Category: **2 – MEETING THE CHALLENGE OF A DIFFICULT JOB – SPECIALTY CONTRACTOR**

Specialty Contractor: **RK STEEL**

Project Name: **MILE HIGH HARLEY-DAVIDSON OF PARKER CANOPY**

ICONIC QUALITY: CUSTOMIZE YOUR MOTORCYCLE

Harley-Davidson is a worldwide brand known for quality, precision and perfection. Each motorcycle can be customized, ensuring their clientele receives the bike of their dreams. Which is why it was no surprise when Mile High Harley-Davidson of Parker wanted their storefront to stand out from the surrounding suburban stores, they chose RK Steel to design and build a customized canopy that encompassed their dynamic brand.

STEP ONE: SELECT YOUR OPTIONS

When RK Steel was first approached with the Mile High Harley-Davidson canopy project, the client presented a conceptual idea of the canopy with no specific layouts or dimensions. They were looking to RK Steel's expertise, as a design-build partner, to make their concept a reality. And RK Steel did just that.

RK Steel was given artistic freedom from the architect, so long as he canopy fit within the envelope of the storefront and also met the architectural intent. The engineering partner provided material sizes, weld requirements, maximum column spans and height restrictions. Other than those specs, RK Steel was given the creative freedom to experiment with geometric locations and design.

With only basic guidelines and artistic autonomy, the RK Steel preconstruction team brainstormed various designs concepts until the final, distinctive design was approved: An open, steel canopy, comprised of five equal segments to cover the Mile High Harley-Davidson storefront. **The ultimate design consisted of two miles of 8", 4" and 1/4" pipe, with no two pieces being exactly the same, and weighing a total of 30 tons.**

STEP TWO: FIND YOUR FIT

A complex geometric structure perfectly describes the final model that the detailing team was challenged to draw up for the RK Steel shop. Tekla Structures detailing software was the program of choice, as it has the highest level of modeling capabilities for the type of complex objects within this structure. Tekla produced the machine data that was uploaded into the Vernon Tool Pipe Cutting Machine. All tube connections were cut using the Vernon with the exception of two. The two parts that could not be cut were so complex that a template had to be custom made and applied to the pipe for hand torch cutting by the RK Steel shop team.

Due to the specific detail of each pipe, the RK Steel detailing department focused on precision down to the very last inch. Close collaboration was imperative to ensure successful fabrication. While RK Steel was working in the shop, the detailing department was in the office, tweaking drawings in real time. This allowed the shop to have updated drawings within minutes of meeting with detailing. Due to tight schedules and the complex nature of the project, the devoted teams collaborated, on several occasions, well into the early morning hours, to ensure each piece was perfect and fit correctly. A total of 2,130 files were issued to the shop, all of which were drawn in-house by detailing with an average time of 25.9 minutes per file.

STEP THREE: FUNCTIONALITY FOR FUN

In order to avoid errors, all machine data was carefully analyzed ahead of cutting. The miters on several of the cuts were so complex that the Vernon misunderstood the location of top dead center and would reverse the image, changing the geometry of the connection. To overcome this issue, RK Steel manually typed the correct coordinates into the machine, investing many hours of programming, and eliminating mistakes.

After the Vernon cuts were completed, the angle of the pipe copes were verified by RK Steel shop foreman and craftsman prior to the fitting process. Due to the complexity of the various angled intersections, it was difficult to interpret all of the three dimensional characteristics of the drawings, so many of the fits had to be calculated using trigonometry on the shop floor. The parts and pieces had to come together at specific locations in order for the connections to be correct and guarantee fit in the field. To assure the natural, crisp and clean look; all welds were

performed by certified 6G welders that not only welded the connections, but then dressed them to perfection by blending and finish sanding.

STEP FOUR: PERFORMANCE ENHANCEMENTS

The complexity of the detailing and fabrication were only the beginning. Now it was time to hit the road with installation. The main V-shaped columns, which didn't have a true center, were set first with anchor bolts and base plates that had radial long slots at the anchor rod locations, allowing the crew to turn the columns. This helped the field team to match up to the straight, back columns.

Even with the precise work of RK Steel detailing and shop crews, the field crew welders had to fine-tune the edges of each overlay pipe piece to ensure an exact fit. Not only did the crew work hard to fit each piece, the final welds needed to be clean and perfect. RK Steel's top field welders were on the job and put countless hours into making the final product a true masterpiece.

In addition to the tight schedule and complex pipe installation, Mile High Harley-Davidson remained open for business during construction. Working around the retail schedule proved to be challenging as the team was working within 20 feet of displayed Harley-Davidson motorcycles – just one dropped pipe could have led to costly damage.

In the end, (and even when the client scrapped the fifth sequence, due to unexpected space restrictions) the RK Steel field team remained on their game, ensuring no Harley-Davidson motorcycles were damaged during this project. They were able to put the four sequences together perfectly thanks to close communication with the RK Steel shop and detailing teams.

STEP FIVE: ADD YOUR STYLE

From the preconstruction team's creation of a unique concept to detailing and carefully drawing every piece of pipe, RK Steel brought this complicated and beautiful canopy to life. The real-time collaboration between detailing and the shop allowed for necessary changes to be made immediately and with precision. The RK pipe shop jumped in to assist the RK Steel shop employees with complex pipe cutting and the steel shop made sure each piece of pipe was well-

labeled for accurate assembly. The steel shop and detailing team also stayed in close communication with the field employees as they installed the canopy. True teamwork was shown by all at RK Steel.

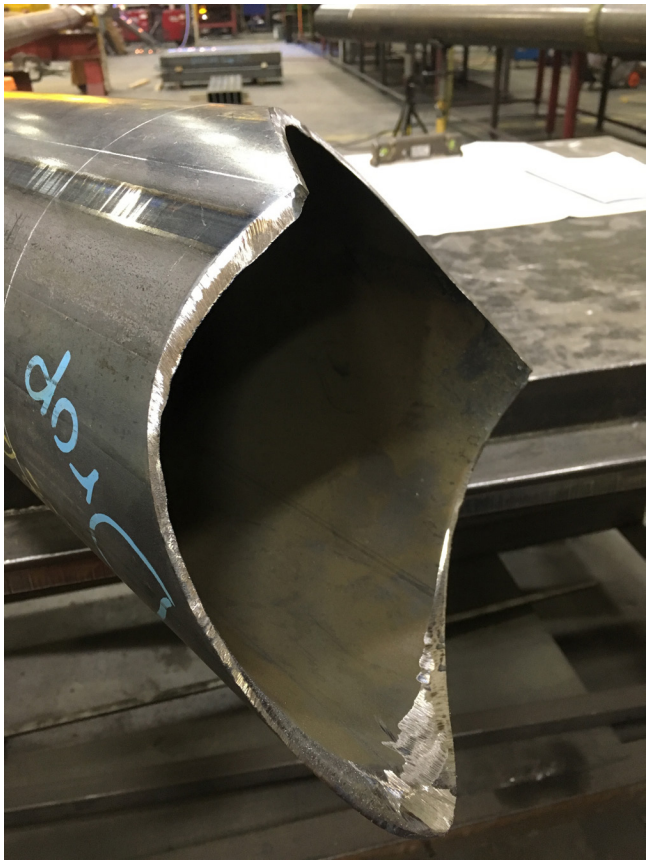
"If we weren't who we are as a company, we wouldn't have been able to pull it off. Even with our many years of combined steel experience, this job was like nothing else we've ever completed." - Don Anderson, RK Steel Project Manager

Safety Style

A total of 4,948 man hours were spent creating the Mile High Harley-Davidson canopy. **The RK Steel team had zero recordable accidents, zero restricted days and zero lost-time accidents on this project.** As with all RK Steel projects, a site-specific safety plan and weekly toolbox talks helped keep safety top of mind while working on the complicated project. RK Steel is proud to hold the quality accreditations of ISO 9001:2015 and AISC Fabricator and Erector.

ENJOY THE RIDE: SHOW YOUR PRIDE

Meet a Harley-Davidson motorcycle owner and you will be overwhelmed with the pride they hold in their valuable ride. Just as those owners, the RK Steel team takes incredible pride in their work on this elaborate steel canopy project. The Mile High Harley-Davidson of Parker canopy pushed all employees to challenge themselves physically and mentally which empowered the team to come together as a unified force. RK Steel truly is "The strength behind every project."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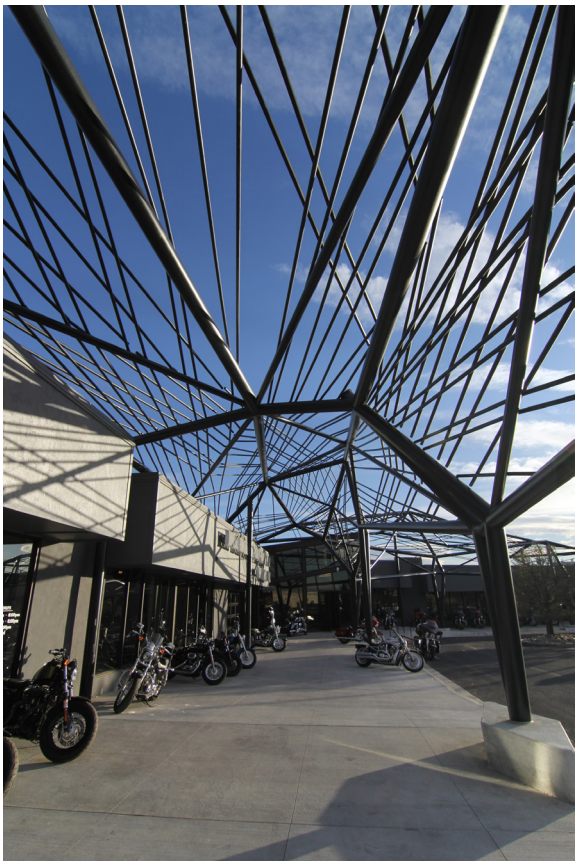
HARLEY-DAVIDSON
OF PARKER




MILE HIGH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