

Application of a New Multi-functional Rope Rescue Training Tower in Fire Rope Rescue Training

Jiangping Liu^a, Chuansong Wu

Public Security Fire Force College, Kunming 650208, China

^aLiujiangping310@163.com

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Abstract: At present, the high-altitude rope training tower in the Chinese fire protection industry is relatively backward. It is mostly built before 2010. It has a single function, limited training, and lacks a comprehensive training venue. This tower is designed to achieve multifunctional simulated rope rescue training. In this design, the fire training tower can be divided into a fire extinguishing technology training area and a rope rescue technology area. Design realization function: Rope Rescue(DRT) technical training; Rescue training of shaft and shaft; Climbing training in corners and water pipes; Ladder, hook ladder training; Training in rope making and anchor making; Crash rescue training in tunnels and narrow spaces; Tower hanging, helicopter hanging down rope rescue training; Slope rope rescue training; Rescue training for crossing ropes; Leaning up the cable rescue training; Window up, down and inwards rope rescue training; Drop rope technology; Rock climbing training.

1. Introduction

Since the study of Japanese rope rescue technology in 2000, China's fire rope rescue has gradually established and developed. After summing up experience and fumbling for practice, it has gradually formed domestic fire rope rescue technology. In China, around 2010, domestic rope rescue technology was in line with the international standard. Domestic rope rescue technology appeared in SRT (single rope technique single-rope technology) and DRT (double rope Technic double-rope technology). Domestic fire protection currently establishes DRT as a rope rescue technology. Since this technology is more secure and stable than domestic traditional rope rescue technology, traditional training facilities cannot meet the training needs after adopting DRT technology. On the other hand, although DRT technology comes from the international community, it is mostly a single-subject professional rope rescue training facility. There is no comprehensive rope rescue training tower suitable for China's National conditions.

The design and construction of a comprehensive multi-functional rope rescue training tower can not only improve the comprehensive rope training, improve the training venue of the trainees, improve the training efficiency of the trainees, but also fill the gap of the comprehensive multi-functional fire rope rescue training tower.

2. Status of Fire Rope Rescue Training Tower

Most of the existing Fire-fighting rope rescue training towers in China were built before 2011. The existing rope rescue training towers have single training subjects, fewer functions, and lower training efficiency. Most of them can only complete the training of simple high-altitude subjects such as rise and fall, underground rescue, etc., and they are completely unable to meet the actual training needs of domestic Fire-fighting rope rescue technology today. Therefore, changing the traditional backward training tower, building a new type of comprehensive multi-functional rope training tower, and gradually realizing the improvement and science of the fire rope rescue training, it has become the key to the high altitude rope rescue training. (Figure 1).



Figure 1. The existing Fire-fighting rope rescue training tower

3. Fire-fighting rope rescue training actual combat requirements

Since the reform and transformation of the ranks, the new orientation of the general secretary of the standard and the new position of the main force and the national team, in view of the needs of the task of "disaster prevention and emergency response", must always keep an eye on the important and difficult issues that restrict the generation of combat effectiveness, and persist in facing actual combat. Seize practical and beneficial actual combat, effectively combine all the elements of the curriculum and actual combat, dare to innovate and dare to surpass, and gradually upgrade the professionalism and professionalism of the team.

To continuously upgrade our professional and technical skills is an inevitable requirement for meeting the challenges of opportunity and adapting to the situation. The construction of a comprehensive multi-functional rope rescue training tower will not only improve the comprehensive rope training, but also improve the training venues for trainees and improve the training efficiency of trainees. The improvement of actual combat ability is also an important way to improve the professional skills in the current job training.

4. Design of a new type of multi-functional rope rescue training tower

This fire training tower can be divided into a fire extinguishing technology training area and a rope rescue technology area. The building area is about 600 or 900 square meters, a total of six floors, each floor 100 or 150 square meters. Among them, firefighting technology training and underground level 1 training area require the production of drainage systems on each floor. There is no power supply for the entire tower. The exterior wall shape must be based on the actual functional needs. The East and South windows can be load-bearing, and the West and North sides are selectively hollow according to the functional exterior walls. It can ensure that there is enough light to enter, and the tower stairwell should be closed to avoid safety hazards caused by the lack of protection measures upstairs or when someone enters in the dark.

Design realization function: Rope Rescue(DRT) technical training; Rescue training of shaft and shaft; Climbing training in corners and water pipes; Ladder, hook ladder training; Training in rope making and anchor making; Crash rescue training in tunnels and narrow spaces; Tower hanging, helicopter hanging down rope rescue training; Slope rope rescue training; Rescue training for crossing ropes; Leaning up the cable rescue training; Window up, down and inwards rope rescue training; (a) Drop rope technology; Rock climbing training.

Figures 2 to 4 are the different directions of the new type of multi-functional rope rescue training tower.

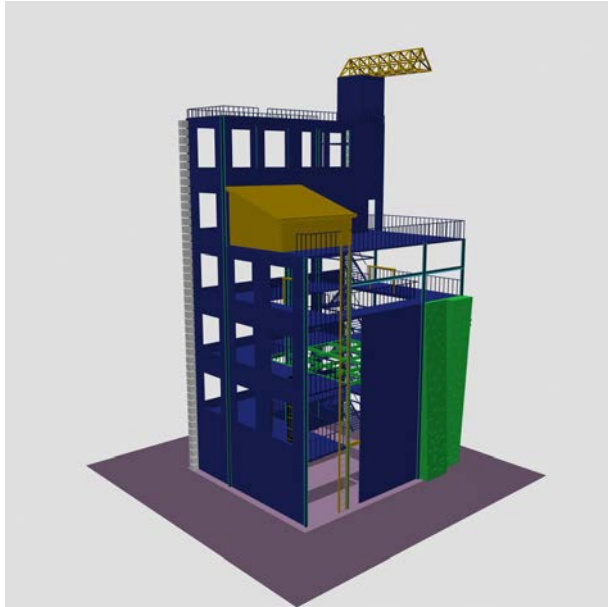


Figure 2. a new type of multi-functional rescue training tower

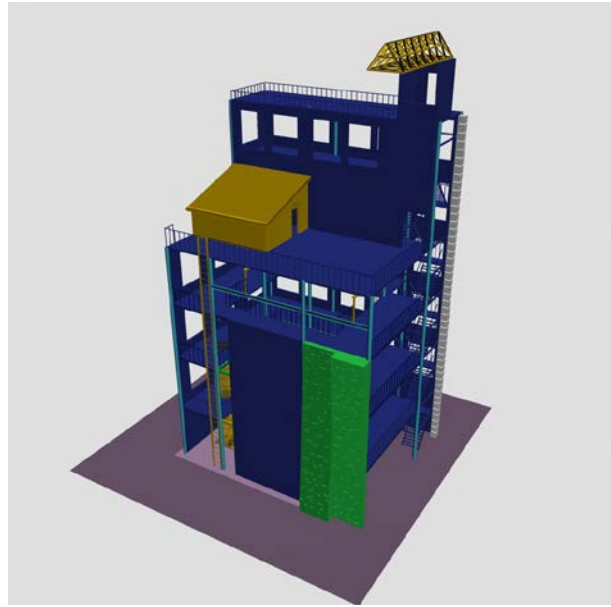


Figure 3. a new type of multi-functional rope rescue training tower

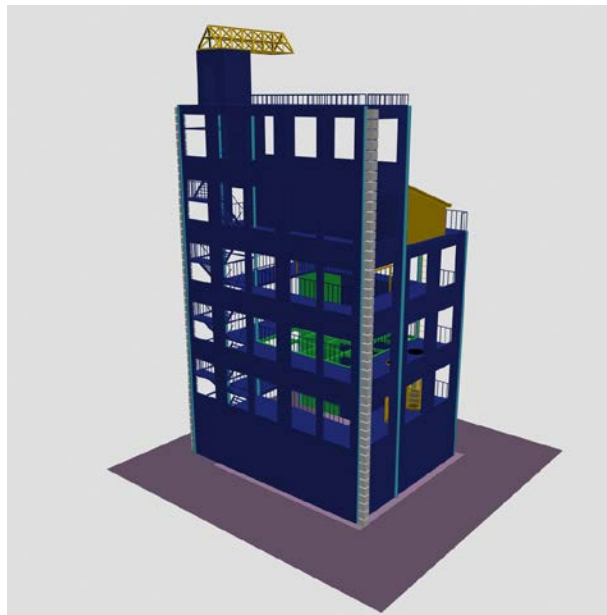


Figure 4. a new type of multi-functional rope rescue training tower

First: Rope Rescue Technical Zone

Rope DRT single technology (up, down, over the knot, rope tow rope, small curved hanging, double hook climbing, over the edge, moving anchor point climbing, fixed anchor climbing), Rope DRT rescue technology (with rope down rescue, with rope up rescue, over rope rescue, small bend hanging rescue, rope tow rope rescue, stretcher down the edge rescue), Traditional Japanese-style rescue subjects (a horizontal rescue of stretchers, rescue methods 1 and 2, 6 or 9 meters of ladder rescue, underground rescue, shaft rescue, horizontal pit rescue, bridge oblique rescue, comprehensive rescue technology) Teaching technical subjects (rescue knot Rope teaching, double force system teaching, equipment use teaching, anchor installation teaching) Building functional subjects (rock climbing, window rope drop, inverted descent, climbing corner training, climbing water pipe training, tower lifting rescue, helicopter suspension, window up and down rescue, window Stretcher rescue, pipe narrow space rescue, transverse small space demolition rescue, water belt emergency fall escape self-help training).

Second: Fire Fighting Technology Training Area

Ladder training (climbing 6 or 9 meters of Ladder training, laying of water belts along the Ladder, setting up of foam hooks by 9m, climbing 15 meters of metal Ladder), Hook ladder training (climbing the hook ladder, connecting the 6 or 9 meter ladder with the hook ladder, climbing the 3 hook ladders, connecting the 15 meter metal ladder with the hook ladder, using the hook ladder to transfer the window), Water belt training (laying water belts along stairs, vertical laying of water belts, lifting water belts, vertical replacement of water belts, high-level stratification of water belts, high-level transfer of laying water belts, high-level laying of water belts, two belts of water along the stairs to carry out water, Individual fire control lifesaving, individual skill), Exercise training (two water guns on the single main line of the floor, water gun positions on the vertical laying of the upper floors, comprehensive water fire extinguishing in multi-storey buildings, 100-meter ladder attacks, water tank fire engine link water pump adapter, high injection vehicle water, curved arm flat car remote control lifesaving blister water The elevated car connects the water belt with vertical water supply along the external wall of the building.)

5. Summary

Practice has shown that the new multi-function rope rescue training tower meets the current domestic fire rope rescue training needs and covers a variety of functions that may be involved in domestic fire rope rescue training. The training subjects are relatively perfect, the training results are better, and the funds and venues are saved. The addition of training functions and subjects is a powerful measure to enhance the actual combat capabilities of the fire brigade.

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