CROWN CAPITAL ENTERPRISE LIMITED

WANCHAI, HONG KONG

Demonstration of RJSeal™
Ying Bin Lu, QinHuangDao, Hebei, Peoples Republic of China

June 2004

TS^2 Consulting Inc.
Lamma, Hong Kong

TS² CONSULTING INC. <

(British Virgin Islands Incorporated) website: http://ts2.stormloader.com

Hong Kong
2/F 81 Po Wah Yuen.
Lamma Island, Hong Kong
Phone (85-2)-2982-4131
Fax: (85-2)-2390-5465
Cellular: (85-2)-9157-6693
Email: speed_cny@yahoo.co.uk

Canada (Liaison Office)
1016 Cannock Road S.W.
Calgary, Alberta
Canada, T2W IM5
Phone: (403)-281-3043
Fax: (403)-281-3043
Email: speed_cny@yahoo.co.uk

June 29, 200

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 Ying Bin Road, QinHuangDao, HeBei.

This is the final report on the demonstration of RJSeal™ on the Ying Bin Road, in the city of QinHuangDao, HeBei Province. This demonstration was undertaken on June 1st and encompassed the entire 6 lane street, exluding bicycle paths on each side of the street. The principal interest of the city's road maintenance department was elimination of water penetration in this newly laid asphalt. Initial indications are that this requirement has been partially met with water penetration greatly reduced, although these tests were taken only two days after the application of RJSeal™ and further tests are planned in late June to affirm initial test results.

Yours Sincerely

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

TS^2 CONSULTING INC. <

(British Virgin Islands Incorporated) website: http://ts2.stormloader.com

Hong Kong
2/F 81 Po Wah Yuen.
Lamma Island, Hong Kong
Phone (85-2)-2982-4131
Fax: (85-2)-2390-5465
Cellular: (85-2)-9157-6693
Email: speed_cny@yahoo.co.uk

Canada (Liaison Office)
1016 Cannock Road S.W.
Calgary, Alberta
Canada, T2W IM5
Phone: (403)-281-3043
Fax: (403)-281-3043
Email: speed_cny@yahoo.co.uk

June 2, 2004

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 Ying Bin Lu, QinHauangDao, Hebei..

The following is a list of items that have to be corrected immediately before work commences on any other jobs:

1. Employees to be mandated to wear safety mask, safety glasses, appropriate clothing, gloves as shown in safety manual. Temporary workers from local client to also be similarly instructed.

2. Repair Little Wonder Leaf Blower - Handle missing bolts and bent axle

3. Desco D200 Sprayer – Dash instruction plates not installed, even though supplied one year ago, hence employees not sure of which switches to use and settings for output of Desco.

4. Utilize handles with paint rollers rather than have employees crouch down to apply RJSeal – result in employees being tired and looks non-professional.

5. Barrel Pump(s) not deployed until 7 pm in evening after wasting valuable time of Desco during the day, feeding RJSeal to the pail and roller crew for odd touch up work.

6. Purchase additional batteries for electric bicycles, as batteries only last 4 to 5 hours before being useless.

7. Purchase additional supplies of wide tape for covering white lines, as supplies never replenished following Hangzhou Job some two months ago.

8. First Aid Kit was missing critical items such as eye wash, barrier cream for skin, sun tan lotion, eye drops. Time wasted looking for aforesaid items and employees health put at risk.

9. Install Pintle Hook (tow) on truck to tow dual axle trailer and second Desco around on job site. This will be important on bigger jobs.

In addition, limited tools for repairing machines are taken to field, so repairs are next to impossible on the job. No ammeter/voltmeter was available for trouble shooting electrical problem on Desco. Wrenches for tightening bolts not available so machines fall apart on the job.

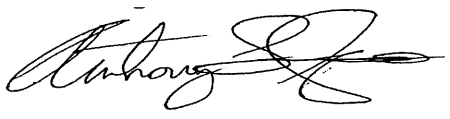
Furthermore, Zhau Chiang Hai was designated project manager for job, but disappeared around 12:30 pm for lunch and turned off mobile phone and never re-appeared at job, hence loss of leadership. This is a critical concern when half an hour delay in applying slag or keeping momentum going on the job

Furthermore crew should be broken down into two or more working parties and staggered lunch breaks should be taken, as entire sand spreader crew disappeared for lunch for an hour and RJSeal being applied did not get covered until too late.

Desco crew should switch out operators every four hours to prevent fatigue and irritation from fumes causing eye problems.

I trust you can bring up these deficiencies with the Beijing People immediately.

Yours Sincerely



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

CROWN CAPITAL ENTERPRISE LIMITED

Demonstration of RJSeal
Ying Bin Lu, QinHuangDao, Hebei,
Peoples Republic of China

June 2004

TABLE OF CONTENTS

FIGURES

TABLES

CROWN CAPITAL ENTERPRISE LIMITED

Demonstration of RJSeal
Ying Bin Lu, QinHuangDao, Hebei,
Peoples Republic of China

June 2004

APPENDICES

No.	Description
A	RJSeal Descriptive Literature
B	Desco D200 Sprayer - Specifications
C	Kunming Copper Slag - Specifications

TS^2 Consulting Inc.
Lamma, Hong Kong

CROWN CAPITAL ENTERPRISE LIMITED

Demonstration of RJSeal™
Ying Bin Lu, QinHuangDao, Hebei
Peoples Republic of China

June 2004

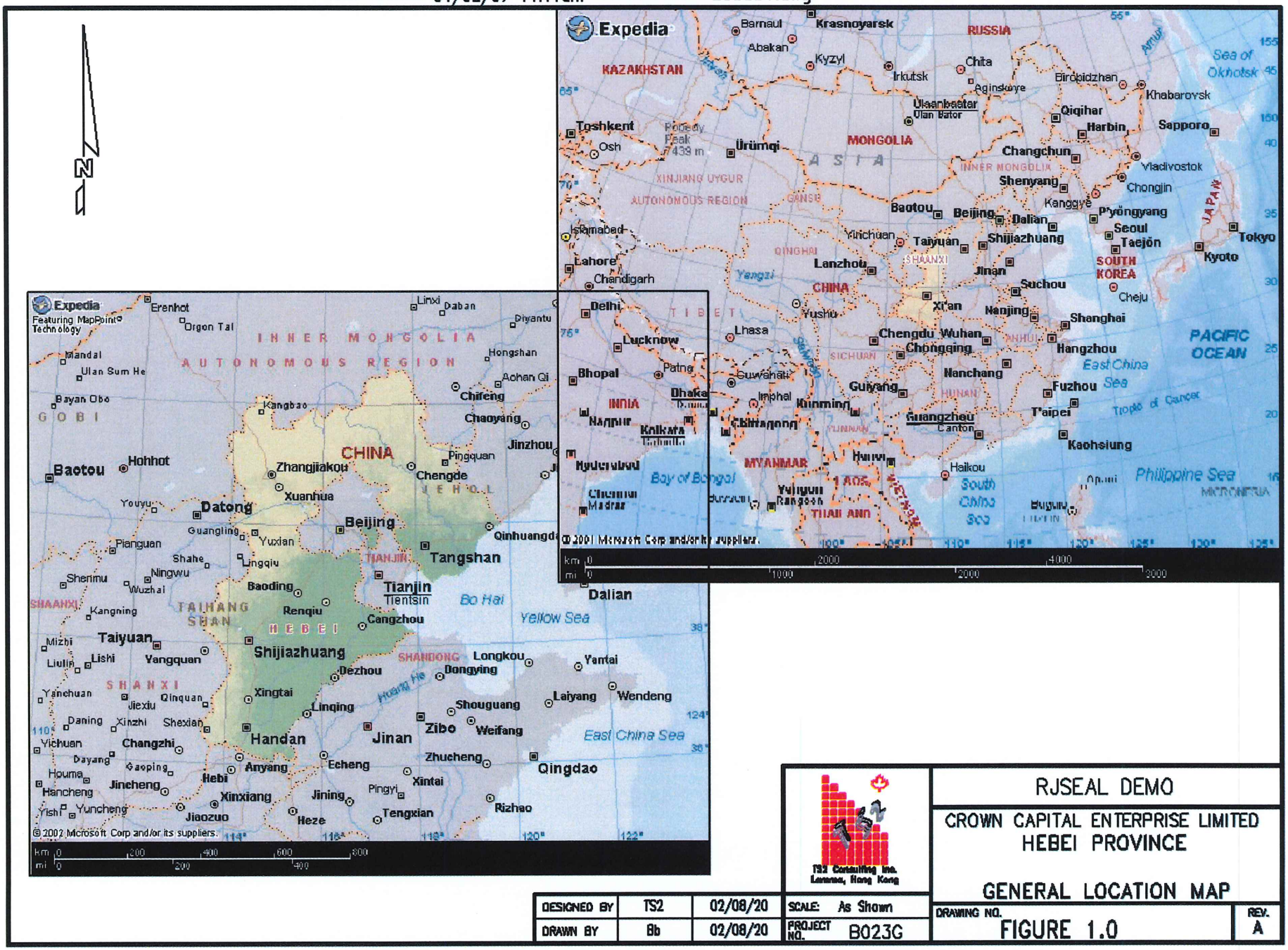
1.0 INTRODUCTION

Crown Capital Enterprise Limited of Hong Kong entered into a contract with the QinHuangDao City Construction Investment Inc. (QICIC) of the City of QinHuangDao, Hebei Province, China in May 2004. This arrangement calls for the analysis of the performance of RJSeal™, a sealer/rejuvenator for asphalt pavement on Ying Bin Lu, as a precursor to further work in 2004.

Hebei Province is situated to the north of the Yellow River (HuangHe) at its confluence with the Sea of Bohai. Henan, Shanxi, Shandong and Liaoning Provinces as well as Mongolia border Hebei. Furthermore, Beijing and TianJin and their independently administered Municipalities are hosted by Hebei Province. Hebei has seen a major growth in the highway system, in recent years, due to a government drive to build national highways linking Beijing and TianJin with major cities in the adjoining provinces and the massive increase in the world export trade. QinHuangDao lies some 250 kilometres east of Beijing and some 100 kms northeast of TianJin. The capital city of Hebei Province is Shijiazhuang with a population of approximately 3 million. See figure 1.0 for a map showing the location of QinHuangDao and Hebei Province. The majority of the area lies at 10 to 20 metres in elevation, on the extensive coastal plain that borders the Sea of Bohai. The regions' latitude (39 degrees north), mean that there are four seasons, with temperatures ranging from 45 Celsius in the long, hot summer to minus 15 Celsius in the short winter. Their is no rainy season per-se, just thunderstorms and these occur primarily in June thru August, but can extend into September.

In the immediate QinHuangDao area, there are hills, with exposures of weakly cemented fine-grained sandstone. However to the south, on the vast plain that lies astraddle the Yellow River, there are no opportunities to see the bedrock. A significant unconsolidated sedimentary sequence predominates and this is due to the site adjoining the delta of the Yellow River. The silt from the flooding that has occurred over several millennium and now obscures all outcrops. Drainage channels feeding into the Yellow River also afford no opportunities to see the bedrock. The asphalt in the area is manufactured from imported materials, which is comprised of crushed and screened sandstone and diorites hauled in from quarries elsewhere in Hebei Province, as well as washed gravels from the various rivers. The bitumen binder for the asphalt is sourced from various locations. Since Hebei Province borders the Sea of Bohai, 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: 04/02/07 11:11am CAD FILE NAME: 800001.dwg



DESIGNED BY	TS2	02/08/20	SCALE: As Shown	
DRAWN BY	Bb	02/08/20	PROJECT NO. B023G	

TS2 Consulting Inc. Lantau, Hong Kong

RJSEAL DEMO

CROWN CAPITAL ENTERPRISE LIMITED
HEBEI PROVINCE

GENERAL LOCATION MAP

DRAWING NO. FIGURE 1.0

REV. A

2.0 CO-OPERATIVE PROGRAM

The intent of the arrangement with the City of QinHaungDao is to demonstrate RJSeal™ and subsequently allow analysis of the performance of RJSeal™ on a variety of asphalt surfaces. A demonstration was undertaken on Hong Qi Lu, in the central core of the city of Qinhuangdao, on October 15 and 16, 2003. The portion of the street that was treated was composed of asphalt pavement of 2002 vintage. No details are known about the subgrade, but inspection of the shoulders show a sandy-silty material. Knowing construction techniques in streets in China in general, minimal gravel would be used for an immediate coarse base, beneath the asphalt pavement. The asphalt pavement was only one year old and the gray colour indicated premature aging of the bitumen and keen interest was expressed in having the life extended. Subsequent to the demonstration on Hong Qi Lu, interest was generated in treating a newly laid asphalt pavement with significant water penetration problems on Ying Bin Lu. This led to the an agreement to apply RJSeal™ to the entire portion of this street, which stretched some 2.3 kilometres northwards from JianShe Road throughGang Cheng Road and Yan Shan Road, terminating at a park.

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 that 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 seven (37) locations in China and fifteen (15) commercial-scale applications have taken place at various locations, including Shanghai, DaQing, Kunming and QinHuangDao.

A prior commercial-scale application conducted in QinHuangDao in October 2003 was located on Hong Qi Lu and covered 24,360 square metres. This street was reportedly one year old at the time of the RJSeal™ application in October. Work described in this report is specifically related to the application on Ying Bin Lu, which was paved on May 14 and 15, 2004 and had water penetration problems.

4.0 TEST PROGRAM

Since Hebei Province is located in a semi-tropical climate (Latitude: 39 North) at a low altitude (10 to 20 metres), it's a demanding setting for asphalt, given the year round warm climate (extremes of 45 Celsius in summer and minus 5 Celsius in the winter) and intense exposure to ultraviolet radiation, all which contribute to the oxidation and breakdown of the asphalt binder.

Hebei has the second greatest concentration of highways in China (after ShangDong), with some 10,000 kms of National and Provincial highway. The City of QinHuangDao is responsible for 1000 kilometres of National Highway, and 800 kilometres of Provincial Highway, within it's jurisdiction (distances as of year-end 2000) and approximately 1000 kms of streets in QinHuangDao and other neighboring communities

QinHuangDao is definitely interested in determining how to economically extend the life of the asphalt road surface. To this end, QinHaungDao has contracted to try RJSeal™ on Ying Bin Lu, adjacent to the city centre of QinHuangDao. See Figure 4.0, showing the location of this street with respect to QinHuangDao and Hebei

On May 31, two test patches in the northbound, outside lane (adjacent to the curb) of Ying Bin Lu (six-lane street with bicycles path on each side, was created with RJSeal™. The test patches were at the following geographic location:

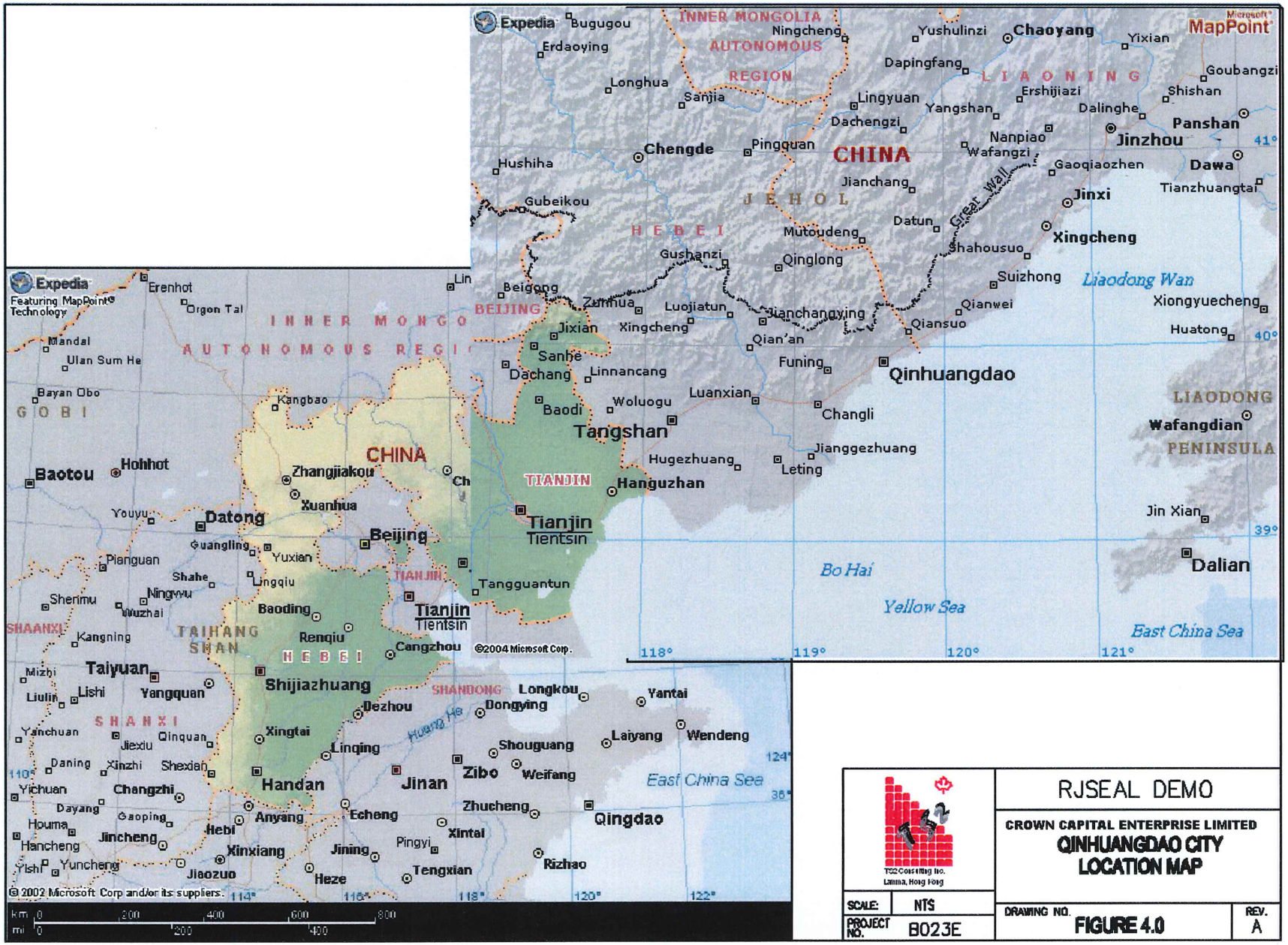
Table 4.1	**Geographic Location of Test Patch Site**	
System	**Northing**	**Easting**
Geographic (deg, min)	39^0 57.694'	119^0 35.195'
Universal Transverse Mercator Grid (50S) (metres)	4426712	0720928

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

Table 4.2				**Particulars of the test patches**						
Test Patch Number	**Patch Width (m)**	**Patch Length (m)**	**Total Area m^2**	**Total Area ft^2**	**RJSeal™ Applied**		**Application Rate**			
				Approx	**litres**	**Kgs**	**US Gal /yd^2**	**Litres /m^2**	**m^2 /Litre**	**m^2 /Kg**
One	1.14	1.14	1.30	14	0.25	0.26	0.043	0.19	5.20	5.00
Two	1.25	1.25	1.56	17	0.25	0.26	0.035	0.16	6.24	6.00

Inspection of the test strip on June 1 indicated that the application rate of 5 m^2/kilogram was appropriate for the asphalt pavement at this location and could be used as a guide for other locations with similar physical characteristics.

The application of RJSeal^{TM} on Ying Bin Lu is located in the centre of the City of QinHuangDao. The portion of this street is entirely new asphalt pavement laid down on May 12. See figure 4.0, which follows, for a location of the general locale. The location of the test patch with respect to the street is graphically shown in figure 4.1, which follows.



TS2 Consulting Inc.
Lamma, Hong Kong

RJSEAL DEMO

CROWN CAPITAL ENTERPRISE LIMITED

QINHUANGDAO CITY LOCATION MAP

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

Figure 4.1 Test Patches at Job Site

The application section, on Ying Bin Lu was selected by QinHuangDao City Construction Investment Inc. (QICIC) and is geographically located as follows:

Table 4.3		**Location of Site**	
System		**Northing**	**Easting**
North End of RJSeal™ Application	Geographic (deg, min)	39^0 57.712'	119^0 35.192'
	Universal Transverse Mercator Grid (metres) 50S	4426745	0720922
South End of RJSeal™ Application	Geographic (deg, min)	39^0 56.480'	119^0 35.362
	Universal Transverse Mercator Grid (metres) 50S	4424472	0721230

Work commenced on the application of RJSeal™ at 6:30 am on June 1, on a sunny day, where the mid-day temperature reached 34 Celsius. The application section is located on a straight section. There is a slight camber to the road, which causes water to run off toward the shoulder, rather than puddle on the road. The asphalt surface on the section treated, was reputedly two (2) weeks old. No oil spills were observed, just the occasional drop of transmission oil, crankcase oil or hydraulic fluid. The asphalt pavement surface was not worn with no rutting due to traffic wear. There was no aging and oxidation of the bitumen, except for the intersection at Yan Shan road, which had been left intact and was not repaved. There were no visible longitudinal cracks or lateral cracks. The entire portion of the treated street section was on a compacted silty-clay, sub-grade.

On June 1, the entire 6 lanes (both north and southbound) were treated with RJSeal™. The application was undertaken with a Desco D200 Sprayer. See Appendix B for the specifications for this machine.

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

Table 4.4				**Details on RJSeal™ Application Section on Ying Bin Lu**						
Work Sector	Work Time (hrs)	(Test Length m)	Total Area m^2	Total Area yd^2	RJSeal™ Applied			Application Rate		
					US gals	litres	kgs	US Gal /yd^2	m^2/litre	m^2 /kg
South	4.0	730	16,571	19,809	1,132	4,279	4,450	0.057	3.87	3.72
North	6.5	970	22,019	26,321	1,501	5,673	5,900	0.057	3.88	3.73
Middle	8.0	600	13,620	16,281	916	3,462	3,600	0.056	3.93	3.78
Totals	18.5	2300	52,210	46,130	3,549	13,413	13,950	0.057	3.89	3.74

Ambient temperatures at the time of the application were in the 27 to 31 degree Celsius range, with humidity in the 45% range. The application on finished at 1:30 on June 2 and remained closed until 03:00 pm on June 3,

when it was re-opened for traffic following line striping. Photos showing the test application of RJSeal™ follow in figures 4.2, 4.3 and 4.4. on the following pages.

The site was visited on June 2 around 08:30 and a difference was readily perceived between the RJSeal™ treated section and the adjoining untreated lanes. A screwdriver was used to dig two small holes in the asphalt pavement, to a depth of 3 centimetres, to determine the penetration of the RJSeal™. This was one day after the application of RJSeal™ and at these two locations the newly rejuvenated surface was evident, by the black resilient surface layer, which was now approximately 1 millimetre thick. Below that depth, the grey, oxidized layer of asphalt was evident.

Figure 4.2 Typical Application Procedure for RJSeal

Figure 4.3 Finished RJSeal Surface.

Figure 4.4 Site Inspection

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 six sites on Ying Bin Street. Testing equipment will again be brought to the site for comparison on a more disciplined, objective basis in the future.

- Hydroplaning Potential
- Water Penetration
- Macrotexture Depth
- Viscosity/Ductility Testing

. 4.2 Hydroplaning Potential

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 macrotexture, as concern has been expressed about hydroplaning on the RJSeal™ treated surface, versus the untreated surface. The procedure is documented in the ASTM working paper, WK-364. 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 pavement surface, if hydroplaning is to be minimized.

Readings were taken with this aforesaid Outflow Meter at six locations. The results are shown in the table that follows:

Table 4.5		**Outflow Meter Readings**		
Test	UTM Northing	UTM Easting	Test May 31/2004 Untreated Pavement (secs)	Test June 3/2004 RejuvSeal™ Treated segment (secs)
One	4426712	720928	19	8*
Two	4426367	720973	13	5*
Three	4425596	721081	20	6*
Four	4425263	721130	18	14
Five	4424896	721169	51	13
Six	4424621	721200	47	10*

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

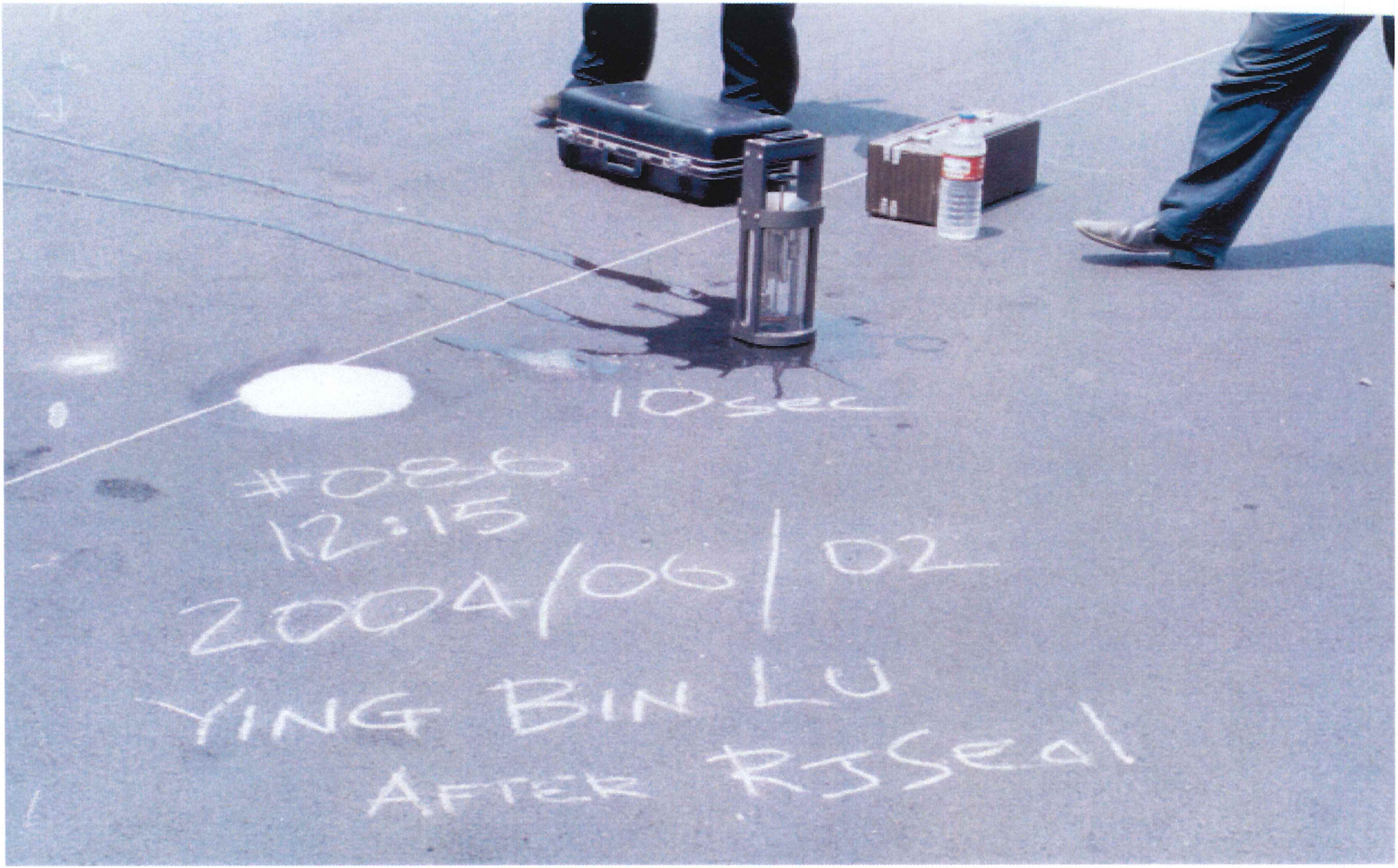


Figure 4.5 Humble Equipment Co.
Outflow Meter

TS2

4.3 Water Penetration Comparison

Water Penetration Tests (China Testing Standard T 0730-2000) were undertaken at several locations on the RJSeal™ treated section and the untreated portion of the road, in close proximity to the Outflow Meter. The results are show in the following table.

Table 4.6		Water Penetration Meter Readings		
Test	UTM Northing	UTM Easting	Test May 10/04 Untreated (ml/min)	Test May 14/04 RejuvSeal™ Treated segment (ml/min)
One	4426712	720928	120	60
Two	4426367	720973	100	60
Three	4425596	721081	120	50
Four	4425263	721130	500	60
Five	4424896	721169	200	60
Six	4424621	721200	355	170

4.4 Macrotexture Depth

The sand patch test (ASTM Standard E965-96 OR China Standard T 0961-95) was used to ascertain the Pavement Macrotexture Depth. Comparison was undertaken at several locations on both the untreated and RJSeal™ treated sections in close proximity to the Outflow meter tests. The results are as follows:

Table 4.7		Sand Patch Readings (Macrotexture Depth)		
Test	UTM Northing	UTM Easting	Test May 31/04 Untreated (mm)	Test June 3/04 RJSeal™ Treated segment (mm)
One	4426712	720928	0.55	0.88
Two	4426367	720973	0.48	0.46
Three	4425596	721081	0.53	0.49
Four	4425263	721130	0.72	0.44
Five	4424896	721169	0.36	0.35
Six	4424621	721200	0.39	0.39

4.5 Viscosity/Ductility Testing

This aspect of the testing is beyond the capabilities of the field equipment available to both Crown Capital Enterprise Limited and RJSeal™ personnel

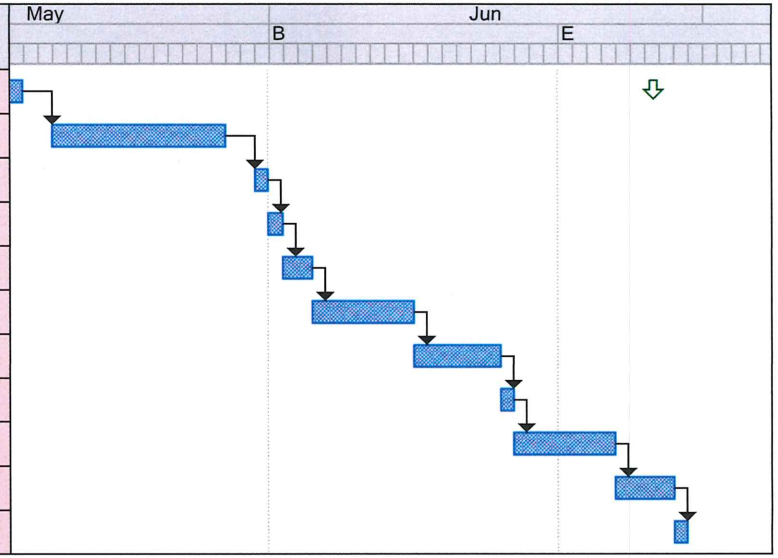
Figure 4.6 Water Penetration & Sand Patch Test

5.0 Test Completion Schedule

The team of technicians from the Hong Kong office will be dispatched to undertake further testing on the trial section in the near future. The projected completion of this testing is scheduled as shown in the following chart.

LiveProject - Ying Bin Lu

ID	Task Name	% Complete	Duration	Start	Finish	Predecessors	Successors	Resource
1	Preliminary site inspectio	0	1 day?	14/5/2004	14/5/2004		2	
2	Negotiations	0	10 days	17/5/2004	28/5/2004	1	3	
3	Testing	0	1 day?	31/5/2004	31/5/2004	2	4	
4	RJSeal Application	0	1 day?	1/6/2004	1/6/2004	3	5	
5	Testing	0	2 days	2/6/2004	3/6/2004	4	6	
6	Hiatus	0	5 days	4/6/2004	10/6/2004	5	7	
7	Report Compilation	0	4 days	11/6/2004	16/6/2004	6	8	
8	Site Inspection & Testing	0	1 day?	17/6/2004	17/6/2004	7	9	
9	Hiatus	0	5 days	18/6/2004	24/6/2004	8	10	
10	Report Finalization	0	2 days	25/6/2004	28/6/2004	9	11	
11	Report Submittal	0	1 day?	29/6/2004	29/6/2004	10		



Task is on time
Task is delayed
Task is complete

A pending suggestion exists
Pending suggestion has a conflict
A suggestion was accepted

A suggestion was rejected
There was an error while updating Project file

Normal task:
Split task:
Critical task:

% complete:
Summary task:
Rolled up Summary task:

Milestone:
External task:
Deadline:

CROWN CAPITAL ENTERPRISE LIMITED

WANCHAI, HONG KONG

Demonstration of RJSeal™
Ying Bin Lu, QinHuangDao, Hebei, Peoples Republic of China

June 2004

APPENDICES

No.	Description
A	RJSeal™ Descriptive Literature
B	Desco D200 Sprayer - Specifications
C	Kunming Copper Slag Specifications

TS² Consulting Inc.
Lamma, Hong Kong

CROWN CAPITAL ENTERPRISE LIMITED

WANCHAI, HONG KONG

Demonstration of RJSeal™
Ying Bin Lu, QinHuangDao, Hebei, Peoples Republic of China

June 2004

Appendix A

RJSeal™ Descriptive Literature

TS^2 Consulting Inc.
Lamma, Hong Kong

CROWN CAPITAL ENTERPRISE LIMITED

WANCHAI, HONG KONG

Demonstration of RJSeal™
Ying Bin Lu, QinHuangDao, Hebei, Peoples Republic of China

June 2004

Appendix B

Desco D200 Sprayer Specifications

TS^2 Consulting Inc.
Lamma, Hong Kong

CROWN CAPITAL ENTERPRISE LIMITED

WANCHAI, HONG KONG

Demonstration of RJSeal™
Ying Bin Lu, QinHuangDao, Hebei, Peoples Republic of China

June 2004

Appendix C

Kunming Copper Slag Specifications

TS^2 Consulting Inc.
Lamma, Hong Kong

CROWN CAPITAL ENTERPRISE LIMITED

Demonstration of RJSeal
Ying Bin Lu, QinHuangDao, Hebei,
Peoples Republic of China

June 2004

TABLE OF CONTENTS

FIGURES

TABLES

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 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 visit on May 29, 2004 thru June 4 inclusive, to QinHuangDao in Hebei Province, China to view Ying Bin street, as described in this report and details of the application as recorded by John Qu, who was the project supervisor for Crown Capital Enterprise Limited

Dated at Hong Kong, this _____day of June, 2004

_____

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