

T-682 P.004/011 F-564

Aug. 9, 2004 4:18PM

Jun-02-04 11:03A Structural Concepts LLC 503 292 0448

No. 0056 P. 1

P.02



JUNE 2, 2004

Mr. Jim McCord
Spacesaver Specialists, Inc.
9730 SW Herman Road
Tualatin, OR 97062

Re: OHSU-PSU Archive Storage
680 SW Bancroft - Portland, OR
Seismic Zone 3 Compliance

Dear Jim:

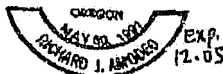
As requested, Structural Concepts LLC has reviewed and analyzed the anchorage and stability of the proposed new stationary 4-post shelving system to be placed in the OHSU-PSU archive storage area, for seismic zone 3 adequacy. This review was based on a maximum shelving storage load of 130 pounds per shelf. Please refer to the attached calculation sheets 1 - 4 for substantiation. This review was in conformance with the 1997 Uniform Building Code.

Note that this work was commissioned by Spacesaver Specialists, Inc., for this specific file layout and location, and is not intended to be used for any other purposes.

Please call if you have any questions or comments.

Sincerely,

Richard J. Anderson, S.E.
Principal



BUREAU OF DEVELOPMENT SERVICES
CITY OF PORTLAND
APPROVED FOR CONSTRUCTION.
DO NOT IMPLY ORDINANCE

BUREAU OF DEVELOPMENT
CITY OF PORTLAND
THIS DRAWING IS APPROVED FOR CONSTRUCTION.
EXCEPTIONS OR VARIATIONS DO NOT IMPLY APPROVAL
TO VIOLATE ANY APPLICABLE CODE OR ORDINANCE
TY # *Discovery*
7-24-0266

DRAWING IS APPROVED FOR
 DISPOSITIONS DO NOT IMPLY AFFIRMANCE
 CITY OF LOS ANGELES PUBLIC CODE OR ORDINANCE
 CITY # 44-02691

BLDG. PERMIT # 3
MCH PERMIT
8/30/24

DATE 8/30/97
REVIEWED BY *Paul H. H. H.*
THESE PLANS & SPECIFICATIONS SHALL BE ON
JOB SITE FOR ALL INSPECTIONS.

04-026696-DFS 01-FA 3

Structural Concepts • DESIGN • CONSTRUCTION • RETROFITTING phone 503.292.4540 • fax 503.292.4104	Project	OHSU - PSU ARCHIVE STORAGE		By	RIA	Sheet No.	1
	Location	PORTLAND, OR		Date		Job No.	
	Client	SPACE SAVER					

Review of Zone 3 seismic compliance of 4-post shelving

- * (126) rows of (18) 24" x 36" units w/ (9) loaded levels
- * Shelving self-weight = 18# / shelf
- * Shelving storage load = 130# / shelf
- * Total load on each shelf = 148#
- * Elevation of loaded levels:

$$h = 1.25", 1.476", 28.25", 41.75", 55.25", 68.75", 82.25", 95.75", 109.25" \quad \Sigma h = 497.25"$$

- * Shelving is located on the concrete s.o.g. level

$$F_p = \frac{1.0 \times .36 \times 1.0}{3.0 \times 1.4} \left[1 + 3 \left(\frac{h_x}{h_t} \right) \right] W_p = .086 W_p$$

$$(F_p)_{\max} = 4.0 \times .36 \times 1.0 \times \frac{1}{1.4} \times W_p = 1.03 W_p$$

$$(F_p)_{\min} = 0.7 \times .36 \times 1.0 \times \frac{1}{1.4} \times W_p = .18 W_p$$

- * use $F_p = .18 W_p$ as critical

$$F_p = .18 (148 \# / \text{shelf}) = 26.6 \# / \text{shelf}$$

$$M_{or} = 26.6 \# (497.25") = 13,227 \# / \text{unit}$$

$$M_{pr} = .9 (9) (148 \#) (12") = 14,386 \# / \text{unit}$$

- * $M_{pr} \geq M_{or}$ ∴ no uplift on system, design for shear @ base only

$$\text{Base Shear per upright} = 9 (26.6 \#) = 239 \#$$

- * (2) anchors will be used @ each upright

$$\therefore \text{shear per anchor} = 120 \#$$

 phone 503.292.4540 • fax 503.292.4104	Project	DM5U-PSU	By	Sheet No.
		ARCHIVE STORAGE	BJA	2
	Location	PORTLAND, OR		
	Client	SPACE SAVER	Date	Job No.
		6-04	SS123	

→ provide (1) $\frac{3}{16}$ " ϕ $\times$ $1\frac{1}{2}$ " embedment Hilti Kwik-Con II anchor at each end of each upright (thru shelf supports)

Anchor Shear Capacity = $195\# \geq 120\#$: ok

* shelving system is stable in both axes, so review strength in both directions (transverse is critical)

Transverse Review:

$$V_{max} = 239\#$$

* upright has 24 gal. closed panel w/ T-posts @ ends.

$$T\text{-post gravity axial} = .5(9)(148\#) = 666\#$$

$$T\text{-post lateral axial} = 110\#$$

$$M_{or} = 13,227\# \quad d = 23.5"$$

$$T\text{-post lateral axial} = 563\#$$

$$\text{Combined } T\text{-post axial} = .75(666\# + 563\#) = 922\#$$

$$A_{post} = .28 \text{ in}^2 \quad \bar{y} = .12" \quad I = .024 \text{ in}^4 \quad r = .29"$$

$$kl/r = 13.29 \approx 11 \quad F_n \approx F_t 5 \text{ ksi}$$

$$f_n = 3.3 \text{ ksi} \approx F_n \quad \therefore \text{ok}$$

* posts are adequate for axial in the transverse direction

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 Project **OASU- PSU
ARCHIVE STORAGE**
 Location **PORTLAND, OR**
 Client **SPACE SAVER**

 By **PJA** Sheet No. **3**
 Date **6.04** Job No. **SS123**
 $d = 12"$ shelf spacing (bracing) $h = 24"$ depth of shear panel $t = .024"$ thickness of shear web

$$a/h = .50 \quad h/t = 1000$$

$$K_v = 4.00 + 5.34 / (.50)^2 = 25.4$$

$$V_{ca} = .38 (.024)^2 [25.4 + (29,000,000) / (23,000)]^{.5} = 1079\#$$

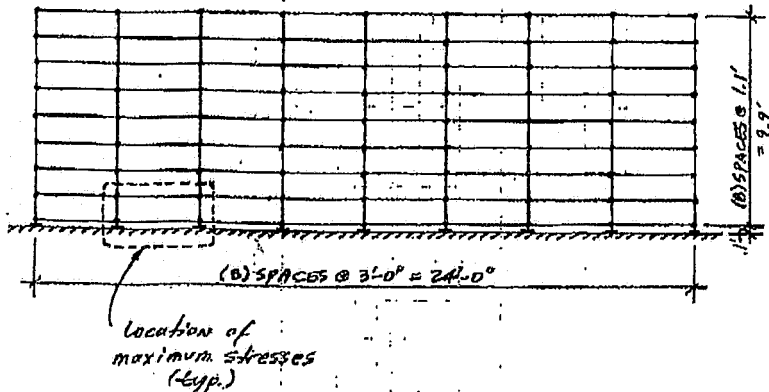
 $V_{cp} \geq V_{max}$ ok in transverse shear

Longitudinal Review:

* (2) linked frame @ each row of 24' in length

$$\text{Frame per level} = 26.6\# / \text{shelf} \times 8 \text{ shelves} \times .5 = 106.4\#$$

$$\text{Force per node} = 106.4\# / 9 = 11.8\# \text{ each}$$



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No. 0056 P. 5

Jun-02-04 11:04A Structural Concepts LLC 503 292 0448

P-06

Structural Concepts - Design & Construction -	Project: OHSU - PSU	By: RJA	Sheet No. 4
	ARCHIVE STORAGE		
	Location: PORTLAND, OR	Date: 6.04	Job No. SS123
	Client: SPACE SAVER		
phone 503.292.4540 • fax 503.292.4104			

Maximum longitudinal lateral axial = 163#

Maximum combined lateral/gravity axial
 due to longitudinal loads @ end L-post = $.75(333\# + 163\#)$
 = 312#
 $\therefore$ gravity axial
 controls $\therefore$ ok

(M max) posts = 702" #

(M max) shelves = 658" #

(f_b) posts = $.702/40 = 17.55 \text{ ksi}$

(f_b) shelves = $.658/39 = 16.87 \text{ ksi}$

* shelf lateral load is generated at the same
 location that it is resisted $\therefore$ shelf axial is
 negligible & consider flexure only.

$F_b = 4/3(1.6)(33.00 \text{ ksi}) = 26.40 \text{ ksi} \geq f_b \therefore \text{ok}$

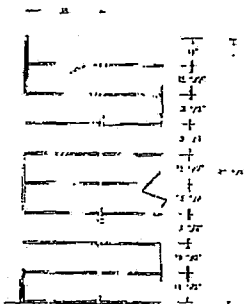
Interior T-post axial = 666# $\therefore f_a = 2.38 \text{ ksi}$

$f_a/f_m = 2.38/17.5 = .136 \leq .15 \therefore$ use $f_a/f_m + f_b/f_b$

$\Sigma = .13 + .82 = 1.02 \leq 1.33 \therefore \text{ok}$

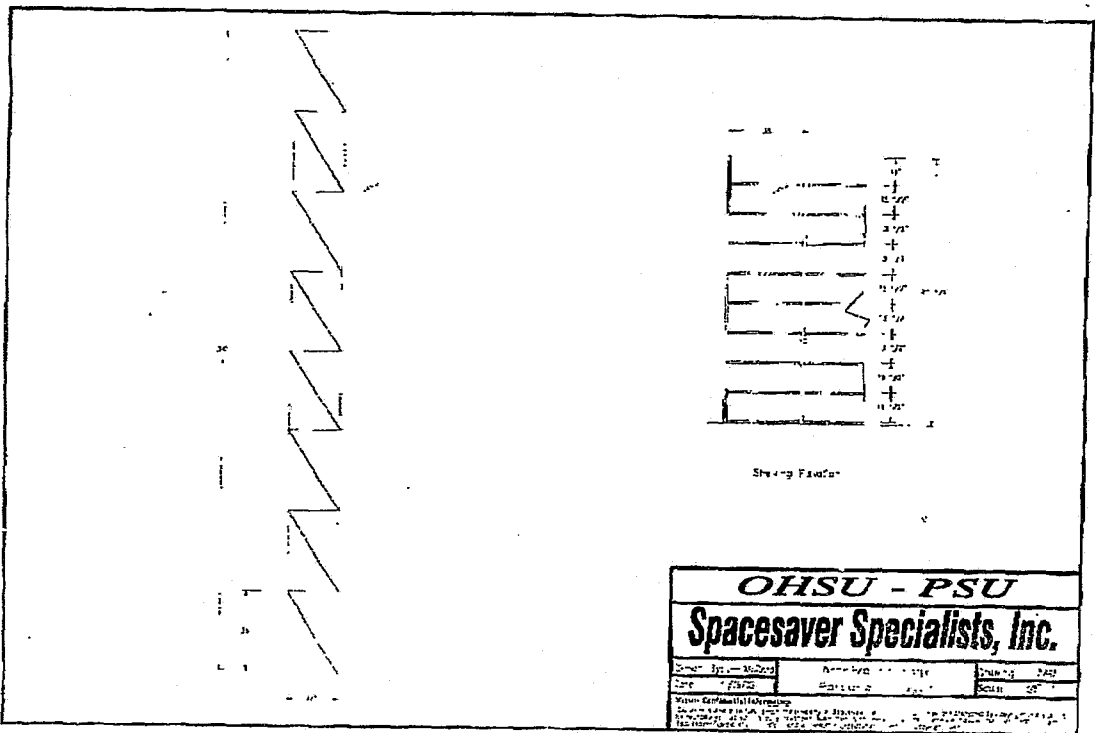
Maximum bolt shear @ rivet joint = $.75(658\#)/4 = 494\#$

Shear cap of $1/4"$ rivet = $.9(33,000)(1/4)(2)(.0498) = 740\#$
 $\geq 494\#$
 $\therefore$ ok to
 transfer
 shear



Shedding Pavilion

OHSU - PSU		
Spacesaver Specialists, Inc.		
Project: 02-009	Address: 11111	Phone: 503-286-703
Date: 9/20/04	Drawn by: J. L. L.	Scale: 1/8" = 1'-0"
Notes: 1. See attached drawings for details. 2. See attached drawings for details. 3. See attached drawings for details.		



4-Post Shelving Systems by Spacesaver

Universal 4-post Shelving

For general filing, storage and book requirements, Spacesaver offers a complete line of powder painted steel shelving systems.

The assembled system has no holes on any exposed surface (unless slotted or bin type shelves are used) and all shelves and backs are flush with the outside of the upright posts.

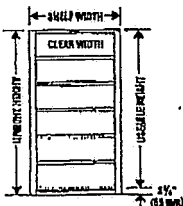
Shelves

Standard shelves shall be 9/16" (14 mm) in height and be formed of 22 ga. (.75 mm) cold rolled steel with flanges on all four sides. Front and rear flanges shall also be turned "down" and "in". Shelves to be adjustable on 1-1/2" (38 mm) centers vertically. Shelves to be supported front and back by two shelf supports of 14 ga. (1.9 mm) min. hot rolled steel. Full depth (or thru) shelves shall have mounting holes for attachment of an optional center stop. Slots (for optional file dividers) shall be placed on 2" (50 mm) centers across entire shelf length (starting 1" (25 mm) from each end). Height of shelf (including supports) shall be 3/4" (19 mm). Heavy-duty shelves shall be 9/16" (14 mm) in height and be formed of 18 ga. (1.2 mm) cold rolled steel with flanges on all four sides. Front and rear flanges shall also be turned "down" and "in". Shelves to be adjustable on 1-1/2" (38 mm) centers vertically. Shelves to be supported front and rear by two shelf supports of 14 ga. (1.9 mm) hot rolled steel. Full depth (or thru) shelves shall have mounting holes for attachment of optional center stop. Slots (for optional file dividers) or holes (for optional fixed bin dividers) shall be placed on 2" (50 mm) centers across entire shelf length (starting 1" (25 mm) from each end. Height of shelf (with heavy duty shelf support) shall be 1-1/4" (31 mm).

Shelf Width	30"	36"	42"	48"
Clear Width	28"	34"	40"	46"

Metric Dimensions (mm):

Shelf Width	762	914	1066	1219
Clear Width	711	863	1016	1168



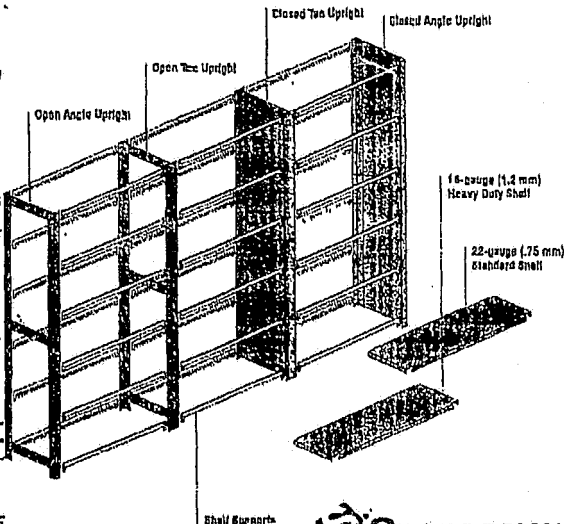
Uprights

Uprights shall consist of 18 ga. (1.2 mm) cold rolled steel formed into either a 2" (50 mm) wide "I" shape common post, or a 1" (25 mm) wide angle shape and post. Keyhole shaped slots are placed on 1-1/2" (38 mm) centers vertically on the inner face of the posts. "Closed" uprights shall have a 24 ga. (.80 mm) closure panel between the posts. "Open" type uprights shall have at least three 3" (76 mm) wide x 18 ga. (1.2 mm) spaces between the posts.

Upright Height	70 1/4"	85 1/4"	98 1/4"	97 1/4"
Useable Height	73 1/4"	82 1/4"	85 1/4"	84 1/4"

Metric Dimensions (mm):

Upright Height	1780	2165	2241	2470
Useable Height	1860	2005	2171	2400



Standard Height 9/16"	Heavy Duty 9/16"
Shelf Depths	Shelf Depths
10" 12" 15" 18"	12" 15" 18" 24"
20" 24" 30" 36"	30" 36"

Metric Dimensions (mm):

Standard Height 14 mm	Heavy Duty 14 mm
Shelf Depths	Shelf Depths
254, 304, 381, 457	304, 381, 457, 609
508, 609, 762, 914	762, 914



Spacesaver
Information and Materials Storage Systems
a division of JCI

Aug. 9, 2004 4:24PM

No. 0000 R. / /

Jun-02-04 11:06A Structural Concepts LLC

503 292 0448

P.02

4-Post Shelving Systems by Spacesaver

Universal 4-post Shelving

For general filing, storage and book requirements, Spacesaver offers a complete line of powder painted steel shelving systems.

The assembled system has no holes on any exposed surface (unless slotted or bin type shelves are used) and all shelves and backs are flush with the outside of the upright posts.

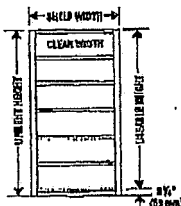
Shelves

Standard shelves shall be 9/16" (14 mm) in height and be formed of 22 ga. (.75 mm) cold rolled steel with flanges on all four sides. Front and rear flanges shall also be turned "down" and "in". Shelves to be adjustable on 1-1/2" (38 mm) centers vertically. Shelves to be supported front and back by two shelf supports of 14 ga. (1.8 mm) min. hot rolled steel. Full depth (or thru) shelves shall have mounting holes for attachment of an optional center stop. Slots (for optional file dividers) shall be placed on 2" (50 mm) centers across entire shelf length (starting 1" (25 mm) from each end). Height of shelf (including supports) shall be 3/4" (19 mm). Heavy-duty shelves shall be 9/16" (14 mm) in height and be formed of 18 ga. (1.2 mm) cold rolled steel with flanges on all four sides. Front and rear flanges shall also be turned "down" and "in". Shelves to be adjustable on 1-1/2" (38 mm) centers vertically. Shelves to be supported front and rear by two shelf supports of 14 ga. (1.8 mm) hot rolled steel. Full depth (or thru) shelves shall have mounting holes for attachment of optional center stop. Slots (for optional file dividers) or holes (for optional fixed bin dividers) shall be placed on 2" (50 mm) centers across entire shelf length starting 1" (25 mm) from each end. Height of shelf (with heavy duty shelf supports) shall be 1-1/4" (31 mm).

Shelf Width	30"	36"	42"	48"
Clear Width	28"	34"	40"	46"

Metric Dimensions (mm):

Shelf Width	762	914	1068	1219
Clear Width	711	863	1016	1168



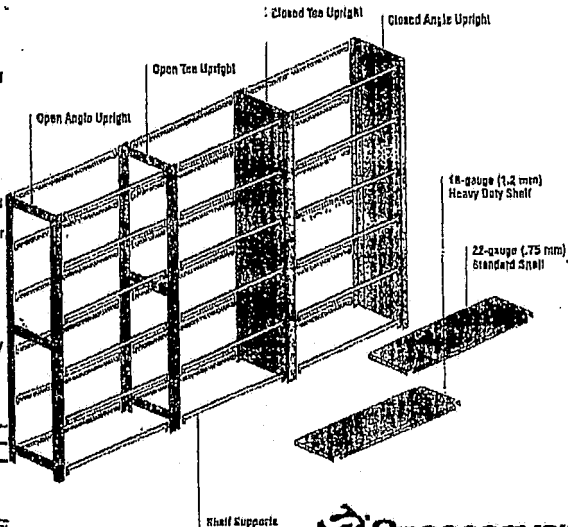
Uprights

Uprights shall consist of 18 ga. (1.2 mm) cold rolled steel formed into either a 2" (50 mm) wide "I" shape common post, or a 1" (25 mm) wide angle shape and post. Keyhole shaped slots are placed on 1-1/2" (38 mm) centers vertically on the inner face of the posts. "Closed" uprights shall have a 24 ga. (.80 mm) closure panel between the posts. "Open" type uprights shall have at least three 3" (76 mm) wide x 16 ga. (1.2 mm) spaces between the posts.

Upright Height	78 1/2"	83 1/2"	88 1/2"	97 1/2"
Usable Height	73 1/4"	82 1/4"	85 1/4"	94 1/4"

Metric Dimensions (mm):

Upright Height	1995	2165	2241	2470
Usable Height	1868	2005	2171	2400



Standard Height 9/16"	Heavy Duty 9/16"
Shelf Depth	Shelf Depth
10" 18" 15" 18"	12" 15" 18" 24"
20" 24" 30" 36"	30" 36"

Metric Dimensions (mm):

Standard Height 14 mm	Heavy Duty 14 mm
Shelf Depth	Shelf Depth
254, 304, 381, 457	304, 381, 457, 609
508, 609, 762, 914	762, 914



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Information and Materials Storage Systems
a division of KCI

Aug. 9, 2004 4:18PM

No. 0056 P. 1

Jun-02-04 11:03A Structural Concepts LLC 503 292 0448

P.02

LHP



3

June 2, 2004

Mr. Jim McCord
Spacesaver Specialists, Inc.
9730 SW Herman Road
Tualatin, OR 97062

Re: OHSU-PSU Archive Storage
680 SW Bancroft - Portland, OR
Seismic Zone 3 Compliance

Dear Jim:

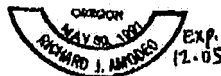
As requested, Structural Concepts LLC has reviewed and analyzed the anchorage and stability of the proposed new stationary 4-post shelving system to be placed in the OHSU-PSU archive storage area, for seismic zone 3 adequacy. This review was based on a maximum shelving storage load of 130 pounds per shelf. Please refer to the attached calculation sheets 1 - 4 for substantiation. The review was in conformance with the 1997 Uniform Building Code.

Note that this work was commissioned by Spacesaver Specialists, Inc., for this specific file layout and location, and is not intended to be used for any other purposes.

Please call if you have any questions or comments.

Sincerely,

Richard J. Alvarado, S.E.
Principal



1750 SW Skyline Blvd, Suite 223 • Portland, Oregon 97221
503.292.4540 • fax 503.292.4104 • email structcon@mindspring.com

04.026696-DFS-01-FA

T552

Structural Concepts • DESIGN • CONSTRUCTION • RECONSTRUCTION phone 503.292.4540 • fax 503.292.4104	Project	OHSU - PSU ARCHIVE STORAGE	By	RJA	Sheet No.	1
	Location	PORTLAND, OR	Date:		Job No.	
	Client	SPACE SAVER		6-04	SS123	

Review of Zone 3 seismic compliance of 4-post shelving

- * (126) rows of (8) 24" x 36" units w/ (9) loaded levels
- * Shelving self-weight = 18#/shelf
- * Shelving storage load = 130#/shelf
- * Total load on each shelf = 148#
- * Elevation of loaded levels:

$$h = 1.25", 14.75", 28.25", 41.75", 55.25", 68.75", 82.25", 95.75", 109.25" \quad \Sigma h = 497.25"$$

- * Shelving is located on the concrete s.o.g. level

$$F_p = \frac{1.0 \times 36 \times 1.0}{3.0 \times 1.4} \left[1 + 3 \left(\frac{h_x}{h_t} \right) \right] W_p = .086 W_p$$

$$(F_p)_{\max} = 4.0 \times 36 \times 1.0 \times \frac{1}{1.4} \times W_p = 1.03 W_p$$

$$(F_p)_{\min} = 0.7 \times 36 \times 1.0 \times \frac{1}{1.4} \times W_p = .18 W_p$$

- * use $F_p = .18 W_p$ as critical

$$F_p = .18 (148 \text{ #/shelf}) = 26.6 \text{ #/shelf}$$

$$M_{or} = 26.6 \text{ #} (497.25") = 13,227 \text{ #"} \text{ / unit}$$

$$M_{pr} = .9 (9) (148 \text{ #}) (12") = 14,356 \text{ #"} \text{ / unit}$$

- * $M_{pr} \geq M_{or}$ - No uplift on system, design for shear @ base only

$$\text{Base Shear per upright} = 9 (26.6 \text{ #}) = 239 \text{ #}$$

- * (2) anchors will be used @ each upright

$$\therefore \text{shear per anchor} = 120 \text{ #}$$

Structural Concepts

Track • Concrete

• Decking

phone 503.292.4540 • fax 503.292.4104

Project **DMSU-PSU
ARCHIVE STORAGE**Location **PORTLAND, OR**Client **SPACE SAVER**By **DJA**

Date

6-04

Sheet No.

2

Job No.

SS123

→ provide (1) $\frac{3}{16}$ " ϕ $\times$ $1\frac{1}{2}$ " embedment Hilti Kurik-Con II anchor at each end of each upright (thru shelf supports)

Anchor Shear Capacity = $195\# \geq 120\#$: ok

* shelving system is stable in both axis, so review strength in both directions (transverse is critical)

Transverse Review:

$V_{max} = 239\#$

* upright has 24 ga. closed panel w/ T-posts @ ends.

T-post gravity axial = $.5(9)(148\#) = 666\#$

T-post lateral axial = M_{tot}/d

$M_{tot} = 13,227\# \quad d = 23.5"$

T-post lateral axial = $563\#$

Combined T-post axial = $.75(666\# + 563\#) = 922\#$

$A_{post} = .28 \text{ in}^2 \quad \bar{y} = .12" \quad I = .024 \text{ in}^4 \quad r = .29"$

$kL/r = 13/.29 = 41 \quad F_n = 17.5 \text{ ksi}$

$f_n = 3.2 \text{ ksi} \leq F_n$: ok

* posts are adequate for axial in the transverse direction

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phone 503.292.4540 • fax 503.292.4104Project **OHSU - PSU
ARCHIVE STORAGE**Location **PORTLAND, OR**Client **SPACE SAVER**

By

PIA

Sheet No.

3

Date

6.04

Job No.

SS123 $d = 12"$ shelf spacing (bracing) $h = 24"$ depth of shear panel $t = .024"$ thickness of shear web

$$d/h = .50 \quad h/t = 1000$$

$$K_v = 4.00 + 5.34 / (.50)^2 = 25.4$$

$$V_{cap} = .38(.024)^2 \left[25.4 + (29,000,000) / (33,000) \right]^{.5} = 1079\#$$

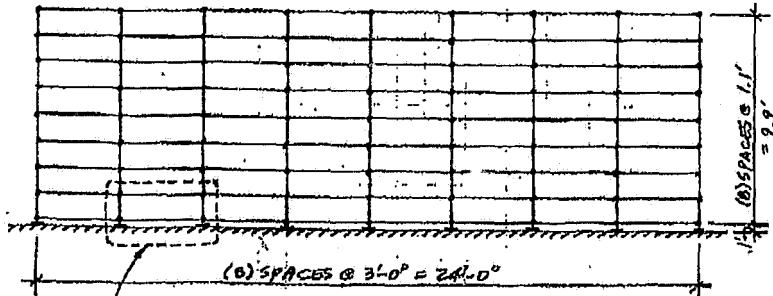
 $V_{cap} \geq V_{max}$ ok in transverse shear

Longitudinal Review:

* (2) linked frame @ each row of 24" in length

$$F_{form} \text{ per level} = 26.6\# / \text{shelf} \times 8 \text{ shelves} \times .5 = 106.4\#$$

$$\text{Force per node} = 106.4\# / 2 = 11.8\# \text{ each}$$

location of
maximum stresses
(typ.)

Aug. 9, 2004 4:18PM

No. 0056 P. 5

Jun-02-04 11:04A Structural Concepts LLC 503 292 0448

P-06

Structural Concepts • Design • Construction • Rehabilitation phone 503.292.4540 • fax 503.292.4104	Project OHSU - PSU	By RJA	Sheet No. 4
	ARCHIVE STORAGE		
	Location PORTLAND, OR	Date 6.04	Job No. SS123
	Client SPACESAVER		

Maximum longitudinal lateral axial = 163#

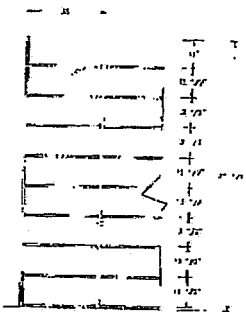
Maximum combined lateral/gravity axial
 due to longitudinal loads @ end L-post = $.75(333\# + 163\#)$
 $= 312\#$
 $\therefore$ gravity axial
 controls $\therefore$ ok

(M_{max}) posts = 702" #(M_{max}) shelves = 658" #(f_b)_{posts} = $.702 / .04 = 17.55 \text{ ksi}$ (f_b)_{shelves} = $.658 / .039 = 16.87 \text{ ksi}$

* shelf lateral load is generated at the same
 location that it is resisted $\therefore$ shelf axial is
 negligible + consider flexure only.

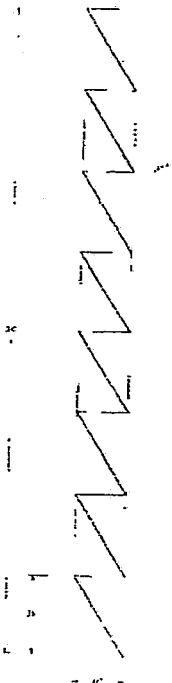
 $F_b = 4/3(1.6)(33,000 \text{ ksi}) = 26.40 \text{ ksi} \geq f_b \therefore$ okInterior T-post axial = 666# $\therefore f_a = 2.38 \text{ ksi}$ $f_a / F_a = 2.38 / 17.5 = .136 \leq .15 \therefore$ use $F_a / F_b + f_b / F_b$ $\Sigma = .13 + .82 = 1.02 \approx 1.33 \therefore$ okMaximum bolt shear @ rivet joint = $.75(658\#) / 1" = 494\#$ Shear cap of $1/4"$ rivet = $.9(33,000)(1/4)(2) = 740\#$

$\geq 494\#$
 $\therefore$ ok to
 transfer
 shear



Showing Foundation

OHSU - PSU		
Spacesaver Specialists, Inc.		
Owner: Eden Development	Address: 1100A	Sheet: 202
Date: 7/27/04	Scale: 1/4" = 1'-0"	Sheet: 202
Notes: 1. Foundation to be constructed in accordance with OHSU - PSU specifications.		



4-Post Shelving Systems by Spacesaver

Universal 4-post Shelving

For general filing, storage and book requirements, Spacesaver offers a complete line of powder painted steel shelving systems.

The assembled system has no holes on any exposed surface (unless slotted or bin type shelves are used) and all shelves and backs are flush with the outside of the upright posts.

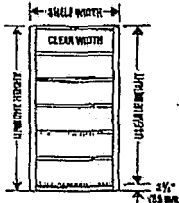
Shelves

Standard shelves shall be 9/16" (14 mm) in height and be formed of 22 ga. (.75 mm) cold rolled steel with flanges on all four sides. Front and rear flanges shall also be turned "down" and "in". Shelves to be adjustable on 1-1/2" (38 mm) centers vertically. Shelves to be supported front and back by two shelf supports of 14 ga. (1.9 mm) min. hot rolled steel. Full depth (or thru) shelves shall have mounting holes for attachment of an optional center stop. Slots for optional bin dividers shall be placed on 2" (50 mm) centers across entire shelf length (starting 1" (25 mm) from each end). Height of shelf (including supports) shall be 3/4" (19 mm). Heavy-duty shelves shall be 9/16" (14 mm) in height and be formed of 18 ga. (1.2 mm) cold rolled steel with flanges on all four sides. Front and rear flanges shall also be turned "down" and "in". Shelves to be adjustable on 1-1/2" (38 mm) centers vertically. Shelves to be supported front and rear by two shelf supports of 14 ga. (1.9 mm) hot rolled steel. Full depth (or thru) shelves shall have mounting holes for attachment of optional center stop. Slots (for optional file dividers) or holes (for optional fixed bin dividers) shall be placed on 2" (50 mm) centers across entire shelf length starting 1" (25 mm) from each end. Height of shelf (with heavy duty shelf support) shall be 1-1/4" (31 mm).

Shelf Width	30"	36"	42"	48"
Clear Width	28"	34"	40"	46"

Metric Dimensions (mm):

Shelf Width	762	914	1066	1219
Clear Width	711	863	1016	1168



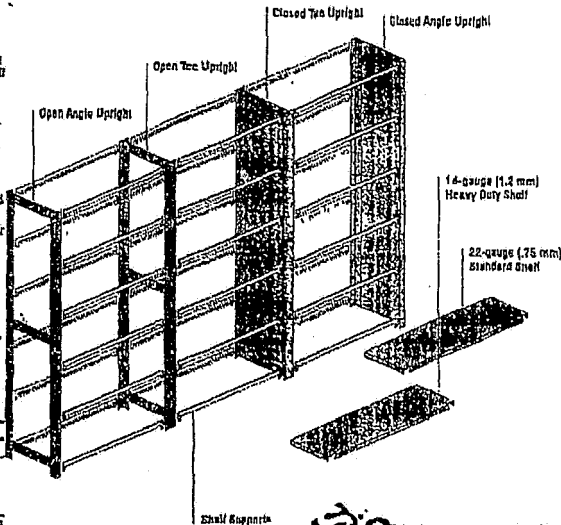
Uprights

Uprights shall consist of 18 ga. (1.2 mm) cold rolled steel formed into either a 2" (50 mm) wide "T" shape common post, or a 1" (25 mm) wide angle shape end post. Keyhole shaped slots are placed on 1-1/2" (38 mm) centers vertically on the inner face of the posts. "Closed" uprights shall have a 24 ga. (.60 mm) closure panel between the posts. "Open" type uprights shall have at least three 3" (76 mm) wide x 18 ga. (1.2 mm) spaces between the posts.

Upright Height	73 1/2"	83 1/2"	98 1/2"	97 1/2"
Usable Height	73 1/2"	82 1/2"	96 1/2"	94 1/2"

Metric Dimensions (mm):

Upright Height	1876	2105	2241	2470
Usable Height	1880	2056	2171	2400



Standard Height 8/16"	Heavy Duty 9/16"
Shelf Depth	Shelf Depth
10" 12" 15" 18"	12" 15" 18" 24"
20" 24" 30" 36"	30" 36"

Metric Dimensions (mm):

Standard Height 14 mm	Heavy Duty 14 mm
Shelf Depth	Shelf Depth
254, 304, 381, 457	304, 381, 457, 603
600, 603, 702, 914	702, 914

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4-Post Shelving Systems by Spacesaver

Universal 4-post Shelving

For general filing, storage and book requirements, Spacesaver offers a complete line of powder painted steel shelving systems.

The assembled system has no holes on any exposed surface (unless slotted or i.e. type shelves are used) and all shelves and backs are flush with the outside of the upright posts.

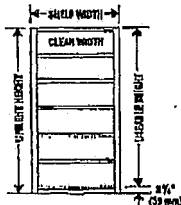
Shelves

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Shelf Width	36"	38"	42"	48"
Clear Width	28"	34"	40"	46"

Metric Dimensions (mm):

Shelf Width	762	914	1066	1219
Clear Width	711	863	1016	1168



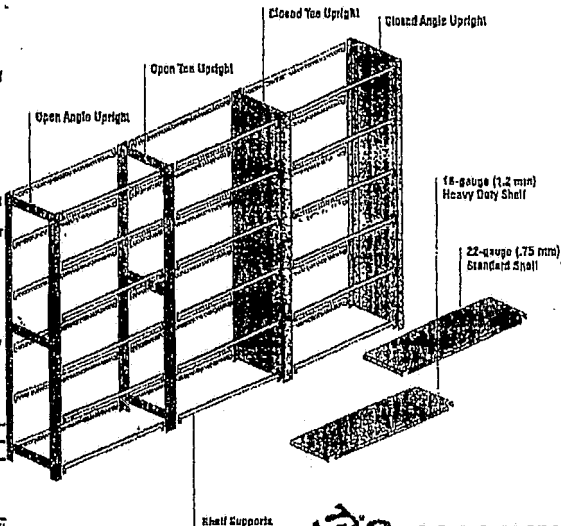
Uprights

Uprights shall consist of 18 ga. (1.2 mm) cold rolled steel formed into either a 2" (50 mm) wide "T" shape common post, or a 1" (25 mm) wide angle shape and post. Keyhole shaped slots are placed on 1-1/2" (38 mm) centers vertically on the inner face of the posts. "Closed" uprights shall have a 24 ga. (.80 mm) closure panel between the posts. "Open" type uprights shall have at least three 3" (76 mm) wide x 18 ga. (1.2 mm) spaces between the posts.

Upright Height	78 1/4"	83 1/4"	88 1/4"	97 1/4"
Usable Height	73 1/4"	82 1/4"	85 1/4"	94 1/4"

Metric Dimensions (mm):

Upright Height	1998	2116	2241	2470
Usable Height	1868	2005	2171	2400



Standard Height 9/16"	Heavy Duty 9/16"
Shelf Depth	Shelf Depth
10" 18" 18" 18"	10" 18" 18" 18"
20" 24" 30" 36"	30" 36"

Metric Dimensions (mm):

Standard Height 14 mm	Heavy Duty 14 mm
Shelf Depth	Shelf Depth
254, 457, 457, 457	254, 457, 457, 457
508, 603, 762, 914	762, 914



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