EMERGENCY ESCAPE AND RESCUE OPENINGS

When Required:

When constructing buildings where occupants may be sleeping during fire within buildings of **Type IIB**, **Type IIIB**, **Type VA**, and **Type VB** construction.

Definitions:

All-Weather Pathway/Surface: Concrete, asphalt, pavers, or another approved engineered surface. A pathway shall be engineered to support a minimum 1,000-pound load.

Emergency Escape and Rescue Window: An operable window, or other similar device, that provides a means of escape and access for rescue in the event of an emergency.

Ladder Pad: A level, slip-resistant, all-weather surface, capable of supporting the weight of the ladder, firefighter(s) in gear, equipment, and person(s) to be rescued. Pads shall consist of a minimum of eight inches of concrete placed over twelve inches of Class II base rock compacted to ninety-five percent on a properly prepared subgrade with positive drainage.

Requirements:

1. **Perimeter of Buildings:** An all-weather pathway/surface shall be provided for ground ladder access meeting all the following requirements:
    a. All-weather pathways shall be provided around the entire perimeter of the buildings/structures. (**see Appendix A for design guidance**).
    b. The pathway width shall be a minimum of 60-inches, and capable of supporting a 10.
    c. The pathway shall be designed and installed so that the extended ladder angle of inclination is at least 70° and no greater than 76° from horizontal. An easy way to determine the proper distance is to divide the required length of ladder by four.
        - For example, if 36-feet of ladder is needed to reach a window on the third floor, the butt of the ladder should be placed a minimum of 9-feet from the building (**see Figure 1 for additional information**). The calculation is based on uniform exterior architectural features and may not be applicable to all facades.
    d. An additional four feet is required to move safely around the ladder (**see Figure 1 for additional information**).
    e. Ladder set-up shall not be obstructed by architectural features, trees, or landscaping.

2. **Interior Courtyards:** Where there are fully enclosed interior courts, ladder pads are allowed to be utilized and shall comply with all the following requirements:
    b. Straight pathway from the public-way through the building to the interior court.
    c. In podium construction a straight stair to the podium level would be acceptable.

d. The pathway width through the building or stair shall be a minimum of 72 inches in width to facilitate carrying a ladder.
e. Ladder pads shall be a minimum of three feet in width, five feet in length, and eight inches in depth (thickness), placed over twelve inches of Class II base rock compacted to 95% on a properly prepared subgrade with positive drainage.
f. Ladder pads shall be designed and installed so that the extended ladder angle of inclination is at least 70° and no greater than 76° from horizontal. An easy way to determine the proper distance is to divide the required length of ladder by four.
    - For example, if 36-feet of ladder is needed to reach a window on the 3rd floor, the butt of the ladder should be placed a minimum of 9-feet from the building (**see Figure 1 for additional information**). The calculation is based on uniform exterior architectural features and may not be applicable to all facades.
g. An additional four feet is required to move safely around the ladder (**see Figure 2 for additional information**).
h. Ladder Pads shall be permanently marked "**Fire Dept. Ladder Pad**".
i. Ladder set-up shall not be obstructed by architectural features, trees, or landscaping.

Figure 1: Ground Ladder on Pathway

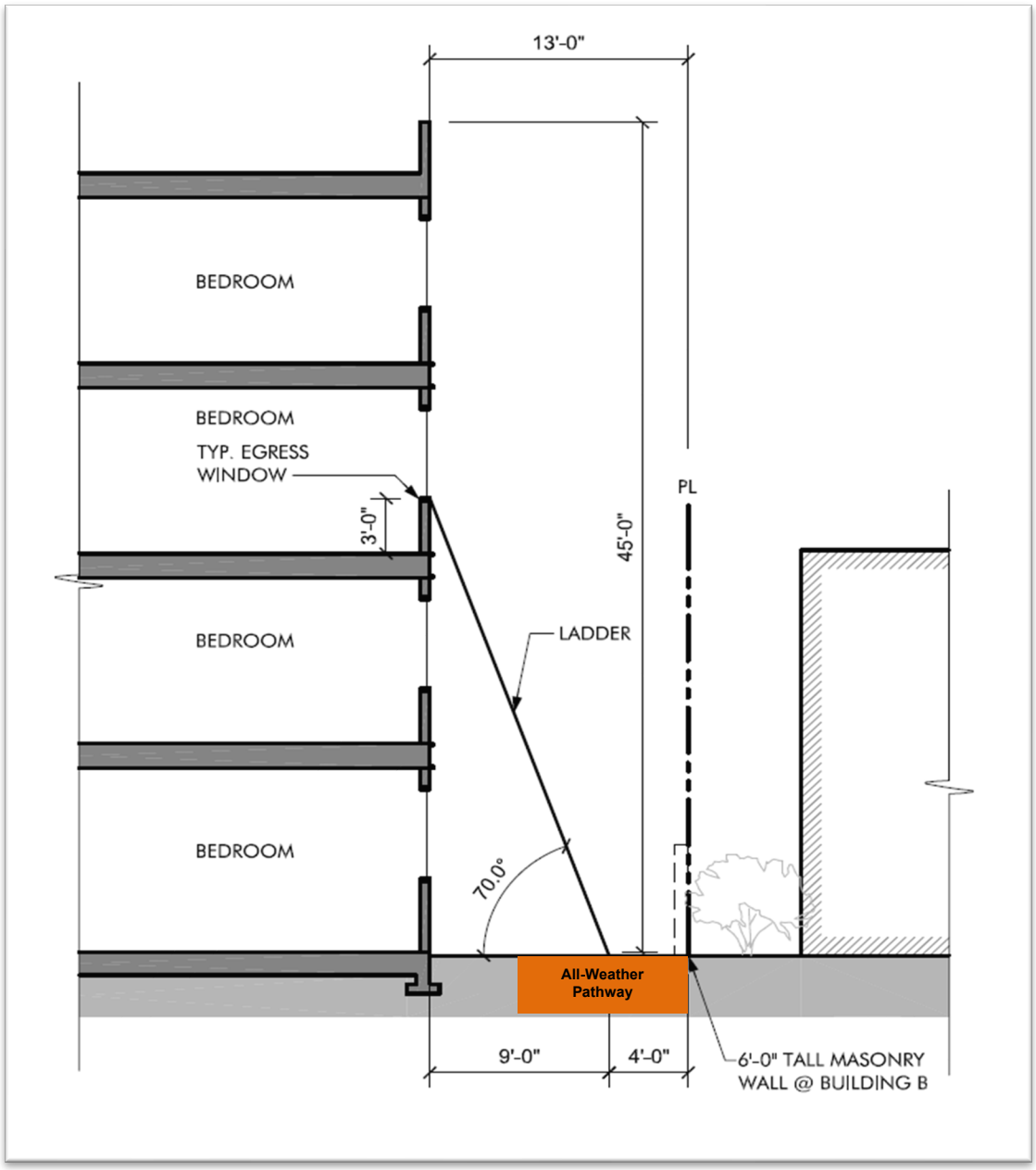
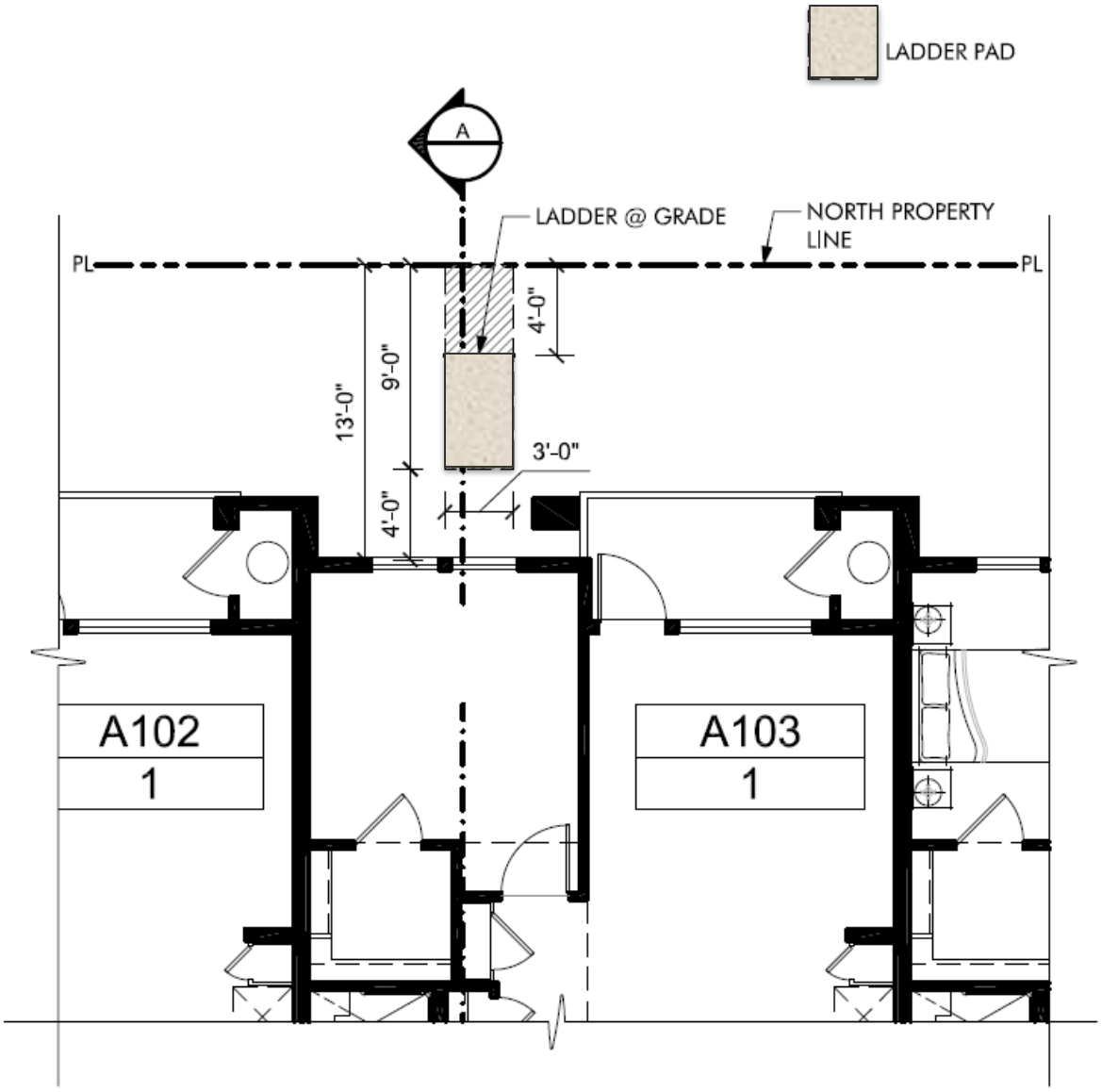


Figure 2: Ladder Pad (Interior Courtyard Only):



Appendix A: Pathway All-Weather Design Options

1. **Portland Cement Concrete (PCC)**
    - Minimum 6-inches concrete (3,000 psi)
    - Reinforced with #3 bars @ 18 inches each way or 6×6 W2.9 wire mesh, mid-depth
    - Over 6-inches Class II aggregate base compacted to 95%
2. **Asphalt Concrete (AC)**
    - 3-inches asphalt concrete (Type A or C2)
    - Over 8-inches Class II aggregate base compacted to 95%
    - Non-woven geotextile separator recommended in weak soils
3. **Interlocking Concrete Pavers**
    - 3-1/8 inches (80 mm) interlocking pavers
    - 1 inch bedding sand
    - Over 8-inches Class II aggregate base compacted to 95%
    - Edge restraints required
4. **Stabilized Decomposed Granite with Binder and Geogrid Reinforcement**
    - 6-inches polymer-stabilized decomposed granite mixed with binder (resin or organic stabilizer), compacted to 95%
    - 12–18 inches Class II aggregate base compacted to 95%
    - One layer of biaxial geogrid reinforcement at mid-depth of the base, with a non-woven geotextile separator under the base
    - Edge restraint required
5. **Crushed Rock/Gravel with Binder and Geogrid Reinforcement**
    - 8-inches angular crushed rock (3/4" max) mixed with soil stabilizer or binder for cohesion, compacted to 95%
    - 12-inches Class II aggregate base compacted to 95%
    - One layer of biaxial geogrid reinforcement at mid-depth of the base, with a non-woven geotextile separator under the base
    - Edge restraints required
6. **Turf-Pave / Grass-Crete / Permeable Paving Systems**
    - Proprietary reinforced turf-pave or grasscrete system capable of supporting HS-20 loading or equivalent
    - Over 12-inches Class II aggregate base compacted to 95%
    - Edge restraints required
    - Must maintain all-weather access and be irrigated/maintained per manufacturer's instructions

Note: Other all-weather systems (e.g., pervious concrete, permeable asphalt, modular plastic grid systems) may be considered if demonstrated by the manufacturer to support the required loading.