

FURNITURE SELECTION GUIDE

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This document provides guiding principles, specification guidance and furniture item descriptions (FID) for basic tables and chairs for classrooms of in a General Instruction Building (GIB), Education Center (ACES), NCO Academy, or Classroom XXI. The FIDs have been developed jointly by the Huntsville Center (HNC) Central Furnishings Program, the GIB Center of Standardization (COS) Norfolk District, and through lesson learned and User feedback (primarily via Post-Occupancy Evaluations). This document is intended to facilitate the preparation of a Furniture, Fixtures, and Equipment (FF&E) design package. It does not replace the professional competence and judgment of a NCIDQ-certified interior designer, nor does it replace the project/user specific guidance which must be taken into account when specifying furniture.

These guidelines are provided to ensure a minimum quality level of furniture in GIBs to support the training mission. Deviations must be approved by the COS in accordance with AR 420-1.

To obtain the GIB Standard Design Criteria and Army Standard, download from the NAO COS website: <http://mrsi.usace.army.mil/cos/norfolk/SitePages/gib.aspx>

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General guiding principles:

- Furniture should possess attributes of “*flexibility*”, defined as the ability to accommodate frequent changes to the learning environment during an academic day or cycle. For example; Lightweight, reconfigurable and mobile furniture designed for lecture based settings in the morning as well as small group instruction which may take place that afternoon that can be easily re-configured by the student with minimum loss to instruction time.
- Furniture shall possess attributes of “*adaptability*”, defined as the ability to respond to less frequent changes to the learning environments and which may require tools. For instance; height adjustable tables that can be adjusted by the maintenance staff to not only suit the majority of users but also to provide proper conditions for disabled or special needs students.
- Furniture should possess attributes of “*multi-functionality*” to the extent practicable. Multi-purpose furniture maximizes economies in of scale and provides consistency, streamlines procurement, avoids/minimizes singular dedicated usage, facilitates inter-changeability and reduces operations/maintenance burdens, while minimizing cost. For example:
 - Multi-functional unit that is both low bookcase as well as a space divider within an administrative suite, serving dual functions.
 - Low classroom storage units can be outfitted with a desktop surface to serve as both storage and additional work surface.
 - Stock training tables used throughout the basic lecture spaces can, with some minor accessorizing, accommodate automation –aided training rather than ordering special dedicated tables.*

*It is understood that some furniture, particularly in applied instruction, may have unique and dedicated requirements which warrant features (such as special chemical resistant tops) not appropriate on a larger school-wide scale.

- Furniture shall generally support technology as a separate (i.e. not integral) component to allow for technology upgrades that occur at a faster rate than furniture replenishment cycles. Separating furniture and technology also promotes the sharing of equipment. Tables can be “accessorized” as need be to accommodate technology; such as CPU slings, table dividers, etc.
- Consideration of the amount of time spent in the classroom will drive ergonomics. Providing furniture with ergonomic qualities to suit the majority of users establishes a foundation for improved productivity and longer attention spans. At a minimum, seating should have “flex”, full back support, waterfall edge, and should accommodate varied seating positions. Where appropriate, consider seat height adjustability.
- Aesthetics: Considerations of color, form and texture foster creativity and a sense of identity in the users. These should be chosen to endure the test of time and be based on the principle foundations of design rather than simply the latest trends. Be aware of product offerings that are more “fun” than “functional”.

Criteria for tables and chairs:

Training tables for typical classroom learning

1) Table requirements:

- a. Rectangle shaped, two-person, and generally of one of the following sizes:
 - a. 24 or 30" x 60"
 - b. 24 or 30" x 72"
- b. Plastic laminate surface.
- c. With or without a modesty panel. If table is powered, it will normally have a modesty panel.
- d. Single pop-up power or power/data port in the middle. What needs to be in those power ports varies with the end user, but at a minimum provide *at least* (2) simplex outlets, and two data ports. If a classroom XXI, more power/data receptacles will be required. Occasionally there will be power modules below the worksurface also.
- e. Flip-top or nesting capabilities.

2) Design and selection considerations:

- a. *Tablet arm chairs*: We have seen tablet arm chairs being phased out at many public universities due to the historically limited top size, handling issues, lack of stacking ability, and awkwardness when sitting and standing up. Newer market offerings have non-handed, mobile (although still non-stacking) and larger work surface solutions. However, tablet arm chairs still remain less flexible than separate tables and chair solution since they are not separable, and the largest tablet arm tops at about 280 square inches are still far less than the 720 square inches per student of a 24x60" table. For these reasons, tablet arm chairs will generally only be selected with caution.
- b. *Integrated "pop-up" monitor tables*: We have seen these in the past and they should generally be avoided. Feedback from the schools is that these units often have fixed monitor supports that preclude use of newer and larger monitors on the market that reflect increasing visual training needs. Life cycle maintenance has also been an issue as the monitor retraction devices (spring loaded or other type) are often failure prone and proprietary.
- c. *CPU slings*: Many manufacturers offer under-mount CPU slings to support the computer tower, located either outside of the leg support (i.e. at the side of the table), or on the inside of the leg. Weigh these options carefully; we have found often that the outside mount may not offer sufficient overhang to cover the CPU. On the other hand, an inside mount leaves less legroom.
- d. *Power*: The question we ask most often about training tables is whether they are hardwired or plug-in to building power. Tables must have modular power connections and be reconfigurable without having to be in a particular sequence. Most manufacturers have good power distribution systems and enough sizes and options to fit almost every situation. Note that power poles or extension cords are never an acceptable solution in a new or renovated classroom. Confirm with User how the

- classroom will be reconfigured. For example, if small group discussion takes place the desks will often be arranged in a “U” fashion, which usually requires a floor box.
- e. *Flip-top or nesting:* It's important to remember that some flip-top tables require the modesty panel to be removed to engage the mechanism. Ensure that the User understands the implications of this. Also, designers sometimes forget to include table carts, which can make it so much easier to move and store these.
 - f. *Desktop surface material:* We generally specify particle board or MDF, but phenolic substrate is also acceptable. The plastic laminate spec is the minimum acceptable material; some manufacturers exceed this. Tables must be edged to prevent delaminating; a contoured or beveled edge is preferred. We have had some tables specified with a “non-skid” surface top. This is great if you plan on walking or dancing on it, but not if you’re trying to write on it.

Student chairs for typical classroom learning

1) Chair requirements:

- a. 5-star, sled or 4-post type. Chairs shall be either stackable or nestable. Castors are preferred for flexibility in accommodating varied training settings.
- b. Seat height approximately 17 to 20 inches, and width of 20 to 22 inches to fit the widest size range distribution.
- c. With or without arms. Arms, if provided, are better if they’re cantilevered so they don’t get in the way.
- d. Contoured seat and flexible back is the minimum, and a synchro-tilt or mechanical flex mechanism for the back is preferred.
- e. Upholstered seat and back preferred when duration of instruction warrants, generally when a class exceeds 2 hours, or in large assembly spaces (> 150 load) where sound reverberation is a problem.

2) Design and selection considerations:

- a. We see a lot of incorrect product in CIDs for chairs. The most common error is requiring a small, generic, plastic stack chair for training tables where people will be sitting for extended periods. If the chair isn’t comfortable, the user squirms around a lot and loses concentration.
- b. Standard task chairs, if preferred by end user, are better with a synchro-tilt mechanism so sitters can stretch their spine and have more opportunity for changing positions. However, these are not often requested, but are viable.
- c. Plastic task chairs with 5-star bases that incorporate the best features of the plastic training chairs like a flexing or highly-flexible back and upholstered seat can be a good alternative to a full-on task chair with synchro. Lately these plastic chairs are becoming more common as more manufacturers offer them.
- d. The most typical chair we see is a ½” wire rod, sled base chair, which many manufacturers can provide. We also see chairs made of tubular steel, but what I’ve see most in this type of seating is the wire rod chair. However, if specifying sled-based chairs ensure that they are lightweight so that they can be easily moved/carried, eg; as students change from a lecture setting to a small group discussion setting sacrificing least amount of learning time possible.



Figure 1 - this well-constructed nesting chair at Ft Lee provides a flexible woven back, upholstered seat, arm rests that don't interfere with the table, mobility and versatility at a reasonable cost.

Guide Specification for tables and chairs:

Following are Section 2s for training tables and chairs, which is quality only. Items in red are edited per project to suit the requirement.

2.1 Laminate Training Tables

Warranty Requirements:

1. 10 year.
2. 5 year – Laminate.

Testing and Standards:

ANSI/BIFMA X5.5-2008 Desk/Table Products

Material

1. ANSI 208.1-2009 Particleboard Classifications.
2. ANSI A208.2-2009 Medium Density Fiberboard.
3. ANSI/NEMA LD 3-2005 High Pressure Decorative Laminates (HPDL).

General Requirements:

1. Work surfaces shall be constructed of a Grade M2 or M3 particleboard or a ~45 lb. medium density fiberboard core with a minimum VGS General Purpose Grade High-Pressure Laminate on the face and a backer material on the underside.
2. Laminates shall be bonded to the core with a PVA adhesive in a cold press or hot press process to prevent separation of the laminate from the core.
3. Low pressure laminate and thermally fused laminate is non-conforming and will be considered unacceptable.
4. Work surface edges shall be totally finished and sealed against moisture.
5. Laminate self edges are non-conforming.
6. **Abutting surfaces shall mate closely and at equal heights when used in side-by-side configurations in order to provide a continuous and level surface.**
7. The leg shaft shall be welded to a formed steel plate, and the plate shall be attached to the bottom of the table with mechanical fasteners in metal inserts.
8. **End caps on round metal legs shall be neatly finished and consist of steel plugs that are brazed in place, ground, and polished smooth prior to finishing. Plastic end caps are non-conforming and will be considered unacceptable.**
9. **“Flip-top” mechanisms shall be of a die cast aluminum or steel.**
10. **Power/Data modules shall be recessed from view and accessed via a touch latch or a hinged or sliding cover.**

2.2 Seating, Metal Frame, [Thermoplastic] [Upholstered]

Warranty Requirements:

1. 10 year – Frame and glides or casters.
2. 5 year – Polypropylene/Thermoplastic.
3. 3 year – Fabric and finishes.

Testing and Standards:

ANSI/BIFMA X5.1-2002 General Purpose Office Chairs

Material

1. Chair padding materials and fabric shall comply with the State of California Technical Information Bulletin 117.

General Requirements:

1. Frame shall be tubular steel or die-cast aluminum. or ½” diameter wire rod.
2. Joints shall be welded.
3. End caps shall be molded plastic, finished to match frame color.
4. Non-marring floor glides.
5. Chair shall have a reinforced back, arms, and legs.
6. The seat shall have a waterfall edge.
7. Seats shall flip up to allow chairs to nest.
8. Backrests shall have welded steel supports that attach to the backrest movement mechanism.
9. The back attachment to the frame shall be concealed.
10. Back flex mechanisms shall gradually increase resistance with applied pressure.

Following are the Section 3s for training tables and chairs, which include salient features and finishes. Items in red are edited per project to suit the requirement.

3.1 Item No. T-X: Training Table, Laminate, Powered

Overall Dimensions: W x D

General Requirements:

- a. High pressure laminate top with vinyl/ABS edge
- b. Metal [T-legs] [Y-legs] [C-legs]
- c. [Glides] [Casters]
- d. [Pop-up power/data module] [Recessed power/data module] shall include: (2) simplex power outlets and (2) data/comm. ports
- e. Power connection shall [plug-in] [be hardwired] to building power
- f. Ganging mechanism, refer to floorplan for configuration and quantity
- g. Flip-top/nesting capable
- h. [Crank] [Electronic] [Pin] height adjustable [Fixed height]
- i. Vertical wire management mounted [to] [in] leg column
- j. Wire management tray or basket below the table top
- k. [Metal] [Laminate] modesty panel
- l. Grommets with covers

Finish:

- a. High Pressure Laminate: Manufacturer's standard selection to include **Color**
- b. Edge: Manufacturer's standard selection to include **Color**
- c. Metal: Manufacturer's standard **powder coat paint** selection to include **Color**

3.2 Item No. C-X: [Guest] [Stack] Chair , Metal Frame, [Thermoplastic] [Polypropylene]
Overall Dimensions: W x D x H **[Verify dimensions online, CID is not always correct.]**

Seat Width: 20" minimum

Seat Depth: 18" minimum

* Overall chair width shall be [measured from outer armrest to outer armrest] [equal to the seat width] overall chair depth shall be measured from front of seat to back of backrest, and overall chair height shall be measured from finished floor to top of backrest.

General Requirements:

- a. [Textured] [Perforated] [thermoplastic] [polypropylene], or similar material, seat and back with upholstered seat and back pad
- b. [1] [2]-Piece seat and back
- c. Shall have a flex back
- d. [Armless] [Open] [Cantilevered] arms
- e. Metal [4-leg] [cantilevered] [sled] frame with glides
- f. Stacks 5 high on [floor] [cart], minimum
- g. Ganging mechanism

Finish:

- a. Shell: Manufacturer's standard [thermoplastic] [polypropylene], or similar material, selection
- b. Metal: Manufacturer's standard selection to include Color

3.3 Item No. C-X: Nesting Chair, Metal Frame, [Thermoplastic] [Polypropylene] [Upholstered]
Overall Dimensions: W x D x H

* Overall chair width shall be [measured from outer armrest to outer armrest] [equal to the seat width]; overall chair depth shall be measured from front of seat to back of backrest, and overall chair height shall be measured from finished floor to top of backrest.

* Contractor shall field verify hard or soft casters after award.

General Requirements:

- a. [Upholstered, cushioned seat and back] [Textured Perforated thermoplastic, or similar material, seat and back with upholstered seat and back pad]
- b. 2-Piece construction
- c. Shall have a flex back
- d. [Armless] [Cantilevered arms]

- e. Flip seat
- f. 4-Leg metal frame with [glides] [casters]
- g. 4-Star base with casters

Finish: **[Include finish selection if specified.]**

- a. Upholstery: Manufacturer's standard woven, stain resistant, mid-grade fabric selection; 100,000+ double rubs
- b. Shell: Manufacturer's standard thermoplastic, or similar material, selection
- c. Metal: Manufacturer's standard selection to include **Color**