Executive Summary

we provide a polymer binding solution to asphalt companies as an alternative to crude oil.

Contact Information

PROBLEM/OPPORTUNITY
(150 words)

26,010 tons of waste plastic was landfilled alone in 2015 according to the EPA and that is only rising year by year and building roads has been getting more expensive due to the shifting prices of crude oil used in asphalt production. We would like to utilize the polycarbonate plastic skeletons created by HID Global as a by-product of secure identity cards production for major corporations and government entities. HID Global produces approximately 900 pounds (lbs) of polycarbonate material per week which currently is being sent to Austin landfill. Plastic can potentially harm public and environment health being in a landfill because of its slow biodegradation property.

SOLUTION/PRODUCT
(350 words)

We intend to utilize the polycarbonate plastic skeletons created by HID Global as a by-product of secure identity cards production for major corporations and government entities. We believe 900 lbs of plastic is not a waste product but is a raw material that can replace the modified polymer in the bitumen for asphalt production. Bitumen is the binding product that holds the road together. Conventional practice is to use an engineered polymer to increase durability, temperature susceptibility, improve adhesion, cohesion, maintain flexible roads, better rut resistance. The polymer is about 2-6% of the bitumen by weight, but covers about 60% of its cost. Waste plastics in the road construction have already been used in some parts of the world and various research studies have encouraged this innovative approach to tackle plastic waste. Adding plastic waste is found to increase the durability and rut resistance of the road. We are proposing to use the polycarbonate skeleton in mulch or chips form for 2-6% by bitumen weight. We will customize the product by varying the plastic ratio per client requirements. Since use of plastic is expected to increase in upcoming years, our solution can be expanded to other industries as well. With the China import ban on US waste plastics, it is critical to find an innovative solution before US landfills are flooded with the plastics.

POTENTIAL RETURN/REVENUE MODEL
(150 words)

Our initial revenue comes from selling the polycarbonate binding mixture to asphalt companies. Asphalt manufacturing is $25.1B industry in the US with a growth rate of 1.1%. The estimated cost of disposal for HID polycarbonate yearly is $28,488 the proposed cost of binding bitumen is roughly $40/ton. Transportation is a variable cost which would roughly be $500 per trip dependent on mileage. Rough binder solution estimates would put us at $1290 per mile of road. ROI=($1290-500)/$500 = $1,289

Example tonnage calculation:
10 ft wide, 1 mile single lane road with 2 inch thickness
Asphalt required = 645 tons
Binder (5% of asphalt) = 32.25 tons
Polymer/plastic (2% of binder) = 0.645 tons = 1290 lbs

COMPETITION
(150 words)

The Asphalt space we are entering is classified as polymer modified asphalt and within that space there are two recognized companies for their innovative Hot asphalt solution utilizing waste plastic Dow and UltraPave. Our differentiating factor is that we are utilizing plastomers to achieve our solution whereas our competition is using styrene-butadiene rubber (SBR). Our solution looks at plastomers while we believe this to be a viable solution we need the funding to further test our hypothesis and have the transportation department grade our material to see if it is up to spec with road standards.

ENVIRONMENTAL IMPACT
(150 words)

Use of HID Global polycarbonate skeletons, we will be diverting about 5000 lbs of plastic from landfill each month. The facility for diverting the 5000 lbs will have the capacity to process 10X and potential divert multiple other recycled plastics going into central texas landfills. This will also reduce the use of crude oil and derived product and thus minimize the exhaustion of the natural resources. By binding the plastic into asphalt, it will contain the plastic and reduces the leaching capability of the plastic and microplastic that could potentially be generated in the landfill otherwise. Please note that intensive environmental testing will be done in the initial phase of the project to determine the leaching.

ECONOMIC IMPACT
(150 words)

Initially we aim to connect austin asphalt producers with the polycarbonite to integrate into their process. Providing them a lower cost alternative to the crude oil binding agent. We would eventually be hiring in Austin to produce the binding agent for asphalt companies at scale.

THE TEAM
(150 words)

Nautasha Gupta
Nautasha brings technical knowledge and has industry background from construction and environmental testings. Her responsibility would be to conduct research on the product strengths and evaluating the environmental implications.
Krishna Halaharvi
Krishna brings business knowledge from working with NYC startups. His responsibility would be to design a robust and growth-oriented business plan and analyze the economic impacts.

EXECUTION PLAN/GO TO MARKET STRATEGY
(150 words)

HID Global, Asphalt manufacturers, and the City transportation department will be major partners. Marketing will be done via Social media, Austin Marketplace, and City of Austin reverse pitch advertisement.

Execution Plan:
Milestone 1: April-July 2019: Getting successful material test results.
Milestone 2: June- September 2019: Lay test road patch
Milestone 3: September- December 2019: Ensure measured results at the test road patch are satisfactory. The test would be done at regular intervals.
Milestone 3a: December 2019- February 2020: Ensure measured results at the test road patch are satisfactory for launch. The test would be done at regular intervals and compared with Milestone 4 to evaluate impact of weather.
Milestone 4: April- May 2020: Get TXDOT material approval and market the product to local asphalt companies.