

# INSTITUTIONAL FURNITURE SPECIFICATIONS

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## PART 1 - GENERAL

### 1.1 GENERAL

- .1 All general conditions and instructions to bidders are a part of this section.

### 1.2 DESCRIPTION OF WORK

- .1 All Herculite Polymer Composite (HPC) form molded Institutional Furniture. All furniture shall be designed for secure installation with no exposed fastenings.

### 1.3 QUALITY ASSURANCE

- .1 MAX-SECURE Maintenance-Free Institutional Furniture as manufactured by Max-Secure Systems Inc. (1-800-657-4336) establishes a minimum quality standard required. Existing engineered and field tested products, which utilize structural adhesive fastening systems and are subject to compliance with requirements may be incorporated into the work and shall meet or exceed the specified test criteria and design characteristics.

### 1.4 SUBSTITUTIONS

- .1 The materials and products specified in this section establish a standard of required function, dimensions, appearance and quality to be met by any proposed substitution.
- .2 No substitutions will be considered unless written request for approval has been submitted by the bidder and has been received by the architect at least five (5) days prior to the date for receipt of bids.
- .3 Each request shall include the name of the material or product for which it is to be substituted and a complete description of the proposed substitute, including drawings, cuts, mock-ups, performance and test data, a list of projects of similar scope and photographs of existing installations, and any other information necessary for evaluation.

### 1.5 INSURANCE LISTING AND APPROVALS, FIRE RETARDANCY

- .1 Herculite Polymer Composite shall conform to: Underwriters Laboratories ASTM - E84 Steiner Tunnel Flame Spread Test

Flame Spread	20
Smoke Developed	250
- .2 Small Scale Fire Test Vertical

Weight Loss	0.01 - 0.05%
Time of Ignition	None
Burning Time	None
Height of Char (after burn)	1.0" - 1.5"

# INSTITUTIONAL FURNITURE SPECIFICATIONS

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## 1.6 PERFORMANCE TESTING – HERCULITE POLYMER COMPOSITE (HPC)

### .1 General

Units shall be manufactured to meet or exceed the following test criteria.

### .2 Finished Product Specifications

Thickness tolerance	0.1875" + 0.050"
Density pcf	117 to 130
Barcol Hardness (ASTM D2583)	50 - 60
Loss on Ignition, Percent (ASTM D2584-68 79)	49.6 - 51.5
Flexural Strength (ASTM D790-71)	Face up 21, 000 psi Face down 18,000 psi
Tensile Strength (ASTM D638-76)	14,000 psi
Notched Izod (ASTM D256)	6.0 ft-lb/in <sup>2</sup>

### .3 Structural Characteristics

#### a. Wall and Floor Mounted Lower Bed

Installation shall employ a concealed structural adhesive mounting system with no Exposed fasteners

Units shall be manufactured to withstand the following impact load test:

Tests shall consist of applying six impact loads successively to the unit through a spreader plate placed in three separate locations on the bed while the unit is supported in a suitable manner to simulate the actual installation conditions.

The spreader plate shall consist of solid plywood or approved equivalent, 12" x 12" x 1 1/2" thick, all edges and corners rounded to 1/4" radius.

The impact load shall consist of a suitable 350 lb. weight dropped from a height of 24" above the surface of the spreader plate.

The test locations shall be on the longitudinal axis of the bed measured to center of the spreader plate as follows:

First two drops	-	15" from one end of the bed
Second two drops	-	15" from other end of the bed
Third two drops	-	at center of bed

Following completion of the tests, the bed shall show no physical defects of any nature.

## INSTITUTIONAL FURNITURE SPECIFICATIONS

---

b. Wall Mounted Two and Four Shelf Locker

Units shall be manufactured to withstand the following impact load test:

Tests shall consist of applying two impact loads successively to the unit through a spreader plate placed in two separate locations on the locker while the unit is fastened to the wall in the specified manner.

The spreader plate shall consist of solid plywood or approved equivalent, 12" x 12" x 1 1/2" thick, all edges and corners rounded to 1/4" radius.

The impact load shall consist of a suitable 200 lb. weight suspended on a steel cable. This weight is held 24" away from the surface of the spreader plate attached to the side of the unit and released.

The test locations shall be in the center of the side of the unit (in the case of the corner lockers the front top and bottom center):

First impact	-	to the center of the left side
Second impact	-	to the center of the right side

Following completion of the tests the locker shall show no physical defects of any nature.

c. Wall Mounted Writing Desk

Units shall be manufactured to withstand the following impact load test:

Test shall consist of applying two impact loads successively to the unit through a spreader plate placed in two separate locations on the top of the desk while the unit is fastened to the wall in the specified manner.

The spreader plate shall consist of solid plywood or approved equivalent, 12" x 12" x 1 1/2" thick, all edges and corners rounded to 1/4" radius.

The impact load shall consist of a suitable 200 lb. weight dropped from a height of 24" above the surface of the spreader plate.

The test location shall be on the top of the desk with the spreader plate centered on the writing surface.

Following completion of the tests the desk shall show no physical defects of any nature.

d. Floor Mounted Round Stool

Units shall be manufactured to withstand the following impact load test:

Test shall consist of applying two impact loads successively to the unit through a spreader plate placed in the center of the stool while the unit is fastened to the floor in the specified manner.

The spreader plate shall consist of solid plywood or approved equivalent, 12" x 12" x 1 1/2" thick, all edges and corners rounded to 1/4" radius.

# INSTITUTIONAL FURNITURE SPECIFICATIONS

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The impact load shall consist of a suitable 200 lb weight dropped from a height of 24 " above the surface of the spreader plate.

The test location shall be on the top of the stool with the spreader plate centered on the seat.

Following completion of the tests the stool shall show no physical defects of any nature.

## **1.7 SUBMITTALS**

### .1 Shop Drawings

Shop drawings for each product specified, showing fabrication details, composite structure, materials to be used as well as outlining installation procedures with no exposed fastenings, caulking, etc. required for Architect's approval before fabrication.

### .2 Samples

Submit the following samples to Architect for approval before fabrication:

Representative samples to determine color and finish. Size not less than 6" x 6". Re-submit as often as required to obtain approval.

### .3 Structural Adhesives

Submit samples of structural adhesive mounting system with a representative 12" x 12" square bed section mounted on a 24" x 24" x 3/4" plywood base adequately demonstrating function of the mounting system.

### .4 Maintenance Instructions

Complete maintenance instructions for preventative maintenance and repairs of the units shall be submitted for incorporation in Project Data Book.

## **PART 2 - PRODUCTS**

### **2.1 MATERIALS**

#### .1 Herculite Polymer Composite

Fire retardant structural polymer composite formulated to obtain optimum processing and service qualities in the finished products. The surface coating shall have a satin, non-glare finish.

#### .2 Epoxy Caulking

Epoxy mastic filler to meet or exceed the following physical property requirements.

Freeze Thaw  
(ASTM C459 T)

No Evidence of cracking, checking, blistering, or other defects.

Adhesion to Concrete  
(ASTM D952-51)

Exceeds internal strength of concrete backing.

Impact Resistance  
Gardner Impact Tester

80" lbs. Without cracking film at 80 lbs. aggregates break without

# INSTITUTIONAL FURNITURE SPECIFICATIONS

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	loosening of embedded section.
Tensile Strength (ASTM D636-61T)	1,500 psi
Salt and Spray (ASTM D822-60)	No deterioration or other defects after 1000 hrs exposure
Water Immersion	No delamination from backing after seven days immersion.

## **2.2 FINISH**

- .1 Finished surfaces shall be smooth, free from all defects, consistent in color and texture to match approved samples.

## **PART 3 - FIELD QUALITY CONTROL**

### **3.1 TESTING SERVICES**

- .1 Institutional Furniture shall be subjected to all tests on full size production units and must meet or exceed the requirements of this specification as verified by reports from an independent testing laboratory.
- .2 Where required, one unit of each type will be forwarded to the testing agency appointed by the Engineer, for testing in accordance with the Performance Requirement specified.
- .3 Final cleaning should be carried out by wiping Institutional Furniture with a clean mild solution of detergent and water. A final coat of wax shall be applied to seal all exposed surfaces of the units.

## **PART 4 - TOLERANCES**

### **4.1 TOLERANCES**

- .1 Institutional Furniture must be designed, manufactured and installed to comply with the tolerances generally specified in this type of work. Installation of the furniture shall be performed by the manufacturer.

## **PART 5 - PRODUCT HANDLING**

### **5.1 HANDLING**

- .1 Institutional Furniture items are to be suitably packaged or crated to prevent damage in shipment and handling. Finished surfaces are to be protected by sturdy wrappings. Where it assists in the identification of the various types, the units are to be labelled.
- .2 The Furniture shall be delivered to location at building site for storage prior to installation.

## **INSTITUTIONAL FURNITURE SPECIFICATIONS**

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- .3 The Furniture shall be removed from storage prior to installation.
- .4 All necessary tools, accessories and portable equipment shall be provided by installation contractor.

### **PART 6 - EXTENDED GUARANTEE**

#### **6.1 GUARANTEE**

- .1 Institutional Furniture and their installation must be guaranteed in writing for a period of ten years commensurate with the final inspection date.
- .2 The guarantee includes defective work, including loosening of the units from their mountings, other than from acts of riot or malicious cause.