

Vertigo Testing Model for Ensuring Working at Height to Prevent Fall from Height of Persons Due to Acrophobia

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Abstract: Falls are among the most common causes of serious work related injuries and deaths. The safety guideline aims to ensure safety while working at height (more than 1.8 meter height) and protection from fall. The development of a national occupational health scheme that will allow the construction industry to both monitor the occupational health status of its workforce and also make a step-change in the health improvement of its two million plus workers is a challenging, yet achievable objective. There is a definite commitment to the 'idea' of a national scheme but progressive steps toward its implementation need to be taken carefully to ensure that all of the stakeholders needs are considered. The main issues to be addressed are securing the support of the quality providers within the occupational health community to inevitably change some of their working practices and systems; ensuring that any scheme caters for all sizes of construction company and not just those with the financial resource to deliver on IT based solutions; and ensuring that the data held is both managed in accordance with legal requirements and is subject to appropriate quality assurance. Looking to seriousness and criticality of working at height job in OIL REFINERY like various critical jobs like we deals in day in and out like stacks painting of more than 100 mtrs, scaffolding erection, Flare line replacement, FCCU stack monitoring or any type of critical erection activities etc. These all are very critical activities we perform as and when required and during plant shutdown. Working at Height job is one of the critical activity and not everybody is fit or competent for working at Height job. Some may have acrophobia or height phobia, contract worker engaged in WAH job are deployed after medical fitness certificate from competent authority i. e. Doctor. Depend upon health and competency of workers are given training and then tested on Vertigo model which is in-house design and developed by us to overcome this critical job related issue.

Keywords: Acrophobia, vertigo, working at height, scaffolding, occupational health

1. Introduction

Pre-employment assessment would be expected to be on the basis of occupational history and experience, and associated 'fitness for work' statements. In this way the 'New' employer might be saved recourse to occupational health advice. It would, however, seem to assume that (e. g.) a 'bricklayer' is a 'bricklayer' and that declared 'fitness to work' as a 'bricklayer' would cover all workplace situations. The risk assessment is, however, workplace dependent and a generic 'fitness for work' assessment on the job title should not be assumed. In this situation an individual could be rejected from employment on the basis of a declared 'unfit for work' assessment from previous employment. This could open the 'New' employer to an action under the Disability Discrimination Act (1995) that would be difficult to defend. On the other hand an employer might, as a result of past information, take on a worker who subsequently suffers an occupational ill health. In this case the 'New' employer would have to accept liability. Furthermore the, perhaps false, assumptions imparted by a proposed model in respect of a reliance on the advance data and its ability to permit 'adequate' screening of potential employees may actually lead to a threat to the protection of employees through increasing the likelihood that employers would engage in activities where risk has not been adequately controlled. In this scenario the employer could deliberately fail to minimize risks on the basis that he would have a defense in respect of liability through a previous fitness to work statement from another employer who had not been so disreputable. In this situation the proposed model could cause an employer to abrogate their responsibilities under the Health and Safety at Work Act (1974). Whilst this might be considered unlikely it serves

to raise the question as to the adequacy of risk assessment and how fitness for work statements relate

In refinery most of the critical job is working at height and accidents took place from fall working at height due to untrained or height phobia person/s deployed in such job even after medical fitness report. For double check on that we have designed and developed a "Vertigo testing model" by scrap material available at Gujarat Refinery in March 2019. This model is design and developed in house from scrap material and it costing is approx.1 to 1.5 Lakh. It is a structure of approx.5 mtr. height, first thing is that contract worker/s has to go under initial medical test such as BP, pulse etc., these test is carried out by the first aider, if BP, Pulse rate is in normal condition, then workmen will be informed to wear all safety equipment/gears such as (Harness, helmet, safety shoes etc.) and then to climb on the structure and he has to walk on the 200mm beam 5 MTR which is installed on the structure, the same walking procedure carried for 1 round on the beam, after coming down contract worker/s, again he has to undergo the BP/pulse and other medical parameter test to confirm any variation in the body due to height. If all medical parameters are in normal condition then he is fit to work on elevated activity, if medical parameter relevant to WAH is not in normal condition then he is consider as unfit to work on elevated activity.

Details of innovations:

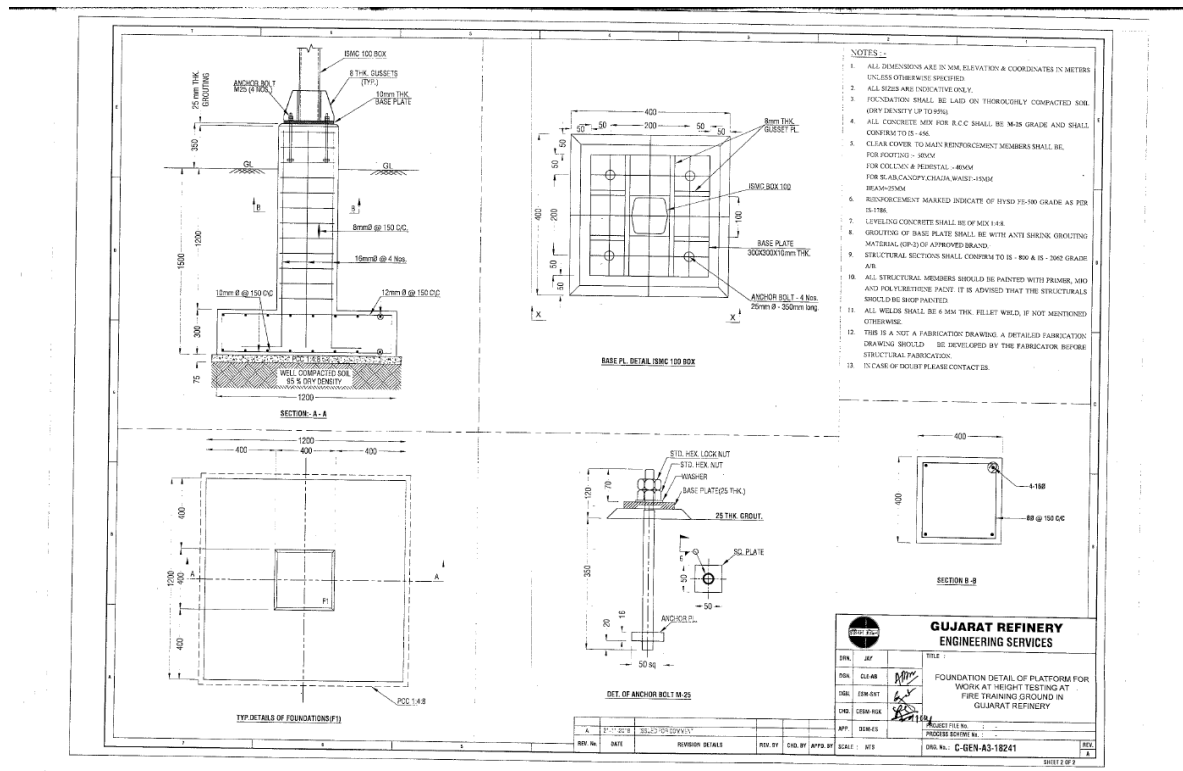
This model is being used for doing Vertigo test of workmen working under various agencies inside Refinery. Purpose of doing vertigo test is to know/confirm the workmen capability in terms of height phobia which is very important to avoid any untoward incident/accident.

Workers engaged in project, shutdown, maintenance carry many Critical/routine activities at height which exposes the worker to fall from height and may cause serious injuries, from this aspect medical fitness of the worker especially for WAH is essential. Recently a major shutdown has been completed and Projects jobs are still going where thousands of workers are involved including routine height jobs. During such time this model found most effective & helpful to check the medical fitness of the worker for free from height phobia. If workmen fail to perform the test and Doctor certified that he is not medical fit for working at height job, will not allow for WAH jobs till he will be medical fit for working height job. We conduct vertigo testing in presence of Doctor and he measure all medical parameters relevant of vertigo /height phobia (before and after the test performed) and then test carried out. If any medical parameters found not meet then same contract worker/s is not allowed for working at height job.

Brief Description of model:

- In refineries, one of the critical job is working at height which requires a worker to be physically fit.
- Even after medical fitness test, accident takes place by fall from height due to height sickness as personal factor.
- For double check on medical fitness certificate before actual start of height job a Vertigo Test Model was developed in Gujarat refinery for simulation.
- Created temporary structures & trial taken on test model.
- Task observation done and Feedback taken from field workmen before preparing engineering drawing for final test model.
- There were 2-3 trials taken on use of this model for Acrophobia testing and then finally the model was erected with height adjustment.
- Reference was also taken from AERB Safety guidelines (AERB/SG/IS-4).

Engg Drawing & Full view picture of model:



Practical testing of vertigo test before deploy in Working at Height Job :



Advantages of use of vertigo testing model:

It is significant because of following advantages:

- 1) By conducting vertigo test it is to know/confirm the workmen capability in terms of height phobia which is very important to avoid any untoward incident/accident.
- 2) Immediate fitness check prior to deploy in Critical job of Working at Height.
- 3) Proactive system of safety awareness for Workers engaged in project, shutdown, maintenance etc.
- 4) During vertigo test before and after checking the medical parameter like BP, SPO2, PULSE rate etc. which confirms whether person is fit for working at job or not.
- 5) During testing if Doctor declares unfit for WAH job then eliminate the people and act as per Doctor Advice.
- 6) All the contract workers are not familiar with Critical job like WAH and never exposes in past by conducting this test right person will choose for right job which enhance the safety among contract workers and eliminate the fall from height injury.
- 7) Medical Parameters Checked Before and after test
 - Blood Pressure
 - SpO2 (Peripheral capillary oxygen saturation, an estimate of the amount of oxygen in the blood)
 - Pulse Rate
 - Nystagmus
- 8) This Vertigo test model helps test and fit the person for working at job.

- Beam width and length
- Person walking with safety harness-m forward and returning
- Doctor taking BP – pre and post test
- Parameters checked by Doctor in Vertigo test
- After successful passing of vertigo test contract workers/employee “ V “ tested logo pasted on their I card for easy identification and people are allowed to work

Benefits:

- Safety confidence building in supervisors and engineers and stakeholders.
- Workers actually come to know about their ability and inability for height work and remain alert in future jobs whether in refinery or any other place.
- Person can take medical treatment for deficiencies and remain healthy and safe.
- Can be deployed in other jobs which is suitable for him.
- Selecting right person for right job i. e. height job.
- In Nutshell – “Avoidance of fall from height due to poor health and achieving ZERO Accidents”.
- It’s a low cost system designed within refinery.
- Sense of satisfaction and positivity among workers.
- Enhancement of safety culture among the contract workers.
- Developing behavioral change among Contractors.

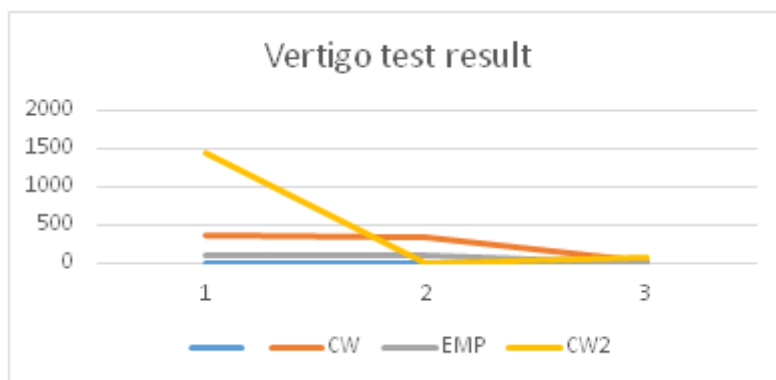
Use of Vertigo Test Model

In construction of more than 50 mtrs and critical height job, Vertigo testing procedure is followed for worker screening and those passed test under medical supervision were given a **V** sticker on their helmet and gate pass/s stick for ease identification and are allowed to work.

Important component wise picture to show in exploded view

- Wire rope and connectors
- Showing height of walkway beam

Statistics of critical Height job more than 50 mtrs. For contract workers		Statistics of critical Height job more than 50 mtrs. For Employees	
Workers undergone Vertigo test	1799	Employees undergone vertigo test	101
Workers Passed in Vertigo test	337	Employees passed vertigo test	99
Workers Rejected in Vertigo test	14	Employees Rejected in Vertigo test	02



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