



**CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY**

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Project Title Twitter Killer	
Objectives/Goals The objective of this experiment was to find out which commonly used building materials are best at blocking WiFi signals. This information could be used for security purposes, such as securing your personal network from other people or eliminating blocking materials in the path of a router to get a better WiFi signal. Abstract Methods/Materials In this experiment a WiFi signal meter, WiFi router, 2x4s, steel, plywood, cloth, concrete blocks, bricks, and drywall were used to test which material blocked WiFi the best. First, a frame was built for the various building materials to go on. Then a WiFi router was placed 14 feet away from the signal meter, and average measurements of signal strength were taken for 2.4GHz and 5GHz bands, the two most common frequency bands used by the public. Next materials were placed surrounding the router, and the measurements were repeated. Results The results of the experiment varied for the 2.4GHz and 5GHz bands. On the 2.4GHz band concrete blocks blocked WiFi the best. The average received signal strength when concrete was placed in front of the router was -50dBm compared to signal strength of -27dBm without the concrete. At the 5GHz band, surprisingly, 2x4s blocked the best, with an average received signal strength of -57 dBm compared to a starting signal strength of -40dBm. Steel remained consistently the second best blocker for both the 2.4GHz and 5GHz bands. Conclusions/Discussion In conclusion, the best commonly used building material to consistently block WiFi is steel, because on both commonly used WiFi frequency bands it was consistently a good blocker. Concrete, which was the best at 2.4GHz was only third best at 5GHz, while 2x4s, which was the best blocker at 5GHz was only fourth best at 2.4GHz.	
Summary Statement In this project it was found that out of all the common building materials tested, steel was the best to consistently block WiFi signals for both 2.4GHz and 5GHz frequency bands.	
Help Received I would like to acknowledge my dad for assisting in the construction of the frame and materials to block the WiFi signals.	