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.

This specification section uses numbered level paragraph styles, which were not included in versions of Word prior to Word 97. In the interests of clarity, all paragraph styles are formatted flush left.

Specification editor’s choice items are shown in [square brackets]. (Optional) paragraphs denote items available at additional cost.

Use TAB to go DOWN one paragraph number level; SHIFT+TAB to go one paragraph number level UP.

SECTION 105113 – RAPTORRAC™ WIDE SPAN SHELVING

1. GENERAL
	1. RELATED DOCUMENTS
		1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
	2. SUMMARY
		1. This Section includes the following:

RaptorRAC Wide Span Shelving

* + 1. Related Work, Not Furnished:

Finish floor covering materials and installation.

* + 1. Related Sections:

[Sections in Division 9 – Finishes, relating to finish floor and base materials]

* + 1. Allowances:
		2. Alternates:
	1. REFERENCES
		1. American National Standards Institute (ANSI) Standards:

Applicable standards for fasteners used for assembly.

* + 1. American Society for Testing and Materials (ASTM) Standards:

Applicable standards for steel sheet materials used for fabrication

Applicable standards for the testing of electrostatically applied Powder Coat Paint

* + 1. American Institute Of Steel Construction (AISC) Standards:

Applicable standards for steel materials used for fabrication.

* 1. DESCRIPTION
		1. General: RaptorRAC Wide Span Shelving
		2. Finishes:

Fabricated Metal Components and Assemblies: All components to be painted with an electro-statically applied Powder Coat paint that can meet or exceed test requirements set out by ASTM standard D3451-06 Standard Guide for Testing Coating Powders and Powder Coatings.

Sizes can be described in paragraph below or in a SCHEDULE attached as the last page of the section.

* + 1. Sizes:

Uprights (Welded and Knock-Down Options)

Available in nominal heights of [60] inches to [144] inches ([1524MM] to [3658MM]) as noted on drawings (variable in 1.5 inch [38.1MM] increments as required).

Available in nominal depths of [15] inches to [48 inches] ([381MM] to [1219MM] as noted on drawings (variable in 1 inch [25.4MM] increments as required).

Beams (Low Profile, Standard Duty, and Heavy Duty Options)

Available in nominal widths of [48] inches to [96] inches ([1219MM] to [2438MM]) as noted on drawings (variable in 1 inch [25.4MM] increments as required).

Decking (Solid Steel, Particle Board, Ribbed, Waterfall Wire, and Flat Wire Options)

Solid Steel Decking - Available in nominal widths of [12] [18] [24] [30] and [36] inches ([305MM] [457MM] [610MM] [762MM] and [914MM]) as noted on drawings. Available in nominal depths of [15] inches to [48] inches ([381MM] to [1219MM]) as noted on drawings (variable in 1 inch [25.4MM] increments as required).

Particle Board Decking - Available in nominal widths of [48] inches to [96] inches ([1219MM] to [2438MM]) as noted on drawings (variable in 1 inch [25.4MM] increments as required). Available in nominal depths of [15] inches to [48] inches ([381MM] to [1219MM] as noted on drawings (variable in 1 inch [25.4MM] increments as required).

Ribbed Decking - Available in nominal widths of [24] inches and [36] inches ([610MM] and [914MM]) as noted on drawings. Available in nominal depths of [15] inches to [48] inches ([381MM] to [1219MM] as noted on drawings (variable in 1 inch [25.4MM] increments as required).

Waterfall Wire Decking - Available in nominal widths of [24] inches and [36] inches ([610MM] and [914MM]) as noted on drawings. Available in nominal depths of [24] [30] [36] [42] and [48] inches ([610MM] [762MM] [914MM] [1067MM] and [1219MM]) as noted on drawings.

Flat Wire Decking - Available in nominal widths of [24] inches and [36] inches ([610MM] and [914MM]) as noted on drawings. Available in nominal depths of [24] [30] [36] [42] and [48] inches ([610MM] [762MM] [914MM] [1067MM] and [1219MM]) as noted on drawings.

* 1. PERFORMANCE REQUIREMENTS
		1. Design Requirements:

Limit overall width to [\_\_\_\_] inches [\_\_\_\_] MM.

Limit overall depth to [\_\_\_\_] inches [\_\_\_\_] MM.

Limit overall height to [\_\_\_\_] inches [\_\_\_\_] MM.

* + 1. Seismic Performance: Provide wide span shelving capable of withstanding the effects of earthquake movement when required by applicable building codes.
	1. SUBMITTALS
		1. Product Data: Submit manufacturer's product literature and installation instructions for each type of wide span shelving required. Include data substantiating that products to be furnished comply with requirements of the contract documents.
		2. Shop Drawings: Show fabrication, assembly, and installation details, including descriptions of procedures and diagrams. Show complete wide span installation layout, including quantities, locations and types of accessory units required. Include notations and descriptions of all installation items and components.

Show installation details at non-standard conditions, if any.

Provide layout, dimensions, and identification of each unit, corresponding to sequence of installation procedures.

Provide installation schedule and procedures to ensure proper installation.

* + 1. Samples: Provide minimum [3] inches or [76] millimeters square example of each color and texture on actual substrate for each component to remain exposed after installation.
		2. Selection Samples: For initial selection of colors and textures, submit manufacturer's color charts, consisting of actual product pieces, showing full range of colors and textures available.
		3. Warranty: Submit draft copy of proposed warranty for review by the [Architect] [Architect/Engineer] [Engineer] [Designer].
		4. Maintenance Data: Provide written documentation of the manufacturer’s statement, claiming the maintenance free nature of the product.
		5. Reference List: Provide a list of recently installed wide span shelving to be visited by owner, architect, and contractor. Intent of list is to aid in verifying the suitability of manufacturer's products and comparison with materials and product specified in this section. Include contact name, address, and phone numbers.
	1. QUALITY ASSURANCE
		1. Manufacturer Qualifications: Engage an experienced manufacturer who is ISO 9001:2008 certified for the design, production, installation and service of wide span shelving. Furnish certification attesting ISO 9001:2008 quality system registration.
		2. Installer Qualifications: Engage an experienced installer who is the manufacturer's authorized representative for the specified products for installing wide span shelving.

Minimum Qualifications: 1-year experience installing wide span shelving of comparable size and complexity to specified project requirements.

* 1. DELIVERY, STORAGE AND HANDLING
		1. Follow manufacturer’s instructions and recommendations for delivery, storage and handling requirements.
	2. PROJECT CONDITIONS
		1. Field Measurements: Verify quantities of wide span shelving units before fabrication. Indicate verified measurements on shop drawings. Coordinate fabrication and delivery to ensure no delay in progress of the work.
		2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating wide span shelving units without field measurements. Coordinate construction to ensure actual dimensions correspond to established dimensions.

Sequencing and Scheduling paragraph can be omitted unless project conditions dictate that and incremental installation sequence is warranted or necessary.

* 1. [SEQUENCING AND SCHEDULING]
		1. Sequence wide span shelving [with other work] to minimize possibility of damage and soiling, during remainder of construction period.
		2. Schedule installation of specified wide span shelving after finishing operations, including painting, have been completed.
		3. Provide components, which must be built in at a time, which causes no delays in the general progress of the work.
		4. Pre-installation Conference: Schedule and conduct conference on project site to review methods and procedures for installing wide span shelving including, but not limited to, the following:

Recommended attendees include:

* + - 1. Owner's Representative.
			2. Prime Contractor or representative.
			3. The [Architect] [Architect/Engineer] [Engineer/Architect] [Engineer] [Designer].
			4. Manufacturer's representative.
			5. Subcontractors or installers whose work may affect, or be affected by, the work of this section.
	1. Warranty
		1. Provide a written warranty, executed by Contractor, Installer, and Manufacturer, agreeing to repair or replace units, which fail in materials or workmanship within the established warranty period. This warranty shall be in addition to, and not a limitation of, other rights the Owner may have under General Condition’s provisions of the Contract Documents.
		2. Limited Lifetime Warranty: Subject to the terms in the written warranty, warrant the original purchaser exclusively that the wide span shelving manufactured by it will be free from defects in materials and workmanship for the lifetime of the wide span shelving.

A separate maintenance agreement paragraph may not be required since accessory items have few parts requiring long-term or continuing maintenance.

1. PRODUCTS
	1. MANUFACTURER:

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

* 1. BASIC MATERIALS
		1. General: Provide materials and quality of workmanship, which meets or exceeds established industry standards for products specified. Use furniture grade sheet and fasteners for component fabrication unless indicated otherwise. Material thicknesses/gauges are manufacturer’s option unless indicated otherwise.
	2. MANUFACTURED COMPONENTS

Uprights:

* + - 1. Welded Upright frames shall be a welded truss design similar to that used for pallet rack. Upright frame posts shall be 14-gauge (1.90 mm) steel, box-formed, 2” (50.8 mm) by 1-9/16” (39.69 mm), designed with notches on the front face of post, located on 1-1/2” (38.1 m) centers, to allow for easy adjustment of horizontal load bearing beams. Sides of post shall have notches, located on 1-1/2” (38.1 mm) centers, to accommodate anchor feet, supports, tie plates, and securing beams to post. Horizontal braces shall be 14-gauge (1.90 mm) steel, roll-formed 1-1/2” (38.1 mm) by 3/4” (19.05mm) tube MIG welded to posts. Diagonal braces shall be 14-gauge (1.90 mm) steel, roll-formed 1” (25.4 mm) by 3/4” (19.05mm) open channel MIG welded to posts. All welded upright frame construction shall meet AWS D1.3 certified welding standards.
			2. Knock-Down Upright frames shall be a bolt together design utilizing vertical post and horizontal ladder bracing. Upright posts shall be 14-gauge (1.90 mm) steel, box-formed, 2” (50.8 mm) by 1-9/16” (39.69 mm), designed with notches on the front face of post, located on 1-1/2” (38.1 mm) centers, to allow for easy adjustment of horizontal load bearing beams. Sides of post shall have notches, located on 1-1/2” (38.1 mm) centers, to accommodate anchor feet, supports, tie plates, and securing beams to post. Horizontal ladder brace component shall be 12-gauge (2.66 mm) steel with two integral lances and one 5/16” (7.94 mm) hole on each end to engage and secure to vertical post.

Beams:

* + - 1. Low Profile Beams shall be 12-gauge (2.66 mm) steel with “Z”- shaped structural design. Overall height of beam shall be 2” (50.8 mm) nominal. Each beam shall have punch slots along its length to accommodate front to back shelf supports; length and location length dependent to support shelving load requirements. Beam mounting end brackets shall be manufactured from 12-gauge (2.66 mm) material and welded to each end of the beam. All welded upright beam construction shall meet AWS D1.3 certified welding standards.
			2. Standard Duty Beams shall be 14-gauge (1.90 mm) steel with “Z”-shaped structural design. Overall height of beam shall be 3-5/8” (92.1 mm) nominal. Each beam shall have slots punched along its length to accommodate front to back shelf supports; length and location of supports are dependent on shelving load requirements. Beam mounting end brackets shall be manufactured from 12-gauge (2.66 mm) material and welded to each end of the beam. All welded upright beam construction shall meet AWS D1.3 certified welding standards.
			3. Heavy Duty Beams shall be 12-gauge (2.66 mm) steel with “Z”- shaped structural design. Overall height of beam shall be 4-5/8” (117.48 mm) nominal. Each beam shall have slots punched along it, length to accommodate front to back shelf supports; length and location of supports are dependent on shelving load requirements. Beam mounting end brackets shall be manufactured from 12-gauge (2.66 mm) material and welded to each end of the beam. All welded upright beam construction shall meet AWS D1.3 certified welding standards.

Decking:

* + - 1. Solid Steel Decking shall be 1-1/4” (31.75 MM) in height and be formed of 18-gauge (1.2 mm) cold rolled steel with flanges on all four sides. Side flanges of decking shall also be turned “down”, “in”, and “up” to form a “J” style bend. Decking shall be supported, front and rear, by two horizontal beams. Steel decking available in widths of 12” (304.8 mm), 18” (457.2 mm), 24” (609.6 mm), 30” (762.0 mm), and 36” (914.4 mm). Steel decking is also available in 1” (25.4 mm) increments in depths between 15” (381.0 mm) and 48” (1,219.2 mm).
			2. Particle Board Decking shall be 11/16” (17.46 mm) thick particle board material per ANSI-A208.1-1999 M-3. Particle board decking available in 1” (25.4 mm) increments in widths between 48” (1,219.2 mm) and 96” (2,468.4 mm), and depths between 15” (381.0 mm) and 48” (1,219.2 mm).
			3. Ribbed Decking shall be formed from 20-gauge (0.91 mm) cold rolled steel with equally spaced 5/8” (15.85 mm) high by 1-3/4” (44.45 mm) wide structural rectangular ribs running the full depth of the decking. Ribbed decking is available in widths of 24” (609.6 mm) and 36” (914.4 mm). Ribbed decking is also available in 1” (25.4 mm) increments in depths between 15” (381.0 mm) and 18” (1,219.2 mm).
			4. Waterfall Wire Decking shall be steel 5-gauge (4.62 mm) wire fabricated on a 2” (50.8 mm) by 4” (104.6 mm) rectangular grid pattern with 1.5” (38.1 mm) front and rear formed flanges. Waterfall wire decking shall have three equally spaced 12-gauge (2.66 mm) steel structural reinforcements placed parallel along the depth of the decking and welded to the wire framing at each intersection. Waterfall wire decking shall be available in widths of 24” (609.6 mm) and 36” (914.44 mm). Waterfall wire decking shall be also available in depths of 24” (609.6 mm), 30” (762.0 mm), 36” (914.4 mm), 42” (1,006.8 mm), and 48” (1,219.2 mm).
			5. Flat Wire Decking shall be steel 5-gauge (4.62 mm) wire fabricated on a flat 2” (50.8mm) by 4” (104.6 mm) rectangular grid pattern. Flat wire decking shall be available in widths of 24” (609.6 mm) and 36” (914.44 mm). Flat wire decking shall be also available in depths of 24” (609.6 mm), 36” (914.4 mm), and 48” (1,219.2 mm).

Accessories:

* + - 1. Tire Beams shall be 12-gauge (2.66 mm) steel. Overall height of beam shall be 4” (101.6 mm). Each beam shall have slots punched along its length to accommodate front to back tire beam supports. One tire beam support is required per pair of beams. Beam mounting end brackets shall be manufactured from 12-gauge (2.66 mm) material and welded to each end of the beam. All welded upright beam construction shall meet AWS D1.3 certified welding standards.
			2. Hanger Bar shall be available in two options: 1 5/16” (33.3 mm) outside diameter hanger bar constructed of 11-gauge (3.05 mm) steel and 1 ¾” (44.45 mm) outside diameter hanger bar constructed of 16-gauge (1.65 mm) steel. Hanger bar brackets shall be manufactured of 12-gauge (2.66 mm) steel and allow for center placement of the hanger bar. Overall height of hanger bar brackets shall be 4 ¾” (119.38 mm).
	1. FABRICATION
		1. General: Coordinate fabrication and delivery to ensure no delay in progress of the work.
	2. FINISHES
		1. Colors: [Selected from manufacturer’s standard available colors.] [Provide in custom colors as selected by [Architect] [Architect/Engineer] [Engineer.]
		2. Paint Finish: Provide factory applied electrostatic powder coat paint. Meet or exceed specifications of the American Society for Testing and Materials (ASTM) Standards:
1. EXECUTION
	1. EXAMINATION
		1. Examine wide span shelving scheduled to receive accessories [with Installer present] for compliance with requirements for installation tolerances and other conditions affecting performance of specified accessory items.
		2. Proceed with accessory installation only after unsatisfactory conditions have been corrected.
	2. INSTALLATION
		1. General: Follow manufacturer’s written instructions for installation of each type of accessory item specified.
	3. FIELD QUALITY CONTROL
		1. Verify accessory unit alignment and plumb after installation. Correct if required, following manufacturer’s instructions.
		2. Remove components that are chipped, scratched, or otherwise damaged and which do not match adjoining work. Replace with new matching units, installed as specified and in manner to eliminate evidence of replacement.
	4. ADJUSTING
		1. Adjust all accessories to provide smoothly operating, visually acceptable installation.
	5. CLEANING
		1. Immediately upon completion of installation, clean components and surfaces. Remove surplus materials, rubbish and debris, resulting from installation, upon completion of work and leave areas of installation in neat, clean condition.
	6. DEMONSTRATION/TRAINING
		1. Schedule and conduct demonstration of installed accessory items and features with Owner's personnel.
		2. Schedule and conduct maintenance training with Owner's maintenance personnel. Training session should include lecture and demonstration of all maintenance and repair procedures that end-user personnel would normally perform.
	7. PROTECTION
		1. Protect system against damage during remainder of construction period. Advise owner of additional protection needed to ensure that system will be without damage or deterioration at time of substantial completion.

You could use pre-printed schedules and simply add them as last page. Add paragraph 3.8 SCHEDULES and add subparagraph: “A. Equipment Schedules, See next page.” or similar wording.

END OF SECTION