

APPENDIX I

PROPERTY SURVEY AND MEASUREMENT PROTOCOL

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A. Definitions

The following definitions apply to Property Surveys, Retrofits, and Inspections conducted pursuant to this Order and Appendices:

1. Clear floor space: a 30” by 48” space positioned at, for example, fixtures, controls, dispensers, devices, accessories, waste receptacles, drop boxes and drop slots, life safety equipment, hooks, and common area amenities such as grills and fire pits that are required to be accessible.
2. Flag: a segment of concrete paving separated by a control joint or construction joint.
3. ISA: the International Symbol for Accessibility.



4. Juliet balcony: a shallow balcony less than 30” deep measured from the face of the building to the inside face of the railing.
5. Lavatory: a bathroom sink.
6. Rise: the vertical change in elevation between two points.
7. Unit type(s): each unit type in a covered property as differentiated by number of bedrooms, number of bathrooms, kitchen design, bathroom design(s), laundry area design, type of outdoor space (*e.g.*, patio versus balcony), and interior amenities (*e.g.*, fireplace, study nook,

storage closet(s)). Variations of unit types which have accessible characteristics such as grab bars and knee space at sinks and lavatories, are separate unit types.

8. HUD-recognized safe harbor: any of the following used in its entirety as a reference to conduct a Property Survey: (1) the Fair Housing Accessibility Guidelines (Mar. 6, 1991) (“HUD Guidelines” or “Guidelines”), in conjunction with the Supplement to Notice of Fair Housing Accessibility Guidelines: Questions and Answers About the Guidelines, June 28, 1994; (2) HUD’s Fair Housing Act Design Manual (“Design Manual”), published by HUD in 1996, updated in 1998, with the 1986 edition of ANSI A117.1 selected for compliance where ANSI is referenced in the Design Manual (and in particular with reference to “public and common use spaces”); (3) ANSI A117.1-1986, used in conjunction with the FHA, HUD’s Regulations, and the Guidelines; (4) CABO/ANSI A117.1-1992, used in conjunction with the FHA, HUD’s Regulations, and the Guidelines; (5) ICC/ANSI A117.1-1998, used in conjunction with the FHA, HUD’s Regulations, and the Guidelines; (6) 2000 ICC Code Requirements for Housing Accessibility; (7) 2000 IBC, as amended by the 2001 Supplement to the IBC; (8) 2003 IBC, with one condition; (9) ICC/ANSI A117.1-2003, used in conjunction with the FHA, HUD’s Regulations, and the Guidelines; (10) 2006 IBC, with the January 31, 2007, erratum and with one condition; (11) ICC/A117.1 2009, used in conjunction with the FHA, HUD’s Regulations, and the Guidelines; and (12) 2009, 2012, 2015, and 2018 editions of the IBC. 24 C.F.R. § 100.205(e)(1)-(2).
9. If HUD’s Fair Housing Act Design Manual (“Design Manual”), published by HUD in 1996, updated in 1998, is used as the selected Safe Harbor, either the 2003 or 2009 editions of ANSI A117.1 may be used for compliance where ANSI is referenced in the Design Manual (and in particular with reference to “public and common use spaces”).
10. This Order and Appendices incorporate by reference the definitions found in the HUD-recognized safe harbor used to conduct the Property Survey.

B. Scope of the Property Survey

1. The Property Survey shall include all exterior and interior public areas, common areas, and units as required to determine the full extent of project compliance with FHA and relevant ADA requirements, including:
 - a. All portions of exterior and interior routes and circulation paths as required to determine existing conditions at all accessible route(s) and any potential alternate routes that may provide access to common areas or units;
 - b. All interior and exterior public and common use areas; and
 - c. At least two of each unit type.
2. Employee only areas (*e.g.*, leasing workroom, staff only package room, commercial kitchen areas, and staff restroom) do not need to be surveyed.
3. To the extent that a portion of the required survey was completed by any approved surveyor or neutral inspector as part of the original investigation, those measurements may be reused and additional Property Surveys may be limited to site evaluation of any portions of routes, common areas, or units that were not surveyed or lack sufficient documentation of the survey results.

C. Equipment

1. The following equipment is required for all Property Surveys and Inspections conducted pursuant to this Order and Appendices:
 - a. A standard 1” steel measuring tape;
 - b. A 24” nominal bar with a 6 1/2” digital inclinometer known as the SmartTool™ (“digital level”) or an equivalent instrument

(other brands of digital levels capable of measuring to a precision of 0.1% may be used including, for example, Bosch, Milwaukee, and Stabila). Calibrate the digital level according to the manufacturer's instructions followed by performing a 180-degree check reading prior to taking any measurements. Check calibration of the digital level at regular intervals during the survey and anytime the digital level is dropped or hit against another surface;

- c. A digital camera with minimum 16 megapixel resolution; and
 - d. A standard door pressure gauge manufactured for this purpose.
2. The following equipment is optional for all Property Surveys and Inspections conducted pursuant to this Order and Appendices:
- a. Standard surveyor instruments;
 - b. A digital altimeter (Zipline or equivalent instrument) calibrated according to the manufacturer's instructions;
 - c. Short digital inclinometer; or
 - d. Carpenter's square or contour gauge.

D. Required Methodology and Documentation for Measurements of Length, Width, Height, or Clearance

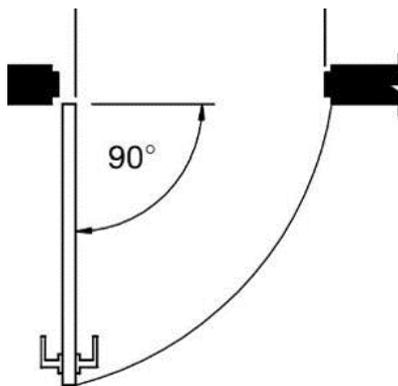
- 1. Measurements of length, width, height, or clearance: measure length, width, height, or clearance using the measuring tape and record all findings with the camera. The camera must be held square to the element and aligned to reduce parallax. Where possible, use the level to make sure that measurements are accurate and that the photograph is legible.

Illustration:



2. Measurements of slope: measurements of slope shall be measured in percentages recorded to the tenth of a percent.
3. Measurements of length, width, height, or clearance: measurements of length, width, height, or clearance shall be recorded in 1/8" increments.
4. Width of door opening: open the door to a 90 degree open position, measure from face of door to the edge of the stop on the opposing jamb. Include a measurement of the door leaf (or leaves).

Illustration:



If unable to open the door to a full 90 degrees due to an obstruction, photograph and document the obstruction and measure and record the width of the door leaf.

5. Parking and access aisle dimensions: measure from the centerline of the stripe to centerline of the stripe. Alternatively, measure from one side of the stripe to the same side of the stripe on the other side of the parking space. Measurement may be made to the outside of the stripe when the stripe is adjacent to a wall or other obstruction that prevents parking on the far side of the stripe. Measurement may be taken from the side wall to side wall in garage spaces.
6. Heights: measure heights of elements used by residents or members of the public to the top most and bottom most operating button, receptacle, etc., not to the centerline of the device, with the exception of electrical receptacles. For duplex electrical receptacles, the measurement is to the centerline of the top outlet (maximum height) or centerline of the bottom outlet (minimum height). Where elements are operated with a fob or motion sensor, the height measurement may be anywhere within the design sensitivity range.
7. Closet depth: measure closet depth from front of closet drywall to back of closet drywall on the inside of the closet.
8. Kitchen clearances: measure kitchen clearances from the edge of the counters to the opposing counters, cabinets, appliances, or walls. Do not include knobs at stoves, handles at refrigerators, and similar elements.
9. Slope:
 - a. Running slopes: measure running slopes by placing the digital level in a 36" wide portion along the centerline of each flag perpendicular to travel and parallel to the run of the accessible route. If a route lacks control joints and construction joints

(*e.g.*, is asphalt or brick paving), measure slopes at approximately 8' intervals along the route.

- b. Cross slopes: measure cross slopes by placing the digital level in a 36" wide portion along each flag perpendicular to travel and in a manner that is perpendicular to the run of the accessible route. If a route lacks control joints and construction joints (*e.g.*, is asphalt or brick paving), measure slopes at approximately 8' intervals along the route. If a flag appears to have significant warp, take additional measurements in order to report the full nature and extent of the existing conditions.
- c. Slopes at door maneuvering spaces: measure slopes at door maneuvering spaces with at least one reading for running slope and one reading for cross slope. If the surface appears to be warped, take additional measurements in order to report the full nature and extent of the existing conditions. Measure running and cross slopes at door maneuvering spaces as follows:
 - i. Measure running slope perpendicular to and centered on the entrance door served by the maneuvering space with the end of the digital level approximately one foot from the face of the door; and
 - ii. Measure cross slopes parallel to and centered on the entrance door served by the maneuvering space with the center of the digital level approximately one foot from the center point of the entrance door.
- d. Slopes at clear floor or ground spaces: measure running slopes and cross slopes at clear floor or ground spaces associated with amenities and controls (*e.g.*, the clear space at a power door operator) and at level landings and turns with at least one reading for running slope and one reading for cross slope. If the surface appears to be warped, take

additional measurements in order to report the full nature and extent of the existing conditions.

- e. Slopes at curb ramps:
 - i. Running slopes: measure running slopes at the base and top of each curb ramp run. Measure running slopes at approximately the center of each top and bottom landing. Measure running slopes of aprons with the level aligned with the back of the curb line. Take additional measurements as needed to document warped conditions.
 - ii. Cross slopes: measure cross slopes at the base and top of each curb ramp run. Measure cross slope at approximately the center of each top and bottom landing. Take additional measurements as needed to document warped conditions.

- f. Slopes at parking spaces and access aisles:
 - i. Running slopes: measure running slopes at the top, middle, and bottom of each parking space and each access aisle. Measurements should be taken as close to the middle of the space (from side to side) as possible. If the space is occupied, take measurements at both sides. Take additional measurements as needed to document warped conditions or deteriorated asphalt.
 - ii. Cross slopes: measure cross slopes at the top, middle, and bottom of each parking space and each access aisle. Measurements should be taken as close to the middle of the space (from side to side) as possible. If the space is occupied, take measurements at both sides.

Take additional measurements as needed to document warped conditions or deteriorated asphalt.

10. Rise: measure rise using standard surveyors instruments, a measuring tape, a calibrated altimeter, or determine by performing calculation using data gathered using the level and measuring tape.
11. Door opening force: measure door opening force by pushing the force gauge against the portion of the door just above the latch or push plate. Do not include the force required to operate the latch. When recording closing speed, include the degrees used for the measurement (e.g., 5 seconds, 90 degrees to completely closed or 2-1/2 seconds, 70 degrees to 3" from closed).
12. Field Notes: include survey date, people present, name of project, address, site plan or sketch, plans of the building(s) if available, unit plans, and any notes taken during the survey.
13. Digital photographs: include at least one context photo and at least one detail photo of the reading for each measurement.

Illustration: sample context photo



Illustration: sample photo of reading/dimension



14. Shower Size: Measure interior finish to interior finish from the middle of each of the end walls to the opposite wall for length, and interior finish of the back wall to the front of the threshold, curb, or front edge of compartment

for depth. Measurements shall be taken at 12” minimum above the floor of the shower.