ABSTRACT

Launchpad Asia, Road building Business Plan

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China's twelfth five-year plan calls for 2.15 million kilometers of rural roads to be built and repaired through 2015, creating an unprecedented demand for a long-lasting and cost-effective construction solution. Currently, there is no surface material that can provide such a solution. Launchpad Asia, an American based distribution company, is the sole proprietor of two soil modifiers, which differentiate themselves from past base stabilizers through innovative technologies. These products can build durable and environmentally safe roads efficiently and cost-effectively. This business plan outlines the specific marketing, organizational and financial strategies for Launchpad Asia to affectively penetrate the rural road building market and capitalize on the 85 billion RMB market opportunity.

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LAUNCHPAD ASIA, ROAD BUILDING BUSINESS PLAN

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In Partial Fulfillment of the Requirements for the

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By

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INTRODUCTION

As a student with an interest in travel, I was attracted to the Baylor i5 program's integration of business and culture. The program is a five-week study abroad program in China awarding 6 hours of business credit through a process similar to an internship. I5 promotes independence in the assigned fields of business, intellectual property law, engineering and entrepreneurship and as a whole provides a chance for international team building. The emphasis on cultural interaction and market innovation is an opportunity to apply business practices learned in the classroom to a global environment.

Through the course of the program my team and I researched and gathered data relative to our respective diciplines (e.g. IP law, engineering, finance, marketing, etc.), combined our findings, applied our work to our specific company's business model, Launchpad Asia, and generated a final presentation to pitch to the Chinese executives at the Innovation Summit in Beijing, China.

The body of this thesis is a business plan written collaboratively by Scott Francis, Samantha Haung, Kaitlin Burt, Owen Xu, and Kinzi Zitzman for Launchpad Asia Roads. The purpose of the plan is to present an overview

of the road building market in China and to outline a market entry strategy for the company's two soil stabilizers, Earthbind Stabilizer and M10+50.

CHAPTER ONE

Executive Summary

China plans to build and repair an unprecedented 2.15 million kilometers of rural roads in its current five-year plan to encourage the growing development of the largest economy in the world. Launchpad Asia has the opportunity to be the sole proprietor of two soil stabilizers, Earthbind Stabilizer and M10+50, and succeed in a 500 billion RMB market. Currently, concrete occupies 51% of the surface materials used to build these roads; while gravel makes up 13%, and the remaining roads get left unpaved. These materials do not provide an adequate solution to meet such a massive demand. Graveled and un-surfaced roads flood often and require constant repair, while concrete is too expensive and impractical to implement all over the nation. While Chinese Departments of Transportation have been skeptical of the cost and quality of soil stabilizers in the past, the Earthbind Stabilizer and M10+50 use biopolymer technology to work with any soil type allowing efficient construction in any region. Other soil stabilizers cannot make such claims. These products provide a cost effective and environmentally safe method of building strong roads efficiently all over China. The rural road market is searching for a new surface material to alleviate its dependency on concrete. Launchpad Asia is the solution for which the industry is looking. By offering 5 km test projects in the 3 largest

provincial markets, Launchpad Asia can lead the soil stabilizer industry within 2 years, replace concrete projects, and begin to see profits within 3 years. With gross revenues of 219,000 RMB per kilometer, Launchpad Asia can expect over 5 million RMB in profits over the next 3-5 years. Launchpad Asia has the right product to capitalize on this unique market opportunity.

CHAPTER TWO

Strategy Plan

Launchpad Asia has the opportunity to introduce its two soil stabilizers, Earthbind Stabilizer and M10+50, into the rapidly expanding market of road building in rural China. China has the largest economy in the world today with one of the most aggressive policies on planned development. The Chinese government creates a plan every five years to promote industry throughout the nation in order to help China become one of the leading, innovative countries in the world. The current five-year plan specifies strategies to meet its three goals of reducing poverty, connecting isolated agricultural communities to larger markets, and increasing the non-farm economy. A facilitating aspect of this plan is the mandate to build over 450,000km of Class 3 and 4 roads throughout the nation. This places a large strain on local governments to produce strong roads efficiently and cost-effectively.

The shale gas industry in China is a prime example of a non-farm enterprise that will generate massive economic growth. This industry is vital to the market entry strategy for Launchpad Asia. China has enough shale gas resources to provide the country with energy for 300 years. Exploration and exploitation of this natural resource has current backing of the Chinese government and places further emphasize on the need to expand rural roads.

Launchpad Asia works with Enviroad and EnviroSeal, companies who create and manufacture polymer soil modifiers for road based construction. Earthbind Stabilizer, produced by EnviRoad, and M10+50, produced by EnviroSeal have been on the market for over 30 years. These products have exceeded the United States Army Core of Engineers standards and have been tested and used in countries around the world. The use of these environmentally friendly soil stabilizers allows up to three kilometers of roads to be built in one eight-hour day. This quick implementation process results in roads being built at a cost of 299,269 RMB per kilometer, which saves companies 417,481 RMB per kilometer, when compared to concrete roads.

With exclusive rights to sell these products in China and open channels of business in an area that is otherwise hard to break into, Launchpad Asia has the means to connect the Chinese market with the innovative technology of these two soil stabilizers. Building a vast network of strong, long-lasting, and cost-effective rural roadways quickly and efficiently with Earthbind Stabilizer and M10+50 will meet the development needs of the fastest growing economy in the world.

CHAPTER THREE

Product

Earthbind and M10+50 work as soil stabilizers by coating soil particles, physically altering the soil properties, and binding the particles together. Earthbind Stabilizer is a bitumen-modified biopolymer and M10+50 is a liquid acrylic originally designed for the U.S. Military. Soil stabilizers are often used when the strength and stability of a road base are not adequate for supporting wheel loads. These products increase soil density, stability, traction, and water resistance while decreasing replacement costs and grading costs.

Earthbind and M10+50 are a one-pack system, requiring only the product and water, which reduces environmental waste caused by used containers. These stabilizers are non-hazardous, nonflammable, non-carcinogenic substances with high UV durability that contain no asphalt or solvent. Earthbind and M10+50 are harmless to aquatic animals, mammals, plants, and other living organisms.

Efficiency is one benefit of building roads with Earthbind Stabilizer or M10+50. In one eight-hour day, three kilometers of road can be built. Unlike many competing products, these stabilizers do not require a long curing time. After one hour, the road will be strong enough to support heavy machinery and endure pressures above 200psi. The durability of the road increases over

the next few days to over 1700psi. In addition, Earthbind and M10+50 are formulated with surfactants to help break the surface tension of soils and aid in compaction, increasing strength by 720%.

Also unlike competing stabilizers, Earthbind Stabilizer and M10+50 are effective on every type of soil. These two stabilizers are non-ionic in nature, so they work well with cationic and anionic soils and aggregates. Solutions of these products are diluted to specified levels so that the product can adapt to differences in soil type, density, moisture level, and temperature.

One basic mechanism involved in Earthbind stabilization of fine-grained soils is waterproofing. Non-stabilized roads do not hold up under heavy rain. Materials loosen and blow or wash away, gradually causing the roads to become prone to increased dust, pot holes and corrugation. Earthbind and M10+50 greatly reduce dust, gravel loss, and sediment runoff by acting as a binder or cement in roads, increasing shear strength by increasing cohesion between aggregate particles and stabilizer coating. The addition of bitumen in Earthbind Stabilizer and M10+50 increases hydraulic conductivity, or the capability of a soil to transmit water, by 10,000%. Increasing hydraulic conductivity prevents detrimental effects of water, such as changes in soil volume, which decrease soil strength.

One further application of Earthbind and M10+50 is as a base for asphalt or concrete surfaces. Use of stabilizer in the base lengthens the service life of asphalt and concrete roads considerably, minimizing the need for repair and

maintenance and allowing a reduction in design thickness of the asphalt or concrete pavement. Failure to provide an adequately stabilized base results in frequent and expensive repairs.

EnviRoad and EnviroSeal provide quality stabilization at low cost. Money is saved during every step of road-construction using Earthbind and M10+50. The one-pack nature of these products lowers shipping and packaging costs, building costs, and maintenance costs, all while increasing soil density, traction, and waterproofness to reduce erosion and provide high quality, durable roads.

CHAPTER FOUR

Markets, Customers, Competitors and Alliances

Markets

Launchpad Asia has two market entry opportunities, to align itself with Shale gas exploration and to establish relationships with local governments to expand rural road networks.

Market Overview

China is the largest and fastest growing economy in the world with one of the most aggressive policies on national development. China's 12th five-year plan calls for 450,000 km of rural roads to be built and 1.7 million km of rural roads to be repaired by the end of 2015. The demand drivers for such an assertive plan are to decrease poverty, increase farm-to-market access and to increase non-farm industry.

In addition to the national Five-year plan, each province has a plan for increasing rural infrastructure. From the market research we have conducted, the two most influential motivators for provincial road building are (1) to connect isolated farming communities to major markets in order to increase agricultural output, and (2) to increase industrial output. In rural China, currently about 184 towns and 54,000 villages, most of which are located in the western region, have no access to roads. Large-scale road projects have recently been launched to expand and improve the rural road

network. This places a great deal of pressure on local governments and local construction companies to build efficiently and cost effectively.

While local development plans are spread throughout Mainland China, certain areas have higher levels of development, thus greater needs for rural infrastructure such as roads. Roads are analyzed in terms of classes based upon the cost and quality of the road material and the building location. Expressways, class 1 and class 2 roads are the highest level built with top grade surface material. They will be built in urban areas or for the large national roads. Expressways, class 1, and class 2 roads will only be built from asphalt and concrete. Although a soil stabilizer, such as the M10+50 and Earthbind Stabilizer can be used under the surface material to provide base stabilization; this is not an immediate market for Launchpad Asia. Launchpad Asia will deal directly in the realm of class 3 and class 4 roads. These roads are rural and countryside roads that utilize cement, gravel, granular material mixes, or bituminous surface treatment. While biopolymer soil stabilizers, such as the M10+50 and Earthbind Stabilizer, are not currently a common material used for these roads, there is a large market for roads built with cost-effective and durable material.

Research exemplifies the positive affect of road building on alleviating poverty and increasing household income. In 2005, the International Food Policy Research Institute, along with the Chinese government, conducted a study on economic growth and poverty reduction in China. In this study, the

IFPRI concluded, for every Yuan invested, class 3 and 4 roads raise far more rural and urban poor people above the poverty line than higher-grade class 1 and 2 roads. In China, road investments were found to have contributed significantly to growth in non-farm and total economic growth as well as to agricultural growth. Infrastructure endowment increased household income by 33 percent, almost doubled wages, and increased income from business and industries by 17 percent. In sum, better infrastructure was associated with greater agricultural output, higher incomes, better indicators of access to health services, and greater wage income opportunities.

For the highest return on investment in road building each plan needs to account for regional differences in market and demand. The IFPRI's study shows a tradeoff between growth and poverty reduction in different parts of China. This implies there is a need to formulate different regional priorities depending on whether economic growth or poverty reduction is more important for a particular part of the country. Considering China's 5-year plan goals, rural infrastructure will affect each region differently. An area looking to reduce poverty is building roads for different reasons than an area looking to increase non-farm output. However, rural roads can also solve overlapping problems. For example, rural road investments can promote the development of small non-farm enterprises, which in turn can increase the demand for rural labor, alleviating poverty levels.-After speaking with the departments of transportation for the 5 major regions of industrial growth,

Shanxi, Henan, Sichuan, Yunnan and Hunan, we have discovered the largest demand driver for rural road building is to connect isolated farming communities with centers of industry. Each province has instituted 5-year plans to build a collective total 502,000 km of roads to encourage the development of non-farm economies.

Currently, the biggest push for the growth of non-farm industries in China is the production of shale gas. China has the largest natural reserves of shale gas in the world, enough to supply the country with all its energy for 300 years. The government has set the goal of producing 6.5 billion cubic meters of shale gas by 2015. The Ministry of Land and Resources has accelerated the exploration of shale gas with total investment reaching 4000-6000 billion Yuan. Subsidized prices, tax incentives and preferential land prices are expected to be announced for shale gas in coming years to encourage development.[1]

One of the fastest developing regions for shale gas development in China is the Sichuan basin in the Sichuan Autonomous Province. This province will have high demand for durable and long-lasting rural infrastructure. The shale gas industry in China is still in an exploratory stage. However, Sinopec has completed more than 10 wells in southeastern Guizhou, southeastern Chongqing, western Hubei, northeastern Sichuan,

[1] China Shale Gas Forum 2012, http://chinashalegasforum.com/about.asp?id=322

Biyang, Jianghan, and southern Anhui. Industrial gas has been acquired in 6 of these wells, and one horizontal well has been completed and fractured. CNPC has completed more than 10 wells in four carefully selected regional blocks, namely Weiyuan, Changning, Zhaotong, and Fushun-Yongchuan, in southern Sichuan and northern Yunnan and Guizhou. Industrial gas has been obtained in 7 of these wells, and one horizontal well has been completed and fractured, with numerous others being drilled or having completed.[2] (See Exploratory Shale Gas Wells map). The growth prospects for the shale gas industry highlights major areas of potential road expansion. Aligning Launchpad Asia's market entry strategy with the Shale gas industry is a way of pinpointing key development areas, expanding network relationships, and earning valuable market experience.

Customers

The customers of Launchpad Asia are looking for a cost-efficient and environmentally friendly road which will stay durable and require little maintenance throughout its life. The direct customers Launchpad Asia will deal with are the decision makers within the department of transportation. Road building in rural China is not an easily defined venture. There are many intricacies and complexities within the system of government which must be considered when pursuing a business venture. It is vital to know the

[2] China's oil giants gear up for shale gas boom
http://china-wire.org/?p=19264

process of rural road building; the methods and the players. The mayors of a given town or municipality will always make the final decision to build a given road. However, the departments of transportation and commissions of reform and development for the each province make the more detailed decisions. [3] These departments research where roads are needed; survey the land; choose the road material needed; and choose the construction company which will build the road. They will typically finance the entire operation from start to finish.

The department of transportation chooses a material for a given road through a bidding process.[4] This bidding process will specify the aspects and qualities the department is seeking in building the road. The material company which can best match these qualities will win the bid.

To be successful in this market, it is imperative to know the aspects and qualities the department of transportation will include in the bids Launchpad Asia seeks to win. From customer research, the most important quality for rural roads is cost-effectiveness.[5] On average, over 70% of the expenses spent on road building come from maintenance fees. So when calculating cost effectiveness, the departments of transportation are not just

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[3] Information obtained from ____ from the Hong Kong Economic Research Center.
[4] Information obtained from several calls made to Ionic Soil Stabilizers, Hong Kong Road Construction Company, and Sichuan Department of Transportation.
[5] Information obtained from Sichuan Department of Transportation.

looking for front-end savings. It is very important for a road to be durable enough to last without continuous repairs. The customer also cares a great deal about the environmental impact of the material. Since most rural roads are being built in largely agricultural communities, any road material must be compatible with the surrounding environment and not harm the plant or animal life.

For example, the Sichuan government has always placed a premium on transportation construction. For example, the amount of investment from 2007 through 2011 is 266.8 billion RMB. This is 1.34 times more than the sum of the investment all the years before 2007. In 2011 alone, the investment into transportation construction accounts for 100.2 billion RMB, 4.1 times more than 2007, ranking 1st in China.[6] The government also works on the innovation of transportation construction, by introducing foreign investment and new technology to improve the quality and to speed up the construction. For instance, there are 24 foreign invested projects accounting for 2510 kilometers with 188.2 billion RMB.

The Department of Transportation of the central Chinese government will also finance, plan, and build rural roads throughout the nation. This agency will go through the same bid process as the provincial and municipal governments. The central government will also care about the cost-effectiveness, reduced maintenance fees, and environmental impact.

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[66] Information obtained from Sichuan Department of Transportation

The customers for the shale gas market will be different. The roads need to build new shale gas wells will be financed, planned, and built by the oil companies investing in the well. Specifically, this will be Sinopec and the Chinese National Petroleum Corporation. These companies are state-owned institutions, so they will also be connected to the departments of transportation around the various provinces, but the company itself will actually make the road material decisions.

Competitors

Currently, the competitive landscape of rural road building material in China is dominated by cement, concrete, and pitch. See Chart 1. Pitch, concrete, and cement comprise 51% of the surfaces of roads; gravel and other macadamized material comprise 13%; while the remainder of the rural roads built in China will not have surface material.

Soil stabilizers are not commonly used in China, as they are seen as unreliable and not cost-effective. Two other companies operating in China are Ionic Soil Stabilizers and EN-1 Soil Stabilizer.

Ionic Soil Stabilizer uses ionic material in its product which limits the soil types with which it can work. Launchpad Asia's products work with the soils which are already on site, giving Launchpad's product a competitive advantage over these other companies.

Launchpad Asia's main competition in this market is concrete. Over 50% of the rural roads constructed in China are surfaced with concrete. Currently, China uses 1.2 billion tons of concrete per year throughout the nation. This is almost a ton of concrete per Chinese citizen. The Chinese government is looking to move away from this level of consumption for its heavy environmental and economic impact. The Earthbind Stabilizer and M10+50 provide an environmentally safe and cost-effective substitute for concrete. These products will save the government 200,000 RMB per kilometer when used over concrete. Additionally, Launchpad Asia's soil stabilizers decrease construction expenses and methods. Installing a concrete road will require the use of a road grader, a road compactor, a spray truck, a cement mixing truck, finishing equipment, and a large construction team to implement. Constructing a road with the Earthbind Stabilizer or M10+50 often only require a road grader with a water injector and a road compactor with a skeleton crew. These products save the customer time and money, giving Launchpad Asia a competitive advantage over concrete roads.

Alliances

Sinopec and CNPC will both be our customers and alliances. Launchpad Asia will sell to these companies to strategically align with this booming industry in China. Since both of these entities are state-owned, they work directly with the various provincial departments of transportation to build wells, connect to pipelines, and shipping channels. With this direct

contact in such a growing industry, these companies will be a great endorses for Launchpad Asia's soil stabilizers.

Another promising alliance will be is Project Hope. Project Hope is a non-profit international program working to relieve poverty in remote rural regions. A major goal of this project is to allow the children of China to receive a quality education. They are working to build schools around the nation, as well as provide avenues for these children in remote communities to attend schools. This project will involve many members of the central and provincial government who are looking to improve the rural infrastructure around the nation. Launchpad Asia should get involved with this program to obtain better market wisdom as well as build good-will with the decision-makers of the departments building rural roads in China.

CHAPTER FIVE

Intellectual Property

It is very important to consider the legal implications of introducing the Earthbind Stabilizer and M10+50 to the Chinese market. Neither product has achieved patent protection, so there will always be an inherent risk of losing the technology to competing companies.

Right now, Enviroad and Enviroseal only hold trade secret protection for the products, respectively. Trade secret is some collection of information, the possession and secrecy of which gives its holder a competitive advantage. This means that unless a holder of a trade secret takes careful steps to ensure such information is kept in secrecy, there is nothing stopping any other competitor from possessing and using it. To ensure a trade secret protection, a holder must take reasonably necessary steps to keep its valuable information secret. These steps might include; signed confidentiality agreements, warning employees, informing employees of the importance of keeping the secret and having them adhere to such standards.

An additional issue stems from another product sold by Enviroseal. While the M10+50 is not a patented product, Enviroseal's Roofguard 101 does hold a patent protection. When a product is patented, the company must provide the exact materials and methods for creating such a chemical in the enabling

disclosure required in a patent application. This information is available for all to see at the United States Patent and Trademark Office website. So, the information detailing the exact make-up of the Roofguard is available to anyone. Since both products are acrylic polymer chemical solutions, it could be very possible that someone could recreate the M10+50 simply by knowing the method for creating the Roofguard 101.

The best way to go forward is to try to penetrate the market as fast and efficiently as possible as a safeguard against anyone who might copy our product. Additionally, to protect itself from the potential issues stemming from the patented Roofguard 101, Launchpad Asia should consider using a different name for these products as an initial safeguard.

CHAPTER SIX

Market Entry Strategy

Launchpad Asia's entrance strategy hinges on changing the general attitudes towards products such as the Earthbind Stabilizer and M10+50. This will require Launchpad Asia to build a strong relationship built on trust with the decision-makers of the national and provincial departments of transportation around China. Additionally, due to the issues discussed in the Intellectual Property section, it is in Launchpad Asia's best interest to establish market presence early and in as many regions as possible.

In China, influence travels from the top to the bottom. The central government has the power to establish the Earthbind Stabilizer and M10+50 soil stabilizer as the dominant players in the rural road material market. The fastest way to spread a positive market attitude towards the products is through the central government, it's economic and social ventures, and the largest rural road producing provinces. This will require a trusting relationship between Launchpad Asia and the decision-makers in the central government's Department of Transportation, the five highest developing province's Departments of Transportation, Sinopec, and CNPC.

To change the public perception of soil stabilizers throughout the Chinese rural road market, Launchpad Asia must differentiate the Earthbind

Stabilizer and M10+50 from the soil stabilizers of the past. The road material decision-makers around China prefer to use cement over any other material because they believe it is the highest quality for the cost. They believe cement will reduce maintenance costs comparatively to previous soil stabilizers which have required constant repairs. Launchpad Asia must show how Enviroseal's M10+50 has exceeded the standards of the US Army Corps of Engineers, has successfully been implemented in many different nations, and has proven to hold strong after 10 years on numerous projects around the world. These products are compatible with most soil types around China, and provide the simplicity and cost-effectiveness of a one-package system. To demonstrate this, Launchpad Asia should offer the central government a chance to test the products in real world conditions. This will show the level of confidence Launchpad has in the ability of these soil stabilizers to exceed the cost and quality expectations and provide a more durable and environmentally friendly road base for China's rural road network.

Launchpad Asia should follow this strategy throughout the major rural road building provinces of China to change the initial perception of its products, establish confidence in the quality and durability of these materials, and establish a presence in the market. The Earthbind Stabilizer and M10+50 are not the typical stabilizers the customers distrust. They are new and improved technologies which take rural road building to a new level of quality and efficiency. They provide the strength and durability the

customer can trust to last and reduce maintenance costs, yet they are easy install, quick to cure, and ready for heavy use literally within hours of grading.

Additionally, Launchpad Asia should put time and effort towards building a strong relationship with the major decision makers in Sinopec and CNCP to align the goals of road building with the Chinese plans of developing the shale gas industry. Shale gas is a major push in the non-farm economy, and both Sinopec and CNCP are looking to invest in producing wells in the very provinces where rural road plans are the largest. Road building and industrial development are inherently tied together. Launchpad Asia will develop brand recognition through an alliance with an industry that drives such high demand for rural road building.

Launchpad Asia must establish close relationships with the decision-makers within the departments of transportation to be able to specifically provide for their needs and build the trust required to build the best roads. Since Launchpad Asia is distributing an unpatented product in a new and complicated market, it is important to gain many road material contracts early to establish a market presence for Launchpad Asia throughout the nation. Launchpad Asia will have to penetrate as many provinces as possible.

CHAPTER SEVEN

Operations

Road-building in China is determined by the government. When a road is to be built, the government holds several bids, first to determine what product should be used to build the road, then to determine what company should build the road. Product bids can be written with very specific qualifications. In order to ensure that Earthbind Stabilizer and M10+50 win product bids, it is important that Launchpad Asia's Managing Director in Asia, David Chen, builds relationships with people in China's Department of Transportation. Influencing bid writers to write bids in such a way to that EnviRoad and EnviroSeal clearly win is the surest way for Earthbind and M10+50 to be used.

Once a bid is won, Launchpad Asia uses information about location, length, and soil type of the road to calculate how many liters of material are needed. Purchase order details are then sent to Chad Lewis, who purchases the material from EnviRoad or EnviroSeal. Instructions for the specific soil type are included with the order and the products are shipped.

Earthbind and M10+50 are transported in traditional 20' cargo containers. Each container holds 74 208-liter drums full of stabilizer. The cargo containers are trucked to an American port, shipped to the port in

Tianjin, China, and then trucked to the province where the roads will be built. If Launchpad Asia chooses to open a mixing plant in China, the product would be mixed at the plant then shipped directly to the customer.

Building a road with either of these products is a simple process. To prepare for construction the road base should be graded or tilled to a depth of 10cm to remove all imperfections. Next, the stabilizer solution should be diluted to the appropriate concentration for the soil type, temperature, and moisture level. A typical base stabilization requires a 4:1 dilution ration of water to product and should be mixed using Bomag Stabilizer/Recycler 122-2 or equivalent machine. Use the Bomag to apply two coats of stabilizer solution to the soil at a rate of 2.26 liters per square meter of road. Re-grade and compact the surface of the road with a roller and apply a final coat of solution at 1.13 liters per square meter to finish the road. It is recommended that sections of no more than 0.8km be built at a time to ensure the highest possible quality.

In order to understand the markets of the individual regions, it is imperative to know how these projects are financed. Rural roads are funded primarily through provincial and local governments. However loans from internal organizations and banks, as well as foreign capital will sometimes add funds to a road development project (though, this is really more the case in major highway projects). The final decision-maker of a rural road's material and construction will depend upon the level of autonomy given to

the local government. This will vary from region to region, yet the majority of the time they mayor of the local municipality will ultimately sign off on a given project. Recently local autonomy has increased, giving the local governments the ability to make final construction decisions. This situation can be a double-edged sword, for along with the ability to make the final decisions comes the responsibility of financing the project. The greater the autonomy of local governments, the greater the disparity grows between them. The more economically developed communities have the money to build more roads, which in turn, results in higher output. In poorer communities, the local government cannot afford to build these roads, thus output continues to be stagnant.

CHAPTER EIGHT

Financials

The current materials used for rural road building are inadequate. Previous soil stabilizers and concrete have built up a reputation for being too expensive, inefficient and harmful to the environment. Last year the major soil stabilizing competitors for Launchpad Asia built and repaired an average of 46.5 km of rural roads. This represents a total market share of a meager .01%. Launchpad Asia's products have the opportunity to expand the market available to soil stabilizers through an exhibition of its process. A pilot program in 3 provinces with the highest concentrated demand will set Launchpad apart from ineffective soil stabilizers and highlight the wasteful expenditures of concrete.

Launchpad Asia's pilot program for the first year will cost the company 11,169,422 RMB to build 5 kilometers of rural roads in each of the 3 provinces. A single competitor's yearly average represents .02% of the Shanxi, Henan and Sichuan market. After the test program Launchpad Asia expects a return on its investment through .05% of the market share. This .05% of the market share for the top 3 provinces equates to 33 kilometers of roads and net income of 4,925,307 RMB in year 2. The company will breakeven in year 3. The pilot program establishes Launchpad's credibility and thereby allows Launchpad Asia to become the market leader for soil

stabilizers in year 3 with a profit of 7,100,628 RMB and by year 4, Launchpad Asia will expand into the market for concrete. Building 60 kilometers of roads for the Shanxi, Henan and Sichuan market in year 4 represents a net income of 9,275,952 RMB. Year 5 is an opportunity for Launchpad Asia to double the market share of soil stabilizers with continued expansion. Profits from year 5 of building 93 roads equate to 14,644,255 RMB a number that will grow exponentially as Launchpad expands its influence beyond the demand areas of the Shanxi, Henan and Sichuan provinces and into the rest of China.

The major expenditures for Launchpad Asia are sales and marketing and shipping expenses. The determined revenues in the income statement are calculated from the number of roads Launchpad expects to build multiplied by a selling price of 1.5 times the purchasing cost. There is no set price for Launchpad, as each deal will be negotiated by province. Launchpad Asia purchases the Earthbind Stabilizer and M10+50 from Enviroad and Enviroseal at a price of 7.00 USD or 44.56 RMB per liter. The price per 1kilometer road, 10m wide is 503,542.69 RMB. The cost of goods sold is determined from the cost per 1kilometer road multiplied by the length of the road. Therefore, in the first year the cost of goods sold for building 5kilometer roads in each of the top 3 provinces equals 7,553,140 RMB. General and administrative expenses for Launchpad Asia's road building project are estimated from 30% of Launchpad's total general and administrative expenses of 200,000 USD. Converted to RMB the expenditure is 382,848

RMB. Sales and marketing expenses are estimated at 400,00RMB for the first year to cover the cost of flights and entertainment. These expenses decrease to 350,000 RMB once the pilot program is implemented and increase again to 450,000 RMB in year 5 as Launchpad Asia expands its efforts beyond the top three provinces of Shanxi, Henan, and Sichuan.

Shipping is a growing expense for Launchpad as the number of roads ordered increase. An average shipping price for shipping 1 liter of soil stabilizing product from Enviroad or Enviroseal is 1.51 RMB; this information was discovered after searching several shipping companies and speaking with a representative from Si Chua. With 11300 liters needed to pave one kilometer of road, the shipping cost per kilometer is 17,058 RMB. Once Launchpad begins building more than 187 kilometers of roads a year it is more beneficial for the company to consider the construction of a distribution center in China. The building costs are 500,000 USD or 3,189,853.71 RMB. Income tax expense is the final expenditure calculated into the income statement with a 30% sales tax multiplied by income before taxes.

The statement of cash flows highlights Launchpad's breakeven point in year 3 and the available cash balance of 24,776,720 RMB at period ending in year 5. Cash paid for merchandise is the cost of goods sold for the product. Cash paid for wages and other operating expense is a reflection of the expenditures spent on sales and marketing and general and administrative

expenses. Cash paid for taxes is calculated using a 30% US income tax rate. Ending cash balance for year one is negative due to the implementation of the pilot program while year 2 is still paying off the final expenses from the 8,654,177 RMB used in the pilot program. Year 3 through Year 5 represent growth potential as Launchpad asserts itself into the market. An aggressive entrance strategy is justified financially as the market is rapidly expanding and the company will see returns of more than double its initial investment in year 5. Additionally, the financials are figured for just the first 5 years within the Shanxi, Henan and Sichuan markets. Calculations were based on the past performances of soil stabilizing companies in the market and the faith Launchpad Asia has in its products to exceed the expectations of the Chinese government. Expansion beyond these provinces after Launchpad has asserted itself within the market will increase returns dramatically and lead to stronger relations with decision makers in the government.

CHAPTER NINE

Reflection

Frank Gallo's book *Business Leadership in China* notes, "Simply importing best western leadership practices will not work in China". There is a cultural difference between the way workers view leaders, what they expect from their leaders, and what leaders can expect from their workforce. Baylor's i5 program, an" Immersion Into International Interdisciplinary Innovation," is a cultural immersion experience with the mission, "to create an environment for students to develop science and technology insight, business savvy and global cultural competence". The program involves a five-week internship in China. Promoting cultural interaction, the program integrates students from Baylor University, USST, the University of Nottingham, Petra University, and the University of Macau. Each team, comprised of students from America and China, is appointed a company to work with and assigned the task of formulating a business plan fitted for the Chinese market. I5's integration of American and Chinese cultures offers firsthand experience of Frank Gallo's advice. There are striking historical and cultural differences between China and America that have led to differing business styles but i5's integration has laid the foundation for a new way of conducting business.

My personal experience with the i5 program began with my letter of acceptance received in March of 2012. As I had just returned from a semester abroad in Spain, I was excited to learn about a new culture. I had no previous knowledge of the language or any experience of traveling in the East. The i5 program was an opportunity to gain practical experience in international business and work on a thesis for my major, Baylor Business Fellows. Frank Gallo's book *Business Leadership in China* was required reading for the trip, and began my understanding of Chinese business culture.

The i5 program left on a Wednesday and flew to Wuhan, China for a Yangzi river cruise. It was there that we were assigned our groups and met our team leaders for the first time. Baylor IP law student, Scott Francis, led our team, Launchpad Asia Road division. The team was also comprised of Baylor undergraduate students Kinzi Zitzman, an engineering major, and myself, a Business Fellows major. We were told that we would meet with the final half of our team, our Asian counterparts, in Hong Kong after the Yangzi cruise. Our assignment was to formulate a business plan with a market penetration strategy for the company's product – a polymer material that enhances soil compaction and stability, ideal for road construction. The Yangzi river cruise was 4-day opportunity to relax, learn our team members and gain some exposure to the diverse landscape of China. We toured ancient temples in the Ghost City, floated through the Three Gorges Dam and drifted down a tributary of the Yangtze on boat tracking tour. Simply by watching

construction activities on the main land and observing daily life from the boat you could see the application of our upcoming project to life in China. Industrialization was expanding, yet dirt roads were still a primary method of transportation. Difficult terrain and tight budgets sustained the demand for reliable dirt roads.

On day five of the trip, we flew to Hong Kong to begin work on our assigned projects at Hong Kong Baptist University. There we met Samantha Haung, our Asian team leader and Owen Xu a business undergraduate and the fifth final member of our team. The two weeks in Hong Kong were spent attending lectures in the mornings and researching for our individual projects at night. The lectures covered topics of entrepreneurship, business strategy and IP law. The lecture activities provided applicable insight into the structural formation of our business plans and encouraged a new way of thinking as we began to collaborate with our groups. While in Hong Kong we also had the opportunity to tour the fashion brand Burberry's Hong Kong headquarters. Burberry executives spoke to our group about the various facets of the brand including IT, intellectual property, marketing, management, human resourcing and finance. Burberry remains at the forefront of fashion with an integrated business model. They use technological innovation to capture the attention of the luxury consumer and to propel the brand forward. You could see from the presentation how the company integrated Western business practices with eastern culture. There

was a strong emphasis on collaboration between the departments and a drive to elevate the brand's status. We also visited ASTRI headquarters at the Science Park. A research company funded by the government, ASTRI's business model differed significantly from that of Burberry's yet the impressive work ethic and strong desire for excellence remained.

The last few weeks before our final presentations in Beijing were spent at the Nottingham Campus in Ningbo, China. It was within these final weeks where our individual research roles began to overlap and develop into the formal business plan and final presentation. Increasingly long days and late nights quickly exposed cultural differences within our group. We began to experience the meaning behind Frank Gallo's advice against importing old practices to a new culture. Our research in Hong Kong and for the first few days in Ningbo was largely an individual assignment. Our group met with the purpose of learning as much as possible about Launchpad Asia's soil stabilizing products and possible areas of demand. This worked well as people began to recognize their roles and worked within their own specialties. Samantha and Owen used their business backgrounds and familiarity with the culture and language to research the Chinese road building process. They conducted phone interviews, sent emails and analyzed newspaper and web articles to gain an understanding of China's expanding road building market. Kinzi used her engineering background to research the chemical makeup of the product and I looked into the product's financials. Scott kept us all on

track and used his knowledge of intellectual property to assess the legal implications of introducing Launchpad Asia's product to the Chinese market.

Problems arose in the final stages when we began to combine the research and format our PowerPoint presentation for Beijing. The process of deciding what information would be used in the presentation, what each presenter would say, and in what order was largely unstructured. The students from Baylor and I were used to working collaboratively and gave critiques of each other's work freely. Our Chinese counterparts, however, were used to a more individualistic and less opinionated strategy of working. They became frustrated quickly and were offended when they were told to go back and change what they had been working on. What we viewed as constructive criticism, Owen and Samantha saw as indication that they had failed.

After various late nights of frustration with a project that was lacking direction, we learned to stop and address our difficulties. We discovered from Owen and Samantha that receiving criticism from the whole group at once was distracting and discouraging. We determined that all criticisms would be addressed to Scott, the team leader, who would then be responsible for giving out direction. Referring back to a method of hierarchy addressed in Frank Gallo's book and common to most business practices in China increase the efficiency of our group. Directing authority to a single member cleared confusion, and allowed the group to work collaboratively in a comfortable

environment. Taking a moment to address our problems allowed our group to move forward. The late nights continued but would often end in delirious laughter rather than tired arguments. In Beijing our team won the award for the business plan in which the panel would most likely invest. Our hard work had paid off and we now had a trophy to show for it.

The overall i5 experience was stressful and required long hours of hard work, but the rewards from completing the project were invaluable. Late nights resulted in international friendships; difficult challenges resulted in newly discovered capabilities; and stale work ethics led to a new way of conducting business. I would recommend the i5 program to anyone looking to challenge themselves and expand their cultural horizons. The program brings new light to international business and gives new meaning to innovation and collaboration across cultures.

APPENDIX

APPENDIX

Product

P-A. Product Overview

Standard Operating Procedure for Applying Earthbind for Erosion Control and Hydroseeding

INTRODUCTION

Earthbind is an emulsified paraffinic resin modified biopolymer that can be used for erosion control and hydroseeding. Earthbind is supplied in a concentrated form and diluted with water prior to application at varying dilutions and applied to the surface of bare soil surfaces to control erosion and aid in vegetation establishment.

PREPERATION OF THE EARTHBIND SOLUTION

Select a proper dilution rate for the intended application using the guidance on the second page. Once the dilution rate has been selected calculate the total volume of diluted product required and the amount of Earthbind concentrate that will be needed for the erosion control project using the following steps.

1) Calculate the area you want to treat in square meters.

2) Calculate the total volume of **dilution** (solution that is made by adding water to the Earthbind concentrate) needed by multiplying the area of treatment in square meters by 2.25 liters/m^2 *(example: 1000 m^2 x* 2.25 liters/m^2 = *2,250 liters of Earthbind dilution)*.

3) Calculate the amount of Earthbind **concentrate** required by multiplying the total volume of dilution derived from step one by the following Dilution factors:

   12:1 Dilution Factor = **0.08**

   15:1 Dilution factor = **0.06**

20:1 Dilution Factor = **0.05**

(20:1 dilution example: 2,250 liters of dilution x 0.08 = 180 liters of Earthbind ***concentrate****)*

4) Determine the amount of water required by subtracting the volume of product required as determined in step 2 above, from the total volume of dilution as determined in step 1 above *(example: 2,250 liters of dilution – 180 liters of product = 2,070 liters of water)*.

5) Add the required amount of water to the application equipment tank prior to adding Earthbind concentrate.

6) After the water has been added, then add the necessary amount of Earthbind concentrate as determined in Step 2 and mix (Note, it is very important that the Earthbind emulsion is mixed well prior to dilution with water for application). It can be important to add Earthbind concentrate after the water is introduced to the tank to prevent the emulsifiers in the product from producing foam that may overflow the tank.

7) Dilution is now ready for application at a rate of 2.25 liters per square meter.

APPLICATION

Earthbind can be applied by a hydroseeder or a hydrocannon mounted on a water truck at a rate of approximately 2.25-liters per square meter. Caution should be taken to avoid creating puddles or runoff. On a slope, the dilution should be sprayed from multiple directions and angles to ensure complete and proper coverage. Treated areas should not be driven on or disturbed after application. Do not apply the solution if rainfall in expected within 24-hours of application.

Recommended dilution rates for specific applications are provided below**.** Do not allow the diluted Earthbind emulsion to enter a surface water body.

Example of a Hydroseeder

Example of water truck with a water canon

<u>Slope Protection on Clay Soils</u>

Earthbind can be mixed in with seed and applied to the slope with a hydrocannon or applied to a slope after the grass has been seeded. Earthbind will stabilize the soil and prevent erosion until seedlings emerge.

Dilution rates shown below represent the ratio of water to product, for example, a 15:1 dilution represents 15 parts water to 1 part Earthbind concentrate. Diluted product should be applied at a rate of 2.25 liters per square meter using the following dilution rates:

- **2:1 Slopes - 15:1 dilution**
- **3:1 Slopes - 20:1 dilution**

Application as a Hydraulic Mulch
Earthbind may be mixed with the seed and fertilizer and sprayed on the soil from a hydrocannon. Recommended application is 2.25 liters per square meter at the following dilution rates:

- **Sandy soils - 12:1 Dilution**
- **Clay Soils - 20:1 Dilution**

CLEAN UP
Residual Earthbind can be washed off the equipment with water.

SIMPLIFIED APPLICATION STEPS

1) Determine the size of the area of application in square meters;
2) Mix the Earthbind concentrate;
3) Prepare a dilution with the proper strength necessary for the application;

____ meters^2 treatment area x 2.25 liters/m^2 = _____ dilution volume in liters

____ Liters of dilution x Dilution factor = _____ liters of Earthbind **concentrate**

_____ Liters of dilution - _____liters of Earthbind = _____ liters of water.

4) Add water and then mix Earthbind concentrate in application equipment;
5) Protect Surface water bodies from product application; and
6) Apply product solution (dilution) to treatment area.

P-B: Material Requirement for Application

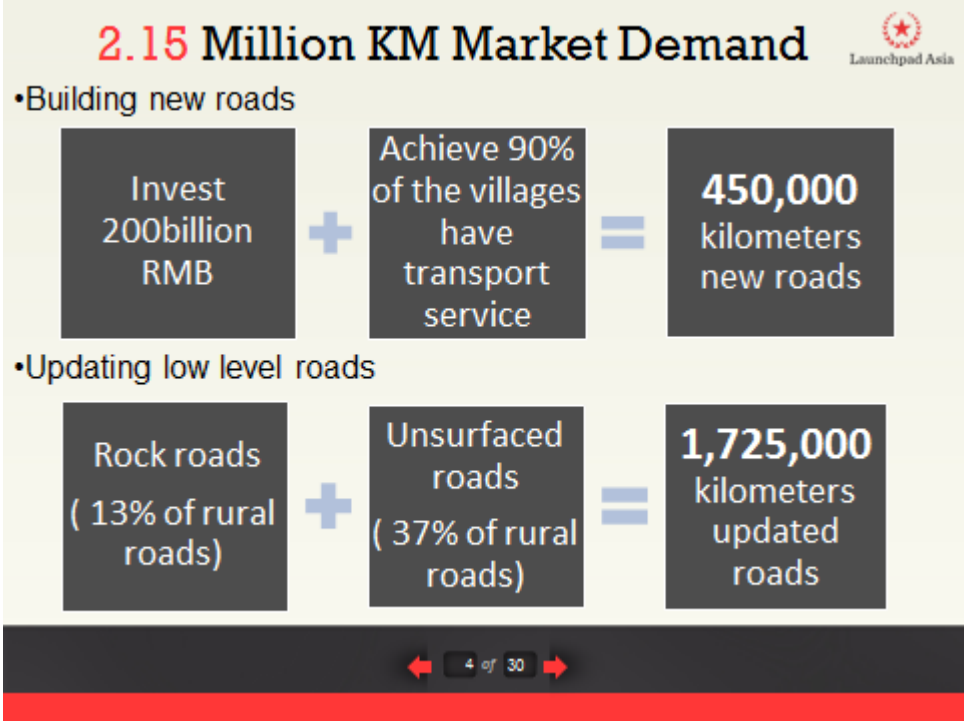
Application Amounts	RMB to USD	6.357
How wide is the road in meters?		12.00
How long is the road in meters?		800.00
Total square meters equals		9,600.00

Treatment Depth (cm)	Base Treatment Treatment	Top Shot	Total Liters per sq m	Total Liters Needed	Liters per MT	MT Needed	Cost per MT - USD	Cost per MT - RMB	Total Cost	Cost per sq/m
10	0.9	0.23	1.13	10,848.00	947	11.5	$ 3,227.00	¥ 20,514.04	¥ 234,990.81	¥ 24.48
15	1.4	0.23	1.63	15,648.00	947	16.5	$ 3,227.00	¥ 20,514.04	¥ 338,969.04	¥ 35.31
20	1.8	0.23	2.03	19,488.00	947	20.6	$ 3,227.00	¥ 20,514.04	¥ 422,151.63	¥ 43.97
25	2.26	0.23	2.49	23,904.00	947	25.2	$ 3,227.00	¥ 20,514.04	¥ 517,811.60	¥ 53.94
30	2.7	0.23	2.93	28,128.00	947	29.7	$ 3,227.00	¥ 20,514.04	¥ 609,312.45	¥ 63.47

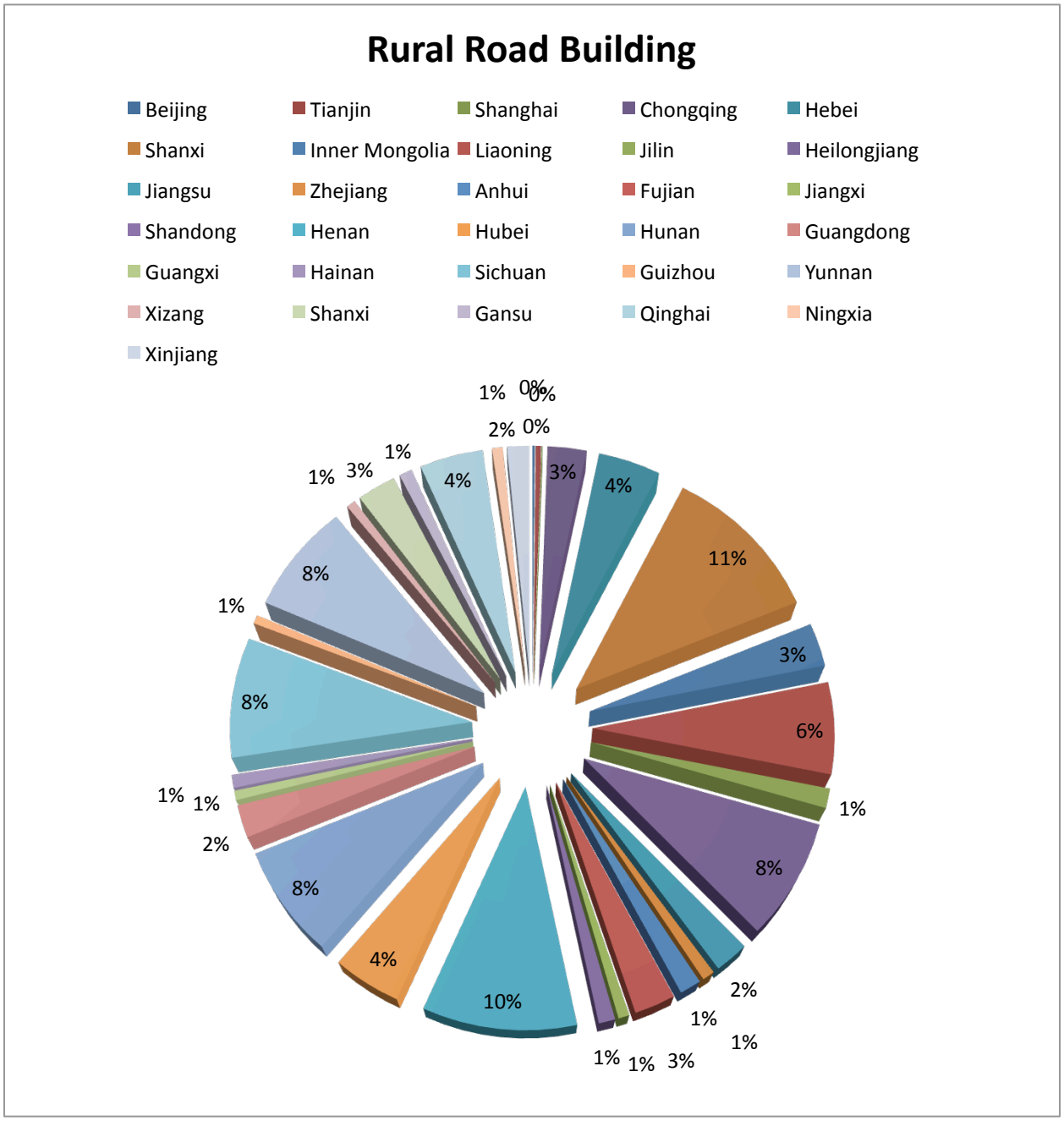
Market Analysis:

M-A: Major Drivers of Demand

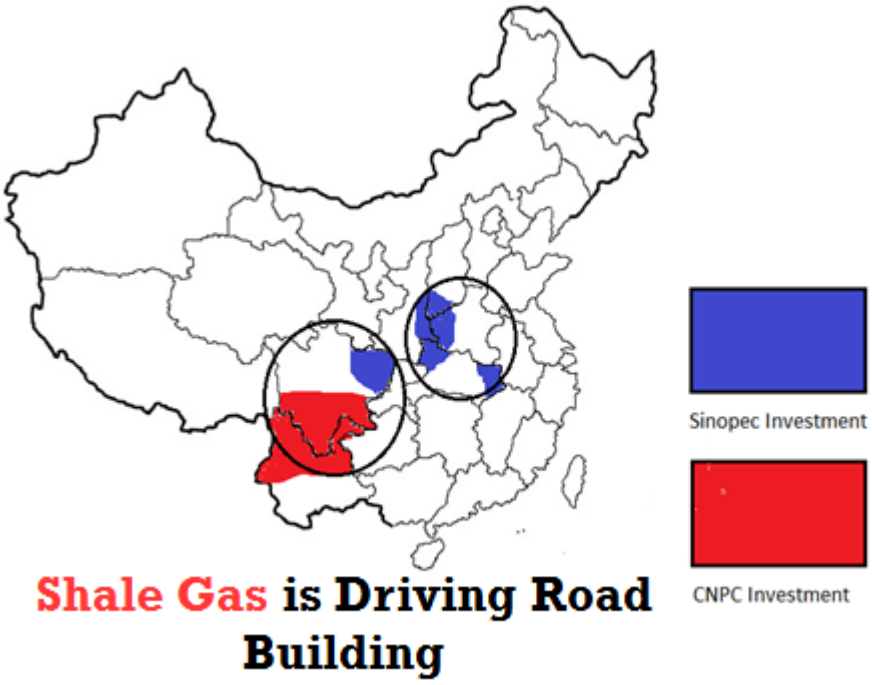
M-B: Total Market Demand



M-C: Rural Road Demand by Province



M-D: Sinopec and CNPC Shale Gas Exploratory Wells



M-E: Highest Rural Road Building Demand From 5-Year Plan

M-F: Sichuan Province Background

Sichuan Province

Road

The total mileage of road has reached 115 thousand kms at the end of 2005, including 12 thousand kms of first-class and second-class road. The total mileage of expressway in the province has reached 1,759km, ranking the fi rst in West China and sixth across the country.

Natural Resources

Sichuan has almost all kinds of mineral resources: 130 kinds of minerals have already been found, the volume of proved reserve of 89 kinds of minerals meet requirement of industrialized exploitation, out of those 89 kinds of minerals, the reserve volume of 11 minerals including vanadium, titanium, lithium, silver, sulfurous iron ore, natural gas etc ranks the first in China (the reserve volume of vanadium and titanium ranks the first around the world).

Industry

Many key enterprises in Sichuan are famous around China, such as Changhong Group CO LTD, Wuliangye Group, Pan Steel Group Co and Southeastern China Gas Field Company etc.

Shale Gas

Weiyuan, Changning, Zhaotong, and Fushun-Yongchuan

M-G: Shale Gas Industry

PetroChina finds shale gas reserves

By Leslie Hook in Beijing

PetroChina has discovered shale gas in China's Sichuan province, confirming that the energy-hungry country is sitting on vast reserves of this unconventional fuel source.

Shale gas, or natural gas trapped inside deposits of shale rock, is expected to transform China's energy supply in future decades by providing a potentially cheap and plentiful new source of fuel for the world's biggest energy consumer.

PetroChina, the listed subsidiary of Chinese oil and gas producer CNPC, told the Financial Times it had drilled about 20 wells in its shale gas acreage in southern Sichuan province and that initial results had been positive. "The wells are producing more than 10,000 cu m of gas per well per day," said Mao Zefeng, PetroChina senior assistant secretary to the board. "We are still assessing the exact size of the potential reserves."

Shale gas is produced by injecting wells with highly pressurised water and chemicals, a process known as "fracking" that cracks open rock to release natural gas. The technique has revolutionised energy markets in countries such the US, the world's largest producer of shale gas, by driving down natural gas prices.

China does not yet have any shale gas wells producing commercially, but several companies have exploratory projects underway, including Sinopec, PetroChina, Royal Dutch Shell, BP andChevron. China has more shale gas reserves than any other country in the world, with 1,275tr cu ft of recoverable shale gas reserves, according to estimates from the US Energy Information Administration. That is enough to supply China for more than 300 years, based on current consumption levels.

Beijing sees natural gas as a part of the solution for China's growing energy needs, and the state has encouraged the development of "unconventional" natural gas sources such as shale gas and coal-bed methane. China's shale gas production will eventually exceed that of the US, according to remarks by Fu Chengyu, chairman of Sinopec, at a conference on Wednesday.

Gavin Thompson, head of China gas research for consultancy Wood Mackenzie, said the initial results in southern Sichuan suggest the acreage could be "comparable with attractive shale plays globally" once horizontal wells were drilled. Most of the wells drilled so far are vertical, and horizontal wells are underway, according to PetroChina.

"These are quite crucial times for shale gas development in China," he said. "If PetroChina or Sinopec has really good success over the next one to two years with their [shale gas] wells, we may see a much harder push to develop shale."

Despite the apparent resources, some analysts are sceptical about how soon China can make shale gas production profitable given the relatively low price of natural gas in China and the lack of pipeline infrastructure. Two geologists contacted by the FT said that 10,000 cu m per day was not large relative to onshore US fields, adding that production from shale gas wells declines rapidly over the lifetime of the well.

PetroChina's southern Sichuan shale acreage includes the Changning and Weiyuan blocks. On the nearby Fushun-Yongchuan block, a joint venture project between PetroChina and Shell has drilled several exploration wells for shale gas, at least one of which has gas production, according to media reports earlier this year. Shell declined to comment on the production of the block, saying that "exploration work is ongoing".

M-G: Si Chuan Province Bureau of Transportation – contact List

Gov	name	position	department	contact
si chuan province, bureau of transportation				
	huang xing li	vice supervisor	foreign affair office	
	chen le sheng	general engineer	supervision office	
			general office	028-85525243
mian yang			comprehensive plan office	0816-2302277
			rural construction office	0816-2336316
			general office	0816-2333572
			road management department	0816-2277623
le shan				
			comprehensive plan office	0833-2428537

			project construction management office	0833-2428557
			transportation management	0833-2428530
sui ning				
			comprehensive plan office	0825-5806976
			construction management office	0825-5867157
			transportation strategy office	0825-5806918
			general	snsjtj@163.com
zi gong				
	yang wan shan	president		0813-8116115
lu zhou				
				0830-2285253
	du yu	director	comprehensive plan office	0830-2287311
	sun qian	director	road management office	0830-2285252
guang an				
	duan zheng zhong	director	comprehensive plan office	0826-2333014

M-H: Call Report from Si Chuan Department of Transportation

1. What material do you use for class 3 and class4?

- Material: Pitch and cement. It depends on the traffic volume.
- Price: 5000 per ton for first half year, 6000~7000 per ton for second half year. It depends on the supply & demand relationship
- Decision: The government invites bids and decides the construction team, while the construction team decides the material. If there is any special material requirement in the project, it will be written in the bid documents

2. What is the motivation of road building?

The government wants to improve the convenience of transportation of residents.

3. Will the construction team build the road by themselves or by government?

They build by themselves.

4. What is the current situation of countryside roads?

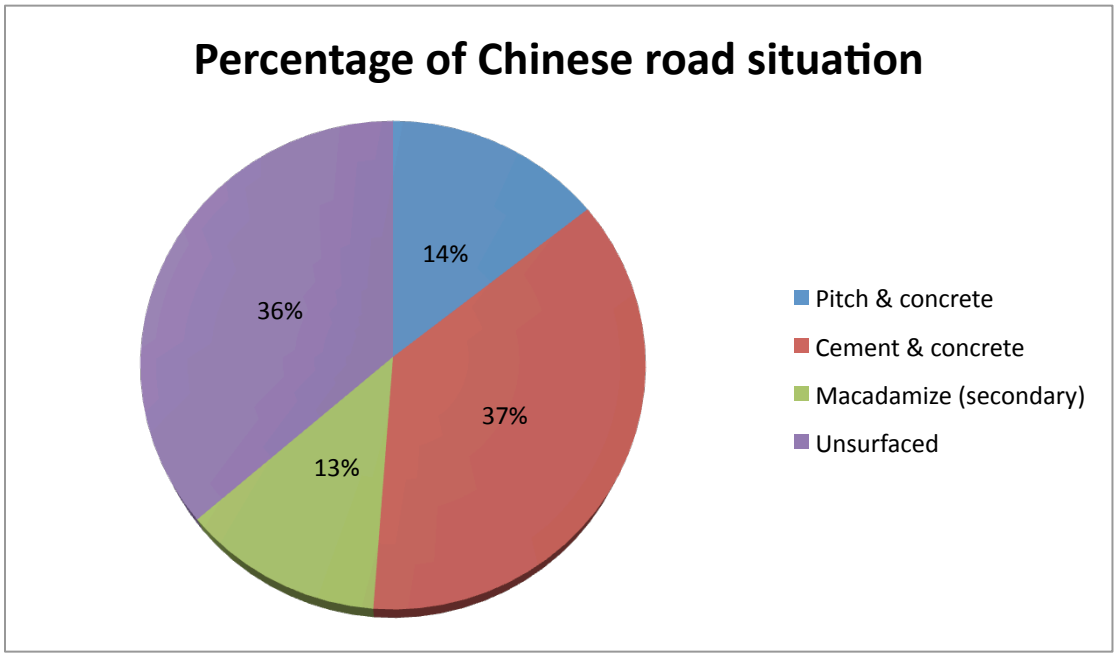
After the Wen chuan earthquake, most of the villages have recovered to connect to the city, while several remote places still need new roads.

5. Have you ever used the soil stabilizer before?

- Yes, but finally give up.
- Too expensive, though it is cheaper than the cement, cement can be easily

maintained and it lasts longer.
Not environmental friendly. It will hurt the soil structure permanently

M-I: Current Surface Material in Rural Road Market



M-J: Major Soil Types by Province

http://zhidao.baidu.com/question/97669259.html

China:

Latosol: south of Hainan Island, the Peninsula, Xishuangbanna and Taiwan Island, roughly in the area south of latitude 22 °.

Lateritic red earth: most of southern Yunnan, in southern Guangxi, Guangdong, the southeastern part of Fujian, and Taiwan Province of south-central, roughly between latitude 22 ° to 25 °. For the transition between the type of brick red soil and red soil.

Red and Yellow: in most areas south of the Yangtze River and the mountain around the Sichuan Basin.

Yellow-brown: the north Qinling, the Huaihe River, south to the Daba Mountain and the Yangtze River, the West since the edge of the Qinghai-Tibet Plateau southeast, east to the heart of the lower reaches of the Yangtze River. Is the transition between the yellow red and brown soil.

Brown: the Shandong Peninsula and Liaodong Peninsula.

Dark Brown: Northeast Daxinanling Dongpo, Mountains, Zhangguangcailing Changbai Mountain.

Cold brown earth (bleaching lime): Daxinganling North segment mountainous upper part of the south of the north wide narrow.

Cinnamon soil: Shanxi, Hebei and Liaoning provinces connection hilly and low mountain areas of Guanzhong Plain.

Chernozem: the Daxinganling south section of the mountains east and west sides, the Northeast Songnen Plain in the central and the Songhua River, Liaohe River watershed areas.

Chestnut soil: the vast grasslands of the Inner Mongolian Plateau, eastern and central regions, is the most widely distributed in the soil of calcium layer, the largest soil types.

Brown soil: the plateau of central and western Inner Mongolia, Ordos Plateau, the northern part of the Junggar Basin, Xinjiang, the outer edge of the Tarim Basin, the driest of the calcium layer of soil and a soil of the desert transition.

The black clay soil: northern Shaanxi, Ningxia, eastern Gansu and other less severe soil erosion on the Loess Plateau, the terrain is relatively flat loess source region.

Desert soil: the western part of Inner Mongolia, Gansu, Xinjiang, most of Qinghai's Qaidam Basin and other regions, area.

Alpine meadow soil: the east and southeast of the Qinghai-Tibet Plateau, in the Altai, Junggar Basin, the Western Hills to the Tianshan Mountains.

Alpine desert soil: the northwest of the northern Tibetan Plateau, the Kunlun Mountains and the Pamirs.

XinJiang

The percentage distribution of different types of soil in Xinjiang area:

Wind sand 22.7%; brown desert soil, 14.19%; brown soil 8.63%; cold permafrost 6.1%; stony soil of 5.02%; 4.97% of the gray-brown desert soil; cold calcareous clay 4.94%; 4.42% of the chestnut soil; saline soil 3.84 %; cold calcareous clay 3.45%; MAT soil 3.13%; meadow soil, 2.59%; black carpet soil 1.67% 1.58%; chernozem; cold desert soil, 1.43%; shrub meadow soil 1.23%; gray desert soil, 1.12 %.

Gansu:

Gansu Province of soil distribution and characteristics of the province Tucheng distribution can be divided into:

south: yellow brown soil, brown soil, cinnamon soil region.

East: loess soil, black bamboo land area;

middle: hemp soil, yellow and white cotton land area, Gannan meadow soils, meadow steppe land area; west: desert soil, irrigation Ki land area and the Qilian Mountains chestnut soil, chernozem 6 region and 19 slopes area.

Tibet

Tibetan soil is divided into the alpine soil orders, semi-leaching soil orders, Alfisols Gang ferralsols Gang, a half of water into the soil orders water into the soil Gang Gang of saline-alkali soil, artificial soil orders, the early Education soil orders and 9 soil orders. soil orders are subdivided into 28 soil types and 67 sub-categories of soil on 362, 2 236 soil species in different soil types, alpine steppe soil, alpine meadow soil and alpine cold desert soil, subalpine meadow soil area of 74 375.3 mu, 28 095.38 mu, mu 21 272.92 14 198.03 mu. soil area 137 9416300 mu, accounting for Chief soil types, 79.87% of the area of waters (excluding settlements). soil area of the smallest Irrigated soil and paddy soil, respectively, only 1.3 mu and 2.2 mu.

1 mu=666.67 m^2

Shaanxi

Variety of soil types in Shaanxi Province, the province a total of 21 soil types, 50 sub-categories, the soil on 149, over 400 soil species. The main soil types are chestnut soil, black loam, brown, cinnamon, yellow-brown, yellowish brown soil, sandy soil, loess soil (soil + Lou) soil, paddy soil, damp soil, a new plot of soil, bog soil and saline-alkali soil.

Shaanxi Province soil zone distribution law is obvious.

From horizontal differentiation: Northern Shaanxi Plateau chestnut soil - black loam land with; Guanzhong Basin brown - cinnamon soil zone; southern Shaanxi mountain yellow-brown - yellowish brown land with.

From the vertical differentiation, Qinling Mountains, Daba Mountains to very obvious. Northern slope of Qinling bottom-up as cinnamon soil - brown - dark brown - the sub-alpine meadow soil - the original soil; Daba Mountain, the northern slope of the bottom-up cinnamon soil - yellow brown - brown.

Shanxi

Shanxi Province soil sub-categories

Brown	In meadow cinnamon soil	Cinnamon	Mountain meadow soil	Salinization tide soil
- Brown soil	Cinnamon soil resistance soil	Light Cinnamon	Mountain steppe meadow soil	Alkalization tide soil
Leached cinnamon soil	Chestnut soil	Tidal Cinnamon	Aquic soil	Marsh soil
Cinnamon soil	The grass Austin chestnut soil	Initial sterile soil	Off the influx of soil	Saline
Calcareous cinnamon soil	Chestnut Soil Soil	Sub-alpine meadow soil	Wet aquic soil	Paddy soil

Brown:

Brown forest soil in our province, an area of 314.7 mu. Mainly distributed five, the Taihang, second-growth forests of the mountains, Zhongshan zone Luliang, Taiyueh,, strips or remnant forest areas. Coniferous forest or needle-leaved forest complex was developed under the soil, elevation from south to north increased, widely distributed 1,700-2,400 m Zhongshan shady or semi-sunny mountain meadow soil, the ceiling then the next The leaching dried. The main vegetation of spruce, tabulaeformis, larch, oriental arborvitae trees, shrubs, lilac, forsythia branches and yellow Rosa, etc., as well as Carex, sedge, lichen, moss and other herbs. Surface a thick litter layer, due to forest canopy light and high temperature and rainfall in summer, winter frozen environment, decomposition is slow, massive accumulation of organic matter, humus organic matter content of 7-15%. Soil medium and long-term water, soil leaching fully g even permanganate with water to seep into the soil underlying the infiltration of g even permanganate is reduced to donkey-hide gelatin g with acid and Wu Limin acid, resulting in showing brown, due to a large number of base by leaching, and excess of organic acids in the free state, the soil was slightly acidic, PH6.5-7.0.

- Brown soil:

An area of 166.2 acres, located in sunny or valleys on both sides of the brown region. Subject to certain erosion of the soil is thin, scattered coniferous clindamycin or broad-leaved forest, mainly grass and shrub coverage poor; another damaged in the history of the primeval forest, the lush soil of secondary grass and shrub replaced , appear in the forest area near the village, or the upper and lower zones of the forest edge, profile deposition layer can be seen the rotten root of the tree. The soil profile poorly developed, brown the process is not obvious. The general configuration of the soil for turf layer - the humus layer - Argic (weak argillic) half of the weathered material layer.

Leached cinnamon soil:

Located in cinnamon, The Li dried soil zone five, the Taihang mountains, Zhongshan, Lu Liang, Taiyue strips Strip, vertical band shrub cover under an area of 1,576.4 mu, is brown The soil in the distribution sub-class of the highest in the terrain. Increased 1,200-2,000 m elevation from south to north in the summer green broad-leaved shrubs and forest bio-climatic characteristics of the zone. Vegetation to the forest of aspen, white Ye hickory, hawthorn, mountain oak and other deciduous broad-leaved trees, and the tiger hazelnuts, xanthina, Spiraea grass and shrub, coverage is generally 70-95%. The soil parent material to the various types of weathering of rocks, debris slope sediments mainly shrub grass bio-climatic conditions, the upper soil humification in the soil with strong decalcification of leaching and leaching argillic deposition cinnamon soil of the process. Quintana limestone reaction, the soil is neutral, PH between 6.7-7.5.

Cinnamon soil:

Area of 101.1 mu, local typical sub-categories. Main distribution of the province south of the warm sub-humid forest-steppe bio-climatic zones Wanrong County Emei platform, Fushan, Fenxi County Ogaki, Wenxi, Tunliu, Jincheng, equal to the second terrace and scattered annual average temperature in the 12-14 ° C, annual rainfall of 500-650 mm, flat terrain, the stability of the pedogenic conditions in the soil profile, argillic, calcic apparent calcium laminated multi-layer of the lower part of the argillic, argillic layer is thick, small Ferrosilicon rate of Argic 0.002 viscosity ratio> 1.5, low Argic calcic layer of calcium carbonate in the soil vary significantly. Leaching type, topsoil, subsurface leaching, the heart of soil calcium laminated; but most the recalcification type, surface, sub-surface complex

lime subsoil layer of semi-leaching, calcium carbonate content <2.5% calcium laminated> 6%.

Calcareous cinnamon soil:

Area of 1,037.5 mu, widely distributed in the the the Hengshan south of Luliangshan east basin of the river two terraces and piedmont inclined plains, hills and gentle slopes, and the Yuan to the average annual temperature of 8-14 ° C. Soil development-level transition is obvious, but the calcium carbonate differentiation was not obvious, can be seen in the soil filamentous and Creamy calcic, quintana lime reaction was a strong heart, soil color more brightly colored sticky layer. The sub-categories in which the hydrothermal conditions were better, flat, mostly secondary loess parent material, is the province's main agricultural soils. Oaki crop-based, and more for two years, three to Winter and Oaki, twice a year for cotton and wheat. Leaching in the soil layer is not obvious, the sticky layer and calcium laminated most of them in the same layer segments, from south to north argillic waning.

In meadow cinnamon soil:

Area of 50.8 mu distribution of piedmont plain low-lying at the second terrace. Groundwater 3-5 m, the upward trend Potential, the bottom layer of the groundwater capillary role and participate in the process of soil, cinnamon soil of the transition to the meadow, sub-categories, the upper soil dried soil, sticky calcium product characteristics, the lower meadow. can be seen in the retention education phenomenon.

Cinnamon soil resistance soil:

Area of 7947.9 mu, widely distributed in the area of cinnamon soil, mountain, hills, the ruins of and gully. Since the terrain in which the cutting broken, the more serious soil erosion, soil formation process is not continuous, poor soil development characteristics of the parent material is more obvious. Quintana lime reacted strongly. Subsoil common to in the amount of points, filamentous calcium product, but the calcium carbonate content of the upper and lower differentiation is not obvious. The parent material residual slope sediments and yellow soil, soil no obvious sticky layer.

Chestnut soil:

Development of bio-climatic conditions of the province temperate semi-arid steppe zone soil, with an area of 169.4 mu. Mainly distributed in the Sanggan north of Datong Basin, the Yuhe two terraces. The main features: A layer of humus layer, a chestnut brown color, the thickness of 20-30 cm, 102% organic matter, arable land due to the cultivation of a long, mineralization, organic matter is not high, generally about 1%; B layer as calcium carbonate accumulation layer was wavy thickness of 30-50 cm, 20-30% of the calcium carbonate content, some layered calcium laminated calcium carbonate content of more than 30% of the whole section strong lime reaction.

Meadow chestnut soil:

Area of 35.5 mu, the distribution of the chestnut zone slightly lower at groundwater upward trend, generally about 3-5 meters. Addition to the chestnut soil characteristics, but also additional meadow into the process of soil, the lower part of the soil barely visible rust grain rust.

Chestnut Soil Soil:

Area of 265.1 mu, the distribution of the chestnut soil, mountainous and hilly and gully zone. More severe wind and water erosion, the process of soil instability, poor profile development, only a weak surface humus layer, often white dry soil and materials Jiang layer below the subsoil.

Cinnamon:

Cinnamon soil to the soil of the chestnut soil transitional area of 1,803.1 mu, the distribution of the province of warm temperate semi-arid and with the semi-arid transition zone, including the Hengshan north, south of the Sanggan Luliangshan west of the area north of the Xi River and Chi River watershed. Deep soil, the more obvious level transition layer A weak humification layer B, weak argillic profile in the lower part of Cream, dot a small amount of pseudohyphal-like weak calcic quintana strong lime reaction.

Light Cinnamon:

Area of 1,507.1 hectares, mainly the province in Northwest Shanxi, wind heavy zone, soil texture, coarse, mostly loamy sand, organic matter content of less than 0.7%, poor soil development, soil level The transition is not obvious, only a weak argillic and calcic features.

Tide Cinnamon:

Area of only 1.5 million mu. Cinnamon Zone valley terraces and low-lying plains at the distribution, the water table of 3-5 m, the upward trend in the lower part of the soil by groundwater influence, common retention education of.

The beginning of sterile soil:

Including to sterile soil and rocky soil the early beginning of sterile soil. Sterile soil the beginning of the soil: loess soil of 1,375.7 hectares, 53.9 million mu of wind sand, red clay 228.6 acres, 69.7 million mu of new fill; rocky beginning of sterile soil: volcanic ash soil 1.1 million mu, the stony soil of 1,081.6 mu, 2,418.4 mu regosols. A total of seven soil types, 10 sub-categories, is a regional distribution, see the front of the elaborate regional soil.

Subalpine meadow soil:

Area of 6.7 million mu, the main points in the Wutai Mountain, five sets of top and in Mount huangcaoliang lotus leaf floor elevation 2,700 meters above the mountain top of the platform are located in the forest above the. About 800-1,000 mm annual rainfall, annual temperature of -4.5 ° C, a grass mound permafrost landforms obvious, permafrost in the soil profile in the lower part of the apparent rust pattern rust. The vegetation hi moist alpine dwarf humilis, covering more than 95%.

Mountain meadow soil:

Area of 38.6 mu, the distribution of the platform and the gentle slope of the altitude of 2,000-2,700 meters in the mountains Peak. Year-round by water erosion, and low temperature impact, coupled with the high altitudes of trees is difficult to survive, hi wet dwarf vegetation, soil generally 0.5-1 meters. Surface (subsurface) higher organic accumulation, transition section lower part of the mild latent layer.

Mountain steppe meadow soil

Area of 33.2 hectares, mainly Hengshan, hexagonal Hill, Liangshan mining more than 2,000 meters, Zhongshan platform gentle slope zone. Humus layer is thinner, drier soil, the soil lower part of the retention of education is not

obvious. Vegetation to xerophytic hi wet hardy plants Mixed cursive slightly higher.

Aquic soil:

Area of 637.9 mu, is widely distributed in the province around the river terraces and valley. Groundwater 1-3 m, developed in the alluvial flood alluvial parent material. Obvious level of soil deposition, soil profile can be seen in the lower retention education of meadow process.

Off the influx of soil:

Area of 147.0 mu, located in a terrace height. In decline due to groundwater, the soil is already out of the groundwater impact, newborn body of calcium carbonate in the soil began to appear, to the zonal direction of soil development, but the lower part of the residual traces of the meadow process.

Soil wet influx:

Area of 7.6 million mu, mainly the lower-lying areas of the terraces, season section water, the growth of hi wet vegetation surface, the common section the lower part of the latent layer.

Salinization of the influx of soil:

Area of 386.3 mu, located in Datong, Xinding Zhu Jinzhong, Linfen, Yuncheng Basin rivers on both sides, and poor drainage, the area of salt, 20 cm of soil salinity <1%. Datong, Yang Gao basin, mainly in soda, sulfate, followed by the main salt composition:; Xinding basin to sulfate, soda, followed by; Jinzhong basin chloride sulfate; Yuncheng basin sulfate. , alkalization second. Surface growth of salt-tolerant hygrophilous vegetation.

Alkalization tide soil:

Distribution, often associated with the the salinization influx of soil was complex domain area: 24.6 million mu. Soil, a higher content of sodium carbonate salts, gray solid surface, no significant crust, some color like hippurate. 0-20 cm soil layer, the salt content <0.2%, pH> 9, the sodium cations in the dominant basicity in the range of 10-40%.

Marsh soil:

Area of 2.8 million mu, the distribution of the piedmont of the transfer of low-lying depressions and local and groundwater outcrops. Long-term accumulation of water surface, the growth of aquatic and hygrophilous vegetation, soil retention with sterile layer and the latent layer, which swamp soil of 0.8 mu, 0.4 million mu of meadow marsh soil, salinized marsh soil. 6 million acres.

Saline soil:

Area of 39.4 mu, scattered basin of an order lower-lying areas, the transfer of low-lying land, or closed depressions with. Growth of salt-tolerant vegetation, 102 meters of groundwater, topsoil gather salt. Divided into 2.6 million mu, meadow saline soil PH <9, the total salt content of> 1% above the ground with a white efflorescence and salt crust, the total salt content down gradually reduced; alkalinized saline soil located in Datong, Yang high saline basin heavier zone, an area of 12.8 mu, with the dual characteristics of salinity and alkalinity. 0-20 cm of soil salt content> 0.6% or 0.7%, pH> 9, CO3 + HCO3 '> 50% surface gray solid, often white efflorescence, and hippurate color knot skin.

Paddy soil:

Area of 12.3 mu, scattered Piedmont knot in depression, depression and diving overflow with Hejian Department long-term hydroponics and artificial aging from the soil, the seasonal alternating wet and dry conditions, soil reduction and oxidation process to pay for, decomposition and accumulation of organic and inorganic substances, significant differentiation, resulting in the formation of the original origin of the material on the basis of the configuration of the specific level. Can be divided into subcategories, infiltration sterile type, retention sterile type, latent type, and saline.

Henan:

Henan Province, the major soil types: brown soil and cinnamon soil, brown soil and cinnamon soil, damp soil, lime concretion black soil, paddy soil. Following on from its distribution, nature, the use of improved several aspects of eleven introduced:

(A) yellow-brown:

The yellow-brown is the transition between the yellow red and brown soils. Its distribution range in our country is roughly as follows: the north Qinling,

the Huaihe River, south to the Daba Mountain and the Yangtze River, the West since the edge of the Qinghai-Tibet Plateau southeast, east to the heart of the lower reaches of the Yangtze River. Yellow-brown distributed in the subtropical north edge.

(B) of cinnamon soil:

Cinnamon soil is mainly distributed in the north edge of north sub-tropical, subtropical and warm temperate southern edge of hilly or hillock. Its geographical range is roughly in the Qinling - Huaihe River to the south along the middle and lower reaches of the Yangtze River, and the yellow-brown in the same natural geographical area.

(C) brown:

Henan Province, Jian distribution the YuXi Area: State, Xiuwu, Jiyuan, Qinyang, Dengfeng, Gongyi, Luanchuan, Song County, Yiyang, Xin, Spi, Romer, Yuzhou, Ruyang, Lushan Xixia, within the township, Nanzhao, a mall.

(D) of cinnamon soil:

The Henan distribution in western Henan, northern Henan, low mountains, hills and alluvial fan terraces. The Sanmenxia urban mianchi, Yima, Spi, Romer, Anyang city, Anyang County, Tang Yin, Lin states, Hebi city, Qi County, Xun County, Xinxiang city, Xinxiang County, Hui, Huixian Wenxian, Mengzhou, Zhengzhou city, Xinzheng, Dengfeng, Gongyi, the new dense, Ying Yang, Luoyang City, Loening, Ruyang, Mengjin, Ikawa, Yanshi Luanchuan, Song County, Yiyang, Xin The Pingdingshan urban, Yu Chau, Yuzhou, Xiangcheng, Jia County, Lushan, Po Fung, Xuchang city, Xuchang County, ChangGe.

(F) lime concretion black soil:

Are located in Henan Province in southeastern lowlands. Nanyang City, the new field, Xichuan, within the township, to the Board, Tanghe, Nanzhao, community flag, Dengzhou town level, Zhumadian urban Queshan, Zheng Yang, Xin Cai, Sui Ping, Choy, Pingyu Runan, Xiping, Biyang, Xinyang County, Huaibin interest County, Gushi, Xiangcheng Shenqiu, commercial water, Yan City, Wuyang Wuyang Iron and Steel, Ye County, Baofeng

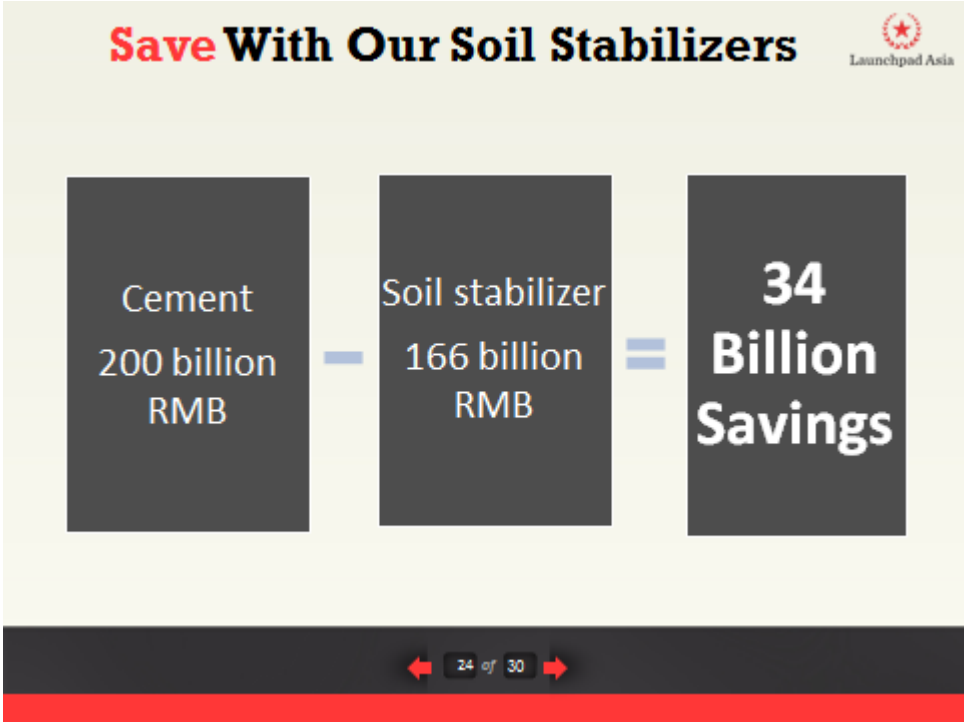
Competitors Overview

C-A: Cost Comparison Table

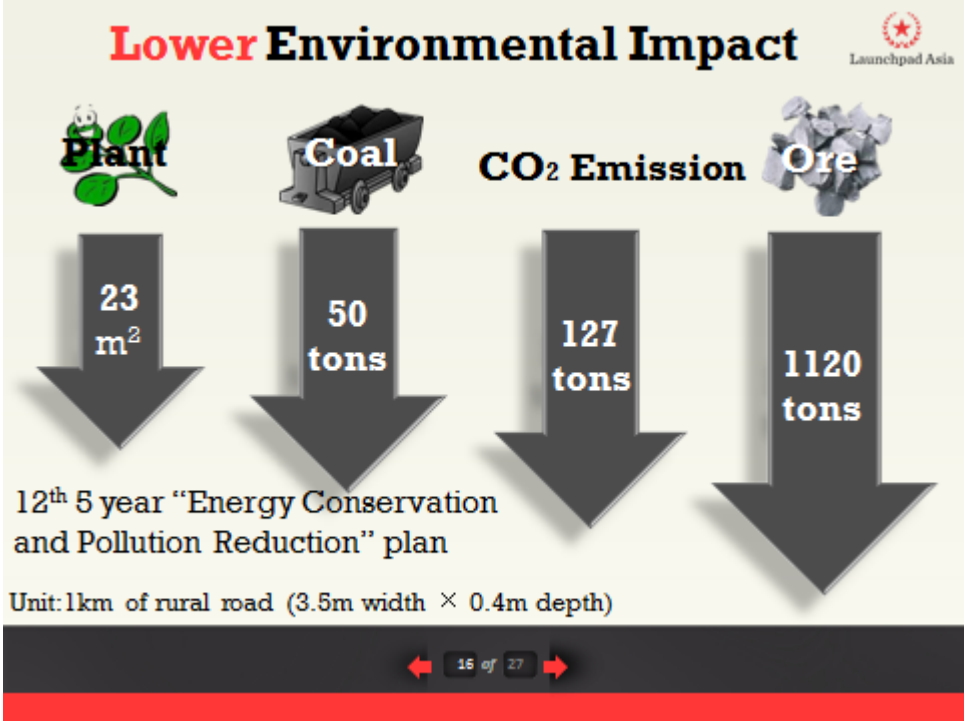
ROADBASE COST COMPARISON ANALYSIS

	Cement	Enviroad
Materials Needed		
Amount of Material Needed per sq meter	0.1525	0.949525907
(treated to depth of 15.25 centimeters)	*Cubic Meters*	*liters*
Weight per Cubic Meter in KG	*2400*	
Metric Tonnes Needed per sq meter	*366*	
Material Costs		
Cost of Material per Metric Ton – USD	¥ 70.78	$ 4,090
Cost of Material per Metric Ton – RMB	¥ 470	¥ 27,157.60
Cost of Material per Square Meter – USD	$ 10.79	$ 3.88
Cost of Material per Square Meter – RMB	¥ 71.68	¥ 25.79
Equipment Needed		
Road Grader	X	X
Compactor	X	X
Spray Truck	X	X
Cement Truck	X	*NO!*
Finishing Equipment	X	*NO!*
Cost per KM - Base Material – USD (10m wide X 1000m long)	$ 107,944	$ 38,836
Cost per KM - Base Material – RMB (10m wide X 1000m long)	¥ 716,750.00	¥ 257,868
SAVINGS PER KILOMETER		**¥ 458,882**

C-B: Total Market Savings Cement vs. Launchpad Asia



C-C: Environmental Impact Comparison



C-D: Call Report from Ionic Stabilizer

1. Which road level does ZHEN HUA build? Is there any countryside road?

Answer: Highway and bridge, no countryside road. E.g. two tenders in the Hong Kong part of Hong Kong-Zhuhai-Macau Bridge

2. What kind of material does ZHEN HUA use in the road building? Is there any environmental friendly material? Or any imported material?

Answer: Cement, rebar. The environmental friendly material is chosen according to the ISO1400 and the ZHEN HUA will also use imported material.

3. Who decide the material in the road building project?

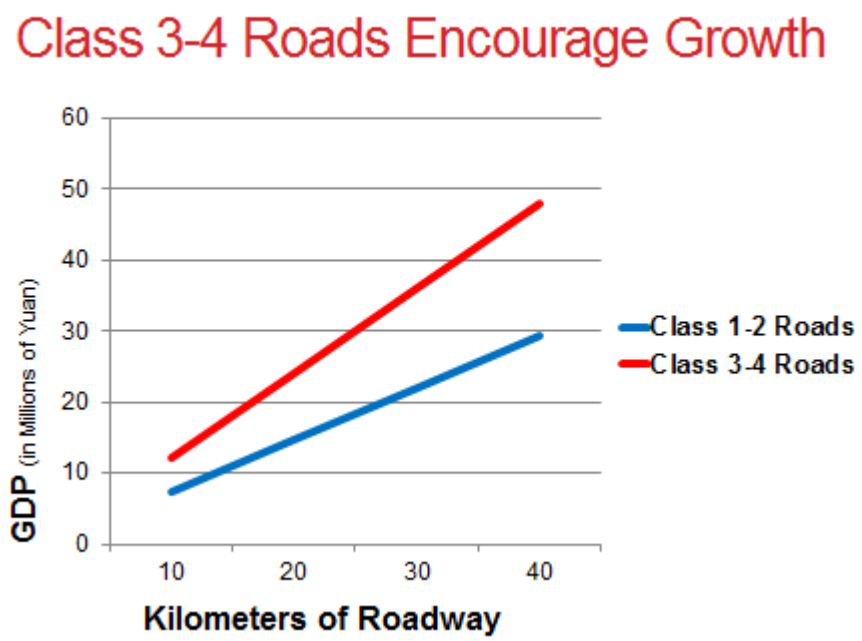
Answer: The customer (government) decides the material and the contractor decides the supplier.

4. What kind of trouble do you have when building roads?

Answer: The negotiation with residents, try to reduce the noise and pollution, the lack of technical labor and the rise of material price.

Financials:

F-A: Value Added to Provincial Governmen



F-B: Shipping Costs

Container Calculations

Five year plan	**Roads Needed**		126000			
New	450000	km	112000			
Repair	1950000	km	93000			6620
Total	2400000	km	331000		0.137917	19860
Our Share (percentage):	0.005					
Our share:	12000	km		160000		

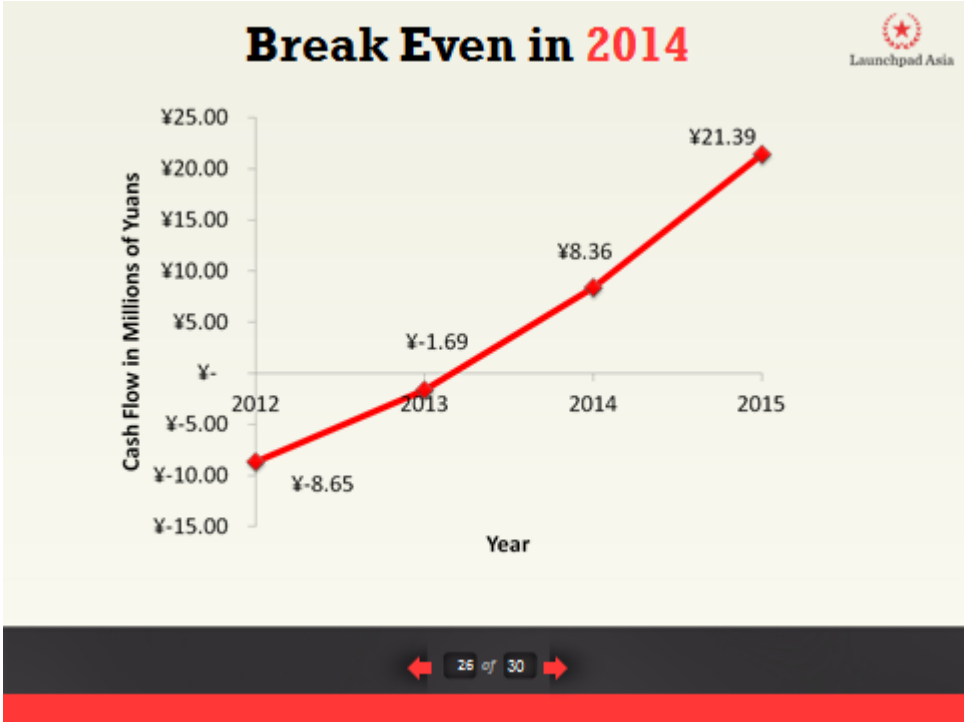
Area:	120000000	m^2	1.13 liters per m^2	3000
Volum of Product:		liters	208 liters per drum	28485.7772
Blue Drums:	0	drums	74 drums per container	136.95085

0 Containers needed if we get 5% of rural

		roads
Length of road	1	km
Area	10000	m^2
Volume of Product	11300	liters
Blue Drums	54.32692308	drums
Containers	0.734147609	Containers
Shipping Cost	17,058.32	RMB

Percent of market: 0.005

F-C: Three Year Break-Even Point



F-D: Income Statement

Launchpad Asia

Income Statement
For the Period Ending Year 5

	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue					
Sales	¥ -	¥ 25,000,895	¥ 35,001,252	¥ 45,001,610	¥ 70,002,505
Cost of Goods Sold	¥ 7,553,140	¥ 16,667,263	¥ 23,334,168	¥ 30,001,073	¥ 46,668,337
Gross Profit	¥ -7,553,140	¥ 8,333,632	¥ 11,667,084	¥ 15,000,537	¥ 23,334,168
Operating Expenses					
General and Administrative Expense	¥ 382,848	¥ 382,848	¥ 382,848	¥ 382,848	¥ 382,848
Sales and Marketing Expense	¥ 400,000	¥ 350,000	¥ 350,000	¥ 350,000	¥ 450,000
Shipping Expense	¥ 255,875	¥ 564,630	¥ 790,483	¥ 1,016,329	¥ 1,580,956
Total Operating Expenses	¥ 1,038,723	¥ 1,297,478	¥ 1,523,331	¥ 1,749,177	¥ 2,413,804
Income Before Income Taxes	¥ -8,591,863	¥ 7,036,153	¥ 10,143,754	¥ 13,251,360	¥ 20,920,364
Income Tax Expense	¥ 2,577,559	¥ 2,110,846	¥ 3,043,126	¥ 3,975,408	¥ 6,276,109
Net Income	**¥ -11,169,422**	**¥ 4,925,307**	**¥ 7,100,628**	**¥ 9,275,952**	**¥ 14,644,255**

Statement of Cash Flow

	Top 3 Provinces	Year 1	Year 2	Year 3	Year 4	Year 5
Beginning Cash Balance						
	¥	-	¥ -11,169,422	¥ -6,244,115	¥ 856,513	¥ 10,132,465
Cash Receipts						
Cash received from customers	¥	-	¥ 25,000,895	¥ 35,001,252	¥ 45,001,610	¥ 70,002,505
Cash Disbursements						
Cash paid for merchandise	¥	7,553,140	¥ 16,667,263	¥ 23,334,168	¥ 30,001,073	¥ 46,668,337
Cash paid for wages and other operating expenses	¥	782,848	¥ 732,848	¥ 732,848	¥ 732,848	¥ 832,848
Cash paid for taxes	¥	2,577,559	¥ 2,110,846	¥ 3,043,126	¥ 3,975,408	¥ 6,276,109
Shipping	¥	255,875	¥ 564,630	¥ 790,483	¥ 1,016,329	¥ 1,580,956
Net cash provided (used) by operating activities	**¥**	**11,169,422**	**¥ 20,075,587**	**¥ 27,900,625**	**¥ 35,725,658**	**¥ 55,358,250**
Ending Cash Balance						
	¥	**-11,169,422**	**¥ -6,244,115**	**¥ 856,513**	**¥ 10,132,465**	**¥ 24,776,720**

BIBLIOGRAPHY

Gallo, Frank T. *Business Leadership in China: Blending Western Best Practice with Chinese Wisdom*. Hoboken, NJ: John Wiley & Sons, 2008. Print.