I. The need for the V-Rod arose with the incoming era of new sport bikes being developed.

II. Harley-Davidson faced the problem of creating a new sport bike to fit in with other sport bikes currently on the market, while still being aesthetically true to the Harley-Davidson brand.

III. Information gathering began in 1995 and ended in 2001. Harley-Davidson focused their attention on this new V-Rod project by looking for inspiration from their racing team and through the observation of dragsters.

IV. Conceptual ideas developed by Harley-Davidson included converting a metal gas tank to a plastic and re-placing it on the bike, a consistent liquid-cooling system, new aluminum chassis, and the ability to customize one’s own motorcycle. Another idea established by Harley-Davidson was to create a radiator to cool the engine while keeping air flow to the engine consistent at higher speeds. This idea was brought about through the use of simple cardboard on the outside of the radiator.

V. The selection of ideas for Harley-Davidson were tricky due to a constant back-and-forth between the engineers and designers through various stages of the project. A new problem faced by one party resulted in finding a solution from the other party. Even the naming process for this new motorcycle project took up to a year.

VI. Analysis for Harley-Davidson’s V-Rod project occurred in their own factory and lab in Milwaukee, and at the Porsche facilities in Germany. Harley-Davidson worked with Porsche on the engine, while back in Milwaukee the actual design of the motorcycle was established and constantly reworked until the first prototypes were made. To create the body, the aluminum chassis was formed through the process of hydroforming, using a new process involving high-pressures of water bending metal.

VII. The prototype for the V-Rod was called the “Digger”, formally named P-4. Testing for the engine involved a constant 400-hour “drive” to test durability and the ability for the engine to be idle without overheating for an extended period of time. This latter factor was due to the involvement of this new motorcycle in Harley-Davidson parades. Other testing included radio wave testing for radio signals, shake durability tests for parts of the motorcycle’s body, and blasting the motorcycle with water to test for leaks. Other components of the testing phase involved anechoic chamber testing for noises on parts that shouldn’t be making noise. Aesthetic fabrication was reworked through the use of modeling clay, and aerodynamics could be tested with these aesthetics created with clay.

VIII. The result of years of work on this motorcycle resulted in tremendous after the V-Rod’s unveiling in 2001. Harley-Davidson fans were graced with an all-new muscle car with the speed and finesse of a sport bike with an ability to compete in a viable sport bike market.