

SECTION 123400  
LAMINATE CLAD CASEWORK – K-12 EDUCATION

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Fixed modular laminate clad casework and components.
- B. Flexible rail mounted laminate clad casework and components.
- C. Countertops.
- D. Mobile storage units, tables and components.

1.02 RELATED SECTIONS

- A. Blocking within walls where indicated: Division 6.
- B. Millwork, trim, and custom cabinetry: Division 6.
- C. Locks master keyed to room doors: Division 8.
- D. Glass: Division 8.
- E. Base molding: Division 9.
- F. Appliances: Division 11.
- G. Sinks and service fixtures, service waste lines, connections, and vents: Division 15.
- H. Electrical service fixtures: Division 16.

1.03 DEFINITIONS

- A. Identification of casework components and related products by surface visibility.
  - 1. Open Interiors: Any open storage unit without solid door or drawer fronts, units with full glass insert doors and/or acrylic doors, and units with sliding solid doors.
  - 2. Closed Interiors: Any closed storage unit behind solid door or drawer fronts.
  - 3. Exposed Ends: Any storage unit exterior side surface that is visible after installation.
  - 4. Other Exposed Surfaces: Faces of doors and drawers when closed, and tops of cabinets less than 72 inches above furnished floor.
  - 5. Semi-Exposed Surfaces: Interior surfaces which are visible, bottoms of wall cabinets and tops of cabinets 72 inches or more above finished floor.
  - 6. Concealed Surfaces: Any surface not visible after installation.

1.04 QUALITY ASSURANCE

- A. Manufacturer: Minimum of 5 years experience in providing manufactured casework systems for similar types of projects, produce evidence of financial stability, bonding capacity, and adequate facilities and personnel required to perform on this project.
- B. Manufacturer: Provide products certified as meeting or exceeding ANSI-A 161.1-2000 testing standards.
- C. Single Source Manufacturer: Casework, countertops and architectural millwork products must all be engineered and built by a single source manufacturer in order to ensure consistency and quality for these related products. Splitting casework, countertops and/or architectural millwork between multiple manufacturers will not be permitted.

***OPTIONAL LANGUAGE: Architectural Woodwork Quality Standards (Delete if not required.)***

- D. Quality Standard: Unless otherwise indicated, comply with AWI's Architectural Woodwork Quality Standards for grades of interior architectural woodwork, construction, finishes and other requirements.
  - 1. Provide AWI Quality Certification Program LABELS indicating that the woodwork complies with requirements of the grade specified. This project has been registered as AWI/QCP project number (ENTER NUMBER HERE).
  - 1. Provide AWI Quality Certification Program CERTIFICATE indicating that the woodwork complies with requirements of the grade specified. This project has been registered as AWI/QCP project number (ENTER NUMBER HERE).
  - 1. The contractor, upon award of work, shall register the work under this section with the AWI Quality Certification Program (Phone: 800.449.8811).

1.05 SUBMITTALS

- A. Comply with Section 01330, unless otherwise indicated.
- B. Product Data: Manufacturer's catalog with specifications and construction details.
- C. Shop Drawings: Indicate dimensions, description of materials and finishes, general construction, specific modifications, component connections, anchorage methods, hardware, and installation procedures, plus the following specific requirements.
  - 1. Include section drawings of typical and special casework, work surfaces and accessories.
  - 2. Indicate locations of plumbing and electrical service field connection by others.

3. Provide one set of shop drawings which includes all products within this section, engineered and built by a single source manufacturer, with seamless coordination amongst all products.
  - D. Casework Samples (To be available upon request):
    1. Base cabinet: Cabinet conforming to specifications, with drawer and door.
    2. Wall cabinet: Cabinet conforming to specifications, with door.
    3. Cabinet samples shall be complete with specified hardware for doors, drawers and shelves.
    4. Component samples: Two sets of samples for each of the following:
      - a. Decorative laminate color charts / PVC and ABS edgings.
- 1.06 PRODUCT HANDLING
- A. Deliver completed laminate clad casework, countertops, and related products only after wet operations in building are completed, store in ventilated place, protected from the weather, with relative humidity range of 25 percent to 55 percent.
  - B. Protect finished surfaces from soiling and damage during handling and installation with a protective covering.
- 1.07 JOB CONDITIONS
- A. Environmental Requirements: Do not install casework until permanent HVAC systems are operating and temperature and humidity have been stabilized for at least 1 week.
    1. Manufacturer/Supplier shall advise Contractor of temperature and humidity requirements for architectural casework installation areas.
    2. After installation, control temperature and humidity to maintain relative humidity between 25 percent and 55 percent.
  - B. Conditions: Do not install casework until interior concrete work, masonry, plastering and other wet operations are complete.
- 1.08 WARRANTY
- A. All materials and workmanship covered by this section will carry a five (5) year warranty from date of acceptance.

## PART 2 – PRODUCTS

- 2.01 ACCEPTABLE MANUFACTURERS:
- A. Manufacturer:
    1. TMI Systems Design Corporation.
      - a. Drawings and specifications are based on manufacturer's literature from TMI SYSTEMS DESIGN CORPORATION, 50 South Third Avenue West, Dickinson, North Dakota, 58601, Phone: 800-456-6716, fixed modular, flexible rail mounted, and mobile casework and accessories.
      - b. Other manufacturers shall comply with the minimum levels of material and detailing indicated on the drawings or as specified.
- 2.02 MATERIALS
- A. Core Materials:
    1. Particleboard up to 7/8 inch thick: Industrial Grade average 47-pound density particleboard, ANSI A 208.1-2009, M-2 requirements.
    2. Particleboard 1 inch thick and thicker: Industrial Grade average 45-pound density particleboard, ANSI A 208.1-2009, M-2 requirements.
    3. Medium Density Fiberboard 1/4 inch thick: Average 54-pound density grade, ANSI A208.2-2009 requirements.
    4. MR Moisture Resistant Particleboard: Average 47-pound density particleboard, ANSI A208.1 1-2009, M-2 requirements.
  - B. Decorative Laminates: GREENGAURD Indoor Air Quality Certified
    1. High-pressure decorative laminate VGS (.028), NEMA Test LD 3-2005.
    2. High-pressure decorative laminate HGS (.048), NEMA Test LD 3-2005.
    3. High-pressure decorative laminate HGP (.039), NEMA Test LD 3-2005.
    4. High-pressure cabinet liner CLS (.020), NEMA Test LD 3-2005.
    5. High-pressure backer BKH (.048), (.039), (.028), NEMA Test LD3-2005.
    6. Thermally fused melamine TFM laminate, NEMA Test LD 3-2005. (TFM allowed on casework interiors only, as specified below. Utilization of TFM on any exterior casework surfaces, including door and drawer faces and finished ends, will not be permitted.)
  - C. Laminate Color Selection: Maximum 1 color per unit face and 5 colors per project. (See Color Selection in section 3.05).
  - D. Edging Materials:

1. 1mm PVC banding, machine applied.
  2. 3mm PVC banding, machine applied and machine profiled to 1/8 inch radius.
- E. Glass:
1. Wall unit full sliding glass doors: 1/4 inch thick laminated safety glass.
  2. Glass insert doors, hinged or sliding wall cabinets: 1/4 inch thick laminated safety glass.
  3. Glass insert doors, hinged or sliding tall or base cabinets. 1/4 inch thick laminate safety glass.
  4. Sliding doors mounted in aluminum track.
  5. Trim glass inserts: Extruded rigid PVC channel and self-locking insert retainer strip.

## 2.03 SPECIALTY ITEMS

- A. Support Members:
1. Countertop support brackets: Epoxy powder coated, 11 gauge steel with integral cleat mount opening and wire management opening.
  2. Undercounter support frames: Epoxy powder coated.
  3. Legs: Epoxy powder coated.
- B. Tote Trays:
1. Heavy-duty vacuum-formed polypropylene plastic with full top rim and pull. Trays are ivory color, equipped with label holder.
  2. Tote tray/supply cabinets equipped with injection molded polycarbonate; continuous side rail support glide. Each side rail support glide is adjustable with integral support pins to interface 32mm pre-drilled holes.
- C. Mobile Storage Units:
1. Tall mobile storage units, as indicated on the drawings, are structural steel framed with epoxy powder coated tubing.
  2. Casters: 5 inch soft rubber double ball bearing, heavy gauge steel fork, zinc plate finish with 2 brakes per unit. Load capacity per caster to be a minimum of 200 pounds.
  3. Side panels, back, top, drawer fronts, and doors are of 3/4 inch thick particleboard, laminated on the exterior with high pressure decorative laminate VGS and on the interior with high pressure CLS cabinet liner. Use of TFM on exposed exterior surfaces or interior surfaces will not be permitted.
  4. Exposed edges are PVC banding, 1mm or 3mm thickness, to match adjacent casework.
  5. Low mobile storage units are mounted to a caster base.
- D. Computer Keyboard Tray:
1. Non-articulating, undercounter mount with positive stop drawer slides.
- E. Music Specialty/Heavy Duty Storage Units:
1. Instrument and uniform storage unit: Exposed exterior finished ends are VGS laminate balanced on interior surface with CLS cabinet liner. Unexposed End panels and vertical dividers are thermally fused melamine laminates, both faces, with 3mm PVC front edging. Cabinet backs are 1/2 inch thick particleboard core laminated with thermally fused melamine laminate. (Use of TFM on exposed exterior surfaces will not be permitted.)
  2. Tops and bottoms are glued and doweled to cabinet sides and internal cabinet components such as fixed horizontals and vertical dividers. Exposed assembly hardware and through-bolt assembly construction methods will not be accepted.
  3. All musical instrument storage casework shall be assembled and finished at the manufacturer's factory utilizing a case clamp to ensure tight joints and a square box. Field assembled casework will not be accepted.
    - a. Any units too large to fit through a standard 36 inch wide doorway may be shipped knocked down and assembled in the field.
  4. Instrument shelves: 1 inch thick particleboard core laminated both faces with thermally fused melamine laminate. Shelves are doweled into sides. Top surface is molded flat stock heavy-duty polyethylene with textured abrasion-resistant finish permanently bonded to shelf. Front of shelf edged with machine applied 3mm PVC edge banding, black color matching heavy-duty polyethylene. Removable or adjustable shelves and shelves attached with mechanical fasteners will not be accepted.
  5. Wire grille doors: Door frame to be 5/16 inch diameter heavy gauge metal rod welded to 3/16 inch diameter verticals with beveled end to produce a clean, finished look; 2-3/4 inch, hospital tip, 0.095 inch thick steel, five knuckle hinges welded to door. Padlock eyelets and label holder included.
  6. Solid doors: 3/4 inch thick particleboard core laminated with VGS laminate on the exposed surface and balanced with CLS cabinet liner on the interior surface. Use of TFM on exterior or interior surfaces of music door fronts will not be permitted. 3mm PVC edged doors and five knuckle, 2-3/4 inch, hospital tip, 0.095 inch thick steel epoxy powder coated hinges. Padlock eyelets included.
  7. Stay Close Latch: (Where shown on drawings.) Latch and door strike to be 13 gauge steel finished in bright chrome. Latch to have contour allowing it to travel over the hasp

into a positive locked position. Door may be padlocked for added security. Padlocks not included.

## 2.04 CABINET HARDWARE

- A. Hinges:
  - 1. Five knuckle, epoxy powder coated, institutional grade, 2-3/4 inch overlay type with hospital tip. 0.095 inch thick. ANSI-BHMA standard A156.9, Grade 1.
    - a. Doors 48 inches and over in height have 3 hinges per door.
    - b. Magnetic door catch with maximum 5 pound pull provided, attached with screws and slotted for adjustment.
- B. Pulls:
  - 1. Door and drawer front pulls are rectangular, semi-recessed, injection molded plastic, screw fastened. Pull design shall comply with the Americans with Disability Act (ADA).
- C. Drawer Slides:
  - 1. Regular, kneespace and pencil: 100-pound load rated epoxy coated steel, bottom corner mounted with smooth and quiet nylon rollers. Positive stop both directions with self-closing feature. Paper storage, 150-pound load rated epoxy coated steel slides.
  - 2. File: Full extension, 150-pound load rated epoxy coated steel, bottom corner mounted with smooth and quiet nylon rollers. Positive stop both directions with self-closing feature.
- D. Adjustable Shelf Supports:
  - 1. Injection molded transparent polycarbonate friction fit into cabinet end panels and vertical dividers, adjustable on 32mm centers. Each shelf support has 2 integral support pins, 5mm diameter, to interface pre-drilled holes, and to prevent accidental rotation of support. The support automatically adapts to 3/4 inch or 1 inch thick shelving and provides non-tip feature for shelving. Supports may be field fixed if desired. Structural load to 1200 pounds (300 pounds per support) without failure.
- E. Locks:
  - 1. Removable core, disc tumbler, cam style lock with strike. Lock for sliding 3/4 inch thick doors is a disc type plunger lock, sliding door type with strike. Lock for sliding glass/acrylic doors is a ratchet type sliding showcase lock.
  - 2. Elbow catch or chain bolt used to secure inactive door on all locked cabinets.
- F. Sliding Door Track: Anodized aluminum double channel.
- G. Coat Rods: 1 inch diameter, 14-gauge chrome plated steel installed in captive mounting hardware.
- H. File Suspension System: Extruded molding integral with top of drawer box sides to accept standard hanging file folders.
- I. Mirrors: 1/8 inch thick mirrored acrylic, break and impact resistant.

## 2.05 FABRICATION:

- A. Fabricate casework, countertops and related products to dimensions, profiles, and details shown.
- B. All casework panel components must go through a supplemental sizing process after cutting, producing a panel precisely finished in size and square to within 0.010 inches, ensuring strict dimensional quality and structural integrity in the final fabricated product.
- C. Cabinet Body Construction:
  - 1. Tops and bottoms are glued and doweled to cabinet sides and internal cabinet components such as fixed horizontals, rails and verticals. Minimum 6 dowels each joint for 24 inch deep cabinets and a minimum of 4 dowels each joint for 12 inch deep cabinets. (Mechanical or metal hardware fasteners joining cabinet top and bottom panels to the sides will not be accepted.)
    - a. Tops, bottoms and sides of all cabinets are particleboard core.
  - 2. Cabinet backs: 1/4 inch thick medium density fiberboard panel fully captured by the cabinet top, bottom and side panels. Finish to match cabinet interior. 3/4 inch x 4 inch particleboard rails will be placed behind the back panel at the top and bottom, and doweled to the sides utilizing 10mm hardwood fluted dowels. A third intermediate rail will be included on all cabinets taller than 56 inches. Utilize hot melt glue to further secure back and increase overall strength.
    - a. Exposed back on fixed or movable cabinets: 3/4 inch thick particleboard with the exterior surface finished in VGS laminate as selected.
  - 3. Fixed base and tall units have an individual factory-applied base, constructed of 3/4 inch thick plywood. Base is 102mm (nominal 4 inch) high unless otherwise indicated on the drawings.
  - 4. Base units, except sink base units: Full sub-top glued and doweled to cabinet sides. (Mechanical or metal hardware fasteners joining cabinet sub-top panel to the sides will not be accepted.)
    - a. Sink base units are provided with open top and a stretcher at the front, attached to the sides. Back to be split removable access panel.

5. Side panels and vertical dividers shall receive adjustable shelf hardware at 32mm line boring centers. Mount door hinges, drawer slides and pull-out shelves in the line boring for consistent alignment.
  6. Exposed and semi exposed edges.
    - a. Edging: 1mm PVC machine applied.
  7. Adjustable Shelves in Cabinets
    - a. Core: Particleboard.
    - b. Core Thickness: 3/4 inch up to 36 inches wide, 1 inch over 36 inches wide.
    - c. Edge: 1mm PVC on Front Edge Only.
  8. Interior finish, units with open Interiors:
    - a. Top, bottom, back, sides, horizontal and vertical members, and adjustable shelving faces with TFM Thermally Fused Melamine laminate.
  9. Interior finish, units with closed Interiors:
    - a. Top, bottom, back, sides, horizontal and vertical members, and adjustable shelving faces with TFM Thermally Fused Melamine laminate.
  10. Exposed ends:
    - a. Faced with high-pressure decorative VGS laminate. Use of TFM on exposed ends will not be permitted.
  11. Wall unit bottom:
    - a. Faced with thermally fused melamine laminate.
  12. Balanced construction of all laminated panels is mandatory. Unfinished core stock surfaces, even on concealed surfaces (excluding edges), are not permitted.
- D. Drawers:
1. Sides, back and sub front: Minimum 1/2 inch thick particleboard, laminated with TFM Thermally Fused Melamine doweled and glued into sides. Top edge banded with 1mm PVC.
  2. Drawer bottom: Minimum 1/2 inch thick particleboard laminated with TFM Thermally Fused Melamine, screwed directly to the bottom edges of drawer box.
  3. Paper storage drawers: Minimum 3/4 inch thick particleboard sides, back, and sub front laminated with TFM Thermally Fused Melamine. Minimum 1/2 inch thick particleboard drawer bottoms screwed directly to the bottom edges of the drawer box. Provide PVC angle retaining bar at the rear of the drawer.
- E. Door/Drawer Fronts:
1. Core: 3/4 inch thick particleboard.
  2. High-pressure decorative VGS laminate exterior, balanced with high-pressure cabinet liner CLS. Use of TFM on exterior or interior surfaces of door/drawer fronts will not be permitted.
  3. Edges: 3mm PVC, machine applied, external edges and outside corners machine profiled to 1/8 inch radius.
  4. Provide double doors in opening in excess of 24 inches wide.
- F. Miscellaneous Shelving (not in Cabinets):
1. Core material: 1 inch thick particleboard.
  2. High-pressure decorative VGS laminate on both faces.
  3. Edges: 3mm PVC, external edges and outside corners machine profiled to 1/8 inch radius.

## 2.06 DECORATIVE LAMINATE COUNTERTOPS:

- A. Core:
1. All countertops except at sink elevations: 1-1/8 inch thick ANSI A208.1-1993 M-2 particleboard.
  2. Countertops at sink elevations: 1-1/8 inch thick ANSI A208.1-1993 M-3 moisture resistant (MR) particleboard.
- B. Surface: High-pressure decorative HGS/HGP laminate with balanced backer sheeting.
- C. Edges, including applied backsplash: 3mm PVC, exposed edges and corners machine profiled to 1/8 inch radius.
- D. All countertops joints must be dry fit at the factory to check for consistency in color from one panel to the other and overall finished panel thickness, resulting in a high quality product easy to install.

## PART 3- EXECUTION

### 3.01 INSPECTION:

- A. The casework contractor must examine the job site and the conditions under which the work under this section is to be performed, and notify the building owner in writing of unsatisfactory conditions. Do not proceed with work under this Section until satisfactory conditions have been corrected in a manner acceptable to the installer.

### 3.02 PREPARATION:

- A. Condition casework to average prevailing humidity conditions in installation areas prior to installing.
- 3.03 INSTALLATION:
- A. Erect casework, plumb, level, true and straight with no distortions. Shim as required. Where laminate clad casework abuts other finished work, scribe and cut to accurate fit.
  - B. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind.
  - C. Repair minor damage per plastic laminate manufacturer's recommendations.
- 3.04 CLEANING:
- A. Remove and dispose of all packing materials and related construction debris.
  - B. Clean cabinets inside and out. Wipe off fingerprints, pencil marks, and surface soil etc., in preparation for final cleaning by the building owner.
- 3.05 COLOR SELECTION:
- A. Laminate Color Selection:
    - 1. Select from the full range of standard Wilsonart® and Formica® stock color charts.
    - 2. Thermally fused melamine laminate matched to White color.
  - B. Hardware Color Selection:
    - 1. Hinge: Select from your choice of epoxy powder coating stock colors matched to White, Beige, Gray, Black and Chrome.
    - 2. Pulls: Select from your choice of ABS stock colors matched to White, Beige, Gray, Black and Chrome.
    - 3. Miscellaneous Hardware (support brackets, table frames, etc.): Select from your choice of epoxy powder coating stock colors matched to White, Beige, Gray, Black and Chrome.
  - C. PVC Edge Banding Color Selection:
    - 1. 3mm PVC: Select from your choice of stock colors matched to White, Beige, Gray and Black. Other colors are available\*. Special order colors may impact cost and lead times.
    - 2. 1mm PVC: Select from your choice of stock colors matched to White, Beige, Gray and Black. Other colors are available\*. Special order colors may impact cost and lead times.

\*For complete and current Laminate and PVC color availability charts please refer to:  
<http://www.tmisystems.com/specifying/crossreference.asp>

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END OF SECTION