CROWN CAPITAL ENTERPRISE LIMITED

WANCHAI, HONG KONG

RJSeal™ Application
Old Airport Road,
Harbin, HeilongJiang,
Peoples Republic of China

September 2005

TS^2 Consulting Inc.
Lamma, Hong Kong

CROWN CAPITAL ENTERPRISE LIMITED

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Peoples Republic of China

September 2005

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RJSeal™ Application
Old Airport Road, Harbin, Heilongjiang, Peoples Republic of China

September 2005

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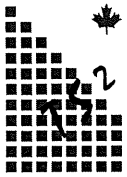

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Application of RJSeal™
Old Airport Road, Harbin, Heilongjiang
Peoples Republic of China

September 2005

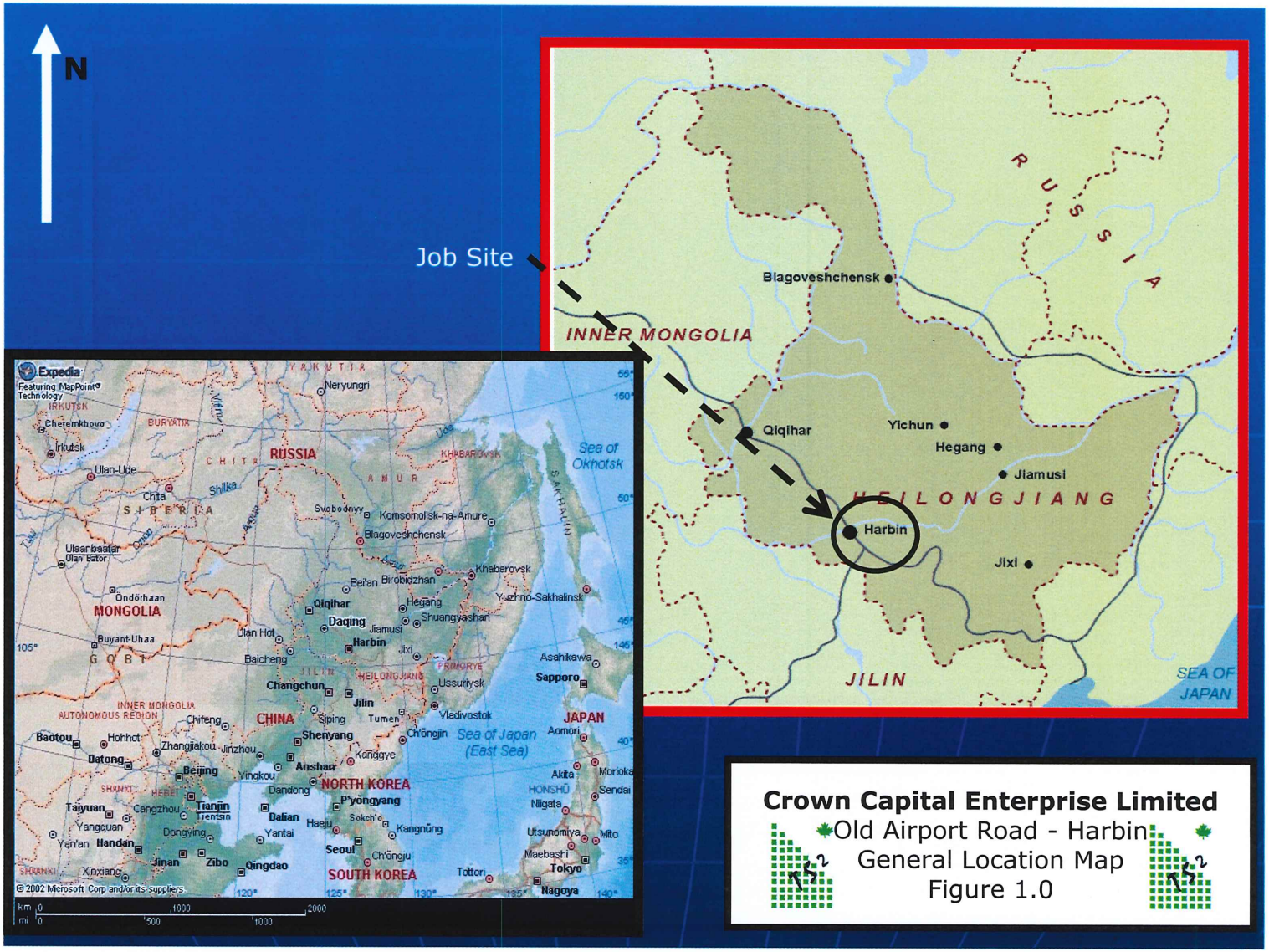
1.0 INTRODUCTION

Crown Capital Enterprise Limited of Hong Kong entered into an arrangement in September 2005 with the Harbin XueJiaZhuan Airport Highway Maintenance Company, which is responsible for the maintenance of the Provincial Highway G102 in proximity to the village of Harbin. This arrangement calls for the analysis of the performance of RJSeal™, a sealer/rejuvenator for asphalt pavement on Provincial Highway No. 102; near Harbin, the Capital City of Heilongjiang Province.

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 8 million. Harbin has 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 was 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 with major cities in the adjoining provinces. .

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 Harbin and Heilongjiang Province.

The predominant feature of the area is the extensive plains and glacial outwash and moraines from the last glacial period. 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 outside China.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RUSSIA
INNER MONGOLIA
Blagoveshchensk
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Harbin
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BURYATIA
Ulan-Ude
CHITA
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Komsomol'sk-na-Amure
Blagoveshchensk
KHABAROVSK
Sea of Okhotsk
SAKHALIN
Khabarovsk
Birobidzhan
Bei'an
Yuzhno-Sakhalinsk
Ulaanbaatar
Ulan Bator
Ondörhaan
MONGOLIA
Qiqihar
Hegang
Shuangyashan
Daqing
Jiamusi
Ulan Hot
Buyant-Uhaa
Harbin
Jixi
GOBI
Baicheng
JILIN
HEILONGJIANG
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Sapporo
Changchun
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Jilin
INNER MONGOLIA AUTONOMOUS REGION
Chifeng
CHINA
Siping
Tumen
Vladivostok
JAPAN
Baotou
Hohhot
Zhangjiakou
Jinzhou
Shenyang
Chŏngjin
Sea of Japan (East Sea)
Aomori
Datong
Beijing
Yingkou
Anshan
Kanggye
Akita
Morioka
Dandong
NORTH KOREA
HONSHŪ
Sendai
SHANXI
HEBEI
P'yŏngyang
Niigata
Taiyuan
Cangzhou
Tianjin
Tientsin
Dalian
Haeju
Sokch'o
Kangnŭng
Utsunomiya
Mito
Yangquan
Dongying
Yantai
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Crown Capital Enterprise Limited
Old Airport Road - Harbin
General Location Map
Figure 1.0

2.0 CO-OPERATIVE PROGRAM

The intent of the arrangement with Harbin XueJiaZhuan Airport Highway Maintenance Company, which is responsible for the maintenance of the 24.1 kilometre G102 Provincial highway that runs west from Harbin, is to demonstrate RJSeal™ at a location selected by the Maintenance Division. The Application will subsequently allow analysis of the performance of RJSeal™ on a variety of asphalt surfaces. An application was undertaken on the Old Airport Road, between Kilometre 0 and Kilometre 4.0, commencing immediately west of Harbin. The work was undertaken on September 22 thru 26, 2005. The portion of the highway that was treated is composed of asphalt pavement, nominally 12 centimetres thick, which overlays a silty sand.

The age of the asphalt pavement is circa 1998. Keen interest was expressed in having the life of the asphalt pavement extended on this highway as the bitumen binder is now quite inflexible. The asphalt pavement is quite smooth with a few lateral and linear cracks. Some planing of bumps had been conducted earlier this year or late last year, but aside from this no other maintenance had been undertaken.

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 that 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 fifty (50) locations in China and fifty eight (58) commercial-scale applications have taken place at various locations, including Beijing, Shanghai, Kunming and QinHuangDao, plus DaQing and LiuShunTun in Heilongjiang.

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 Harbin XueJiaZhuan Airport Highway Maintenance Company is responsible for the maintenance of this provincial highway that originally led to the TaiPing International Airport.

In view of this extensive network of roads and the relatively short life of the asphalt surface, The Harbin XueJiaZhuan Airport Highway Maintenance Company is definitely interested in determining how to economically extend the life of the asphalt road surface. To this end, they agreed to try RJSeal™ on Old Airport Road, immediately west of Harbin. See Figure 4.0, showing the location of this street with respect to Harbin and Heilongjiang

On September 22 thru 26, 2005, all four lanes of the Old Airport Road were treated with RJSeal™, commencing just west of the junction with the new Airport Expressway and continuing west for 4.1 Kilometres. The location selected for an application of RJSeal™ was at the following geographic location:

Table 4.1	Geographic Location of Test Strip on Old Airport Road		
RJSeal Strip	**System i.e. Geographic or Universal Transverse Mercator (UTM)**	**Northing**	**Easting**
East End	Geographic (deg, min)	45^0 41.975 '	126^0 32.390'
	UTM Grid (52T) (metres)	5063631	0308477
West End	Geographic (deg, min)	45^0 40.578 '	126^0 29.955'
	UTM Grid (52T) (metres)	5061142	0305236

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. The entire portion of the treated asphalt pavement section overlies a compacted silty-clay, sub-grade

RJSeal™ was applied, using a Desco D200 Sprayer. See Appendix B for technical information on this unit. This unit can uniformly apply the RJSeal™ in the application.

Ambient temperatures at the time of the application on September 22 thru 26 were in the 9 to 22 degree Celsius range, with humidity in the 40% to 50% range.

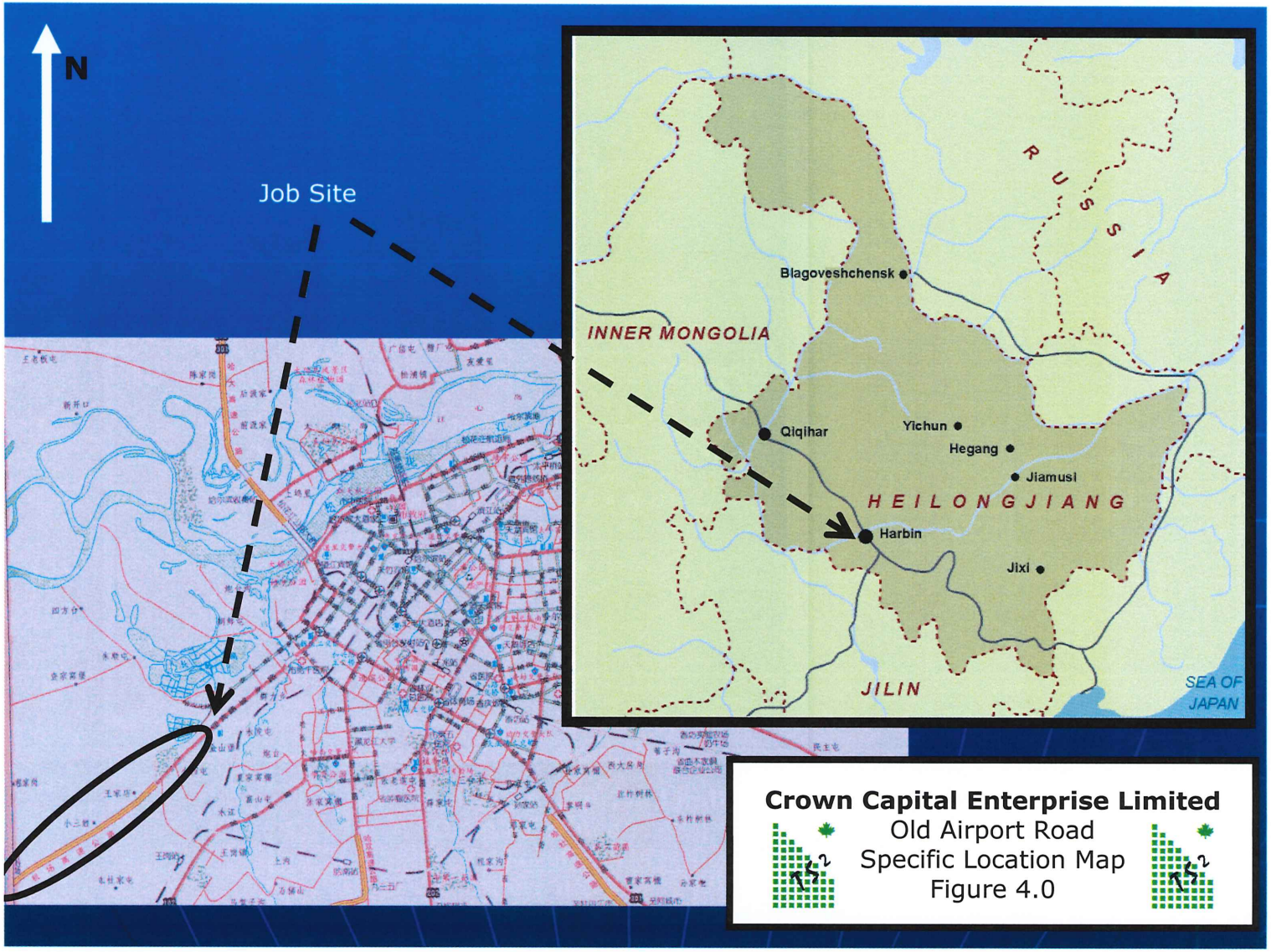
Particulars of the RJSeal™ Application are shown in the table that follows:

Table 4.2			Particulars of the application on Old Airport Road							
Date	Work Time (hrs)	Total Area (m^2)	Total Area (yd^2)	RJSeal™ Applied			RJSeal™ Application Rate			Slag
				US gals	Litres	Kgs	US Gal /yd^2	m^2 /Litre	m^2 /Kg	Kg/m^2
Sept 22	7	7,995	9,557	499	1,887	2,000	**0.052**	**4.24**	**4.00**	**0.03**
Sept 23	10	17,250	20,620	699	2,642	2,800	**0.034**	**6.53**	**6.16**	**0.00**
Sept 24	11	12,750	15,241	549	2,075	2,200	**0.036**	**6.14**	**5.80**	**0.06**
Sept 25	8	12,848	15,358	549	2,075	2,200	**0.036**	**6.19**	**5.84**	**0.06**
Sept 26	8	9,675	11,565	449	1,698	1,800	**0.039**	**5.70**	**5.38**	**0.04**
Total	**44**	**60,518**	**72,341**	2,745	10,377	11,000	**0.038**	**5.83**	**5.50**	**0.04**

Subsequent inspection, showed that the application rate of 5.5 m^2/kg was adequate for the asphalt pavement at this location

The 4.0 kilometre long application section on the Old Airport Road is comprised entirely of asphalt pavement. The location with respect to Harbin is graphically shown in figure 4.0.

An initial test application was conducted at the west end of the zone selected for the RJSeal™ Application to determine the most appropriate application rate. This then lead to adjustment of the application rate, given the drying time experienced and the smoothness of the pavement as well as the penetration of the RJSeal™ into the pavement surface. The initial test application is shown in figure 4.1 which follows. Photos showing the application of RJSeal™ follow in figures 4.2, 4.3 and 4.4. on the following pages.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HEILONGJIANG
Harbin
Jixi
JILIN
SEA OF JAPAN
Crown Capital Enterprise Limited
Old Airport Road
Specific Location Map
Figure 4.0

Figure 4.1 Test Strip on Old Airport Road
Highway G102.

Figure 4.2 Typical Application Procedure.

Figure 4.3 Copper Slag Application.

Figure 4.4 Final RJSeal ouch-up ork

Figure 4.5 Finished Surface.

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 Old Airport Road.

Testing equipment brought to the site for comparison on a more disciplined, objective basis included the following tests.

- Water Penetration
- Macrotexture (Depth of Texture)

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:

- Viscosity
- Ductility
- Penetration
- Softening Point

4.2 Water Penetration

Water Penetration Tests (China Testing Standard T 0730-2000) were undertaken at several locations on the Old Airport Road on both treated and segment treated with RJSeal™.

Table 4.3 Water permeability test			Before RJSeal™	After RJSeal™
Location (Geographical)		Sample No.	Results (ml/min)	Results (ml/min)
Latitude	Latitude			
45^0 40.578'	45^0 40.578'	1	0	n/a
45^0 40.749'	45^0 40.749'	1	n/a	0
45^0 40.749'	45^0 40.749'	1	0	n/a
45^0 41.274'	45^0 41.274'	1	n/a	0

See Figure 4.6 that follows for a pictorial presentation of the Water Penetration Meter.

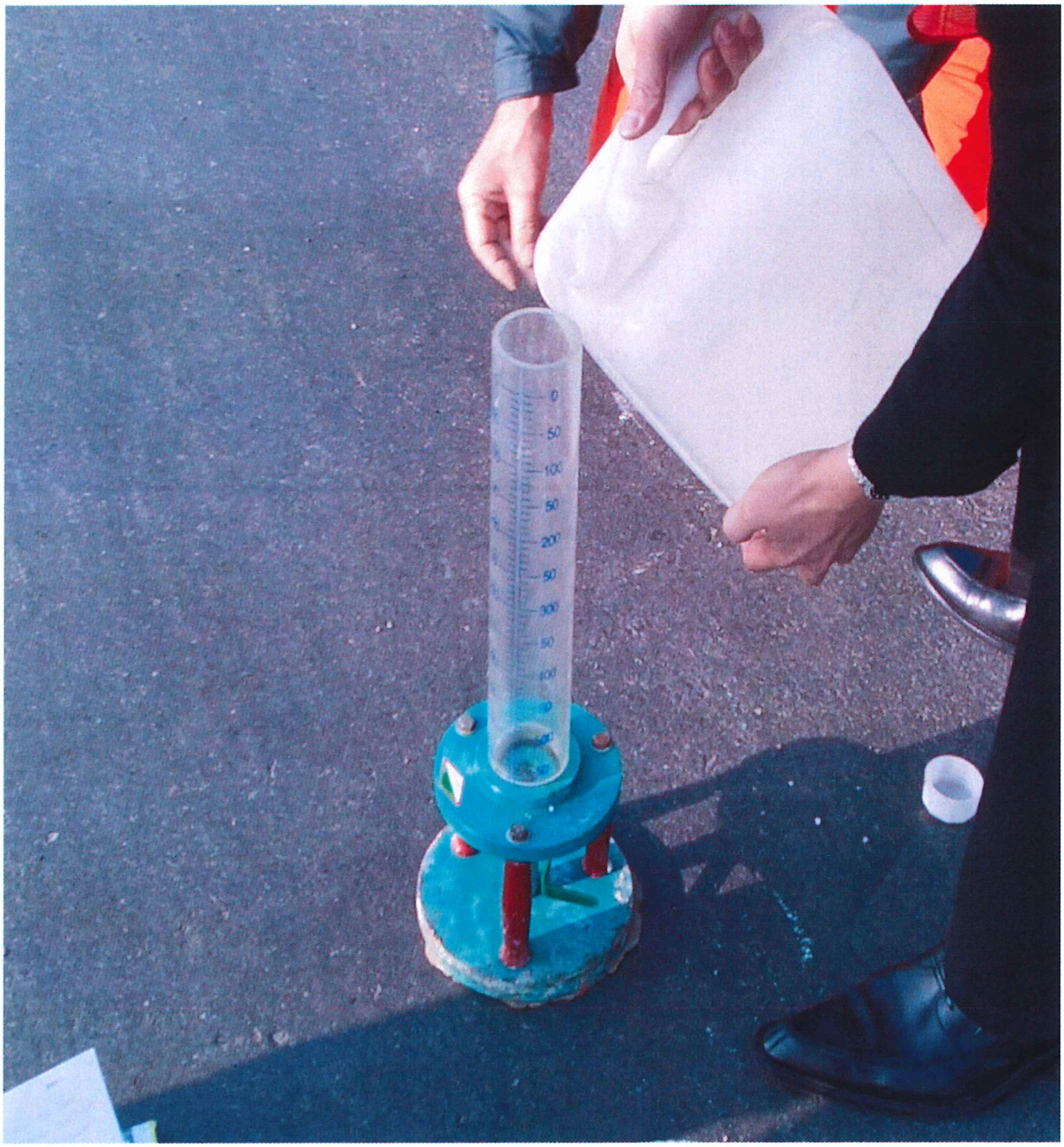


Figure 4.6 Water Penetration Test

4.3 Macrotexture (Depth of Texture)

The sand patch test (ASTM Standard E965-96 OR China Standard T 0961-95) will be used to ascertain the Pavement Macrotexture (Depth of Structure). Comparison will be undertaken at several locations on the untreated section in close proximity to the Water Penetration Meter tests.

Table 4.4 Sand Patch Test			Before RJSeal™		After RJSeal™	
Location (Geographical)		Sample No.	Diameter of Patch (mm)	Texture Depth (mm)	Diameter of Patch (mm)	Texture Depth (mm)
Latitude	Longitude					
45^0 40.578'	126^0 29.955'	1	346.75	0.26	n/a	n/a
45^0 40.749'	126^0 30.271'	1	n/a	n/a	371.25	0.23
45^0 40.749'	126^0 30.271'	1	342.5	0.27	n/a	n/a
45^0 41.274'	126^0 31.307'	1	n/a	n/a	415	0.18

See Figure 4.7 which follows, showing the sand patch testing procedure.

4.4 Ductility/Viscosity/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, the Harbin XueJiaZhuan Airport Highway Maintenance Company has retained an independent testing company to conduct tests on the treated section. This will be reported separately.

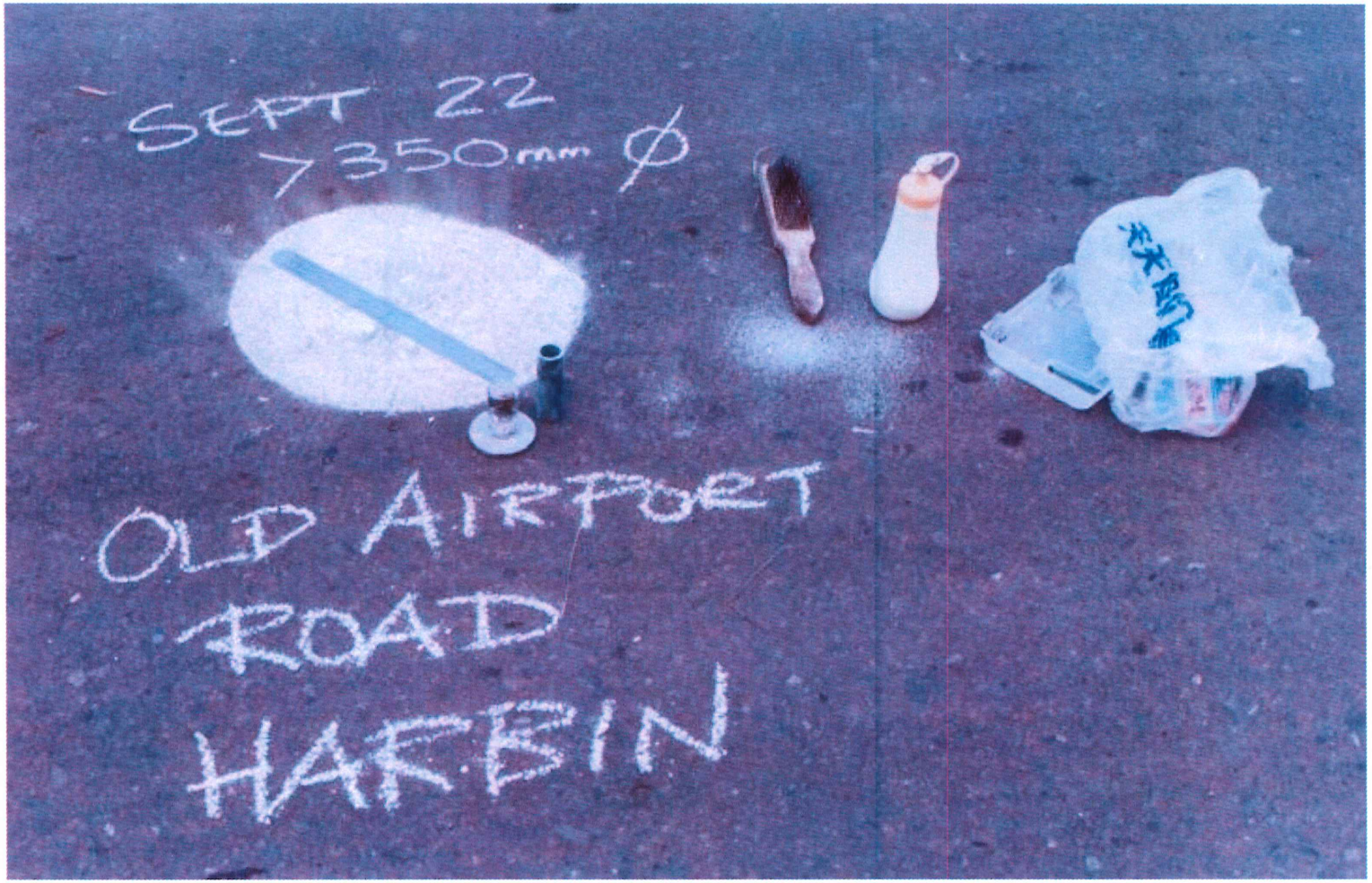


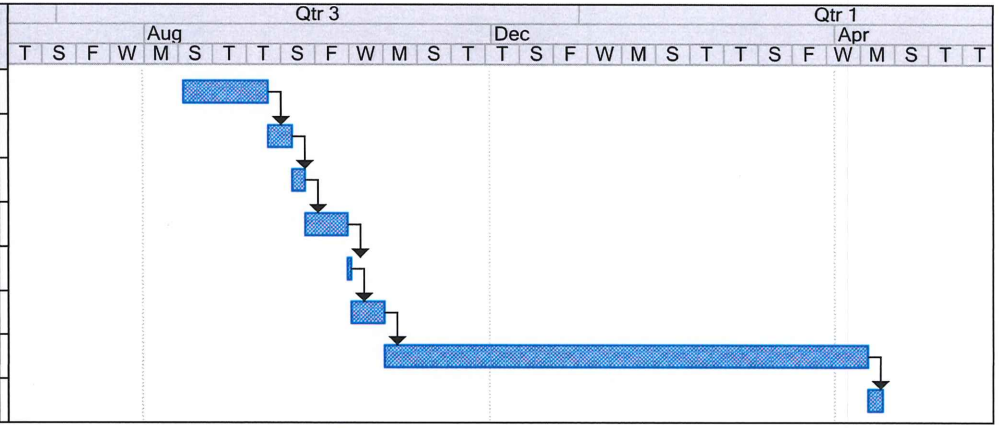
Figure 4.7 Sand Patch Test

5.0 Test Completion Schedule

The technicians from the testing laboratory, retained by the Harbin XueJiaZhuan Airport Highway Maintenance Company 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 - Project Schedule

ID	Task Name	Duration	Start	Finish	Predecessors	Successors
1	Negotiate Contract for De	22 days	15/8/2005	13/9/2005		2
2	Mobilization	6 days	14/9/2005	21/9/2005	1	3
3	Application	5 days	22/9/2005	26/9/2005	2	4
4	Hiatus	11 days	27/9/2005	11/10/2005	3	5
5	Inspection	1 day?	12/10/2005	12/10/2005	4	6
6	Report Preparation	8 days	13/10/2005	24/10/2005	5	7
7	Hiatus	122 days	25/10/2005	12/4/2006	6	8
8	Field Testing	3 days	13/4/2006	17/4/2006	7	



Normal task: % complete: Milestone:

Split task: Summary task: External task:

Critical task: Rolled up Summary task: Deadline:

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Appendix A

RJSeal™ Descriptive Literature

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Appendix B

Desco D200 Sprayer

Technical Data

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