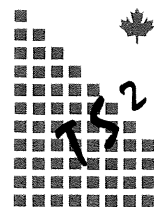


**CROWN CAPITAL ENTERPRISE LIMITED**

**WANCHAI, HONG KONG**

**RJSeal™ Application  
Century Street,  
DaQing, HeilongJiang,  
Peoples Republic of China**

**June 2003**



**TS² Consulting Inc.  
Lamma, Hong Kong**

# **CROWN CAPITAL ENTERPRISE LIMITED**

## **RJSeal™ Application Century Street, DaQing, Heilongjiang, Peoples Republic of China**

**June 2003**

### **TABLE OF CONTENTS**

<b>Section</b>	<b>Description</b>	<b>Page</b>
1.0	Introduction	1
2.0	Co-operative Program	3
3.0	RJSeal™	4
3.1	Prior Experience	4
4.0	Test Program	5
4.1	RJSeal™ Testing	14
4.2	Water Dissipation	14
4.3	Skid Resistance – British Pendulum	16
4.4	Elasticity/Ductility Testing	16
5.0	Project Completion Schedule	17

### **FIGURES**

<b>No.</b>	<b>Description</b>	<b>Page</b>
1.0	General Location Map	2
4.0	Specific Location Map	6
4.1	Test Strips on Iron Man Street	8
4.2	Typical Application Procedure	10
4.3	Finished Surface	11
4.4	Site Visit, Following Application	13
4.5	Humble Equipment Co. Outflow Meter	15
5.0	Project Completion Schedule	18

### **TABLES**

<b>No.</b>	<b>Description</b>	<b>Page</b>
4.1	Geographic Location of Test Strips on Iron Man Street	5
4.2	Details of Test Strips on Iron Man Street, DaQing	7
4.3	Geographic Location of RJSeal™ Application	9
4.4	Details of RJSeal™ Application on Century Street, DaQing, Heilongjiang	10
4.5	Outflow Meter readings at Test Strip Site	14

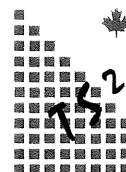
# **CROWN CAPITAL ENTERPRISE LIMITED**

**RJSeal™ Application**  
**Century Street, DaQing, Heilongjiang,**  
**Peoples Republic of China**

**June 2003**

## **APPENDICES**

<b><u>No.</u></b>	<b><u>Description</u></b>
A	RJSeal™ – Technical Seminar, DaQing China, September 2002
B	RJSeal™ Descriptive Literature
C	Desco D200 Sprayer – Technical Data



**TS² Consulting Inc.**  
**Lamma, Hong Kong**

# TS<sup>2</sup> CONSULTING INC. <

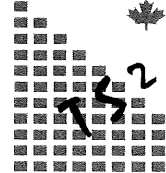
(British Virgin Islands Incorporated) website: <http://ts2.stormloader.com>

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August 27, 2003

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

Dear Charence

Re: Commercial Application of RJSeal™ on Century Street, DaQing.

This is the final report on the application of RJSeal™ on Century Street (a six lane street) and it's continuation, known as Iron man Road (an eight lane street) in DaQing. The work was undertaken during an extended period from June 27 thru July 4 and encompassed a distance of 3.43 kilometres. The principal interest of the municipality was extension of the life of the asphalt pavement on this street and creation of a waterproof surface to prevent water penetration. The asphalt pavement overlies a concrete base and at each joint, reflective cracks occur. A significant number of other lateral and lineal cracks were encountered, principally due to the differential expansion of the asphalt pavement and underlying concrete base. The principal cracks were sealed with hot tar prior to the RJSeal™ Application. Inspection of the street occurred concurrent with the application and showed that RJSeal™ had penetrated the asphalt pavement to a depth of at least 5 mm.

Yours Sincerely

A handwritten signature in black ink, appearing to read 'Anthony G. Speed', is written over a horizontal line.

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

Crown Capital Enterprise Limited.  
Century Street & DaQing Street  
RejuvaSeal Project  
Demo Date 24-Jun-03  
Application Dates June 27 thru June 30  
Prepared by A.G. Speed  
Updated by A.G. Speed  
Updated 2-Jul-03  
file name Century Street  
Location: DaQing

Assumptions - Demo			
Approximate Length	260	Metres	
Approximate Width	7	Metres	
Approximate Area	1,925	Sq Metres	
Assumptions - Application			
Century Street			
Approximate Length	3,100	Metres	
Approximate Width	23.8	Metres	
Approximate Area	73,780	Sq Metres	
Iron Man Rd			
Approximate Length	430	Metres	
Approximate Width	31.0	Metres	
Approximate Area	13,330	Sq Metres	
Iron Man Ring Road			
avg dia	377	Metres	
avg width	15.2	Metres	
Approximate Area	5,730	Sq Metres	
Total Area	92,840	Sq Metres	

Conversion Factors			
US Gallon=	3.78	Litres	
Sq Metre=	10.76	Sq Feet	
Sq Metre=	1.20	Sq Yds	
One Litre	1.10	kgs	

Weather Conditions			
Temperature	28 Celsius to 31 Celsius		
Humidity	20% to 30%		
Cloud Cover	Sunny		
Road Surface	31 Celsius to 40 Celsius		

Crew Consist		No
Traffic Control		4
Truck Driver		4
Labourers		10
Desco Op		2
Desco Helper		2
Supervisor		2
Total		24

Work Schedule		Work Time (hours)	Length (metres)	Width (metres)	Total Area m <sup>2</sup>	Total Area yd <sup>2</sup>	RejuvaSeal Applied			Application Rate				24 Man Crew		Location
							US gals	litres	kilograms	USGal /yd <sup>2</sup>	Litres/m <sup>2</sup>	m <sup>2</sup> /Litre	m <sup>2</sup> /Kg	m <sup>2</sup> /man-hr	yd <sup>2</sup> /man-hr	
27-Jun-03																Century Road
11:00 - 18:00		7.00	1,000	12.6	12,600	15,062	552	2,087	2,296	0.037	0.17	6.04	5.49	75.0	89.7	
Totals		7.00			12,600	15,062	552	2,087	2,296	0.037	0.17	6.04	5.49	75.0	89.7	

Work Schedule		Work Time (hours)	Length (metres)	Width (metres)	Total Area m <sup>2</sup>	Total Area yd <sup>2</sup>	RejuvaSeal Applied			Application Rate				24 Man Crew		Location
							US gals	litres	kilograms	USGal /yd <sup>2</sup>	Litres/m <sup>2</sup>	m <sup>2</sup> /Litre	m <sup>2</sup> /Kg	m <sup>2</sup> /man-hr	yd <sup>2</sup> /man-hr	
28-Jun-03																Century Road
11:00 - 16:00		5.00	1,000	12.6	12,600	15,062	552	2,085	2,294	0.037	0.17	6.04	5.49	105.0	125.5	
19:00 - 21:00		2.00	300	15.5	4,650	5,559	204	770	847	0.037	0.17	6.04	5.49	96.9	115.8	Century Road
Totals		7.00			17,250	20,620	755	2,855	3,141	0.037	0.17	6.04	5.49	102.7	122.7	

Work Schedule		Work Time (hours)	Length (metres)	Width (metres)	Total Area m <sup>2</sup>	Total Area yd <sup>2</sup>	RejuvaSeal Applied			Application Rate				24 Man Crew		Location
							US gals	litres	kilograms	USGal /yd <sup>2</sup>	Litres/m <sup>2</sup>	m <sup>2</sup> /Litre	m <sup>2</sup> /Kg	m <sup>2</sup> /man-hr	yd <sup>2</sup> /man-hr	
29-Jun-03																Century Road
12:00 - 16:00		4.00	800	12.6	10,080	12,049	441	1,669	1,836	0.037	0.17	6.04	5.49	105.0	125.5	
19:00 - 21:00		2.00	800	12.6	10,080	12,049	441	1,669	1,836	0.037	0.17	6.04	5.49	210.0	251.0	Century Road
Totals		6.00			20,160	24,099	883	3,337	3,671	0.037	0.17	6.04	5.49	140.0	167.4	

Work Schedule		Work Time (hours)	Length (metres)	Width (metres)	Total Area m <sup>2</sup>	Total Area yd <sup>2</sup>	RejuvaSeal Applied			Application Rate				24 Man Crew		Location
							US gals	litres	kilograms	USGal /yd <sup>2</sup>	Litres/m <sup>2</sup>	m <sup>2</sup> /Litre	m <sup>2</sup> /Kg	m <sup>2</sup> /man-hr	yd <sup>2</sup> /man-hr	
30-Jun-03																Iron Man Ring Road
11:00 - 16:00		5.00	800	12.6	10,080	12,049	441	1,669	1,836	0.037	0.17	6.04	5.49	105.0	125.5	
19:30 - 22:00		2.50	400	15.0	6,000	7,172	263	994	1,093	0.037	0.17	6.04	5.49	100.0	119.5	Iron Man Ring Road
Totals		7.50			16,080	19,222	704	2,662	2,929	0.037	0.17	6.04	5.49	89.3	106.8	

Work Schedule		Work Time (hours)	Length (metres)	Width (metres)	Total Area m <sup>2</sup>	Total Area yd <sup>2</sup>	RejuvaSeal Applied			Application Rate				24 Man Crew		Location
							US gals	litres	kilograms	USGal /yd <sup>2</sup>	Litres/m <sup>2</sup>	m <sup>2</sup> /Litre	m <sup>2</sup> /Kg	m <sup>2</sup> /man-hr	yd <sup>2</sup> /man-hr	
1-Jul-03																Century Road
11:00 - 17:00		6.00	1,000	12.6	12,600	15,062	552	2,085	2,294	0.037	0.17	6.04	5.49	87.5	104.6	
21:00 - 22:00		1.00	300	15.5	4,650	5,559	204	770	847	0.037	0.17	6.04	5.49	193.8	231.6	Century Road
Totals		7.00			17,250	20,620	755	2,855	3,141	0.037	0.17	6.04	5.49	102.7	122.7	

Work Schedule		Work Time (hours)	Length (metres)	Width (metres)	Total Area m <sup>2</sup>	Total Area yd <sup>2</sup>	RejuvaSeal Applied			Application Rate				24 Man Crew		Location
							US gals	litres	kilograms	USGal /yd <sup>2</sup>	Litres/m <sup>2</sup>	m <sup>2</sup> /Litre	m <sup>2</sup> /Kg	m <sup>2</sup> /man-hr	yd <sup>2</sup> /man-hr	
2-Jul-03																Century Ring Road
11:00 - 17:00		6.00	1,000	12.6	12,600	15,062	552	2,085	2,294	0.037	0.17	6.04	5.49	87.5	104.6	
21:00 - 22:00		1.00	200	10.0	2,000	2,391	88	331	364	0.037	0.17	6.04	5.49	83.3	99.6	Century Ring Road
Totals		7.00			14,600	17,453	639	2,417	2,658	0.037	0.17	6.04	5.49	86.9	103.9	

Work Schedule		Work Time (hours)	Length (metres)	Width (metres)	Total Area m <sup>2</sup>	Total Area yd <sup>2</sup>	RejuvaSeal Applied			Application Rate				24 Man Crew		Location
							US gals	litres	kilograms	USGal /yd <sup>2</sup>	Litres/m <sup>2</sup>	m <sup>2</sup> /Litre	m <sup>2</sup> /Kg	m <sup>2</sup> /man-hr	yd <sup>2</sup> /man-hr	
3-Jul-03																Iron Man Bridge
12:00 - 16:00		4.00	1,000	15.5	15,500	18,528	679	2,567	2,824	0.037	0.17	6.04	5.49	161.5	193.0	
19:00 - 23:00		4.00	1,000	15.5	15,500	18,528	679	2,567	2,824	0.037	0.17	6.04	5.49	161.5	193.0	Iron Man Bridge
Totals		8.00			31,000	37,057	1,358	5,134	5,648	0.037	0.17	6.04	5.49	161.5	193.0	

Work Schedule		Work Time (hours)	Length (metres)	Width (metres)	Total Area m <sup>2</sup>	Total Area yd <sup>2</sup>	RejuvaSeal Applied			Application Rate				24 Man Crew		Location
							US gals	litres	kilograms	USGal /yd <sup>2</sup>	Litres/m <sup>2</sup>	m <sup>2</sup> /Litre	m <sup>2</sup> /Kg	m <sup>2</sup> /man-hr	yd <sup>2</sup> /man-hr	
4-Jul-03																Iron Man Bridge
09:00 - 18:00		9.00	1,400	16.0	22,400	26,776	984	3,718	4,090	0.037	0.17	6.02	5.48	103.7	124.0	
Totals		9.00			22,400	26,776	984	3,718	4,090	0.037	0.17	6.02	5.48	103.7	124.0	

59	Street	Area	151,340	180,908	6,632	25,067	27,574
1	Test Strips	Area	1,906	2,278	91	346	380
59	Totals		153,246	183,186	6,723	25,413	27,954
						131	barrels
						2	barrels
						133	barrels
						0.9109589	correction factor

# Test Section on Century Road

Weather Conditions			
Temperature	25 Celsius		
Humidity	30%		
Cloud Cover	Sunny		

Crew Consist		No
Traffic Control		3
Truck Driver		1
Labourers		4
Desco Op		1
Desco Helper		1
Supervisor		2
Total		12

Work Schedule		Work Time (minutes)	Length (metres)	Width (metres)	Total Area m <sup>2</sup>	Total Area yd <sup>2</sup>	RejuvaSeal Applied			Application Rate				12 Man Crew	
							US gals	litres	kilograms	USGal /yd <sup>2</sup>	Litres/m <sup>2</sup>	m <sup>2</sup> /Litre	m <sup>2</sup> /Kg	m <sup>2</sup> /man-hr	yd <sup>2</sup> /man-hr
24-Jun-03															
pm															
6:30		8.00	105	2.1	221	264	12	45	49	0.045	0.20	4.95	4.50	137.8	164.7
		8.00	105	2.1	221	264	11	40	44	0.040	0.18	5.50	5.00	137.8	164.7
		8.00	105	3.2	333	398	15	55	61	0.037	0.17	6.05	5.50	208.0	248.7
7:20		26.00	155	7.3	1,132	1,353	54	206	227	0.040	0.18	5.50	5.00	217.6	260.1
Totals		50.00			1,906	2,278	91	346	380	0.040	0.18	5.51	5.01	190.6	227.8

Flow/Meter Readings	Time (sec)	Location	Location
June 26, 2003			
Untreated	4	1 metres past west end	1.3 metre south of curb in westbound side
Untreated	5	1 metres past west end	5 metre south of curb in westbound side
June 26, 2003			
Treated	54	15 metres from east end	2.5 metre south of curb in westbound side
Treated	4	15 metres from east end	1.3 metre south of curb in westbound side
Treated	37	15 metres from east end	5 metre south of curb in westbound side
Treated	10	1 metres from west end	1.3 metre south of curb in westbound side

# **CROWN CAPITAL ENTERPRISE LIMITED**

## **Application of RJSeal™ Century Street, DaQing, Heilongjiang Peoples Republic of China**

**June 2003**

### **1.0 INTRODUCTION**

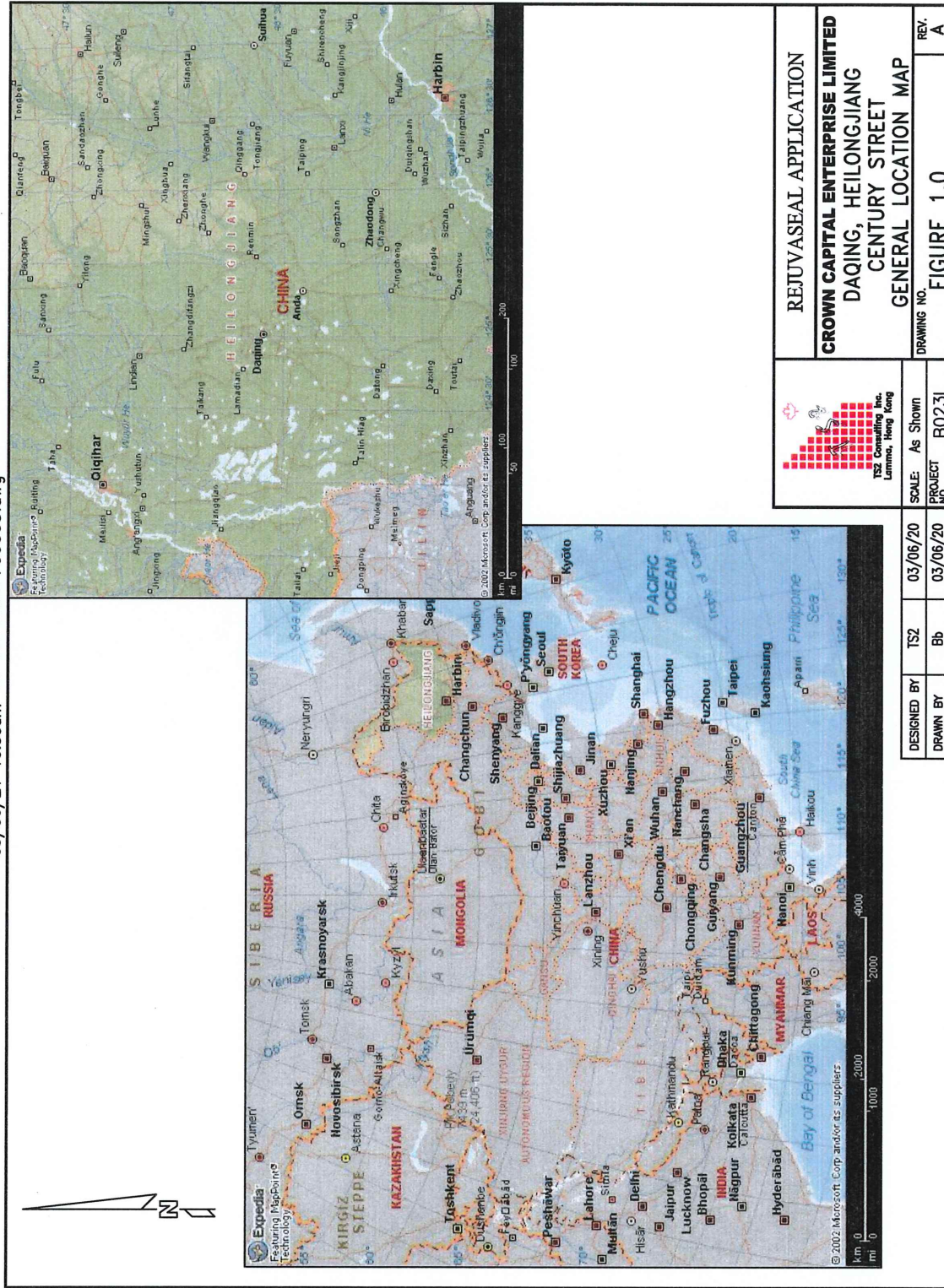
Crown Capital Enterprise Limited of Hong Kong entered into an arrangement with the China National Petroleum Corporation, which is responsible for the maintenance of the infrastructure of DaQing City, Heilongjiang Province, China in July 2002. This arrangement calls for the analysis of the performance of RJSeal™, a sealer/rejuvenator for asphalt pavement on roads within the jurisdiction of DaQing City.

Heilongjiang Province is situated in the extreme northeast corner of China, and is bounded by Russian (Siberia), North Korea and Mongolia as well as Jilin Province to the south. The capital city of Heilongjiang Province is Harbin with a population of approximately 3 million. Harbin and DaQing have a different architectural appearance when compared to cities in southern China, and this is attributable to the fact that Russia occupied this part of China for many years and had the southern terminus of its' Manchurian Railroad in Harbin. After the 1917 Russian Revolution, the population of Harbin swelled as refugees fled to China. In recent years, Heilongjiang has seen a major growth in the highway system, due to a government drive to build national highways linking Harbin and DaQing with major cities in the adjoining provinces. Oil was discovered in the DaQing area in 1959, which led to significant petroleum developments in the area. Some nine refineries exist in the immediate area and are a major force in driving the development of the area.

The majority of the area lies at 150 metres in elevation, on the extensive plain that straddles the SongHuaJiang River that flows to the northeast and eventually into the HeilongJiang (Amur) River. The regions' latitude (45 degrees north), mean that there are four seasons, with temperatures ranging from 45 Celsius in the long, hot summer to minus 25 Celsius in the short winter. There is no rainy season per-se, just summer rain showers and thunderstorms and these occur primarily in May thru September. See figure 1.0 for a map showing the location of DaQing, Harbin and Heilongjiang Province.

The predominant feature of the area is brackish swamps. 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 Heilongjiang Province, as well as washed gravels from the various rivers. The bitumen binder for the asphalt is probably sourced from refineries located in DaQing.

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## **2.0 CO-OPERATIVE PROGRAM**

The intent of the arrangement with China National Petroleum Corporation, which is responsible for the infrastructure of the City of Daqing, is to demonstrate RJSeal™ at different locations selected by the Road Maintenance Division. The Application will subsequently allow analysis of the performance of RJSeal™ on a variety of asphalt surfaces. An application was undertaken on Century Street, in the center of the city of DaQing, commencing with a demonstration on June 24, 2003 and then working intensely from June 27 thru to July 4, 2003. The portion of the street that was treated was composed of asphalt pavement, nominally 10 centimetres thick, which overlays a concrete sub-grade. The immediate soil, beneath the concrete is a silty sand.

The age of the asphalt pavement is circa 1999. Keen interest was expressed in having the life of the asphalt pavement extended on this major thoroughfare. The asphalt pavement has a significant number of extensive lateral and linear cracks, which had recently been filled with road tar. However smaller cracks also exist and the road maintenance department wished to prevent water percolating through these smaller cracks in the asphalt pavement and concrete underlay, thus 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 and recently in China 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 provided to participants at a seminar held in DaQing in September 2002. This outlines the experience with RJSeal™ at various locations in North America and South America as well as China. 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 other locations in the U.S.A. Since 2000, RJSeal™ has been demonstrated successfully at over 26 locations in China and five (5) commercial-scale applications have taken place at various locations, including Shanghai and Kunming.

#### **4.0 TEST PROGRAM**

Since Heilongjiang Province is located in a northern climate (Latitude: 43 to 53 North) at a low altitude (150 to 200 metres), it's a demanding setting for asphalt, given the climate (extremes of 45 Celsius in summer and minus 25 Celsius in the winter) and intense exposure to ultraviolet radiation, all which contribute to the oxidation and breakdown of the asphalt binder.

Heilongjiang has a significant concentration of highways in China, with some 5,000 kms of National and Provincial Highway. The China National Petroleum Corporation (CNPC) is responsible for the maintenance of the infrastructure in the City of DaQing and is responsible for approximately 200 kms of streets in DaQing.

In view of this extensive network of roads and the relatively short life of the asphalt surface, CNPC is definitely interested in determining how to economically extend the life of the asphalt road surface. To this end, CNPC agreed to try RJSeal™ on Century Street, immediately east of the Railway Overpass ("Iron Bridge"), that had been treated earlier in August 2002 by CNPC in the city of DaQing. See Figure 4.0, showing the location of this street with respect to DaQing and Heilongjiang

On July 24, 2003 a test strip in the westbound lane of Iron Man Street (continuation of Century Street) an eight lane street with service road on either side, was treated with RJSeal™. The test strip at the curb lane and adjoining lane segment was selected for an application of RJSeal™ at the following geographic location:

<b>Table 4.1</b>		<b>Geographic Location of Test Strips on Iron Man St.</b>	
<b>System</b>		<b>Northing</b>	<b>Easting</b>
Geographic (deg, min)		46° 36.429'	124° 59.504'
Universal Transverse Mercator Grid (50S) (m)		0652528	5163455



Particulars of the test strips are shown in the table that follows:

<b>Table 4.2</b>				<b>Particulars of the Test Strip on Iron Man St.</b>							
<b>Test Segment Number</b>	<b>Strip Width (m)</b>	<b>Strip Length (m)</b>	<b>Total Area (m<sup>2</sup>)</b>	<b>Total Area ft<sup>2</sup> approx</b>	<b>RJSeal™ Applied</b>			<b>Application Rate</b>			
					<b>US gals</b>	<b>litres</b>	<b>kgs</b>	<b>US Gal /yd<sup>2</sup></b>	<b>litres /m<sup>2</sup></b>	<b>m<sup>2</sup> /Litre</b>	<b>m<sup>2</sup> /Kg</b>
One	2.20	105	230	275	12	47	51	0.045	0.20	4.95	4.50
Two	2.20	105	230	275	11	42	46	0.040	0.18	5.50	5.00
Three	3.20	105	333	398	15	55	61	0.037	0.17	6.05	5.50

Subsequent inspection of the test strips on June 25, showed that the application rate of 5.5 m<sup>2</sup>/kg was adequate for the asphalt pavement at this location

The 3.24 kilometre long application section on Century Street and it's continuance known as Iron Man Street is located in the heart of the City of DaQing. This strip is entirely asphalt pavement. See figure 4.0 for a location of Iron Man Street. The location of the test strips with respect to the westbound portion of the road is graphically shown in figure 4.1, which follows.



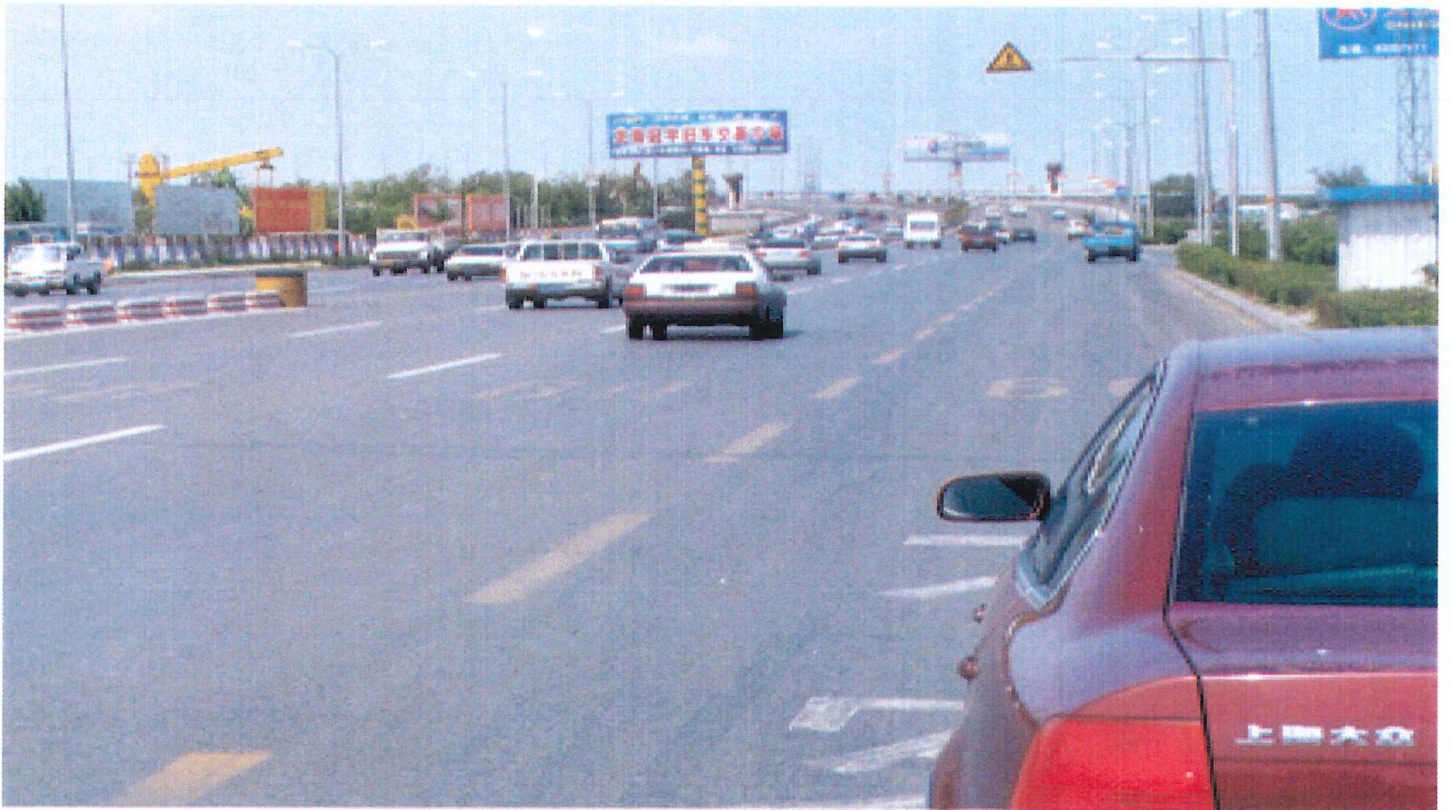
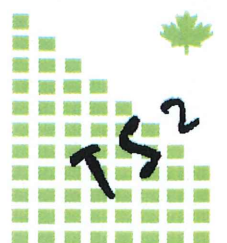


Figure 4.1 Test Strips on Century Street.  
Top Photo - Before, Bottom Photo - After



The Application section, on Century Street and Iron Man Street was selected by the Street Maintenance Department and is geographically located as follows:

<b>Table 4.3</b>		<b>Location of Site</b>	
<b>Location</b>	<b>System</b>	<b>Northing</b>	<b>Easting</b>
North End of Application Section	Geographic (deg, min)	46 <sup>0</sup> 36.429'	124 <sup>0</sup> 59.504'
	Universal Transverse Mercator Grid (metres) 51T	0652528	5163455
South End of Application Section	Geographic (deg, min)	46 <sup>0</sup> 35.900'	125 <sup>0</sup> 01.931'
	Universal Transverse Mercator Grid (metres) 51T	0655651	5162553

This is at the same location as the test strip. Refer to Figure 4.0 for the location. Work commenced on the application at 9:00 am on June 27, on a warm, sunny day, where the mid-day temperature reached 28 Celsius. The section is located on a level section with several intersections and a large traffic circle at either end. There is 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 aging and oxidation of the bitumen, which extended to a depth of several millimetres. There were longitudinal cracks, and also extensive lateral cracks, which had recently been filled with tar. The entire portion of the treated asphalt pavement section overlies a concrete sub-grade, which rests on a compacted silty-clay, sub-grade

RJSeal™ was applied, using a Desco D200 Sprayer. See Appendix C for technical information on this unit. This unit can uniformly apply the RJSeal in the application. Further application of RJSeal on the remainder of the 3.4 kilometre section were undertaken over eight days (June 27 thru July 4 inclusive), culminating in completion of both the four east bound lanes and four west bound lanes of Iron Man Street as well as the three east bound lanes and three west bound lanes of Century Street. A site visit on July 1, was made to check to entire test section and evaluate the penetration of the RJSeal. This is pictorially shown in Figure 4.4 that follows.

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

Table 4.4				Details on RJSeal™ Application on Century Street, DaQing					
Work Schedule	Work Time (hrs)	Total Area m <sup>2</sup>	Total Area yd <sup>2</sup>	RJSeal™ Applied			Application Rate		
				US gals	Litres	kgs	US Gal /yd <sup>2</sup>	m <sup>2</sup> /litre	m <sup>2</sup> /kg
June 27	7.	12,600	15,062	552	2,087	2,296	0.037	6.04	5.50
June 28	7.0	17,250	20,620	755	2,855	3,141	0.037	6.04	5.50
June 29	6.0	20,160	24,099	883	3,337	3,671	0.037	6.04	5.50
June 30	7.5	16,080	19,222	704	2,662	2,929	0.037	6.04	5.50
July 1	7.0	17,250	20,620	755	2,855	3,141	0.037	6.04	5.50
July 2	7.0	14,600	17,453	639	2,417	2,658	0.037	6.04	5.50
July 3	8.0	31,000	37,057	1,358	5,134	5,648	0.037	6.04	5.50
July 4	9.0	22,400	26,776	984	3,718	4,090	0.037	6.04	5.50
Totals	59.0	151,340	180,908	6,632	25,067	27,574	0.037	6.04	5.50

Ambient temperatures at the time of the application on June 27 thru July 4 were in the 24 to 31 degree Celsius range, with humidity in the 20% to 30% range. 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 27 thru July 1 inclusive and a difference was readily perceived between the RJSeal™ treated sections and the adjoining untreated lanes. A screwdriver was used to dig several small holes in the asphalt pavement, to a depth of 3 centimetres, to determine the penetration of the RJSeal™. At these 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.

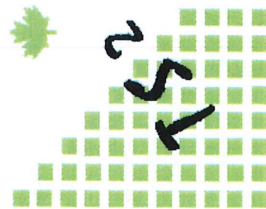
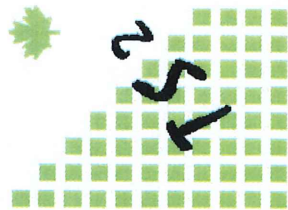






Figure 4.3 Finished Surface.





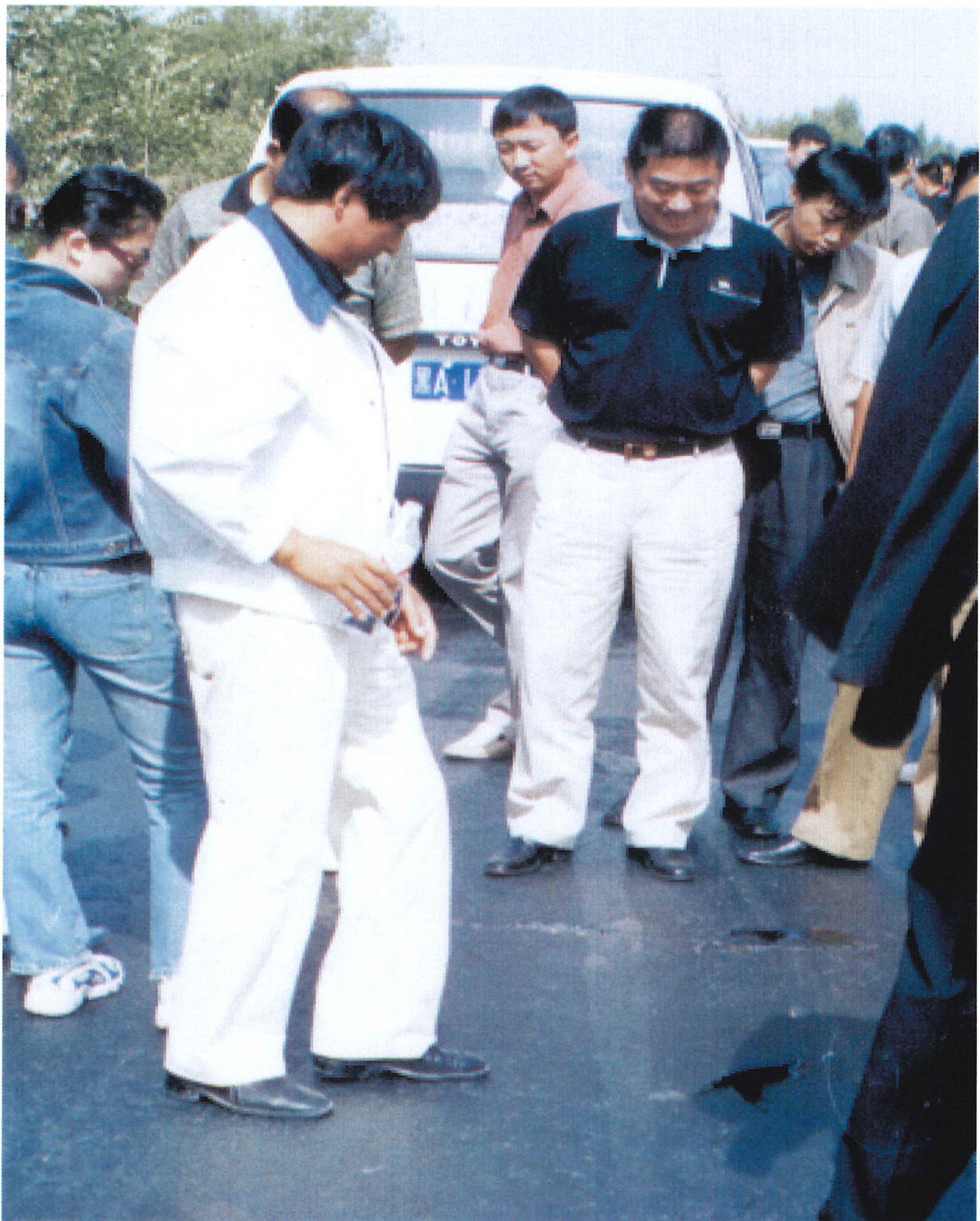
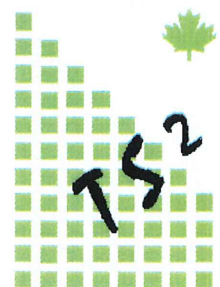


Figure 4.4 Site visit - following application



#### **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 on Century Street. Testing equipment brought to the site for comparison on a more disciplined, objective basis solely consisted of an Outflow meter manufactured by Humble Equipment Co. of Reston, Louisiana, U.S.A. This was to establish the Water Dissipation (Hydroplaning Comparison).

Additional testing equipment 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.

- Skid Resistance using the British pendulum
- Water Penetration resistance using a Water Infusion testing device

At a later date, cores will be acquired from the asphalt pavement for laboratory testing and the following properties of the asphalt pavement will be determined:

- Elasticity
- Ductility
- Penetration
- Softening Point

#### **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) 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 six locations on the portion of Iron Man street selected for the test strips. These readings were taken at 3:00 pm on June 26.

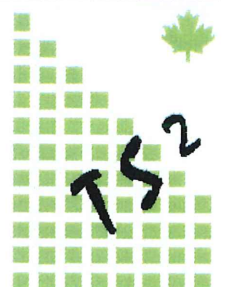
The results are shown in the table that follows:

<b>Table 4.5</b>		<b>Outflow Meter Readings</b>		
Test Date	Location relative to curb on north side of street	Location relative to east end of test section	RJSeal™ Treated Sect'n (secs)	UnTreated Sect'n (secs)
June 26	2.5 metres	15 metres west	n/a	54
June 26	1.3 metres	15 metres west	n/a	4
June 26	5 metres	15 metres west	n/a	37
June 26	1.3 metres	100 metres west	n/a	10
June 26	1.3 metres	106 metres west	5	n/a
June 26	5 metres	106 metres west	4	n/a





Figure 4.5  
Humble Equipment Co. Outflow Meter



#### **4.3 Skid Resistance – British Pendulum**

This aspect of the testing is beyond the capabilities of the field equipment available to both Crown Capital Enterprise Limited and external assistance has been sought from experts in the field of Asphalt Testing. To this end, DaQing has retained an independent testing company to conduct tests on the treated section. This will be reported separately.

#### **4.4 Water Infusion**

This aspect of the testing is beyond the capabilities of the field equipment available to both Crown Capital Enterprise Limited and external assistance has been sought from experts in the field of Asphalt Testing. To this end, DaQing has retained an independent testing company to conduct tests on the treated section. This will be reported separately.

#### **4.5 Elasticity/Ductility/Penetration Testing**

This aspect of the testing is beyond the capabilities Crown Capital Enterprise Limited personnel and external assistance has been sought from outside experts in the field of Asphalt Testing. To this end, DaQing has retained an independent testing company to conduct tests on the treated section. This will be reported separately.

## **5.0 Test Completion Schedule**

The technicians from the testing laboratory, retained by DaQing 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.



ID	Task Name	Duration	Start	Finish	ne							July							August							September						
					6/15	6/22	6/29	7/6	7/13	7/20	7/27	8/3	8/10	8/17	8/24	8/31	9/7	9/14														
1	Travel to DaQing	2d	Sun 6/22/03	Mon 6/23/03																												
2	Test Strip on Iron Man Street	1d	Tue 6/24/03	Tue 6/24/03																												
3	Training of Operators	2d	Wed 6/25/03	Thu 6/26/03																												
4	Application of RJSeal to Century St and DaQing St.	6d	Fri 6/27/03	Fri 7/4/03																												
5	Prepare draft report on RJSeal Demo and Testing	12d	Mon 7/7/03	Tue 7/22/03																												
6	Hiatus	15d	Wed 7/23/03	Tue 8/12/03																												
7	Prepare final report	9d	Wed 8/13/03	Mon 8/25/03																												
8	Submit final report	1d	Tue 8/26/03	Tue 8/26/03																												

Task

Progress

Milestone

Summary

Rolled Up Task

Rolled Up Milestone

Rolled Up Progress

# **CROWN CAPITAL ENTERPRISE LIMITED**

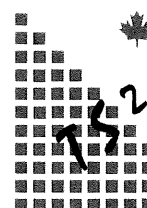
**WANCHAI, HONG KONG**

**RJSeal™ Application  
Century Street, DaQing, Heilongjiang,  
Peoples Republic of China**

**June 2003**

## **APPENDICES**

<b>No.</b>	<b>Description</b>
A	RJSeal™ – Technical Seminar, DaQing, China, September, 2002
B	RJSeal™ Descriptive Literature
C	Desco D200 Sprayer – Technical Data



**TS² Consulting Inc.  
Lamma, Hong Kong**



**CROWN CAPITAL ENTERPRISE LIMITED**

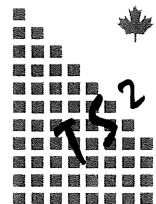
**WANCHAI, HONG KONG**

**RJSeal™ Application  
Century Street, DaQing, Heilongjiang,  
Peoples Republic of China**

**June 2003**

**Appendix A**

**RJSeal™ – Technical Seminar,  
Beijing,  
Peoples Republic of China,  
August 2001**



**TS² Consulting Inc.  
Lamma, Hong Kong**

**CROWN CAPITAL ENTERPRISE LIMITED**

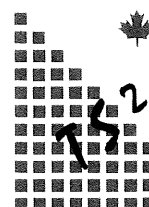
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**June 2003**

**Appendix B**

**RJSeal™ Descriptive Literature**



**TS² Consulting Inc.  
Lamma, Hong Kong**

**CROWN CAPITAL ENTERPRISE LIMITED**

**WANCHAI, HONG KONG**

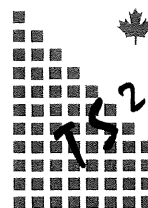
**RJSeal™ Application  
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**June 2003**

**Appendix C**

**Desco D200 Sprayer**

**Technical Data**



**TS² Consulting Inc.  
Lamma, Hong Kong**