

# Design & Construction Techniques

First Edition - 2007



Photograph by: George Pfoertner

*Builders, Architects and Interior Designers Guide for Creating More  
Closet and Storage Space in  
New Construction and Remodeling Projects*

*A special report prepared by*



ASSOCIATION OF  
CLOSET AND STORAGE PROFESSIONALS™

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The contents of this booklet are not to be considered professional advice. The information provided herein is a compilation of techniques, procedures and suggestions gathered from experienced closet and storage industry professionals. What is appropriate can and will vary from project to project and locale to locale. Users of this booklet are advised to consult their local building code officials, architects, architectural review boards, consulting engineers and others to insure that these suggestions are consistent with building and safety codes, covenants and architectural/structural or any other applicable requirements.

The Association of Closet and Storage Professionals seeks to provide our working partners in the construction industry with the tools you need to insure that your clients receive the maximum storage with the minimum cost. If some of these suggestions are implemented at the design stage or early in the construction process, your clients will benefit from space efficient design at no additional cost to you or them.

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# Introduction

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For decades designers and installers of closet and storage organizing systems have complained, *“If only the builder had done..... differently, we could have designed in so much more storage space”*.

The homeowners (your client and ours) *repeatedly complain* that valuable space has been *squandered* because someone *didn’t plan in advance*.

Our industry bears part of that responsibility for not educating our partners in construction, namely architects, interior designers and builders. This booklet is offered as a guide for creating more potential storage space at *no cost* (or almost none) *to the builder* or the end-user.

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# Room Layout and Storage Space Requirements

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## *Reach-in closets (aka wardrobes)*

### Dimensions:

- Ideal depth range (front to rear) is 24"-27" for hanging. Greater than 27" deep is wasted space
- Side returns (door casing to side walls) should be 12" or less for easy access. (e.g.- a 96" wide (rear wall) closet should have a centered 72" w door opening)
- Ceiling heights greater than 96" (when using an 80" high door) is inaccessible space. When ceilings are higher than 96", using a 96" h door allows better access to upper shelving

### Lighting:

Mount light fixture above door on the header, instead of ceiling, so it will not interfere with shelving installed on rear wall.

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## *Walk-in closets (24" minimum clear passage aisle)*

### Dimensions:

*Depths (front to rear):*

- 60" or greater allows for an in-swing door plus hanging on rear wall

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*Widths (side to side):*

- 60” allows shelving along one wall and hanging on the opposite wall (with proper placement of door)
- 72” allows hanging along both side walls
- 132” (11 feet) is minimum for reasonable center island

*Heights:*

- 42” minimum for single short hang, box & luggage storage
- 66” minimum for long hang
- 84” minimum for double hanging
- 126” minimum for some triple hang options

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## ***Common Obstacles that Impede Space Efficiency and Suggested Remedies***

### **Door Swing:**

When possible, swing doors outward so not to impede utilizing the interior of the closet space.

### **Door Types:**

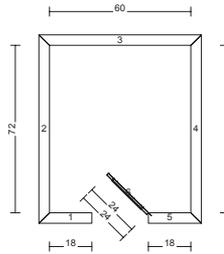
- Pocket doors allow 100% access to stored items
- Bi-swing hinged doors provide up to 90% access
- Bi-folds are an option that will provide a 67% minimal access
- By-pass (sliding) are limited access as 50% of the opening is always blocked

## Door Positioning:

Frame closet doors toward the center of the entry wall. By centering the door's rough opening, you create more useable space along both returns (distance between the door casing and the nearest corner). Below see examples of superior and inferior positioning.

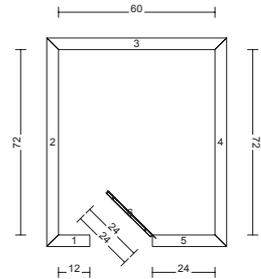
### *Door Centered*

No hanging available on either side wall for the first 2 to 3 feet when 24" depth is not provided



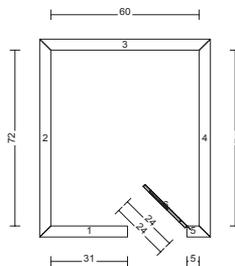
### *Door Off-set*

Hanging and shelving are available on side walls



### *Door Skewed to Side*

Door uses the first 3 feet of side wall for swing radius



## Windows:

Although window placement is determined by exterior architectural considerations, closet space is adversely affected inside when the window is skewed toward a corner. General shelving requires a minimum 12" depth while hanging needs 24" depth. This helps determine the clearance needed from window casing to the nearest corner. The space below the window can be used for seats, shelving or drawer units depending on the height and width dimensions of the window and clearance to adjacent walls.

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### Switches:

Locating light switches on outside walls of the closet will not interfere with storage inside. If the switch must be inside, position it as close to the door casing as possible. This leaves more room along the return wall for storage.

### Electrical Boxes:

Receptacles, cable connections, phone jacks, speaker wires, alarm boxes, computer cables, etc., should not be located within 8" of a corner. This provides space for closet vertical supports to be installed in corners thus allowing the utility box to fall within the shelving or hanging sections.

### Attic Access:

Attic openings may be either a scuttle lid or pre-manufactured pull down ladder assembly. In either case, the opening should be as close to the center of the ceiling as possible. Clearance from the opening to any side or end wall should be at least 22". When stairs open toward the closet entry door, more storage space can be utilized at the rear and side walls.

### Wall Openings:

As with electrical, as noted above, openings in closet walls for Jacuzzi pumps, steam or plumbing fixtures, laundry chutes, built in safes, etc., should be kept 8" off corners to allow these options to be designed and incorporated into the overall storage plan. When openings are toward the center of the walls, the corner can be better utilized for storage requiring less access, like seasonal hanging.

### Vents:

HVAC supply vents and returns should be located 18" from walls, when ceiling or floor mounted. This way they do not interfere with the closet components installed along the walls. When return vents are required, ceiling mounted is suggested or wall mount above 84" high.

### Metal Studs:

If wall hung system is pre-determined, wood blocking centered around 80" off floor and corner blocking would provide a stable anchoring system

### Hidden Wiring & Plumbing:

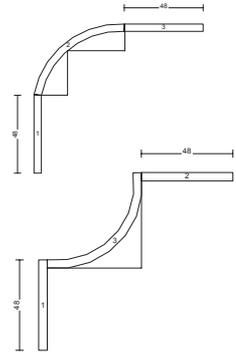
Metal shields on outer edges of studs where plumbing, wiring, HVAC lines are present, will protect them from screw penetration during storage system installation

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## *Irregular Shaped Storage Spaces*

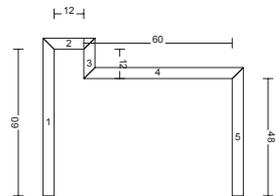
### Curved Walls:

Curved walls in closets are generally due to architectural considerations on the other side such as circular staircases or curved hallways. The curve inside the closet, whether concave or convex, makes it difficult to utilize that space. Squaring off the closet side of these walls during the framing process is less costly while it improves the space efficiency.



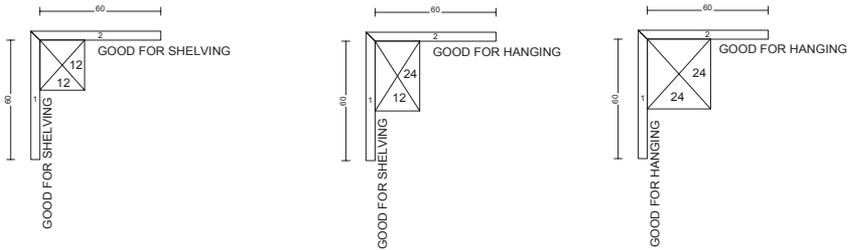
### Niches and Alcoves:

These areas may seem like a good use of space but generally they are not. Shallow or narrow nooks, niches or alcoves inside the closet space require more access room than the nook provides. Framing across these areas squares off the useful space and the cavity can be utilized for HVAC chase-ways.



## Bump-Outs:

Corners in closets framed out for HVAC ductwork (or otherwise) should be deep enough to accommodate closet components on adjacent sides (see glossary).



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## *Sequence of Storage Installations*

The scheduling of closet installations depends on the method of install (see glossary). Storage systems are typically installed after finished drywall, door, window and access-hole trim, and final painting (typically closet and storage systems do not come with backing unless requested).

Floor based systems can have its components installed before or after final flooring. When flooring is resilient such as tile, marble, vinyl, wood or parquet, closets are generally installed after the floor is down. Floor based storage systems with toe-kicks can be installed before or after carpet.

The advantage of storage install before carpet allows future changing of the flooring without having to remove the closet system. Concerning baseboard installation, some builders/owners prefer to install this after the closet installation for a cleaner look. The alternative, if baseboard is installed during trim-out, is for the closet company to notch the bottom/rear of the verticals before installation of the closet.

Wall-hung method can be installed anytime after final painting as the finished floor and baseboard trim are not affected.

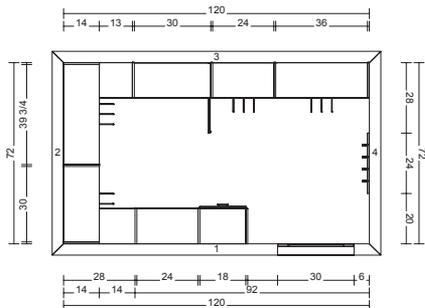
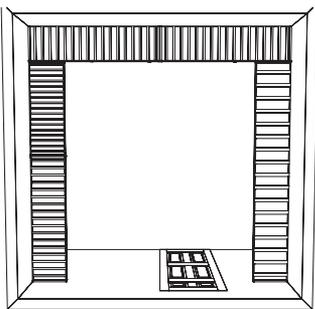
## Save Space / Save Cost

### Large closets do not insure more usable storage space

Hiring a professional closet and storage system specialist can save the builder and homeowner valuable space and money.

For example, if a closet is allocated a 10' by 10' area, and construction costs run at \$120/square foot, this space is valued at \$12,000. When a closet company is not employed to organize the space, this cost will probably include a basic single rod/shelf on each wall (totaling 29 linear feet of usable space).

If the closet is downsized to a 10' by 6' area, its construction cost is \$7200. (60 sq.ft x \$120.) . A basic component closet system installed for \$2200. (22 linear feet at \$100/foot), the smaller closet is valued at \$9400. The smaller closet will have close to double the usable storage space for 22% less cost than the larger space, inefficient closet area. **Less cost....more value.**



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## *Innovations and Trends in the Storage Industry in the Past Few Years*

Architects, interior designers and builders should be aware that their clients are requesting that new and innovative features be incorporated into closets and storage systems. Recent features have included:

- Washer/dryers
- Ironing boards with accessories
- Accent and task lighting
- Steamers and pants presses
- Cable TV / phone jacks
- Coffee makers with plumbing
- Mirrored dressing tables with lighting
- Wardrobe carousels (manual and motorized)
- Gun vaults
- Fireproof safes
- Retractable seats
- Compressed air
- Slide out tie and belt racks and valet rods
- Overhead retractable wardrobe lifts

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# Glossary

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## General Closet Design Parameters

Sixty to 70% of an average wardrobe closet is allocated for hanging space.

Of the total hanging space, 20% to 30% of women's hanging is allocated to long dress hang. The remainder is used for double hanging (short over short).

The remaining 30% to 40% of space of a wardrobe closet is allocated to non-hanging storage which includes shelving, drawers, baskets, hampers, trays and accessories.

## Definitions and Phraseology:

**Length:** Vertical height measurement

**Depth:** Front to rear edge measurement

**Width:** Horizontal side to side measurement

**Closets:** This phrase is used throughout this booklet but can mean other storage spaces or rooms such as pantries, linen spaces, home offices, garage storage, entertainment centers, hobby rooms and wall beds.

## Installation Methods

**Floor-Based:** Vertical supports rest on the floor and the system is fastened to the walls.

**Wall-Hung** (or mounted): Vertical supports are suspended from a horizontal wall rail, which is fastened to the studs for weight support. An alternate wall hung system utilizes cleats fastened to fixed upper shelves between vertical panels and fastened through sheet-rock to studs.

# Industry-Wide Dimensional Standards and Space Requirements for Commonly Stored Items

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## *Average size person*

### Hanging Garments (length includes hanger):

28-32”h x 1-2”w	folded slacks, tennis skirts, shorts
30-36”h x ½-1”w	blouses
32-42”h x 2-4”w	women’s suits and jackets
34-44”h x 1-2”w	skirts
38-40”h x ½-1”w	men’s shirts
39-42”h x 2-4”w	men’s suits and jackets
40-44”h x 4-6”w	outerwear jackets
46-52”h x 1-2”w	slacks hung long from cuff or waist, medium dress hang Maximum height of hang-rod for wheel chair or handicapped
46-66”h x 2-6”w	robes, coats
48-66”h x 1-3”w	dresses
72-78”h x 1-3”w	women’s formal long hang
82-86”h	upper rod height for double hanging

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## Slide-Outs: (heights for drawers, baskets, hampers, etc):

*Industry standards for sliding hardware:*

*18" w & 24" w & 30" wide by 14" d & 16" deep*

3-6" h	jewelry, socks, scarves, lingerie, wine racks
6-9" h	shirts, shorts, underwear, socks
9-12" h	sweaters, sweat suits, jogging outfits, handbags
16-18" h	pantry bins, chips, pet food, onions/ potatoes
20-24" h	hampers

## Shelving:

Adjustable heights using the 32mm system allows shelving to be positioned at 32 mm (1-3/8") increments using 5mm shelf pins

## Common Folded Items:

10-14" w X 12-14" d	sweaters, jeans, sweat suits
9-10" w X 12-14" d	t-shirts, turtlenecks
9" w X 16" d	men's laundered shirts

## Shoes:

7-8" w	women's /pair
8-10" w	men's /pair

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**Linens:**

12-14" w X 12-14" d

18-24" w X 14-16" d

24-36" w X 18-24" d

24" w X 16" d

towels, sheets

blankets

comforters, bedspreads

pillows

**Utility Items:**

43" h X 12" d

58" h

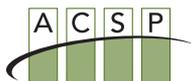
12" h

upright vacuum

broom, mop, ironing board

bucket, detergents

*This booklet is compliments of*



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