CROWN CAPITAL ENTERPRISE LIMITED

WANCHAI, HONG KONG

Application of RJSeal™
XiZhan & XiaoCaiYuan Interchanges,
Kunming, Yunnan Province
Peoples Republic of China

December 2003

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January 20, 2004

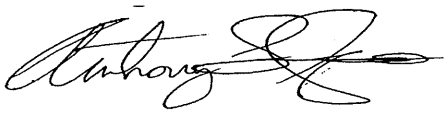
Crown Capital Enterprise Limited
B5, Centre Point Building
181 – 185 Gloucestor Road,
Wanchai, Hong Kong.
Attn: Charence Chiang
General Manager

Dear Charence

Re: Application of RJSeal^{TM} on XiZhan and XiaoCaiYuan Interchanges, Kunming.

This is the final report on the application of RJSeal^{TM} on the XiZhan and XiaoCaiYuan Interchanges in Kunming, on West HuanCheng Road in the north sector Kunming, Yunnan Province. The application of RJSeal was undertaken on four consecutive nights, commencing on December 13, 2003. This application encompassed two separate interchanges, both with fly-overs and traffic circles beneath. Collectively, some 51,680 square metres were treated with RJSeal.. The principal interest of the Kunming City Road Maintenance Department was restoration of the asphalt pavement's ductility, as well as an improvement of the resistance to water penetration. Initial indications are that these requirements have been readily met.

Yours Sincerely



Anthony G. Speed, P.Eng. (Ontario, Canada)

RejuvaSeal (Yunnan) Inc
RJSeal Application
Xizhan Overpass, etc
Commencement of work 13-Dec-03
Prepared by A.G. Speed
Updated by A.G. Speed
Updated 24-Jan-04

Weather Conditions

Temperature 10 Celsius
Humidity 40%
Cloud Cover Clear Skies

Assumptions

Date	Area-m^2	Barrels
13-Dec-03	8,000	8
14-Dec-03	12,303	10
15-Dec-03	16,000	20
16-Dec-03	15,380	18
	51,683	56

20,303	Xizhan Overpass	
31,380	XiaoCaiYuan Overpass	
51,683	Total	

Conversion Factors

US Gallon=	3.78	Litres
Sq Metre=	10.76	Sq Feet
Sq Metre=	1.20	Sq Yds
One Litre	1.04	kgs
One Full Drum	208	Litres
One Full Drum	55	US Gallon
90% full drum	50	US Gallon
slag	5000	kgs
slag area	27,683	sq metres
slag rate	0.181	kgs/sq m

Crew Consist	Day 1 & 2 No	Day 2 &3 No
Desco Op	1	1
Desco Help	2	2
Labourers	20	30
Truck Driver	3	4
Supervisor	3	3
Total	29	40

Work Schedule	Work Time	Work Time	Total Area m^2	Total Area yd^2	RejuvaSeal Applied			Application Rate				29/40 Man Crew	
					US gals	litres	kilograms	USGal /yd^2	Litres/m^2	m^2 /Litre	m^2/Kg	m^2 /man hr	yd^2 /man hr
13-Dec-03	21.30-03.30	6.0	8,000	9,563	423	1,600	1,664	**0.044**	**0.20**	**5.00**	**4.81**	46.0	55.0
14-Dec-03	21.30-03.30	6.0	12,303	14,707	529	2,000	2,080	**0.036**	**0.16**	**6.15**	**5.91**	70.7	84.5
15-Dec-03	21.30-04.30	7.0	16,000	19,126	1,058	4,000	4,160	**0.055**	**0.25**	**4.00**	**3.85**	57.1	68.3
16-Dec-03	21.30-05.30	8.0	15,380	18,385	952	3,600	3,744	**0.052**	**0.23**	**4.27**	**4.11**	48.1	57.5
Totals		27.0	51,683	61,780.7	2,963.0	11,200.0	11,648.0	**0.048**	**0.22**	**4.61**	**4.44**	55.5	66.3
			1			*bbls*	*56*				0.02		

Note 1: **Slag applied to 12,000 sq metre area on round-about and lead-in roads (traffic circle) on Dec 14**
Note 2: **Slag applied to 6,000 sq metre area on two round-abouts (traffic circles) on Dec 15**
Note 3: **Drying time: 3 hours**

Test Patch Specifics at various locations	Patch Width (m)	Patch Length (m)	Total Area m^2	Total Area yd^2	RejuvaSeal Applied			Application Rate			
					gallons	(litres)	kgs	gallons/sq yd	litres /m^2	m^2 /litre	m^2 /kg
A	1.082	1.082	1.17	1.40	0.066	0.25	0.26	0.047	**0.21**	**4.68**	**4.50**
B	1.14	1.14	1.30	1.55	0.066	0.25	0.26	0.043	**0.19**	**5.20**	**5.00**

Outflow Meter Readings

Date	Time	Location
8-Dec-03		

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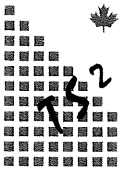
APPENDICES

No.	Description
A	RJSeal™ Descriptive Literature
B	Desco D200 Sprayer, Technical Specifications
C	Technical Data, Copper Slag, Kunming Smelter



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1.0 INTRODUCTION

Crown Capital Enterprise Limited of Hong Kong entered into an agreement with Kunming Road Maintenance Department, based in Kunming, Yunnan Province, China on December 5, 2003. The agreement calls for the application RJSeal™, a sealer/rejuvenator for asphalt pavement on the XiZhan and XiaoCaiYuan Interchanges and Traffic Circles within the City of Kunming.

Kunming is located in Yunnan province, in the southwestern sector of the Peoples Republic of China and is bordered by Vietnam, Laos and Myanmar (Burma). See figure 1.0 for a map showing the location of this province. Kunming is the Capital City and the majority of the area lies in the Yunnan-Guizhou Plateau which averages 2000 metres in the area of interest. The altitude, combined with the regions' latitude, mean that the climate is quite pleasant in China, warm and mild, and is known as "spring at all seasons."

The asphalt in the area is manufactured from local materials, which is comprised almost exclusively of crushed and screened limestone, dolomite as well as sandstone. In the immediate Kunming area, a karst topography predominates and has formed numerous scenic vista's. Alternate road surfacing material does not exist, aside from slag from local steel mills and copper smelters plus boiler slag (bottom ash) from coal fired, power plants. The bitumen binder for the asphalt is sourced from various overseas locations, including Iran. Shell and Esso/Mobil have generally been the prime suppliers, as no suitable petroleum refinery distillates exist in Yunnan province, nor the neighbouring provinces of Guangxi, Guizhou or Sichuan. A coal char/coking plant exists in Anning near Kunming, but coal tar distillates for use as an asphalt binder are not manufactured.

2.0 CO-OPERATIVE PROGRAM

The intent of the Agreement with the Kunming Road Maintenance Department is to rejuvenate the asphalt pavement on the XiZhan and XiaoCaiYuan elevated traffic interchanges and the lower traffic circles, which will subsequently allow analysis of the performance of RJSeal™ on a variety of asphalt surfaces. The two interchanges are located in the northern sector of the city immediate to the Yunnan University and were built in 1996 or thereabouts. The asphalt pavement is suspected to be of 1996 vintage on the XiZhan Interchange with more recent asphalt overlays in part (possibly 2001), whereas that on the XiaoCaiYuan Interchange appears to be somewhat younger, possibly 1999 vintage.

3.0 RJSEAL™

RJSeal™ is a proprietary product that is supplied by Crown Capital Enterprise Limited of Wanchai, Hong Kong. RJSeal™ has been proven in numerous applications in North and South America to rejuvenate asphalt pavement at various stages of it's life and economically extend the life of the pavement. RJSeal™ is a three component, asphalt sealer rejuvenator that is comprised of Coal Tar, Coal Tar Oils and Petroleum Solvents.

3.1 PRIOR EXPERIENCE

Refer to Appendix A for a copy of the brochure, which outlines the experience with RJSeal™ at various locations in North America and South America. Further information is available from Crown Capital Enterprise Limited. RJSeal™ has been used at numerous airports in North and South America, as well as highways in Alberta, Canada; Cearo State, Brazil and North Dakota and Texas, as well as other locations in the U.S.A. Since 2000, RJSeal™ has been demonstrated successfully at over thirty four (34) locations in China and fourteen (14) commercial-scale applications have taken place at various locations, including Shanghai and Kunming.

4.0 TEST PROGRAM

Since Yunnan Province is located in a semi-tropical climate (Latitude: 25 North) at a high altitude (2000 metres), it's a demanding setting for asphalt, given the year round warm climate (average of 25 Celsius, with extremes of 30 Celsius) and intense exposure to ultraviolet radiation, all which contribute to the oxidation and breakdown of the asphalt binder. Furthermore, the soft limestone/dolomite/sandstone mosaic of the asphalt quickly wears under the traffic. Discussions with the Kunming Road Maintenance Department indicate that on primary highways the life cycle of the asphalt requires that the traveling surface be planed and a new overlay of fresh asphalt be applied every five or six years.

The Kunming Road Maintenance Department is responsible in the immediate Kunming area for a growing system of primary and secondary roads. In view of their growing network of roads, and the short life of the asphalt surface the Kunming Road Maintenance Department is definitely interested in determining how to economically extend the life of the asphalt road surface. To this end, they have agreed to try RJSeal^{TM} on several sections of highway. The agreement of December 5, 2003 calls for RJSeal^{TM} to be applied to the XiZhan and XiaoCaiYuan Traffic Interchanges. Earlier tests on the Kun-Lu and Kun-Chieu Highway in proximity to Kunming were conducted in May and July respectively of 2001. A 6.5 kilometre trial on the G320 Elevated Expressway that cuts through the middle of Kunming on an east-west alignment was undertaken in April of 2002.

4.1 XiZhan & XiaoCaiYuan Interchanges

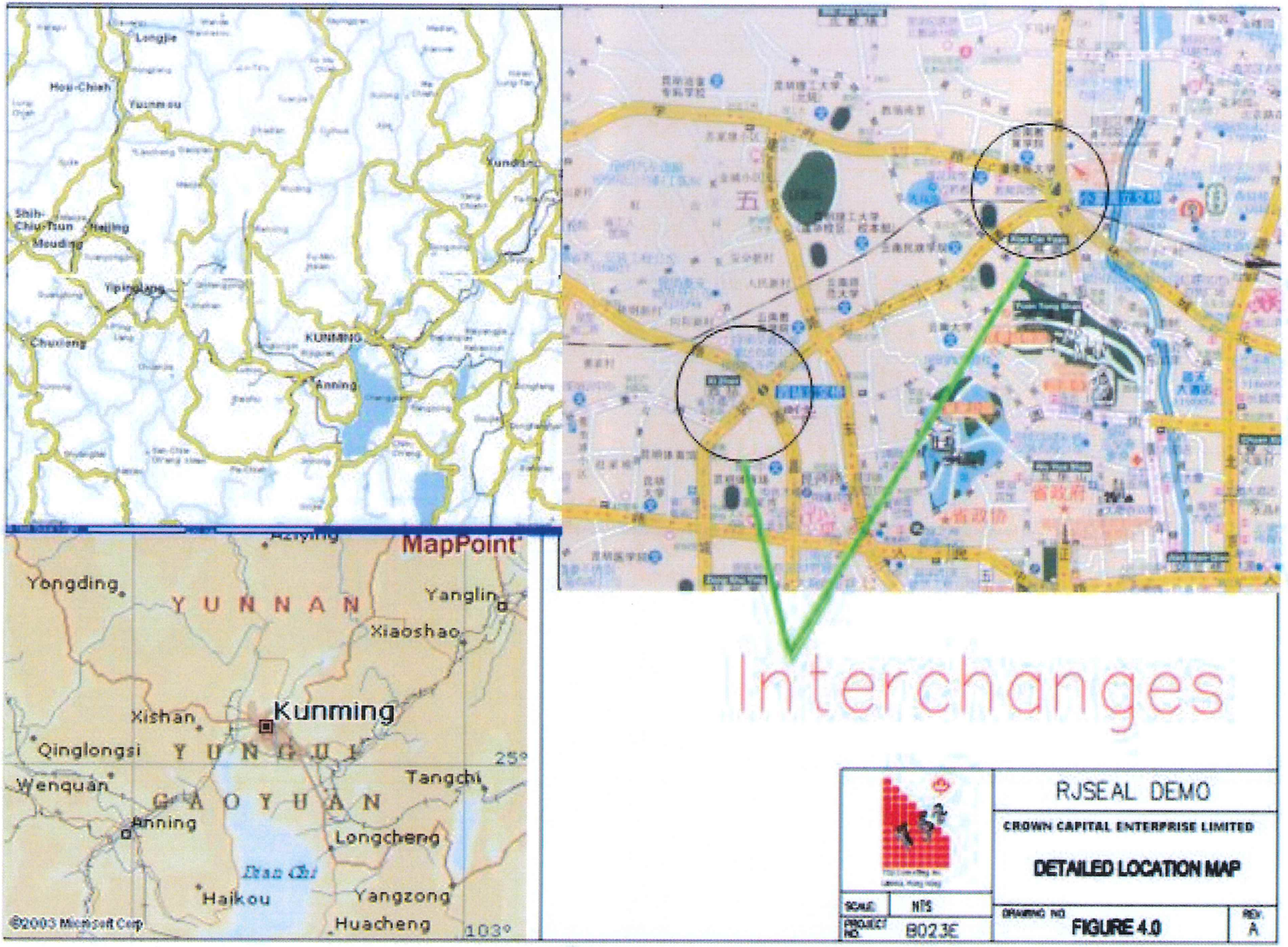
The Interchanges are located immediately north of the downtown core in proximity to Yunnan University. The XiZhan Interchange is located at the following geographic location:

Table 4.1	**Geographic Location of XiZhan Interchange**	
System	**Northing**	**Easting**
Geographic (deg, min)	25^0 03.263'	102^0 41.424'
Universal Transverse Mercator(48R) (m)	0266999	2772969

The XiaoCaiYuan Interchange is located at the following geographic location:

Table 4.2	**Geographic Location of XiaoCaiYuan Interchange**	
System	**Northing**	**Easting**
Geographic (deg, min)	25^0 03.630 '	102^0 42.526'
Universal Transverse Mercator (48R) (m)	0268864	2773615

See figure 4.0 which follows, for a graphic presentation of the location.



The entire XiZhan & XiaoCaiYuan Interchanges were treated. At the XiZhan Interchange, there is a fly-over bridge and a traffic circle above grade. A lower deck on grade for bicycles was not treated with RJSeal™. At the XiaoCaiYuan Interchange there are two fly-over bridges and a double traffic circle on grade. The asphalt surface on the XiZhan interchange was reputedly six years old (1996 vintage) although the north end of the fly-over bridge had a more recent overlay (possibly 2001 vintage). The asphalt surface on the XiaoCaYuan Interchange appeared to be slightly more recent, say 2000 vintage. No significant oil spills were observed, just the occasional drop of transmission oil, crankcase oil or hydraulic fluid. The pavement surface on the fly-over bridges is fairly rough, whereas the lower traffic circles have an asphalt pavement that is quite smooth. There is no apparent rutting, which can be attributable to the fact that the base is a concrete box structure for the fly-over bridges. There are some lineal cracks, generally near expansion joints.. There was appreciable aging and oxidation of the bitumen, which extended to a depth of two to three mm.

On December 5, test patches at the traffic circle adjacent to the curb were undertaken at the XiaoCaiYuan Interchanges and also on the south end of the fly-over bridge using RJSeal™ at two different application rates. The test patches were at the following geographic location:

Table 4.3	**Geographic Location of Test Patch at XiaoCaiYuan Interchange**	
System	**Northing**	**Easting**
Geographic (deg, min)	25^0 03.630 '	102^0 42.526'
Universal Transverse Mercator Grid (48R) (metres)	0268864	2773615

See Figure No 4.1 for a photo showing the test patches as implemented. Particulars of the test patches are as follows:

Table 4.4				**Particulars of the test patch at XiaoCaiYuan Interchange**						
Test Patch Number	**Patch Width (m)**	**Patch Length (m)**	**Total Area m^2**	**Total Area yd^2 approx**	**RJSeal™ Applied**			**Application Rate**		
					US gals	**litres**	**Kgs**	**US Gal /yd^2**	**m^2 /Litre**	**m^2 /Kig**
One	1.08	1.08	1.17	1.40	0.066	0.25	0.26	0.047	4.6	4.5
Two	1.14	1.14	1.30	1.55	0.066	0.25	0.26	0.043	5.2	5.0

Subsequent inspection of the test patches on December 6, showed that the application rate of 5 m^2/litre (test patch two) was appropriate for the asphalt pavement at the traffic circle on grade, whereas the fly-over bridge required an application rate of 4.5 m^2/kilogram (test patch one)

On December 5, two test patches were undertaken at the XiZhan Interchanges at the traffic circle, one adjacent to the curb and a second on the approach XiZhan Road access ramp that leads to the traffic circle using RJSeal™. The test patches were at the following geographic location:

Table 4.5	**Geographic Location of Test Patches at XiZhan Interchange**	
System	**Northing**	**Easting**
Geographic (deg, min)	25^0 03.263'	102^0 41.424'
Universal Transverse Mercator Grid (48R) (metres)	0266999	2772969

See Figure No 4.2 for a photo showing the test patches as implemented. Particulars of the test patches are as follows:

Table 4.6				**Particulars of the test patch at XiZhan Interchange**						
Test Patch Number	**Patch Width (m)**	**Patch Length (m)**	**Total Area m^2**	**Total Area yd^2 approx**	**RJSeal™ Applied**			**Application Rate**		
					US gals	**litres**	**Kgs**	**US Gal /yd^2**	**m^2 /Litre**	**m^2 /Kig**
One	1.08	1.08	1.17	1.40	0.066	0.25	0.26	0.047	4.6	4.5
Two	1.14	1.14	1.30	1.55	0.066	0.25	0.26	0.043	5.2	5.0

Subsequent inspection of the test patches on December 6, showed that the application rate of 5 m^2/litre (test patch one and two) was appropriate for the asphalt pavement at the two adjoining traffic circle on grade, whereas the fly-over bridge required an application rate of 4.5 m^2/kilogram

Commencing on December 13, thru December 14, the XiZhan Interchange was sprayed with RJSeal™ using a Desco D200 Sprayer. See Appendix B for specifications on this machine. The white lines were covered with tape to preserve them. Rollers were used for the extreme edges of the fly-over and the traffic circle where the Desco D200 spray bar couldn't reach.

On December 14 and 15, the XiaoCaiYuan Interchange was sprayed with RJSeal™ using a Desco D200 Sprayer. The white lines were covered with tape to preserve them. Paint rollers were used for applying RJSeal™ to the extreme edges of the fly-over and the traffic circle where the spray bar on the Desco D200 sprayer couldn't reach.

Copper Slag from the Kunming Smelter was applied to the entire RJSeal™ treated section on the traffic circles and approach road, but not the fly-over bridges, with an application rate of 0.2 kgs/square metre. Specifics of the Copper Slag are contained in Appendix C .

Details of the application are summarized below:

Table 4.7		**Details of RJSeal™ Application Section on XiZhan & XiaoCaiYuan Interchanges**					
Date	Work Time (hrs)	Total Area m^2	RJSeal™ Applied			Application Rate	
			US gals	litres	kgs	m^2/ Litres	m^2/ Kg
Dec 13	6	8,000	423	1,600	1,664	5.00	4.81
Dec 14	6	12,303	529	2,000	2,080	6.15	5.91
Dec 15	7	16,000	1,058	4,000	4,160	4.00	3.85
Dec 16	8	15,380	952	3,600	3,744	4.27	4.11
Totals	27	51,683	2,963	12,200	11,648	4.61	4.44

Each evening the work commenced at 9:30 pm with the erection of barriers to prevent vehicles entering the work area and then the application of tape to cover the white lines. Around 10:30 pm, the Desco D200 Sprayer was put to work applying RJSeal™. Copper Slag was finally spread by hand about one hour following the completion of RJSeal™ spraying in any particular work area. On the initial two evenings work ceased on the XiZhan Interchange around 3:30 am although completion of the work on the XiaoCaiYuan Overpass required work until 4:30 am and 5:30 am on the two days respectively.

Figure 4.1 Test Patch at application site XiaoCaiYuan Interchange.

Figure 4.2 Typical Application Procedure.

Figure 4.3 Applying Coat of Copper Slag to RJSeal

Figure 4.4 Finished Surface -
Upper Photo XiZhan Interchange
Lower Photo XiaoCaiYuan Interchange

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4.2 RJSeal™ Testing

Todate the comparison of the asphalt treated with RJSeal™ has been compared on a subjective basis over a very short period at the test site on the Kun-Lu highway. Appropriate testing equipment will be brought to the site and a comparison on a more disciplined, objective basis will be undertaken. To this end, the following tests will be undertaken.

- Water Dissipation (Hydroplaning Comparison)
- Water Penetration
- Viscosity/Ductility Testing

. 4.3 Water Dissipation

An "Outflow Meter" manufactured in the U.S.A. by Humble Equipment Company of Ruston, Louisiana and sold under the trademark "Outflow Meter" (see figure 4.5) was used to measure the asphalt pavement's capability to dissipate water, as concern has been expressed about hydroplaning on the RJSeal™ treated surface, versus the untreated surface. The Outflow Meter gives readings in seconds for the dissipation of a known quantity of water. It is suggested that any readings between 3 and 10 seconds are satisfactory results for an asphalt surface, if hydroplaning is to be minimized.

Initially readings were taken with this aforesaid Outflow Meter at two locations on the portion of the street selected for the test, in proximity to the test patches. Further readings will be taken on the treated road surface, when the site is revisited in February. The results are shown in the table that follows:

Table 4.8			**Outflow Meter Readings**		
Overpass	Location	Sector	Location relative to curb	Before RJSeal™ (secs)	After RJSeal™ (secs)
XiaoCaiYuan Overpass	Traffic Circle	NE	2.5 m west	**187***	n/a
	Overpass	South	1 m east	**8***	n/a
Xizhan Overpass	Traffic Circle	NW	0.5 m south	**63***	n/a
	Overpass	North	1 m east	**307***	n/a

- Readings in the 3 to 10 second range are quite acceptable from a skid resistance viewpoint.
- Readings were taken with this aforesaid Outflow Meter on both untreated sections of the roadway and RJSeal™ treated sections, in close proximity to each other.

4.4 Water Penetration Comparison

Comparison of Water Penetration was undertaken on several sections of the untreated and RJSeal™ treated sections in close proximity to the Outflow meter tests. This comparison consisted of affixing a Water Penetration (Infusion) meter to the road surface (see figure 4.6) and then checking the outflow of water from the meter over a given time period. If the water readily penetrated the asphalt pavement surface, then resistance to water penetration was assumed to be lower than if the water simply pooled on the surface of the asphalt pavement. The goal was to check to see if the application of RJSeal™ would minimize or eliminate penetration of water into the asphalt pavement. Results from this test work showed that the asphalt pavement on the traffic circles was essentially impervious in the first place whereas on the bridge decks, water penetration was greatly reduced. The results are presented in tabular form as follows:

Table 4.9			**Water Pentration (Infusion) Meter Readings (milliliters)**		
Overpass	Location	Sector	Location relative to curb	Before RJSeal™ (ml)	After RJSeal™ (ml)
XiaoCaiYuan Overpass	Traffic Circle	NE	2.5 m west	**0***	n/a
	Overpass	South	1 m east	**0***	n/a
Xizhan Overpass	Traffic Circle	NW	0.5 m south	**0***	n/a
	Overpass	North	1 m east	**0***	n/a

4.5 Viscosity/Ductility Testing

This aspect of the testing was beyond the capabilities of the field equipment available to both Crown Capital Enterprise Limited and RJSeal™ personnel And as such, external assistance has been sought from outside experts in the field of Asphalt Testing. To this end, core samples of the asphalt pavement from the RJSeal™ treated section will be acquired and shipped to a laboratory for independent testing.

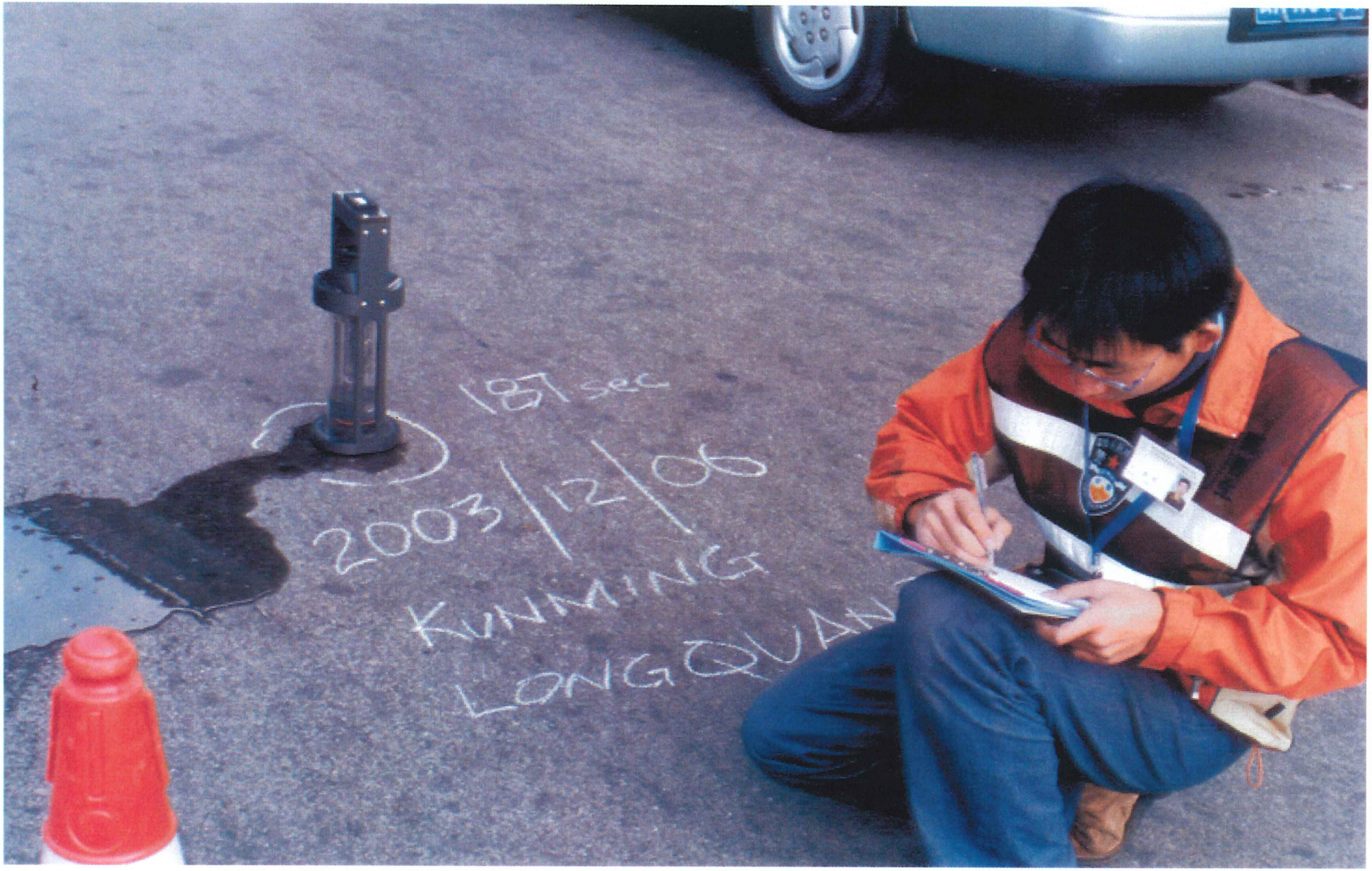


Figure 4.5
Humble Equipment Co. Outflow Meter

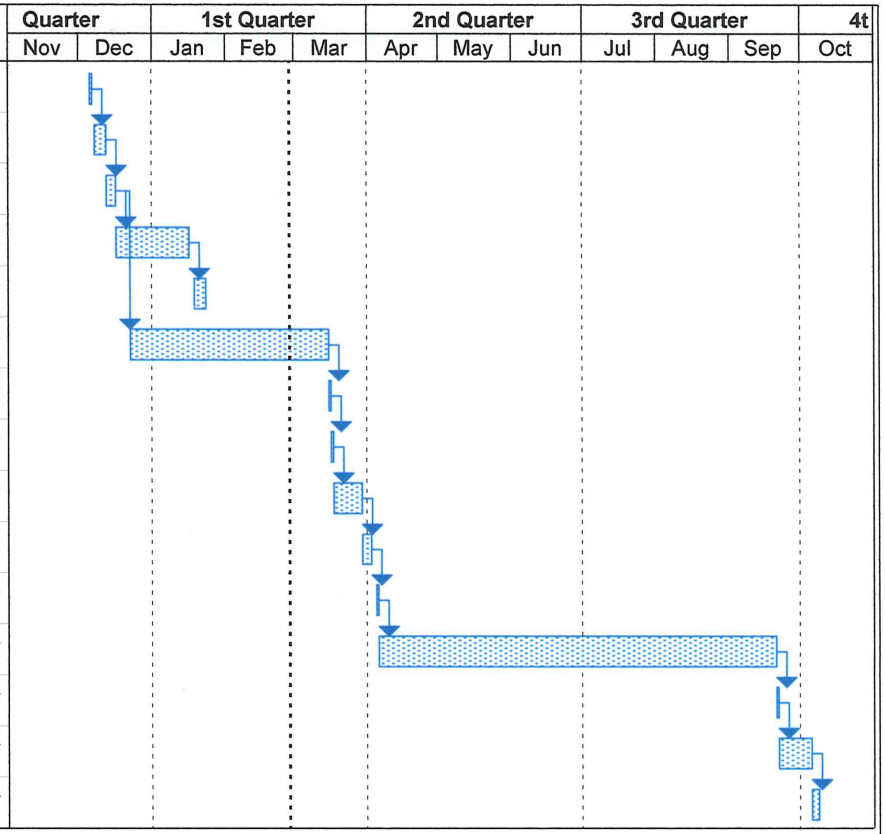
Figure 4.6 Water Penetration (Infusion) Meter

5.0 Test Completion Schedule

The team of technicians from the Hong Kong office will be dispatched in March to undertake initial testing on the trial section. Further testing with the Outflow Meter will take place in the near future.

Laboratory work on cores of asphalt from the Application section on the XiZhan & XiaoCaiYuan Interchanges is currently planned at independent testing facilities approximately 9 months following the application of RJSeal™, namely September 2004. This will be reported separately. The schedule for completion of this testing is shown in the following chart.

ID	Task Name	Duration	Start	Finish
1	Inspection of Overpass, Test Patches and Insitu Test	1d	Sat 12/6/03	Sat 12/6/03
2	Weather Delays	5d	Mon 12/8/03	Fri 12/12/03
3	Application of RJSeal .	4d	Sat 12/13/03	Tue 12/16/03
4	Hiatus	25d	Wed 12/17/03	Fri 1/16/04
5	Prepare draft report on RJSeal Demo and Testing	5d	Mon 1/19/04	Fri 1/23/04
6	Hiatus	62d	Tue 12/23/03	Mon 3/15/04
7	Inspection of Demo Section	1d	Tue 3/16/04	Tue 3/16/04
8	Insitu Testing - 90 days after completion	1d	Wed 3/17/04	Wed 3/17/04
9	Hiatus	8d	Thu 3/18/04	Mon 3/29/04
10	Prepare final report	4d	Tue 3/30/04	Fri 4/2/04
11	Submit final report	1d	Mon 4/5/04	Mon 4/5/04
12	Hiatus	120d	Tue 4/6/04	Mon 9/20/04
13	Core Testing	1d	Tue 9/21/04	Tue 9/21/04
14	Laboratory Testing of Cores	10d	Wed 9/22/04	Tue 10/5/04
15	Laboratory Report	3d	Wed 10/6/04	Fri 10/8/04



Project: XiZhan XiaoCaiYuan Sched
Date: Sat 2/28/04

Task
Progress
Milestone
Summary
Rolled Up Task
Rolled Up Milestone
Rolled Up Progress

6.0 Qualifications

STATEMENT OF QUALIFICATIONS

I, Anthony G. Speed of Hong Kong in the Special Administrative Region of China, DO HEREBY CERTIFY.

I. THAT I am a Consulting Engineer, with offices at 2/F, 81 Po Wah Yuen, Lamma Island, Hong Kong

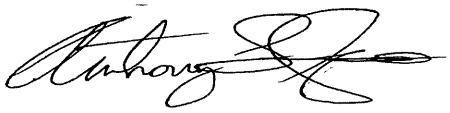
II. THAT I am a 1968 graduate of the University of Saskatchewan, Canada with a Bachelor of Science Degree in Mining Engineering.

III. THAT I am currently registered and in good standing as a Professional Engineer with the Association of Professional Engineers of Ontario, and New Brunswick, Canada

IV. THAT my 35 years of continuous experience in major civil engineering works (earth moving, highway and mining construction) and mining has exposed me to a broad knowledge of civil and mining engineering and allowed considerable familiarization with road construction and asphalt pavement.

V. THAT this report is based on my visit in December 2003 to Kunming and observation of the RJSeal™ application described in this report

Dated at Hong Kong, this _____day of January, 2004



Anthony G. Speed, P.Eng.

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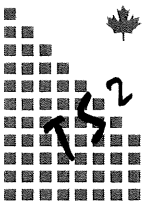
WANCHAI, HONG KONG

Application of RJSeal™
XiZhan & XiaoCaiYuan Interchanges,
Kunming,
Yunnan Province
Peoples Republic of China

December 2003

APPENDICES

No.	Description
A	RJSeal Descriptive Literature
B	Desco D200 Sprayer, Technical Specifications
C	Technical Data, Copper Slag, Kunming Smelter



TS^2 Consulting Inc.
Lamma, Hong Kong

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Appendix A

RJSeal™ Descriptive Literature

TS^2 Consulting Inc.
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Appendix B

Desco D200 Sprayer
Technical Data

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Appendix C

Technical Data
Copper Slag
Kunming Smelter

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