CROWN CAPITAL ENTERPRISE LIMITED

WANCHAI, HONG KONG

Demonstration of RJSeal™
Shang San Highway, Xin Chang, ZheJiang, Peoples Republic of China

October 2003

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Lamma, Hong Kong

TS² CONSULTING INC. <

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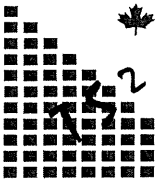

December 29, 2003

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

Dear Charence

Re: Demonstration of RJSeal™ on the Shang San Highway, Zhejiang.

This is the final report on the demonstration of RJSeal™ on the Shang San Highway, south of the city of Xin Chang, Zhejiang Province. This demonstration was undertaken on October 16 and encompassed a one kilometre long section, on the southbound slow lane (adjoining the shoulder) and the paved shoulder of this four lane, divided highway. The principal interest of Huhangyong, Zhejiang Expressway Inc. was restoration of the asphalt pavement's ductility plus sealing of transverse and longitudinal cracks to minimize water penetration. Initial indications are that these requirements have been readily met.

Yours Sincerely

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

Crown Capital Enterprise Limited.
RejuvaSeal Demo
Shang San Highway, ZheJiang

Date of Work	9-Oct-03
Prepared by	A.G. Speed
Updated by	A.G. Speed
Updated	**10-Mar-04**

Weather Conditions

Temperature	25 Celsius
Humidity	40%
Cloud Cover	Cloudy

Time	Assumptions Length	Width	Area
Day One	1060	9.5	10070

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	

Crew Consist	No
Desco Op	1
Desco Help	2
Labourers	10
Truck Driver	2
Supervisor	3
Total	18

Work Schedule am/pm	Work Time	Work Time	Test Length (m)	Total Area m^2	Total Area yd^2	RejuvaSeal Applied US gals	litres	kilograms	Application Rate USGal /yd^2	Litres/m^2	m^2 /Litre	m^2/Kg	18 Man Crew m^2 /man hr	yd^2 /man hr
9-Oct-03	05.30-11.30	6.0	1,060.0	10,070	12,037	635	2,400	2,496	**0.053**	**0.24**	**4.20**	**4.03**	93.2	111.5
Totals		6.0	1,060	10,070	12,037	635	2,400	2,496	**0.053**	**0.24**	**4.20**	**4.03**	93.2	111.5
							bbls 12							

Note 1: **Slag applied to 10 sq metre area at 91 km marker on demo basis.**
Note 2: **Application included 2 bridges on the highway**
Note 3: **Drying time: 3 hours**

FlowMeter Readings **Time (sec)** **Location**
Time **Location**

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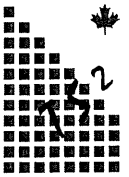
B	Desco D200 Sprayer Technical Specifications
C	Huangyong, Zhejiang Expressway Inc. - Testing Report – March 2004



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Lamma, Hong Kong

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1.0 INTRODUCTION

Crown Capital Enterprise Limited of Hong Kong entered into an arrangement with the Huangyong, Zhejiang Expressway Inc. of Zhejiang Province, China in October 2003. This arrangement calls for the analysis of the performance of RJSeal™, a sealer/rejuvenator for asphalt pavement on highways within the Huangyong, Zhejiang Expressway Inc. administrative district.

Zhejiang Province is situated immediately south of the municipality of Shanghai, which straddles the Yangtze (Chiang Jiang) River at it's mouth tht enters the Yellow Sea. Zhejiang has a lengthy history related to the sea, with fishing villages and ports along the coastline that have supported trade with foreign countries since recorded time. Zhejiang province is bordered by Anhui, JiangXi and Fujian Provinces as well as Shanghai Municipality. The province is generally quite mountainous and the principal city is Hangzhou, which has a population of approximately 3 million and is also the capital city. Hangzhou was already a city of note in the Song Dynasty and Marco Polo languished there and wrote of the beauty of the West Lake and the surrounding area. The principal seaport is NingBo, which has grown to be a major container terminal along the southeastern coast of China and competes with Shanghai and Shenzhen for business. Zhejiang has seen a major growth in the highway system, in recent years, due to a government drive to build national highways linking Shanghai with major cities in the adjoining provinces and the massive increase in the world export trade. Xin Chang, lies some 120 kms south of Hangzhou and some 200 kilometres south of Shanghai. See figure 1.0 for a map showing the location of Xin Chang and Zhejiang Province. The majority of the area lies at 60 to 70 metres in elevation. The regions' latitude (30 degrees north), mean that there are four seasons, with temperatures ranging from 45 Celsius in the long, hot summer to minus 2 Celsius in the short winter. There is a rainy season per-se, that occurs primarily in May thru August, but can extend into September and throughout the winter there are numerous showers and thunderstorms

In the immediate Xin Chang area, a significant consolidated sedimentary sequence predominates. Due to mountain building a significant number of hills and small mountains prevail, that have been gradually eroded and . afford excellent opportunities to see the bedrock. The asphalt in the area is manufactured from local materials, which is comprised of crushed and screened sandstone hauled in from local quarries, as well as washed gravels from the various rivers. The bitumen binder for the asphalt is sourced from

various locations. Since Zhejiang Province borders the Yellow Sea, the possibility of bitumen being sourced from offshore is a distinct possibility so refineries in Singapore and the like should not be forgotten.

LAST UPDATE: 04/01/11 10:21am CAD FILE NAME: 800001.dwg

TS2 Consulting Inc.
Lantau, Hong Kong

RJSEAL APPLICATION

CROWN CAPITAL ENTERPRISE LIMITED
ZHEJIANG PROVINCE

GENERAL LOCATION MAP

DESIGNED BY	TS2	04/01/08	SCALE: As Shown	
DRAWN BY	TS	04/01/08	PROJECT NO. B023H	

DRAWING NO. FIGURE 1.0 REV. A

2.0 CO-OPERATIVE PROGRAM

The intent of the arrangement with Huangyong, Zhejiang Expressway Inc. of Zhejiang Province is to demonstrate RJSeal™ at different locations selected by the Huangyong, Zhejiang Expressway Inc.. The demonstration will subsequently allow analysis of the performance of RJSeal™ on a variety of asphalt surfaces. A demonstration was undertaken at two different locations on the Shang San Highway, near the city of Xin Chang, on October 9, 2003. The portion of the highway that were treated was of mid-2000 vintage. No details are known about the sub-grade. Knowing construction techniques in highways in China in general, minimal gravel would be used for an immediate coarse base, beneath the asphalt pavement. The exposed pebbles on the surface of the asphalt were quite smooth with some lateral and longitudinal cracks and concern had been expressed about water percolating through the asphalt pavement and softening the sub-grade.

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 its 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 prepared by Crown Capital Enterprise Limited. This outlines the experience with RJSeal™ at various locations in China, 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 two (32) locations in China and fourteen (14) commercial-scale applications have taken place at various locations, including Shanghai and Kunming.

4.0 TEST PROGRAM

Since Zhejiang Province is located in a semi-tropical climate (Latitude: 30 degrees North) at a low altitude (50 to 70 metres), it's a demanding setting for asphalt, given the year round warm climate (extremes of 45 Celsius in summer and minus 2 Celsius in the winter) and intense exposure to ultraviolet radiation, all which contribute to the oxidation and breakdown of the asphalt binder.

Zhejiang has the significant concentration of highways in China with some 4,000 kms of National and Provincial highway. Huangyong, Zhejiang Expressway Inc is responsible for 200 kilometres of National Highway, within it's jurisdiction (distances as of year-end 2000).

In view of this network of roads and the relatively short life of the asphalt surface Huhangyong, Zhejiang Expressway Inc is definitely interested in determining how to economically extend the life of the asphalt road surface. To this end, Huhangyong, Zhejiang Expressway Inc has agreed to try RJSeal™ on the Shang San Highway, near Xin Chang. See Figure 4.0, showing the location of this highway with respect to Xin Chang and Zhejiang

On October 9, a test strip extending from kilometre marker 90 to kilometre marker 91 in the two northbound lanes and shoulder of the Shang San Highway (four lane, divided highway with paved shoulders) was treated with RJSeal™. This test strip was at the following geographic location:

Table 4.1 Kilometre 90 - Kilometre 91 - Test Strip		**Geographic Location of Test Strip Site**	
Loc'n	**System**	**Northing**	**Easting**
North End – Km 90	Geographic (deg, min)	29^0 20.734'	120^0 52.383'
	Universal Transverse Mercator Grid (51R) (metres)	3248162	0293503

This test strip included two bridges, one 217 metres long across the Men Xi River, at the extreme north end of the demo strip and a second, much shorter bridge, toward the south end of the demo strip. See figure 4.0, which follows, for a location of the general locale.

See Figure No 4.1 for a photo showing the test strip as implemented. Inspection of the test strip, showed that the application rate of 4 m^2/kilogram was appropriate for the asphalt pavement at this location.

Demo Loc'n

TSS Consulting Inc.
Lantau, Hong Kong

RJSEAL APPLICATION

CROWN CAPITAL ENTERPRISE LIMITED

DETAILED LOCATION MAP

SCALE:	NTS	DRAWING NO.	REV.
PROJECT NO.	B023E	FIGURE 4.0	A

Figure 4.1 Test Strip, Shang San Highway.

Work commenced on the demonstration section at 5:30 am on October 9, on a sunny day, where the mid-day temperature reached 25 Celsius. The road section selected for the demonstration descends gradually toward the Men Xi River as one proceeds north from Kilometre marker 91 and has a slight camber to the road, which causes water to run-off toward the shoulder, rather than puddle on the road. No significant oil spills were observed, just the occasional drop of transmission oil, crankcase oil or hydraulic fluid. The asphalt pavement surface was not appreciably worn with no rutting due to traffic wear. There was some aging and oxidation of the bitumen, which extended to a depth of several millimetres. The entire portion of the treated highway had an asphalt underlay that was purportedly 15 centimetres thick and underlain by a gravel base, which was on a compacted silty-clay, sub-grade. The asphalt pavement on the section treated was reputedly 2 years old. RJSeal™ was applied using a Desco D200 Sprayer and technical specifications for this unit are contained in Appendix B. This demonstration section dried in approximately 3 hours.

Details of the application are summarized in the table that follows:

Table 4.2				**Details of RJSeal™ Demonstration Section on Shang San Highway**							
Date Sept	Work Schedule am/pm	Work Time (hrs)	Test Length (m)	Total Area m^2	RJSeal Applied			Application Rate			
					US gals	litres	Kilo grams	USGal /yd^2	Litres /m^2	m^2 /Litre	m^2/Kg
9	05:30-11:30	6.00	1,060	10,070	600	2269	2496	**0.050**	**0.23**	**4.40**	**4.00**

Photos showing the test application of RJSeal™ follow in figures 4.2 and 4.3 on the following pages. A trial section some 20 metres long at kilometre 91 had copper slag applied to demonstrate an improvement in skid resistance once this material is applied and becomes embedded in the asphalt surface, see figure 4.4 showing the asphalt pavement after treatment with the slag.

The site was visited on March 13, 2004 around 10:00 am and a difference was readily perceived between the RJSeal™ treated sections and the untreated lane, just north of the test section. A knife was used to dig two small holes in the asphalt pavement, to a depth of 3 centimetres, some 200 metres south of the bridge that crosses the Men Xi River at the north end of the demonstration section (adjacent to kilometer marker 90+400) to determine the penetration of the RJSeal™. This was five (5) months after the application of RJSeal™ and at this location, the newly rejuvenated surface was evident, by the black resilient surface layer, which was now approximately 5 millimetres thick. Since it was a very cold day (5 Celsius) a deeper hole could not be dug in the asphalt pavement.

Figure 4.2 Typical Application Procedure.

Figure 4.3 Finished Surface.
Northbound Lane - Km 91

Figure 4.4 Finished Surface
Northbound Bridge Deck - Km 90

TS2

4.1 RJSeal™ Testing

To date 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 Shang San Highway. Testing equipment that will be brought to the site for comparison on a more disciplined, objective basis in the future and to this end, the following tests will be undertaken.

- Water Dissipation (Hydroplaning Susceptibility)
- Water Penetration
- Fuel Resistance Comparison
- Ductility Testing

4.2 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) will be 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.

Readings were taken with this aforesaid Outflow Meter at two locations, when the site was revisited in March 2004. The results are shown in the table that follows:

Table 4.5		**Outflow Meter Readings**		
Test	Location relative to the curb lane marker	Location Km Marker	Before RJSeal™ (secs)	After RejuvSeal™ (secs)
One	0.1 m east	90 + 370 m	n/a	**4***
Two	0.1 m east	90 + 450 m	n/a	**7***

*** These readings are acceptable from a skid resistance viewpoint.**

4.3 Water Penetration

Water penetration into the asphalt pavement is minimized by the application of RJSeal™. Water Pentration meter test was undertaken on a section of the RJSeal™ treated section in close proximity to the Outflow meter test on March 13, 2004. The result is show in the following table.

Table 4.6		**Water Penetration Meter Readings**		
Test	Location relative to the curb	Location relative to start of demo sect'n	Before RJSeal™ (ml)	After RejuvSeal™ (ml)
One	0.1 m east	90 + 370 m	n/a	**0**

4.4 Fuel Resistance Comparison

Fuel Resistance Comparison will be undertaken on several sections of the untreated and RJSeal™ treated sections in close proximity to the Outflow meter tests in the near future. This comparison will consist of pouring about a cupful of diesel fuel onto the road surface and then later checking the penetration of the fuel. If the fuel readily penetrated the asphalt pavement surface, then resistance to this form of chemical attack was presumed to be lower than if the fuel pooled on the surface of the asphalt pavement and slowly evaporated.

4.5 Ductility/Pentration/Viscosity Testing

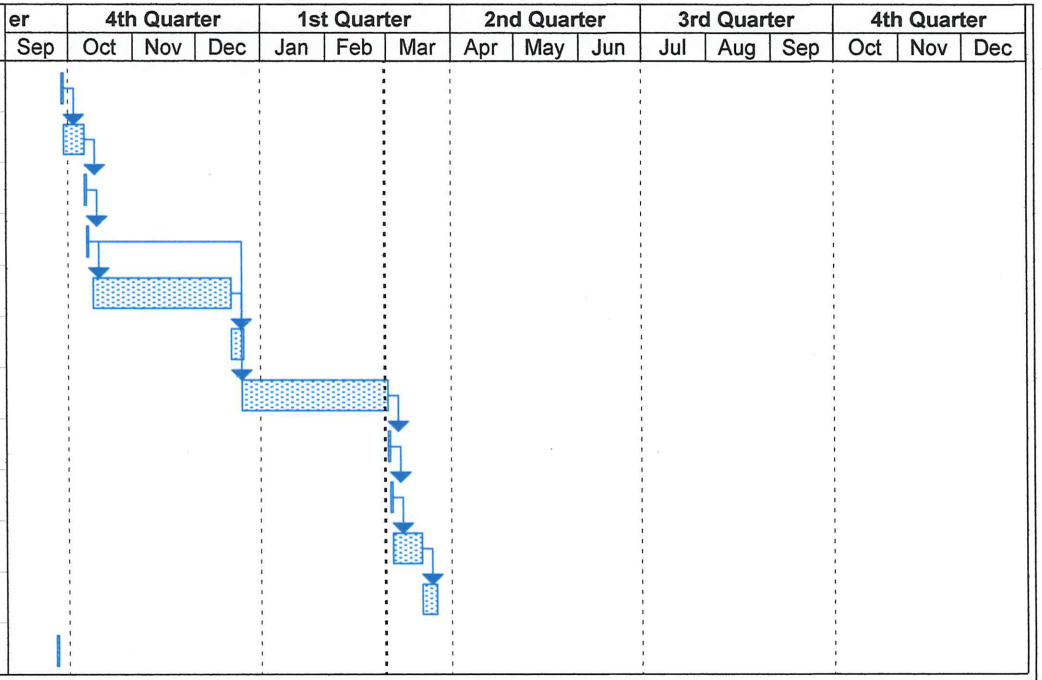
This aspect of the testing requires specialized laboratory equipment and is beyond the capabilities of both Crown Capital Enterprise Limited and RJSeal™ personnel and as such, external assistance has been sought from outside experts in the field of Asphalt Testing. To this end, Huangyong, Zhejiang Expressway Inc has contacted an independent laboratory for advise on asphalt pavement testing. A copy of their report on some initial testing is appended in Appendix C

Figure 4.5
Humble Equipment Co. Outflow Meter

5.0 Test Completion Schedule

Technicians from the independent testing agency will be dispatched to undertake further testing on the trial sections in the following winter. The projected completion of this testing is scheduled as shown in the following chart.

ID	Task Name	Duration	Start
1	Travel to HangZhou and inspect Shang San Highway	1d	Sun 9/28/03
2	Hiatus	8d	Mon 9/29/03
3	Application of RJSeal to Jing Chu hwy near Xing Xian	1d	Thu 10/9/03
4	Inspection of Demo Section	1d	Fri 10/10/03
5	Hiatus	50d	Mon 10/13/03
6	Prepare draft report	4d	Thu 12/18/03
7	Hiatus	50d	Tue 12/23/03
8	Inspection of Demo Section	1d	Tue 3/2/04
9	Insitu Testing	1d	Wed 3/3/04
10	Hiatus	10d	Thu 3/4/04
11	Prepare final report on RJSeal Demo and Testing	5d	Thu 3/18/04
12	Submit final report	1d	Thu 9/25/03



Project: Shang San highway
Date: Sun 2/29/04

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

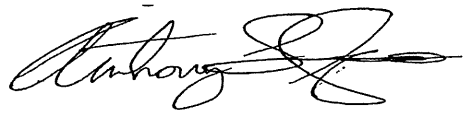
II. THAT I am a 1968 graduate of the University of Saskatchewan, Canada with a Bachelor of Science Degree in Mining Engineering.

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

V. THAT this report is based on my collation of data and a visit on September 30, 2003 and again on March 13, 2004, to Zhejiang Province to view the Shang San Highway as described in this report and details of the October 9, 2003 RJSeal™ application as recorded by John Qu, who was the project supervisor for Crown Capital Enterprise Limited

Dated at Hong Kong, this _____day of March, 2004



Anthony G. Speed, P.Eng. (Ontario and New Brunswick, Canada)

CROWN CAPITAL ENTERPRISE LIMITED

WANCHAI, HONG KONG

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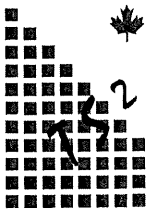
APPENDICES

No.	Description
A	RJSeal™ – Descriptive Literature
B	Desco D200 Technical Specifications
C	Huangyong, Zhejiang Expressway Inc. Testing Report, March 2004



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Appendix A

RJSeal™ – Descriptive Literature

TS^2 Consulting Inc.
Lamma, Hong Kong

CROWN CAPITAL ENTERPRISE LIMITED

WANCHAI, HONG KONG

Demonstration of RJSeal™
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Appendix B

Desco D200 Sprayer
Technical Specifications

TS^2 Consulting Inc.
Lamma, Hong Kong

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WANCHAI, HONG KONG

Demonstration of RJSeal™
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Appendix C

Huangyong, Zhejiang Expressway Inc.
Testing Report,
March 2004

TS^2 Consulting Inc.
Lamma, Hong Kong