**DRAFT Test Assertions for VVSG 1.0 Section 3.2.4**

**October 14, 2014**

**ATTENTION:** Figures 1 through 4 further specify the information contained in these assertions. (See them at bottom of document).

**Requirement 3.2.4**

**VVSG 1.0 Requirement 3.2.4:** The voting process shall be accessible to voters who use mobility aids, including wheelchairs.

**Note:** This is a high-level requirement that is fulfilled by the lower-level ones.

**Test Assertions**

None.

**Requirement 3.2.4a**

**VVSG 1.0 Requirement 3.2.4a:** The accessible voting station shall provide a clear floor space of 30 inches (760 mm) minimum by 48 inches (1220 mm) minimum for a stationary mobility aid. The clear floor space shall be level with no slope exceeding 1:48 and positioned for a forward approach or a parallel approach.

**Test Assertions**

**TA324a-1:** For the floor area, intended for use by the voter, the accessible voting station SHALL be designed to be operable, when set up according to the documentation supplied by the manufacturer, within a clear floor space of at least a 30 inch (760 mm) by 48 inch (1220 mm) rectangle, to allow for a stationary mobility aid.

**TA324a-2:** For the floor area, intended for use by the voter, the accessible voting station SHALL be designed to be operable, when set up according to the documentation supplied by the manufacturer, on a level, clear floor space with slope not to exceed 1:48.

**TA324a-3:** For the floor area, intended for use by the voter, the accessible voting station SHALL be designed to be operable, when set up according to the documentation supplied by the manufacturer, on a floor space positioned for a forward approach or positioned for a parallel approach.

**Requirement 3.2.4b**

**VVSG 1.0 Requirement 3.2.4b:** All controls, keys, audio jacks and any other part of the accessible voting station necessary for the voter to operate the voting machine shall be within reach as specified under the following sub-requirements.

**Note:** This is a high-level requirement that is fulfilled by the lower-level ones.

**Test Assertions**

None.

**Requirement 3.2.4bi**

**VVSG 1.0 Requirement 3.2.4bi:** If the accessible voting station has a forward approach with no forward reach obstruction then the high reach shall be 48 inches maximum and the low reach shall be 15 inches minimum.

**Test Assertions**

**TA324bi-1:** When set up according to the documentation supplied by the manufacturer, IF the accessible voting station has a forward approach and the accessible voting station does not have a forward reach obstruction THEN the high reach SHALL be 48 inches maximum.

**TA324bi-2:** When set up according to the documentation supplied by the manufacturer, IF the accessible voting station has a forward approach and the accessible voting station does not have a forward reach obstruction THEN the low reach SHALL be 15 inches minimum.

**Requirement 3.2.4bii**

**VVSG 1.0 Requirement 3.2.4bii:** If the accessible voting station has a forward approach with a forward reach obstruction, the following requirements apply (See Figure 2):

* The forward obstruction shall be no greater than 25 inches in depth, its top no higher than 34 inches and its bottom surface no lower than 27 inches.
* If the obstruction is no more than 20 inches in depth, then the maximum high reach shall be 48 inches, otherwise it shall be 44 inches.

**Test Assertions**

**TA324bii-1:** When set up according to the documentation supplied by the manufacturer, IF the accessible voting station has a forward approach with a forward reach obstruction THEN its forward obstruction SHALL NOT be greater than 25 inches in depth.

**TA324bii-2:** When set up according to the documentation supplied by the manufacturer, IF the accessible voting station has a forward approach with a forward reach obstruction THEN its top SHALL NOT be higher than 34 inches.

**TA324bii-3:** When set up according to the documentation supplied by the manufacturer, IF the accessible voting station has a forward approach with a forward reach obstruction THEN its bottom surface SHALL NOT be lower than 27 inches.

**TA324bii-4:** When set up according to the documentation supplied by the manufacturer, IF the accessible voting station has a forward approach with a forward reach obstruction AND the obstruction is less than or equal to 20 inches in depth THEN the maximum high reach shall be 48 inches.

**TA324bii-5:** When set up according to the documentation supplied by the manufacturer, IF the accessible voting station has a forward approach with a forward reach obstruction AND the obstruction is greater than 20 inches in depth THEN the maximum high reach shall be 44 inches.

**Requirement 3.2.4biii**

**VVSG 1.0 Requirement 3.2.4biii:** Space under the obstruction between the finish floor or ground and 9 inches (230 mm) above the finish floor or ground shall be considered toe clearance and shall comply with the following provisions:

* Toe clearance shall extend 25 inches (635 mm) maximum under the obstruction
* The minimum toe clearance under the obstruction shall be either 17 inches (430 mm) or the depth required to reach over the obstruction to operate the accessible voting station, whichever is greater
* Toe clearance shall be 30 inches (760 mm) wide minimum

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**Test Assertions**

**TA324biii-1:** When set up according to the documentation supplied by the manufacturer, space under the obstruction between the finish floor or ground and 9 inches (230 mm) above the finish floor or ground SHALL be considered toe clearance.

**TA324biii-2:** When set up according to the documentation supplied by the manufacturer, under the obstruction, the height of the toe clearance SHALL NOT exceed 25 inches (635 mm).

**TA324biii-3:** When set up according to the documentation supplied by the manufacturer, under the obstruction, the minimum depth of the toe clearance SHALL be the greater of: 1) 17 inches (430 mm) or 2) the depth required to reach over the obstruction to operate the accessible voting station.

**TA324biii-4:** When set up according to the documentation supplied by the manufacturer, under the obstruction, the minimum width of the toe clearance SHALL be 30 inches (760 mm).

**Requirement 3.2.4biv**

**VVSG 1.0 Requirement 3.2.4biv:** Space under the obstruction between 9 inches (230 mm) and 27 inches (685 mm) above the finish floor or ground shall be considered knee clearance and shall comply with the following provisions:

* Knee clearance shall extend 25 inches (635 mm) maximum under the obstruction at 9 inches (230 mm) above the finish floor or ground.
* The minimum knee clearance at 9 inches (230 mm) above the finish floor or ground shall be either 11 inches (2 80 mm) or 6 inches less than the toe clearance, whichever is greater.
* Between 9 inches (230 mm) and 27 inches (685 mm) above the finish floor or ground, the knee clearance shall be permitted to reduce at a rate of 1 inch (25 mm) in depth for each 6 inches (150 mm) in height.

**Discussion:** It follows that the minimum knee clearance at 27 inches above the finish floor or ground shall be 3 inches less than the minimum knee clearance at 9 inches above the floor.

* Knee clearance shall be 30 inches (760 mm) wide minimum.

**Test Assertions**

**TA324biv-1:** When set up according to the documentation supplied by the manufacturer, space under the obstruction between 9 inches (230 mm) and 27 inches (685 mm) in height above the finish floor or ground SHALL be considered knee clearance.

**TA324biv-2:** When set up according to the documentation supplied by the manufacturer, under the obstruction, the height of knee clearance SHALL NOT exceed 25 inches (635 mm) at 9 inches (230 mm) above the finish floor or ground.

**TA324biv-3:** When set up according to the documentation supplied by the manufacturer, under the obstruction, the minimum depth of knee clearance at 9 inches (230 mm) above the finish floor or ground SHALL be the greater of: 1) 11 inches (280 mm) or 2) 6 inches less than the toe clearance depth.

**TA324biv-4:** When set up according to the documentation supplied by the manufacturer, under the obstruction, between 9 inches (230 mm) and 27 inches (685 mm) above the finish floor or ground, the knee clearance depth MAY reduce at a rate of 1 inch (25 mm) in depth for each 6 inches (150 mm) in height.

**TA324biv-5:** When set up according to the documentation supplied by the manufacturer, under the obstruction, the minimum knee clearance depth at 27 inches above the finish floor or ground SHALL be 3 inches less than the minimum knee clearance depth at 9 inches above the floor.

**TA324biv-6:** When set up according to the documentation supplied by the manufacturer, under the obstruction, the minimum width of knee clearance SHALL be 30 inches (760 mm).

**Requirement 3.2.4bv**

**VVSG 1.0 Requirement 3.2.4bv:** If the accessible voting station has a parallel approach with no side reach obstruction then the maximum high reach shall be 48 inches and the minimum low reach shall be 15 inches. See Figure 3.

**Test Assertions**

**TA324bv-1:** When set up according to the documentation supplied by the manufacturer, IF the accessible voting station has a parallel approach AND the accessible voting station has no side reach obstruction THEN the maximum high reach SHALL be 48 inches.

**TA324bv-2:** When set up according to the documentation supplied by the manufacturer, IF the accessible voting station has a parallel approach AND the accessible voting station has no side reach obstruction THEN the minimum low reach SHALL be 15 inches.

**Requirement 3.2.4bvi**

**VVSG 1.0 Requirement 3.2.4bvi:** If the accessible voting station has a parallel approach with a side reach obstruction, the following sub-requirements apply. See Figure 4.

* The side obstruction shall be no greater than 24 inches in depth and its top no higher than 34 inches.
* If the obstruction is no more than 10 inches in depth, then the maximum high reach shall be 48 inches, otherwise it shall be 46 inches.

**Test Assertions**

**TA324bvi-1:** When set up according to the documentation supplied by the manufacturer, IF the accessible voting station has a parallel approach AND has a side reach obstruction THEN the side obstruction SHALL NOT be greater than 24 inches in depth.

**TA324bvi-2:** When set up according to the documentation supplied by the manufacturer, IF the accessible voting station has a parallel approach AND has a side reach obstruction THEN the top of the side obstruction SHALL have a maximum of 34 inches.

**TA324bvi-3:** When set up according to the documentation supplied by the manufacturer, IF the side reach obstruction is less than or equal to 10 inches in depth, THEN the maximum high reach SHALL be 48 inches.

**TA324bvi-4:** When set up according to the documentation supplied by the manufacturer, IF the side reach obstruction is greater than 10 inches in depth, THEN the maximum high reach SHALL be 46 inches.

**Requirement 3.2.4c**

**VVSG 1.0 Requirement 3.2.4c:** All labels, displays, controls, keys, audio jacks, and any other part of the accessible voting station necessary for the voter to operate the voting machine shall be easily legible and visible to a voter in a wheelchair with normal eyesight (no worse than 20/40, corrected) who is in an appropriate position and orientation with respect to the accessible voting station.

**Test Assertions**

**TA324c-1:** IF a voter in a wheelchair, with at least 20/40 corrected eyesight, is in an appropriate position and orientation with respect to the accessible voting station THEN all labels of the accessible voting station necessary for the voter to operate the voting machine SHALL be legible to that voter.

**TA324c-2:** IF a voter in a wheelchair, with at least 20/40 corrected eyesight, is in an appropriate position and orientation with respect to the accessible voting station THEN all displays for the voter to operate the voting machine SHALL be legible to that voter.

**TA324c-3:** IF a voter in a wheelchair, with at least 20/40 corrected eyesight, is in an appropriate position and orientation with respect to the accessible voting station THEN all controls for the voter to operate the voting machine SHALL be legible to that voter.

**TA324c-4:** IF a voter in a wheelchair, with at least 20/40 corrected eyesight, is in an appropriate position and orientation with respect to the accessible voting station THEN all keys for the voter to operate the voting machine SHALL be legible to that voter.

**TA324c-5:** IF a voter in a wheelchair, with at least 20/40 corrected eyesight, is in an appropriate position and orientation with respect to the accessible voting station THEN all audio jacks for the voter to operate the voting machine SHALL be legible to that voter.

**TA324c-6:** IF a voter in a wheelchair, with at least 20/40 corrected eyesight, is in an appropriate position and orientation with respect to the accessible voting station THEN any other part of the accessible voting station necessary for the voter to operate the voting machine SHALL be legible to that voter.

**TA324c-7:** IF a voter in a wheelchair, with at least 20/40 corrected eyesight, is in an appropriate position and orientation with respect to the accessible voting station THEN all labels necessary for the voter to operate the voting machine SHALL be visible to that voter.

**TA324c-8:** IF a voter in a wheelchair, with at least 20/40 corrected eyesight, is in an appropriate position and orientation with respect to the accessible voting station THEN all displays for the voter to operate the voting machine SHALL be visible to that voter.

**TA324c-9:** IF a voter in a wheelchair, with at least 20/40 corrected eyesight, is in an appropriate position and orientation with respect to the accessible voting station THEN all controls for the voter to operate the voting machine SHALL be visible to that voter.

**TA324c-10:** IF a voter in a wheelchair, with at least 20/40 corrected eyesight, is in an appropriate position and orientation with respect to the accessible voting station THEN all keys for the voter to operate the voting machine SHALL be visible to that voter.

**TA324c-11:** IF a voter in a wheelchair, with at least 20/40 corrected eyesight, is in an appropriate position and orientation with respect to the accessible voting station THEN all audio jacks for the voter to operate the voting machine SHALL be visible to that voter.

**TA324c-12:** IF a voter in a wheelchair, with at least 20/40 corrected eyesight, is in an appropriate position and orientation with respect to the accessible voting station THEN any other part of the accessible voting station necessary for the voter to operate the voting machine SHALL be visible to that voter.

**TA324c-13:** IF a voter in a wheelchair, with at least 20/40 corrected eyesight, is in an appropriate position and orientation with respect to the accessible voting station THEN all text and symbols on the accessible voting station SHALL be legible to that voter.

**TA324c-14:** Controls on the accessible voting station SHALL NOT be positioned at a tilt angle resulting in non-visible controls, with respect to the voter.

**TA324c-15:** Labels on the accessible voting station SHALL NOT be positioned at a tilt angle resulting in non-visible labels, with respect to the voter.

**Figures 1 - 4**

