and distortions noted when one alignment was overlayed onto the other, using appropriate scale factors: • When 1:2000 digital mapping became available from McElhanney Surveys, it was used to create the final alignment. <u>Golden</u> • The existing centreline alignment was obtained from the Ministry provided as-builts, and was tied to final alignment (Donald to Golden). <u>East of Golden</u> • The existing centreline alignment was created using 1:5000 digital information obtained from Nadir Mapping.

FEATURE	SOURCE	COMMENT
Horizontal (e) (cont'd)		Superelevation • The superelevation from the photolog inventory may not be reliable. Field measurements of as-built superelevation will be taken next year.
Vertical	1:1000 Mapping 1:5000 As-builts	Donald to Golden • Initial vertical alignment was created by scaling spot elevations noted on 1:5000 Nadir Mapping. The spacing between spot elevation points varied from 100m to 400 metres. This was then discarded when 1:1000 mapping became available from MoTH. • The spacing of spot elevations shown on the 1:1000 mapping was much closer than 1:5000 mapping. The existing profile was plotted using 1:5000 H, 1:500 V scales and the vertical curves were superimposed on existing profile using "best fit" approach. Appropriate K values were calculated based on the length of vertical curves and the incoming and outgoing grade lines. Golden • The existing centreline profile information was scaled from the Ministry supplied as-builts, and was tied to the Donald to Golden and east of Golden profiles East of Golden • The existing centreline was created by scaling spot elevations noted on 1:5000 Nadir mapping. The spacing of spot elevations varied from 100m to 400 metres, similar to Donald to Golden section. The profile created, although less reliable than 1:1000 mapping, was incorporated in the ECR because there was no such mapping available for this section.

FEATURE	SOURCE	COMMENT
Posted (Advisory)	• Photolog • Field pick-up • As-builts	• Posted and advisory speed sign locations were noted from photologs and the field pick-up survey and are shown on the drawings at the appropriate LKI chainages.
AADT (SADT)	• MoTH	• AADT and SADT volumes for 1996 were taken from the Trans Canada Highway Corridor Management Plan, Community Impact and Development Study - Appendix B - Traffic Forecasts - by Urban Systems
Accidents	• MoTH	• The accident data was obtained from the Ministry supplied H.S.S. Accident Summary Report. • The accident data contained in the report was collected over the period from January 1, 1991 to December 31, 1995.
Electrical	• Photolog • Field pick-up • As-builts	• Electrical features are noted in the drawings using appropriate notations. In addition locations of traffic counter stations and road closure gates are also noted on the same information bar.
Drainage	• MoTH District staff in Revelstoke • SNC-L survey data	• The Culverts Detail Report for Region 3, Contract Area 12, lists the size and type of culverts.
Structures/(BCI)	• MoTH	• The existing Condition Report drawings show Bridge Condition Index (BCI) information only.
R/W	• MoTH Regional staff in Nelson • MoTH District Staff in Revelstoke	• Greg Lawrence provided copies of 5 right-of-way plans to cover the area from Donald to Golden. • Rocky Vanlerberg confirmed that all property adjacent to the R/W (TCH) between 5 and 10 Mile Bridges is Crown Land. • Brian Abear stated that there are no legal plans for the highway section Yoho Bridge (5 Mile Bridge) to top of Golden Hill (approximately LKI 1.5 km).

SECTION 10.0

ROTH CREEK TO BRAKE CHECK

SECTION 11.0
BRAKE CHECK TO YOHO PARK

11.1 ITEMIZED DESCRIPTION

Line 1: Intersections and Accesses

Information provided here relates to the section east of the Brake Check at LKI 17.4, and the westerly border of Yoho Park, LKI 25.93. This information was obtained from the air photo mosaics, site visits and plans.

Line 2: Segment/LKI

This information was provided by the Ministry of Transportation & Highways (MoTH).

Line 3: Cut/Fill (WB)

Information was obtained from site visits, field observations and photolog. Where a C or F is indicated, the cut or fill continues with increasing LKI until otherwise indicated on the line.

Line 4: Clear Zone (WB)

There are no clear zones in this section.

Line 5: Shoulder Width (WB)

This applies to the paved shoulder, and was derived from random measurements on 1:1000 surveyed plan.

Line 6: Right Turn Lanes (Length) (WB)

This was derived from plans and photolog.

Line 7: Lane Width (Number) (WB)

Derived from random measurements from plans and site observations.

Line 8: Left Turn Lanes (Length) (WB)

There are no WB left lanes in this section.

Line 9: Median Width (Type)

Derived from site observations, plans and photolog.

Lines 10 – 15:

As per lines 3 to 8, but for the eastbound (EB) lane(s) and adjacent roadside elements.

Line 16: Horizontal (e)

The horizontal alignment was produced from a best-fit alignment on the 1:1000 plan; "e" derived from photolog information.

Line 17: Vertical (%)

Based on best fit vertical from surveyed information, profile scale – 1:2000 horizontal, 1:200 vertical.

Line 18: Posted Speed (Advisory)

Derived from site observations and photolog.

Line 19: AADT (SADT)

Traffic data derived from counter P-37-1, and this has been used in the present report. These figures are somewhat lower than earlier assumed figures for 1996, where SADT was assumed to be identical to the 1995 figure, which appeared to be particularly high in relation to the overall trend, as confirmed by 1997 and draft 1998 SADT figures. 1996 Annual Average Daily Traffic (AADT) has therefore been taken to be 4276 vehicles per day, and Summer Average Daily Traffic (SADT) 8760 vehicles per day.

Line 20: Accidents

The Ministry's accident data records for the route for the period from 1991/01/01 to 1995/12/31 were used to identify the location and type of accident (fatal, injury or damage only).

Line 21: Electrical

There are no highway-related electrical installations (lighting, traffic signals, etc.).

There are power poles adjacent to the highway.

Line 22: Drainage

Based on information provided by the District Office from Road Features Inventory.

Line 23: Structures (BCI)

Supplied by MoTH.

Line 24: R/W (Total)

The right-of-way information shown has been derived from the registered legal highway right-of-way plan R310.

SECTION 11.0

BRAKE CHECK TO YOHO PARK

SECTION 10.0
ROTH CREEK TO BRAKE CHECK

10.1 INTRODUCTION AND BACKGROUND

In 1997 the MoTH initiated a Corridor Management Plan for the Trans Canada Highway (Highway 1) from Cache Creek to the Rockies (CCR).

A draft Options Generation and Evaluation Study report for the CCR Corridor was issued in September 1998. The Ministry of Transportation and Highways appointed N.D. Lea Consultants Ltd. to undertake the functional planning and preliminary design of the most easterly section (Section I) from approximately LKI 11.8 to LKI 17.4 of Segment 0990, located between Roth Creek and approximately 300m east of the Brake Check.

This report reflects an understanding of the existing conditions obtained both from field observations and surveys, and from a detailed study of available reports and data. The data is summarized in bar format below the attached plans showing the existing alignment. A common format has been used by all consultants working on the project, thus ensuring consistency of both content and presentation and facilitating comparison between sections. The sources of the data are described in the following sections of this report, and relevant explanatory comments are also included.

10.2 LIST OF SOURCES

- 1:5000 (1991) mapping provided by MoTH Region 3 (October 1998)
- Air photo mosaics provided by McElhanney Consulting Services Ltd. (November 1998)
- Segment and LKI provided by MoTH (September 1998)
- Field reconnaissances (November 1998)
- Community impact and development study for the Corridor, Appendix B: Traffic Forecasts (Urban Systems, May 1998)
- CMP Constituent Study, Golden to Yoho, Planning and Evaluation Report (Draft, September 1998)
- Ministry's accident data records (September 1998)
- BCI provided by MoTH (November 1998)

10.3 GENERAL DESCRIPTION OF THE AIR PHOTO MOSAICS

The air photo mosaics show the key features of the section, such as the rest area, Park Bridge, runaway lane, Brake Check, and LKI at each exact kilometre number. The LKI is indicated in the second line of information, and all other data can be linked to the relevant LKI position. Lines 3 to 8 give information relating to the westbound lane(s), i.e. on the northern side of the road, whilst lines 10 to 15 relate to the eastbound lane(s). The next nine lines apply to the road as a whole. Lines 25 to 27 relate to geotechnical aspects, and lines 28 to 31 to environmental aspects, which will be reported on separately by the relevant subconsultants. An explanation of terms and legend used in the air photo mosaic is shown in Sheet 2 of 4.

10.4 ITEMISED DESCRIPTION

Line 1: Intersections and Accesses

Information provided here relates to the designated rest area at LKI 12.5, the runaway lane at LKI 14.7, and the Brake Check at LKI 16.7. Other gravel pull-outs, e.g. to the west of the Park Bridge, are unofficial stopping places and have not been included. This information was obtained from the air photo mosaics and site visits.

Line 2: Segment/LKI

This information was provided by the Ministry of Transportation & Highways (MoTH).

Line 3: Cut/Fill (WB)

Information was obtained from site visits and field observations. Where a C or F is indicated, the cut or fill continues with increasing LKI until otherwise indicated in the line.

Line 4: Clear Zone (WB)

This information was obtained from site measurements of each consistent section. Where indicated as, say, " 0.8/CRB ", this means that there is a 0.8m shoulder to the concrete roadside barrier.

Line 5: Shoulder Width (WB)

This applies to the paved shoulder, and was derived from random measurements on site.

Line 6: Right Turn Lanes (Length) (WB)

This was derived from air photo mosaics, excludes taper, and only applies to full width lanes.

Line 7: Lane Width (Number) (WB)

Derived from random measurements and site observations.

Line 8: Left Turn Lanes (Length) (WB)

There are no WB left turn lanes in this section.

Line 9: Median Width (Type)

Derived from site observations.

Lines 10 to 15

As per lines 3 to 8, but for the eastbound (EB) lane(s) and adjacent roadside elements. As shown in Line 10 – Left Turn Lanes (Length), there is an eastbound left turn into the rest area at LKI 12.5.

Line 16: Horizontal (e)

The horizontal alignment was produced from a best-fit alignment on the 1:5000 aerial mapping provided by MoTH Region 3; "e" derived from random on-site measurements using an electronic carpenter's level. The field measurements indicated that the superelevation rate (e) was not consistent across all lanes. The "e" values shown represent the average of the field measurements.

Line 17: Vertical (%)

Based on 1:5000 aerial mapping provided by MoTH Region 3.

Line 18: Posted Speed (Advisory)

Derived from site observations.

Line 19: AADT (SADT)

The primary sources of traffic data were the Community Impact and Development Study for the Corridor, Appendix B: Traffic Forecasts (Urban Systems, May 1998), data supplied by the Ministry of Transportation & Highways, and the CMP Constituent Study, Golden to Yoho: Planning and Evaluation Report (Draft, September 1998). In the last mentioned report, the Multiple Account Evaluation section contains 1996 traffic data derived from counter P37-1, and this has been used in the present report. These figures are somewhat lower than earlier assumed figures for 1996, where SADT was assumed to be identical to the 1995 figure, which appeared to be particularly high in relation to the overall trend, as confirmed by 1997 and draft 1998 SADT figures. 1996 Annual Average Daily Traffic (AADT) has therefore been taken to be 4276 vehicles per day, and Summer Average Daily Traffic (SADT) 8760 Vehicles per day.

Line 20: Accidents

The Ministry's accident data records for the route for the period from 1991/01/01 to 1995/12/31 were used to identify the location and type of accident (fatal, injury or damage only).

Line 21: Electrical

The only highway related electrical installation along this section of the highway is the avalanche control gate just east of the Brake Check.

There are power poles adjacent to the highway.

Line 22: Drainage

Based on field observations indicating the location, size and pipe material.

Line 23: Structures (BCI)

Supplied by MoTH.

Line 24: R/W (Total)

No registered right-of-way plans could be traced for the section west of the Park Bridge. The right-of-way information shown has been derived from the Ministry's as constructed 1952 drawings. R/W plan for the section east of the Bridge was found by means of a title search at the Land Registry in Kamloops.