#### Cantilever Shelving

Please Note: These specifications may or may not include all available options including, dimensions, etc. To customize and modify these specIFICATIONs for your specific application, please contact Dave Bradford at 847-344-8989 or dave@bradfordsystems.com

Also, if this shelving product is to be mounted on a mobile carriage system, this specIFICATION sheet can be added to our mobile shelving specifications.

**Acceptable Manufacturers:**

Spacesaver Corporation, 1450 Janesville Avenue, Fort Atkinson, WI 53538. Spacesaver or equal as determined by owner/architect.

For pricing, contact David Bradford at 847-344-8989 or dave@bradfordsystems.com

**Design:** Cantilever bracket type metal library book stack as defined by the American Library Association and published in their library technology reports.

**Height:** ­­­­As noted on drawing legends.

**Width:** Nominal 36", 24” or 30” as noted on drawings.

**Depth:** 20”, 22” or 26” or as noted on drawing legends.

**Number of openings:** As required, ( specify)

**Plumbness of completed shelving:** 1/8" maximum deviation between level of bottom shelf and canopy top, measured on the edge of any upright in any direction.

**Resistance of completed shelving to lateral forces:** 1/4" maximum deflection from vertical under a horizontal force of 100# applied against any upright in any direction at a point 48" above the floor or raised floor.

**Deflection of uprights under load:** Maximum deflection of upright in any direction with all shelves evenly spaced and all shelves on one side of the range evenly loaded at 50# per lineal shelf foot shall not exceed 1.00" at top of upright. Permanent set after load is removed shall not be more than 1/8 of an inch.

**Shelf loading and deflection:** Shelves shall support loads of 50# per lineal shelf foot without deflection in excess of 3/16" and without permanent set after load is removed.

All shelving components shall be free of burrs, sharp edges, projecting hardware and other defects which could present a hazard to books or people. All surfaces and edges shall be smooth and non-abrasive.

Shelving components shall exhibit no dents, oil-canning, buckling, or other surface irregularities.

 Vertical adjustment interval for shelves shall be on 1" centers.

 Gaps between adjoining shelf end bracket assemblies shall not

 exceed 3/32 of an inch.

Adjustable shelf assemblies shall be easily and readily adjustable by one person without tools or disassembly of the end brackets from the shelf base, and without affecting other shelves or the stability of the section or the range.

Partially loaded shelves shall be easily and readily adjustable by one person by being able to reposition one shelf's end bracket attaching hooks in the adjoining upper or lower upright slots. To be followed by repositioning the opposite shelf brackets attaching hooks, so as to easily be able to "walk" the shelf either up or down the column.

For static shelving: The top of the base shelf shall be 3" from the base of the upright assembly.

 For mobile shelving: The top of the base shelf shall be a maximum of 1" from the base of the upright assembly.

**Materials and Workmanship:** Only the finest materials and quality of workmanship will be acceptable. Commercial grade or case-type shelving will not be considered. Sheet metal is to be furniture grade. Gauge thicknesses are U.S. standard with the following minimum requirements.

a. Welded frame upright – Min. 14-gauge furniture grade.

b. Tubular top spreader – Min. 14-gauge furniture grade.

c. Bottom channel spreader – Min. 16-gauge cold rolled steel.

d. Shelves – Min. 18-gauge cold rolled steel.

e. Shelf end brackets – Min. 16-gauge cold rolled steel.

f. Canopy tops – Min. 18-gauge cold rolled steel.

**Welded frame upright:** The welded frame shall consist of 2 vertical upright columns constructed of min. 14 gauge steel. Upright column shall be 2" deep with a 1 1/4" face with 1/2" return flanges. The uprights are fully welded to a tubular top spreader and a channel bottom spreader. The uprights shall have shelf attachment slots on 1" increments the entire length of the upright. Slots shall be 5/8" x 1/4". Uprights shall include location indicators the entire length of upright on a minimum of 6" centers.

 The tubular top spreader shall be a minimum of 14 gauge steel tube 2 1/2" tall x 1" wide. The bottom spreader channel shall be a 16 gauge channel 1 3/4" tall x 1" wide with two 3/8"-16 UNC weld nuts provided for optional levelers.

Non-welded frame cantilever type shelving units are unacceptable.

**Base supports:** A base support shall be provided to provide lateral unit stability. The support shall be minimum of 14 gauge steel 9" high with a 1" return on the bottom for support. Support shall attach to frame upright with two 3/8" UNC bolts.

 Support shall be designed and constructed with shear tabs that interlock/mate with the upright to provide a positive connection that will give additional stability to welded frame in addition to the bolted connectors. Shear tabs ensure squareness and alignment of the base support to the welded frame. Base support design must allow the frame to transfer loads to floor or levelers. Base support brackets that put the bolted connection in shear are unacceptable.

 (A gussetted base support shall be provided between every other unit on mobile to provide lateral unit stability. The gusset will be a minimum #14 gauge steel welded to the top of the standard base support.)

**Leveler Kits:**

**Single Faced:** Consists of one or two 3/8-16 UNC cage nut(s) and leveler(s) held by the single faced base support. Two additional cage nuts and levelers are provided to be used in the welded frame itself.

**Double Faced:**  Consists of two or four 3/8-16 UNC cage nuts and levelers held by the double faced base support. Two additional cage nuts and levelers are provided to be used in the welded frame itself.

**Shelf end brackets:** Shall be made of minimum 16 gauge steel of a depth not less than that of the shelf on which they are used and shall extend not less than 6" above the top surface of the shelf. The top and front edges shall be flanged outwardly to a half round profile to prevent accidental knifing of material. Shelf brackets shall have a minimum of two hooks at the top for engaging into the column (post) and one safety lug to prevent accidental dislodgment at the bottom. Outward embossment in the upper front corner of the shelf brackets shall act as shelf spacers and prevent overlapping of shelf end brackets. For aesthetic reasons as well as to prevent sharp corners, the upper front corner of the shelf brackets shall have a radius of not less than 1 inch. The base of the end brackets will have two lanced tabs that interlock with the shelf and provide firm support for the shelf. Lance tabs and shelf shall be provided with 1/4" diameter holes for optional bolting of components. The front edge of the end bracket shall have a 15 degree slope.

**Base Shelves for Static:** Shelves shall be formed from minimum 18 gauge cold rolled steel with a triple 90 degree bend on the rear of shelf and a double bend with a 3" surface at the front. Shelf ends to be turned down 90 degrees to engage and interlock into the shelf end brackets. Base shelves on mobile shall be 3/4” to sit flush with top of carriage profile. Base shelves shall be individual on both faces of double face or single face units, with center filler channels. Each base shelf shall be supported by shelf brackets for maximum strength and support.

**Plain Shelves:** Shelves shall be formed from minimum 18 gauge cold rolled steel with a triple 90 degree bend on both front and rear edges with a shelf thickness to be 3/4". Shelf ends to be turned down 90 degrees to engage and interlock into the shelf end brackets. Shelves shall be no less than ¼” from actual dimension specified.

**Metal canopy tops:** Shall be formed from minimum 18 gauge cold rolled steel with a triple 90 degree bend on front edges with a maximum edge thickness of ¾”. Single face and double face units to be one-piece design.

**Card Holders:** As specified, shall be painted steel to hold 3" x 5" cards (by others). One shall be provided for each single faced and two for each double faced end panel.

 All parts of identical dimensions shall be totally interchangeable without modification.

 **Color:** To be selected form manufacturer’s standard powder coat color selection. Minimum 18 standard colors.

**Finish Specification:** All components to be painted with an electrostatically applied Powder Coat paint that meets or exceeds specifications set forth by the American Library Association for Cantilever Bracket Type Metal Library Bookstacks published in their Library Technology Reports.

 **Gloss:** Average specular gloss values must be between 30 and 60 measured with a 60 degree gloss meter in accordance to A.S.T.M. Method 0523-53T.

**Adhesion of Finish:**

 **Bending:** Finish must show no adverse effects, other than cracks at either end of the test panel no greater than 1/4" when bent around 180 degrees at 1/4" mandrel in one second. This test must be performed with the grain of the steel parallel and transverse to the mandrel (modification of Federal Test Standard No. 141a. Method 6221).

**Impact:** Finish must show no cracks or chipping when a 2" diameter steel ball is dropped 10-1/2" onto a painted test panel laid over a 1-1/4" diameter opening.

 **Resistance of the finish to abrasion:** Finish must resist falling sand abrasion test in accordance to A.S.T.M. method D968-51. The minimum number of liters of sand needed to expose a 5/32" area of substratum should be 30.

 **Resistance of the finish to acids and chemicals:** Finish must be capable of withstanding exposure to 95% solution of alcohol, 10% solution of acetic acid, machine oil, and undiluted household ammonia for 30 minutes and a 10% solution of lye for 15 minutes and show no signs of discoloration, softening or blemishes.

**Resistance of the finish to a lighted cigarette:** Finish must show no adverse effects when a cigarette is placed on the surface and allowed to burn until it is completely consumed. After the cigarette has ceased burning, the surface is wiped with a damp cloth and a mild detergent and rinsed with cold water.

(Add accessories as required.)