Fresno Fire Department

Aerial Truck Placement Guide

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INTRODUCTION

The Fresno Fire Department utilizes several types of Aerial apparatus with differing lengths of ladders and configurations of ladder tips. From Tower Ladders to Straight Stick Ladders, truck companies must be familiar with the operations of the truck they are operating. This guide is a basic operating guide regarding placement of truck companies on the fire ground and utilization of trucks for different operations. This guide is not meant to limit truck companies' utilization or operations.

Figure 1 Ladder Truck

Figure 2 Tower Ladder

General Placement of Aerial Apparatus

General placement depends upon conditions encountered on arrival. The officer in command of a fire should give instructions regarding the placement of apparatus and the operations to be performed. The decision should be based on but not limited to the following factors:

1. Street conditions- traffic encountered, i.e., overhead wires, trees, etc.
2. Type of structure; height and area. (Remember the limitation of your ladder).
3. What wall to work on based on the life factor, i.e., rescue.
4. Condition and stability of building.
5. Fire conditions, fire location, and extent of the fire.
6. Type of occupancy-time of day
7. Location of pumper and hydrants.
8. Elevated master streams potential.

Arriving first provides the choice of positions best suited for initial operations.

Arriving second requires positioning that will not block out other first alarm units. It may be necessary or advantageous to circle the block and come in from the opposite end of the street if such action will improve the effective “scrub area”. “Scrub area” is defined as that area of the building wall which can be touched by the basket or tip of the ladder.

When victims are in need of rescue from upper floors, position the apparatus parallel to the building. The aerial device can then be lined up parallel to the victim(s) (Figure 1). When positioning parallel to the building, the scrub area of the aerial device can be reduced by the cab. The condition can be corrected by parking the apparatus with the front end angled about 15 degrees from the building line. This will put the cab portion of the apparatus farther away than the rear portion, and in this way the boom can be operated the full extent of the scrub area.

Positioning at a corner of the building affords coverage on two fronts. This enables coverage over a much wider area, permitting greater access and observation points to check stability of the building (Figures 3 - 4).

Figure 3 - IFSTA Diagram

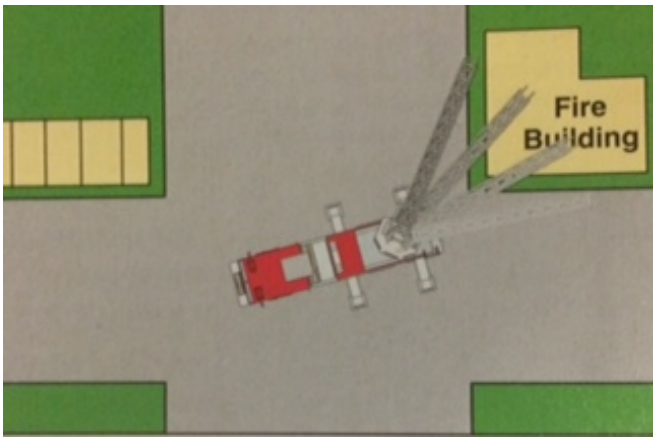

Figure 4 - IFSTA Diagram

Positioning the apparatus perpendicular to the building will considerably reduce the scrub area and should be avoided whenever possible. However, when the ground is found to be unstable it may be more advantageous to position the apparatus perpendicular.

Stability of the aerial apparatus can be improved by operating the aerial device in line with the longitudinal axis (apparatus body). The apparatus is most stable when the aerial device is operated directly over the front or rear of the vehicle (Figure 3 and 4).

Streaming Coverage Based on Positioning

The below illustration depicts the stream coverage of the sides based on the positioning of the aerial apparatus (*Figure 5*).

Regardless of initial placement, it must be realized that as conditions change; repositioning may be required and may be accomplished quickly and safely with proper training and planning. Be mindful that collapse zone recommendations are one and a half times the height of the building.

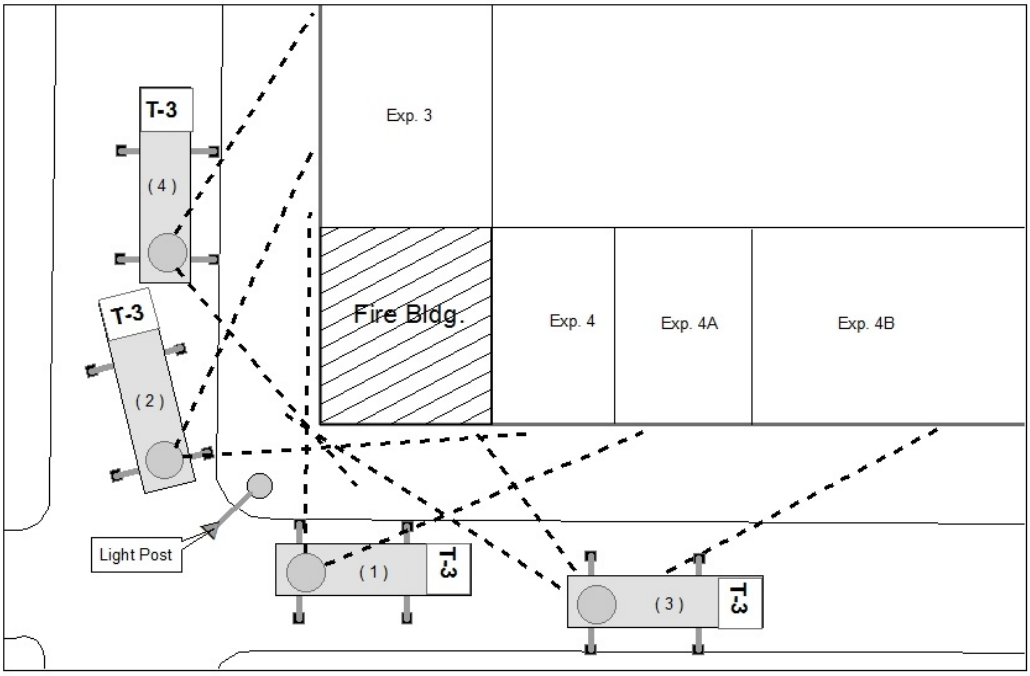

Figure 5 - Positioning at a corner building - Hi-Rise.

Position #1: Affords stream coverage of two sides of the building, all floors, and effective stream coverage of Exp. #4, Exp. #4A, and some coverage of #4B if the ladder is brought parallel to the front of the building.

Position #2: Affords coverage of 3 sides of the building with stream, limited coverage of Exp. #4, 4A and 4B.

Position #3: Affords coverage of the front of the fire building and effective coverage of Exp. #4, 4A, 4B, and limited stream coverage of Exp. #3 side of the building.

Position #4: Affords coverage of Exp. #3 with coverage of one side of the fire building and partial coverage of Exp. #4.

Positioning When Footing is Doubtful

The below illustration depicts the positioning of the aerial apparatus when the footing is in doubt (*Figure 6*).

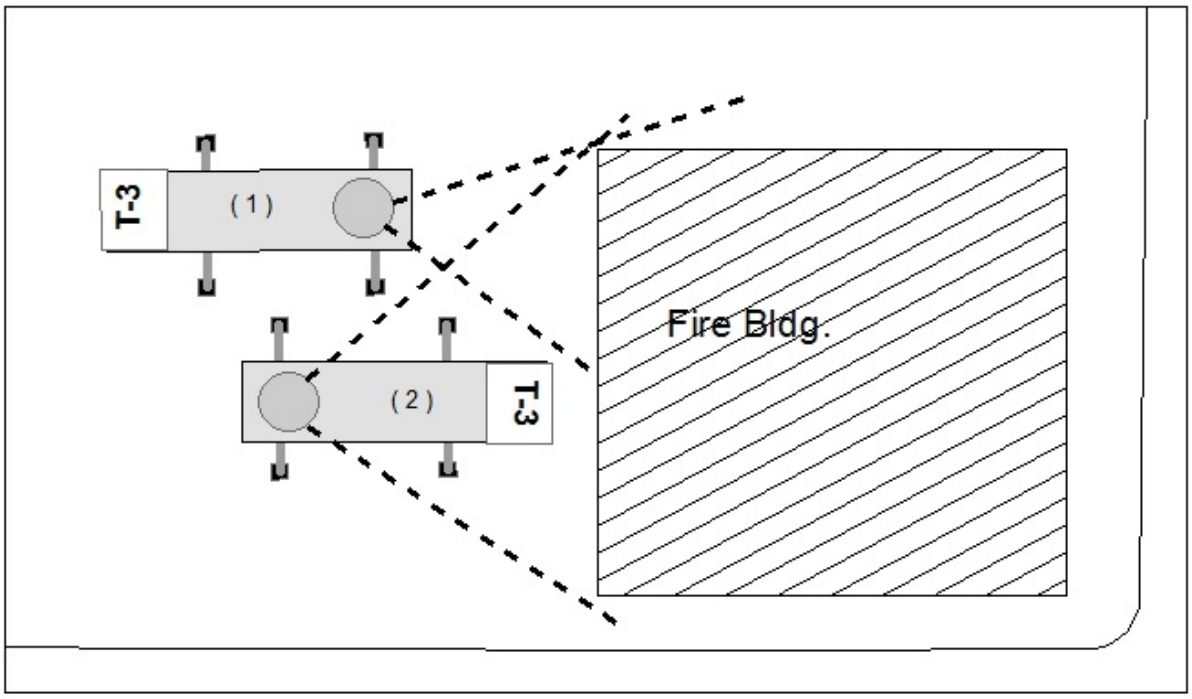

Figure 6 - Positioning when footing is doubtful.

1. Lateral movement of the ladder should be limited to avoid placing excessive weight on the outriggers on either side; keeping stress distributed as equally as possible on all supports.

2. Backing the apparatus into position would insure coverage of lower floors.

3. Positioning the apparatus closer to the rear line of the building will afford effective stream operation on most floors. (Position #1)

During operations at one and two family private dwellings or any structure with an alleyway between the fire building and an exposure, placing the turntable in line with the alley affords frontal protection, extinguishment, rescue, ventilation, search, and entry. For the purpose of the diagram below (*Figure 7*) an alleyway will also be considered the space between structures.

Positioning Using Alleyways

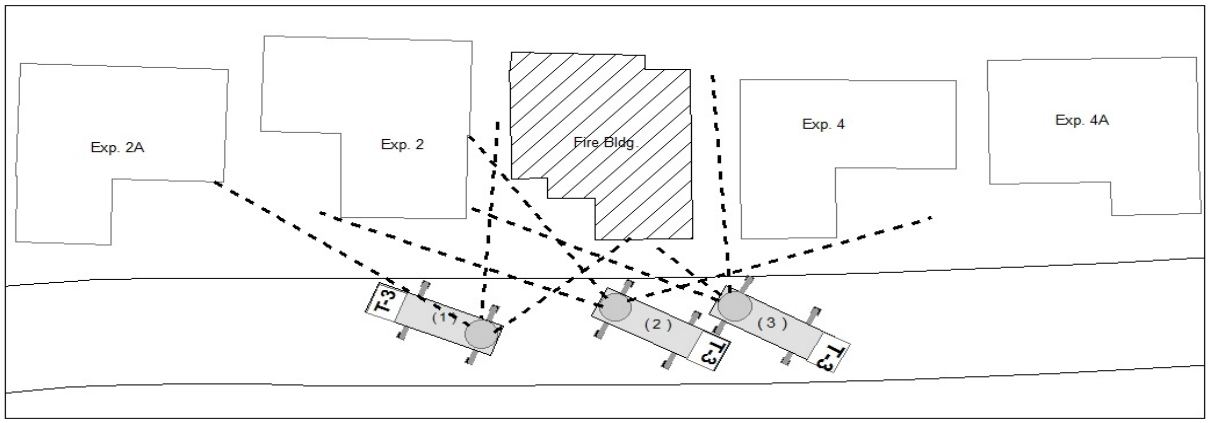

Figure 7 - Residential apparatus positioning using alleyways.

Position #1: Affords extension into alley for ventilation and/or rescue to the fire building and also stream coverage in alley. Additional coverage is afforded to exposure 2 and 2A.

Position #2: Affords frontal coverage of the fire building, stream coverage via alley #2 and #4 sides, some stream coverage of Exp. #2 and #4.

Position #3: Affords frontal and alley coverage for rescue and/or ventilation. Affords stream coverage all the way to the rear of the structure.

Note:

a. The presence of obstructions such as power poles, trees, and police cars will limit positions and operations.

b. Potential life hazard and/or direction of fire travel dictates positioning of apparatus.

Orderly placement of aerial apparatus on the fireground can be accomplished through pre-incident planning and SOPs. Buildings taller than five (5) stories should have the aerial apparatus closest to the building. Buildings less than five stories tall should have the aerial apparatus positioned outside of the pumpers. The philosophy here is that the building is low enough, generally less than five stories, it can be reached by the aerial device even if it has to go over the closer engines.

If a building is less than five (5) stories tall, the aerial apparatus may be positioned outside the pumpers (*Figure 8*).

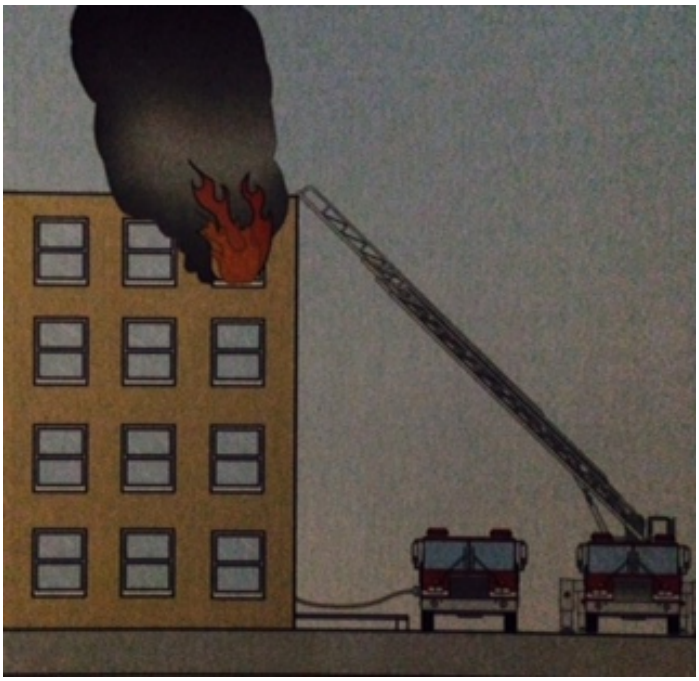

Figure 8 - Aerial apparatus positioned outside the pumper.

If a building is more than five (5) stories tall, the aerial apparatus should be positioned inside the pumpers (*Figure 9*).

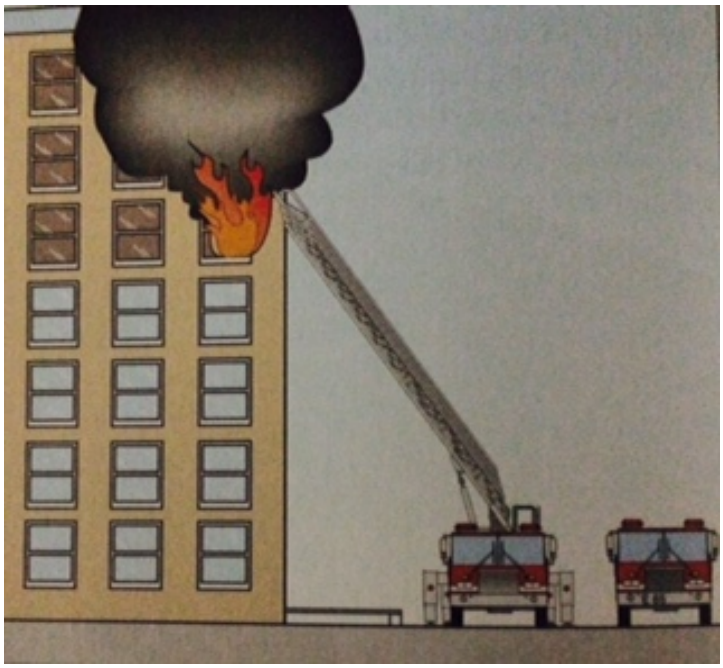

Figure 9 - Aerial apparatus positioned inside the pumper.

Positioning on Hills:

When the ladder rungs are nonparallel to the ground, stress to the aerial device is increased. Stress is also increased when the aerial device is operated off the side and parked on an incline. These positions and others like them create torsion, or a twisting action to the ladder and turntable. The diagrams below show the proper way to spot when on a hill.

Note: Grades up to 4% slope may be treated as level ground.

Figure 10 - Aerial device positioning when approaching from the downhill side.

When approaching from the downhill side, the apparatus should be stopped short of the fire building and the aerial device should be operated over the front of the apparatus (*Figure 10*).

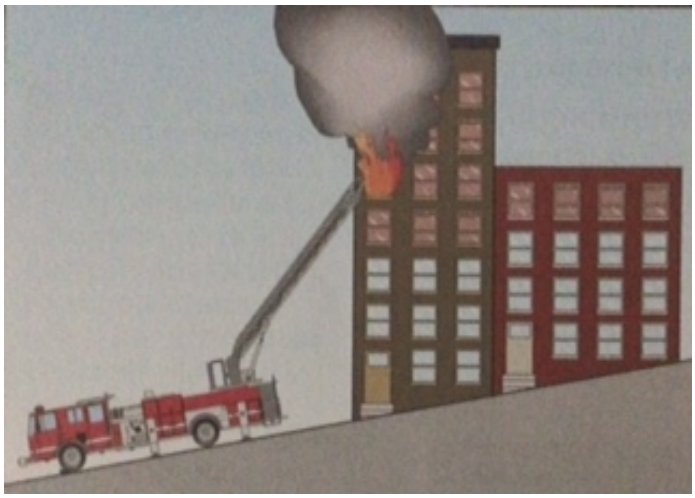

Figure 11 - Aerial apparatus position when approaching from the uphill side.

When approaching from the uphill side, the apparatus should be driven past the fire building and the aerial device should be operated over the rear of the apparatus (*Figure 11*).

OVERHEAD OBSTRUCTIONS

Do not work within 20 feet of power lines energized up to 350K. Do not work within 50 feet of high voltage transmission line if the voltage is unknown. If necessary, the commanding officer should have the wires removed by the utility company.

Trees can hinder operations; it is possible to extend or raise the boom through light branches. Larger branches can damage the ladder and will either have to be cut or reposition the apparatus.

REFERENCES

Training and Equipment Manual

Section 313.041, Standard Stabilizer Deployment

Section 313.041a, Standard Stabilizer Deployment IPE

Section 313.042, Standard Aerial Deployment

Section 313.042a, Standard Aerial Deployment IPE

Section 315.010, Truck Company Operations, Setting up an Aerial Ladder

Textbook

IFSTA Pumping and Aerial Apparatus Driver/Operator Handbook Third Ed.