CASE STUDY

WORKING AT HEIGHTS

Working at heights training structure – New Vaal – 2015

Led by: Neil Koekemoer – Mechanical Engineer

Customer: Anglo coal

CUSTOMER BRIEF

The customer had PCMS's Escape Chute training structure installed and had a separate scaffold, used for working at heights training. The requirement was to have the existing Escape Chute Systems (ECS) training structure upgraded to accommodate fall arrest techniques and basic rescue when working at heights.

The structure currently used for ECS training was designed with other training purposes in mind. Thus, any changes required to suit the customers' requirements would be cost effective, provided there is no structural changes to the main structure. The main objective is to incorporate these changes in the most cost- and time effective manner possible, while satisfying stakeholder requirements.

This project was done in two segments. Firstly, the design was completed and a costing was given for installation. Once the customer was satisfied with the design and costing, the installation was done.

Regular site meetings were held and all of the following information was documented in a ProRun (Project Rundown):

- Design standards (SANS)
- Scope of work
- Budget
- Laws and Regulations
- Limitations
- Conceptual design
- Timeline

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COMPETITIVE ANALYSIS

The design of the working at heights training structure was done exclusively for the customer. The modifications were done to suit PCMS's standard ECS training structure.

CHALLENGES

The biggest challenge was to ensure that the structure complies with the mine standards as well as the relevant SANS codes. Designing and manufacturing the structure so that it is cost effective, by incorporating the customer changes was the next challenge.

CHANGES

Changes to the existing ECS training structure included the following:

- Addition of I-Beams to the structure as a vertical supports between the platform and the roof of the structure.
- Pivot point for the abseiling is fixed to the abovementioned I-Beam as well as the anchor points, which consists of eye-bolts.
- Aluminium VASTRAP plate is used as the abseiling surface, as it is lighter than structural steel.
- Anchor points were added for safety harnesses.
- CAT ladders were also installed.

LIMITATIONS

The addition of the abovementioned to the existing training structure called for certain fastening methods. These methods where:

- Bolting brackets on the structure
- Bolting directly on the structure and
- Welding on the structure

The recommended fastening mechanism was bolting brackets on the structure, as drilling holes and welding on the main structure will result in the change of structural integrity. .

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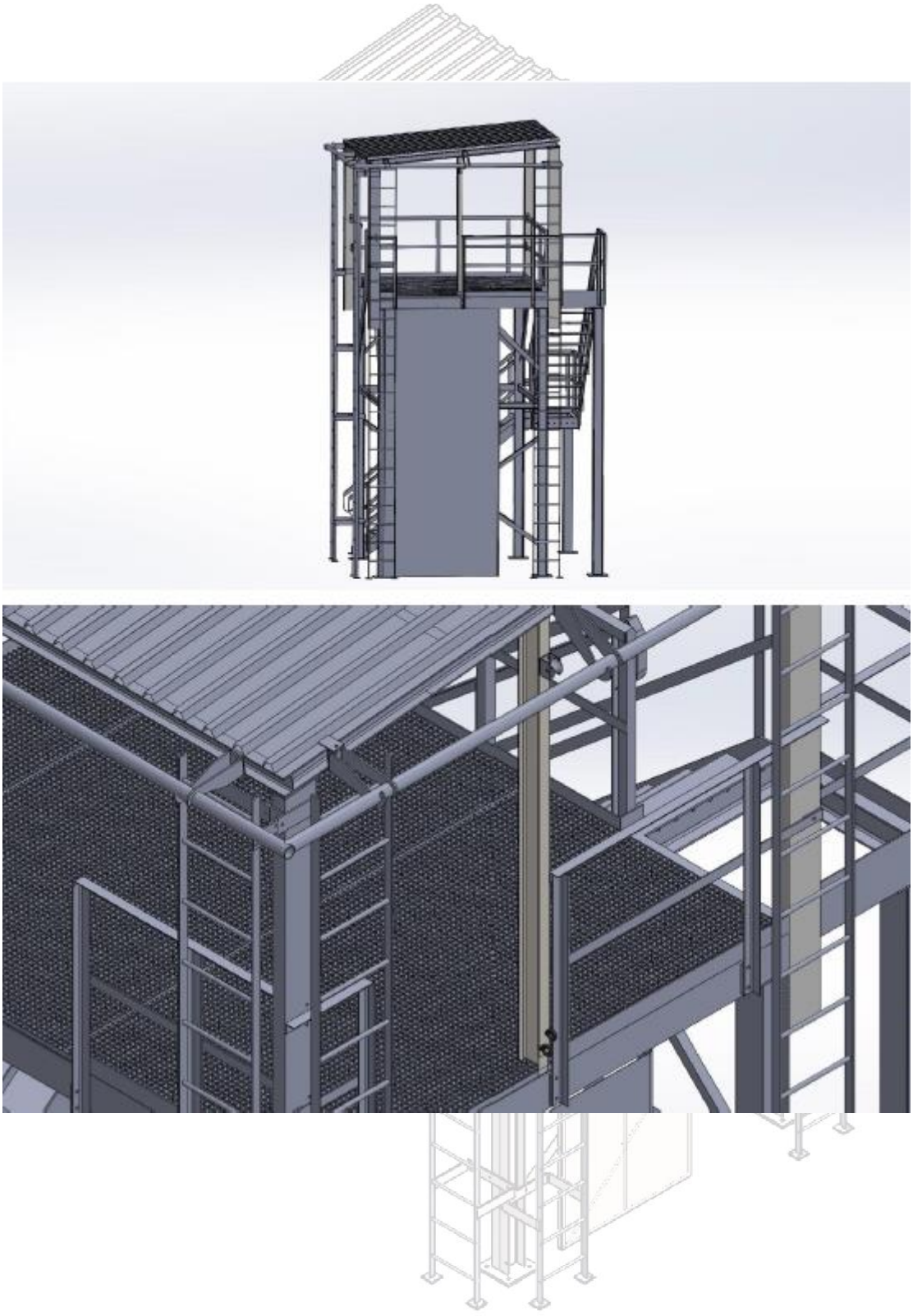

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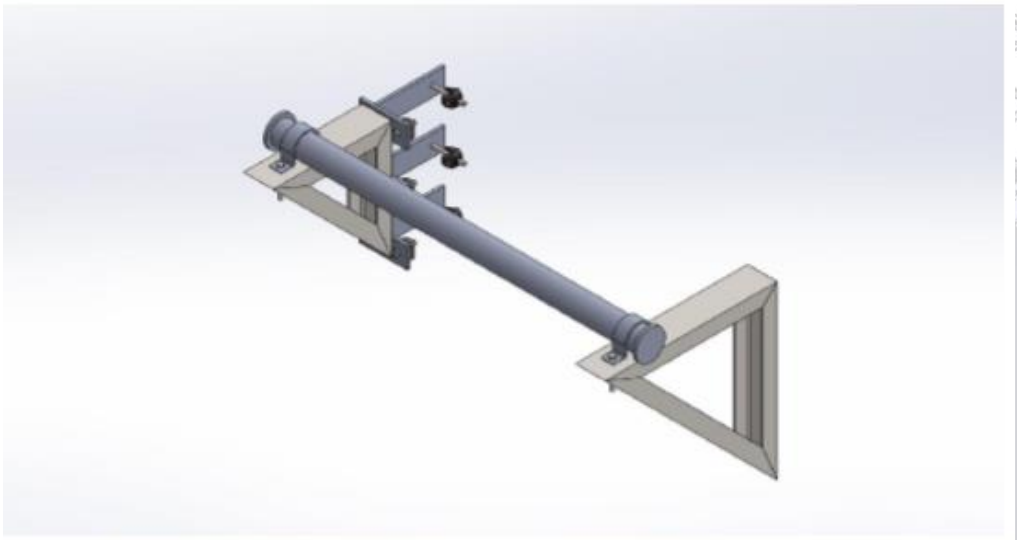
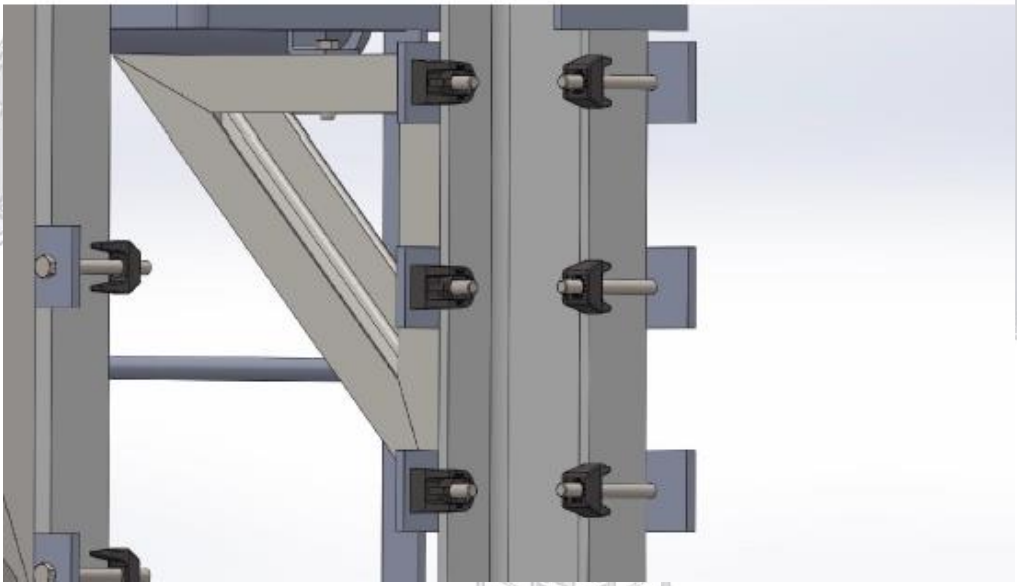
LIFELINE SUPPORT

The lifeline fixture consists of a 76.2mm OD pipe, fastened at the top of the structure. The pipe is held in place with pipe clamps and supported with S355JR channel. Lindapters are also used here to fasten the lifeline support to the main structure which complies to the SANS code. This code demands the brackets to be able to handle 1.5 tons for one person and 2.3 tons for two persons. The Lindapters ensure time effective installation and maintenance. I-Beams are added to improve the Safe Working Load (SWL) of the anchor points. It is crucial to ensure these components comply, so that they are deemed safe for life safety operations.





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PRODUCT REQUIREMENTS

Safety First

The ECS training structure will be essential in providing working at heights-, fall arrest- and rescue training. Providing said training must be done on a structure that is deemed safe. Thus this structure is designed and built according to the mine standards as well as various SANS codes. The additions to this structure also complies to various relevant SANS codes.

Maintenance Friendly

All decisions made regarding the additions to the structure was done with safety and maintenance in mind. Only maintenance friendly options where chosen and added to the structure.

Design

This project's design included 3D concept design, detailed design drawings, manufacturing drawings, installation drawings and costing.

Review

The ECS working at heights training structure at New Vaal Colliery was a proud success for P & C Mining Services. They were able to provide detailed specifications ratings with unsurpassed safety standards in an all-in-one safety training structure.

Where the customer's specifications met?

Safety	✓
Maintenance friendly	✓
Cost effective	✓

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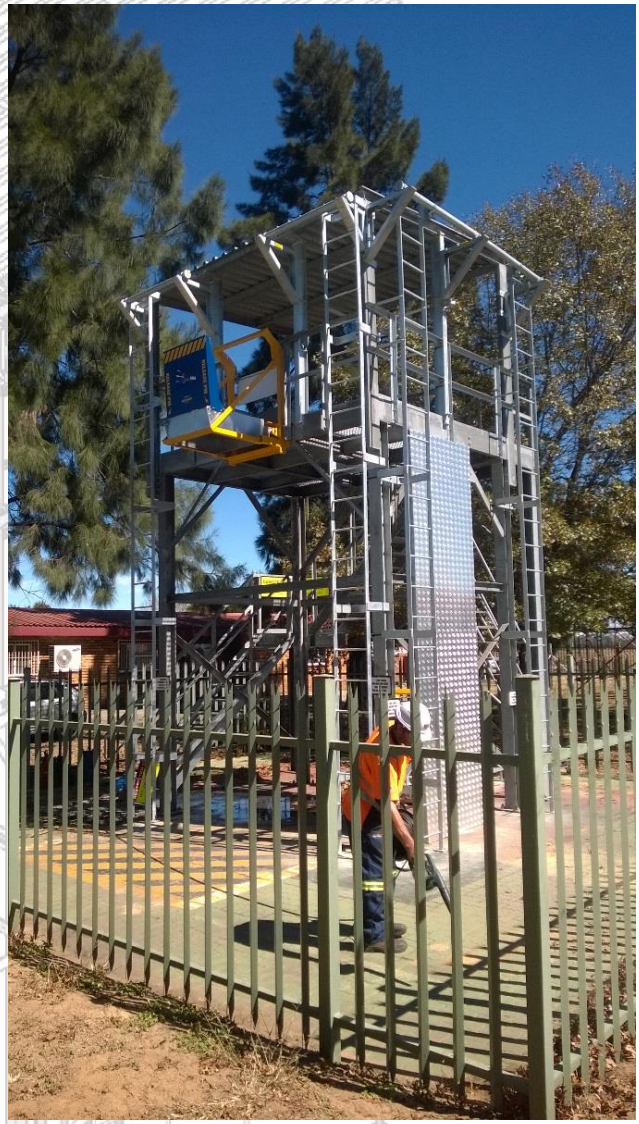

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