



CASE STUDY

How Helical Piers Saved This Oil & Gas Project Over \$100,000

SUMMARY

When an Oil & Gas company sought to expand their facility in West Texas with a new slug catcher, they wanted bids for helical pier foundations. Even though concrete is the “traditional” foundation solution, the Client wanted a faster and more economical alternative.

See how S&B Helical stepped in and took a value-engineered approach that saved this Oil & Gas company over **\$100,000** and put them **2 weeks ahead** of schedule.

INTRODUCTION

In a pipeline where gases and liquids flow together, it’s common for the liquids to settle to the bottom of a pipe while gases rise to the top. This leads to the formation of “slugs”, the name given to large plugs of liquid or gas that travel together in a pipeline. These slugs can cause surges in pressure that damage the pipeline or even cause injury.

To protect pipelines against these surges of liquid or gas, the slug catcher is a crucial safety and quality control component.

While they come in a range of configurations and sizes to suit countless use-cases, they act on the same principle. By adding extra volume to the system, the slug catcher protects the main pipeline by buffering slugs of liquid or gas.

Slug catchers are subject to heavy loads, strong lateral forces, rapid loading/unloading, and brutal weather. As a piece of critical safety equipment they need to be able to completely withstand these forces. That means the foundation needs to be more than reliable – it needs to be bullet proof.

AT A GLANCE

Industry	Oil & Gas
Structure	Slug Catcher
Location	West Texas, USA
Total Piers	148
Client	Confidential

FOUNDATION SPECS

Material	Galvanized
Loads	Complex axial over 1,000,000lbs & intense lateral moments
Embedment	Min. 12' embed 8' to 12' projection Min. pier length 24'

An Over-Engineered Problem

We refer to this customer as "Client" in this case study due to confidentiality.

As part of an expansion of their facility in West Texas, the Client was planning to build a large slug catcher to serve the pipeline.

Concrete was considered, but the soils were dry, tough, and full of gravel. Excavation was a challenge and Client wanted to avoid having to remove spoils. In addition, the location of the facility made concrete costly to source and slow to install.

Driven piers were also considered, but their cost and the potential for vibrations eliminated that solution as well.

The Client had used helical pier foundations previously, so they decided to use them again for the slug catcher. Their superior speed, durability, and economy, made them a clear solution for this project.

Unfortunately, the first helical pier contractor to bid proposed an over-engineered solution. The design they proposed used larger piers than necessary which drove up the cost of the foundation by a significant margin.

This greatly increased the project cost and threatened to cause extended delays due to then on-going steel procurement problems.

Seeking a more cost-effective foundation solution, the Client turned to S&B Helical for help.



A Precise Foundation Solution

Our design and engineering team at S&B Helical quickly identified the first design had been over-engineered.

After studying the Client's project specifications, we designed a more efficient foundation that offered the same support while using smaller diameter helical piers.

With our fully engineered DWGs and quick engineering response during the bid process, our team was able to smoothly coordinate with the Client to produce a rock-solid design in record time. Our engineers devised a straight forward, sleek, and solid foundation.

It consisted of 7" diameter helical piers, along with some 8.625" in diameter, installed in a battered configuration that provided both axial and lateral support. These piers would then be welded to steel I-beams to tie the entire support structure together.

Due to the Client's concerns about corrosion, the helical piers and I-beams were also completely galvanized to defend against rust and degradation.

By leveraging the knowledge and experience of our design and engineering team, we produced a solution that would use dramatically less raw material than the competing bid.

Not only did this save the Client a huge sum of money, it meant the piers could be sourced and installed faster than anticipated.

Helical Pier Dimensions

7" x .317WT, 20" helix, 35' LG (battered)

7" x .361WT, 20" helix, 25' LG (vertical)

7" x .361WT, 20" helix, 35' LG (battered)

7" x .361WT, 20" helix, 25' LG (vertical)

8.625" x.322WT, w/ 20" helix, 25' LG (vertical)

8.625" x.322WT, w/ 20" helix, 35' LG (battered)

How S&B Helical Installed 148 Helical Piers

Located on the plains of West Texas, the site was in full-swing when our crews arrived. With multiple contractors working on-site, the general contractor did an excellent job at coordinating crews and keeping everyone safe.

After collaborating with the general contractor to organize materials and equipment, our crews set to work installing the helical piers. Moving smooth, smart, and efficient, they used tools like constant torque monitoring to ensure an accurate installation.

The first piers went in without any drama, before our good fortune was interrupted by some unexpected hurdles our team had to quickly overcome.

The first problem was that onsite elevations reported to engineering discovered the maximum pier projections (how much protrudes from the ground) of some piers were exceeding designs. We immediately notified the general contractor and were able to make fast corrections with zero downtime.

Another challenge that threatened progress were mid-project design load changes. During installation, the Client passed along revisions to the design loads.

Our engineering team took it in stride and revised loading criteria, re-ran the pier analysis, and produced revised DWGs that adhered to new loads in one day.

Thanks to the adaptability of helical piers, and the dedication of our team, we could conform to the new loads without delaying the installation.



Finishing the Foundation

A smooth work-flow between the S&B Helical team and the general contractor ensured all the challenges on this install were cleared with zero-delay revisions.

The rest of the installation was textbook and our crews finished installing the piers smoothly and quickly.

To complete the foundation our welding team came in to tie the piers together using galvanized steel I-beams laid across the top. A boom truck gave them the reach they needed to secure everything and transform the piers into a cohesive foundation.

In less than one month, and with plenty of hard work and dedication, our crews were wrapped up and leaving the site as pristine as it was on day one.

What was an empty patch of dirt now contained a solid foundation ready for a beautiful new slug catcher.



Results

Compared to a concrete foundation, our helical piers were complete and client was setting pipe **2 weeks ahead of schedule**

Even with supply chain delays, a helical pier solution was **dramatically faster** than concrete

We were **20% more efficient** with steel selection and design, saving client over **\$100,000** compared to competing bids

Challenges that arose during installation were resolved with **zero-delay revisions**

This helical pier foundation will enable this slug catcher to easily reach its **50-year design life** (and beyond)

Client was so pleased with our work they requested additional helical piers for other structures



Questions or comments about this case study?

Let our team of foundation experts answer your questions
about **faster, easier, more efficient**, and more
environmentally-friendly foundations.

Get In Touch

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