

INSTRUCTION FOR EDITING

SECTION 12302

WOOD CASEWORK

1. Library casework for reading and stacks area and shelving for library support spaces are covered separately under Section 12360.
2. Plastic laminate-faced casework is covered separately under Section 12304.

SECTION 12302

WOOD CASEWORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General Conditions and Division-1 Specification sections, apply to the Work of this section, with special attention to the following:
 - 1. Shop Drawings, Product Data and Samples: Section 01340
 - 2. Substitutions and Product Options: Section 01630

1.02 RELATED WORK

- A. Miscellaneous wood shelving, mounting blocks, and other millwork: Section 06400 - Finish Carpentry.
- B. Section 11060/11061 - Musical Instrument Storage Equipment
- C. Section 12304 - Plastic Laminate Faced Casework.
- D. Section 12360 - Library Casework.

1.03 DESCRIPTION OF WORK

- A. Extent of wood casework is shown on drawings.
- B. Work includes the fabrication and installation of base cabinets, wall cabinets, storage cabinets, shelf units, and other units as indicated on the drawings.
- C. Tops, box curbs, and splash rims common to wood casework are included in the Work of this section.
- D. Cutouts in tops to accommodate sinks, faucet assemblies, and other hardware are included in the Work of this Section.

1.04 WORK EXCLUDED

- A. Sinks and faucet assemblies shall be provided and installed under the Work of Division 15. Contractor shall coordinate with Division 15 trades to ensure proper location and size of cutouts for such fixtures.
- B. Furnishing and installing of rough framing, wall reinforcement or other means of support shall be provided under the Work of other Sections.

1.05 QUALITY ASSURANCE

- A. Single Source Responsibility: All wood casework and tops shall be manufactured or furnished by one manufacturer.
- B. Submit certification indicating at least five (5) years successful experience in the manufacturing and installation of casework.
- C. Installation: Install casework under the supervision of the Manufacturer's authorized representative, using workman certified or approved by Manufacturer.

1.06 SUBMITTALS

- A. Product Data: Submit manufacturer's fabrication and product data, and installation instructions for each type of wood casework unit, casework hardware, fixtures and accessories required.
 - 1. Provide product literature for all types of panel and lumber materials to be used in casework fabrication.
 - 2. Provide catalog data for all casework hardware.
- B. Samples: Submit 6" x 6" samples of specified finishes, including countertop material. Samples shall be reviewed by Architect for color, texture, and pattern only. Review and approval shall not waive responsibility for compliance with all specified requirements.
- C. Shop Drawings: Submit dimensioned shop drawings for wood casework showing plans, elevations, ends, cross-sections, and service-run spaces. Show location and type of service fixtures, and indicate coordination with utility rough-ins and connections. Show details and location of anchorages and fitting to floors, walls, and base. Include layout of units with relation to surrounding walls, doors, windows, and other building components. Shop drawings shall indicate coordination with the work of other trades.
- D. Joinery: Submit Manufacturer's standard details and descriptive literature indicating methods of cabinet construction, joinery, and edge banding treatment.

1.07 PRODUCT HANDLING

- A. Deliver wood casework and fixtures only after the operations of "wet" trades are completed in the area of Work.
- B. Store completed wood casework and fixtures in a secure, well ventilated and conditioned place, protected from the weather, with relative humidity of 50% or less at 70°F (22°C).

- C. Protect finished surfaces from soiling and damage during handling and installation. Store in original packaging or other protective covering recommended by the manufacturer.

1.08 WARRANTY

- A. Provide minimum five (5) year warranty covering defects in materials and workmanship.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Manufacturers offering products to comply with requirements for wood casework include the following:
 1. Paragon Casework, Chantilly, VA, 1-703-1517.
 2. TMI Music Storage Systems (TMI Systems Design Corp.), Dickinson, ND, 1-800-456-6716 (www.tmisystems.com).
 3. Other fabricator(s) pre-bid approved in accordance with this section and Section 01630. Upon request, fabricators shall provide Architect or Owner with a fabricated representative sample of casework complete with hardware and accessories.
- B. Unless otherwise noted, casework and fixtures are identified on the drawings by catalog numbers of Southside Manufacturing Corp. The catalog description represented by each catalog number shall be the standard of quality for each item, unless otherwise modified.

2.02 WOOD CASEWORK

- A. Definitions: The following definitions apply to wood casework units;
 1. "Exposed" portions of casework include surfaces visible when doors and drawers are closed. Bottoms of cases more than 4'0" above floor shall be considered as exposed. Visible members in open cases or behind glass doors also shall be considered as exposed portions.
 2. "Semi-exposed" portions of casework includes those members behind solid doors and drawers, such as shelves, dividers interior faces of ends, case back, drawer sides, backs and bottoms and back face of doors. Tops of cases 6'-6" or more above floor shall be considered semi-exposed.

3. "Concealed" portions of casework include sleepers, web frames, dust panels, and other surfaces not usually visible after installation.
- B. Exposed Materials: Uniformity of finish: Do not use exposed faces of lighter-than average color joined with exposed faces of darker-than-average color. Do not use two adjacent faces that are noticeably dissimilar in grain, figure, and natural character markings.
 - C. Exposed Solid Lumber: Plain Sliced Red Oak, air dried for a minimum of one (1) year, then kiln dried to a moisture content of 7 percent. All lumber shall be clear, sound and free from knots and other defects; selected for compatible grain and color.
 - D. Unexposed Solid Lumber: Any suitable hardwood specie, unselected for grain and color, but with no defects affecting structural soundness.
 - E. Veneered Plywood:
 1. Face veneer (Exposed construction): Same species as exposed solid lumber, clear, selected for grain and color. At Contractor's option, provide plain sliced or rotary sliced red oak veneer.
 2. Face veneer (interior cabinet construction): Oak or birch; unselected for color.
 3. All exposed panels and semi-exposed panels for interior cabinet construction shall be 3/4" veneer plywood core, APA standard PS-52 (hardwood) or PS-1 (softwood) A-A INT.
 - F. Hardboard (semi-exposed cabinet backs: 1/4" thick, 48 pound medium density, tempered.
 - G. Exposed Cabinet Backs: 1/4" inch oak veneered plywood, A/C INT.
 - H. Edgebanding: Subject to fabrication requirements, provide the following:
 1. 1/4" thick solid oak, hot-melt glued under pressure.
 2. 1/24" thick oak veneer, hot-melt glued under pressure.
 - I. Cabinet Doors: 3/4" thick oak veneered medium density fiberwood with 1/24" oak veneer edge band. Veneer shall be plain sliced, book-matched red oak.
 - J. Drawers:
 1. Fronts: Same as cabinet doors for veneer, core material and edgebanding.

2. Sides and back: 1/2" veneered plywood, poplar or other suitable hardwood specie.
- K. Clear Wood Finish:
1. General: Provide complete factory finish to comply with chemical and physical resistance requirements. After installation, touch up or refinish damaged portions equal to original factory finish.
 2. Preparation: Sand exposed and semi-exposed components, using machine and hand methods. Machine marks, cross sanding, tool marks or other surface blemishes are not acceptable.
 3. Finishing: Carefully sand finishes after each surface treatment. Apply finishes as follows:
 - a. Exposed Surfaces: One (1) coat of stain, one (1) coat of sealer, two (2) coats of lacquer topcoat.
 - b. Semi-exposed (interior cabinet) surfaces: One (1) coat of sealer and one (1) coat of lacquer topcoat.
 - c. Concealed Portions: One heavy coat of water repellent finish.
 - d. Stain Colors: As selected from Manufacturer's standard samples.

2.03 CASEWORK HARDWARE AND ACCESSORIES

- A. Hinges: Wrap-around Institutional type, 5-knuckle, 270° swing, 2 3/4" high, chrome plated with satin finish. Provide one pair for doors less than 4 feet high and 1-1/2 pair for doors over 4 feet.
- B. Pulls: Solid metal bar type 4" long extruded aluminum with satin anodized finish, for drawers and swinging doors; mount with 2 plated machine screws fastened from back. Provide 2 pulls for drawers over 24" wide.
- C. Door Catches: Dual self-aligning permanent magnet type with tenite case. Strike shall be plated steel, mounted on inside of cabinet.
 1. Inactive doors shall have one magnetic catch and one elbow catch.
 2. Inactive doors over 4 feet tall (tall cabinets) shall have one magnetic catch and one surface bolt.
- D. Drawer Stops: Designed to permit easy removal, and yet prevent inadvertent drawer removal. Provide on all drawers, located on the inside.

- E. Drawer Slides: Ball bearing type, 75 lb. load capacity per pair.
- F. Drawer and Cabinet Locks: CompX, National or Timberline - Disc tumbler design; provide locks for all drawers and doors. All locks shall have metal strike/receiver. All locks shall be keyed alike by room.
 - a. Rough-ins for locks shall comply with manufacturer's recommendation to avoid gaps around the locks.
 - b. Provide four (4) Master keys
- G. Cabinet Base Moulding: Extruded vinyl or rubber, color as selected, 4" high, on exposed sides and fronts of floor mounted cabinets. Base shall be provided and installed by flooring contractor on all fixed casework.
- H. Adjustable Shelf Supports: 1" long x 1/4" diameter metal shelf pins.

2.04 FABRICATION

A. General:

1. Fabricate wood casework to dimensions, profiles, and details shown on the Drawings.
2. Assemble units in the shop in components as large as practicable to minimize field jointing.
3. Install hardware uniformly and precisely after final finishing is complete. Set hinges snug and flat in mortises unless otherwise indicated. Turn screws to flat seat. Adjust and align hardware so that moving parts operate freely and contact points meet accurately. Allow for final field adjustment after installation. Allow for final field adjustment after installation.

B. Base Cabinets:

1. End panels, vertical partitions and bottom panels: Oak veneered plywood with 1/4" solid oak front edge band. Machine end panels to receive top frame, rails, bottom panel and back.
2. Top frame: solid hardwood with 1/4" solid oak front edge band.
3. Intermediate horizontal rails between drawers: Oak veneered plywood with oak front veneer edge band.
4. Back panels (open front cabinets): 1/4" thick oak veneered plywood.

5. Adjustable shelves: 3/4" thick oak veneered plywood with oak veneer edge banding. Provide adjustability on 1 1/4" centers by use of shelf supports set into 1/4" diameter holes.
- C. Wall Cabinets:
1. End panels: oak veneered plywood with 1/4" solid oak edge band. Machine end panels to receive top frame, rails, bottom panel and back.
 2. Top panels: oak veneered plywood with 1/4" solid oak front edge band.
 3. Bottom panels: oak veneered plywood with 3/4" solid oak rail.
 4. Back panels: medium density fiberboard.
 5. Back panels (open front cabinets): 1/4" thick oak veneered plywood.
 6. Provide center and bottom hanger rails: lumber stock, screwed into end panels and screwed through back panels into top and bottom panels respectively.
 7. Adjustable shelves: see base cabinet construction.
- D. Tall Cabinets:
1. End panels: oak veneered plywood with 1/4" thick solid oak edge band. Machine panel to receive top panel, bottom panel, and back.
 2. Top panels: oak veneered plywood with solid oak rail.
 3. Bottom panels: oak veneered plywood with 1/4" thick solid oak front edge band.
 4. Back panels: medium density fiberboard.
 5. Back panels (open front cabinets): 1/4" thick oak veneered plywood.
 6. Provide center and bottom hanger rails.
 7. Adjustable shelves: see base cabinet construction.
- E. Doors and Drawer Fronts: provide style "WF-1"; square edge, flush overlay design.

2.05 TOPS AND ACCESSORIES

- A. Tops, Box Curbs and Splash Rim: Provide smooth, clean, exposed tops and edges, in uniform plane, free of defects. Tops shall be 3/4" thick with 1-1/4" buildup consisting of .050" thick high-pressure plastic laminate finish bonded to moisture resistant particleboard core. Colors shall be as selected by architect, except where noted and scheduled otherwise, from plastic laminate manufacturer's standard range of color selections.
1. Countertops and splashes for sink base units: Same construction features as above, except provide moisture resistant particle board countertops and splashes at sink locations, with moisture resistant tops and splashes extending a minimum of 24" past both sides of the sink. Where sinks occur in countertops where multiple base units are grouped together, and the total length is six feet or less, the entire countertop and all splashes shall be moisture resistant.
 2. Moisture resistant particleboard: "Duraflake MR" (Willamette Industries, Inc.) or equivalent, complies with ANSI 1-M-3; 47 pound density. 1.5% thickness swell and 7% absorption maximum after exposure to 24-hour water soak test.
- B. Countertops for computer counters: High pressure, decorative laminate on 3/4" thick particle board and 3/4" thick plywood (for a total core thickness of 1-1/2"). Concealed side shall be balanced with a backer sheet. Tops shall be as long as practical in order to minimize seams.
- C. Top Sizes: Furnish tops in maximum practicable lengths, to minimize field spliced joints. No joints shall be allowed at or within 12" of a sink cutout.
- D. Top Thickness: Maintain 1-1/4" thickness with tolerance not exceeding plus or minus 1/32". Provide front and end overhang of 1" over base cabinets, formed with continuous drip groove on under side of overhang 1/2" from edge on units with sinks.

PART 3 - EXECUTION

3.01 INSPECTION AND PREPARATION

- A. Inspect areas where casework is to be installed. Notify the Owners Field Representative and Architect of any adverse conditions that would affect proper fabrication and installation of the casework. Do not proceed until unsatisfactory conditions are corrected.
- B. Coordinate with Division 15 and Division 16 trades to assure complete functioning installation of service fixtures. Verify that service rough-ins have

been correctly installed. Coordinate with work of other trades adjacent to the area of casework installation.

- C. Verify dimensions of on site casework locations prior to fabrication. Coordinate fabrication of casework in separate units where required, to ensure that casework can be physically transported through doorways and openings, and placed in final location.

3.02 CASEWORK INSTALLATION

- A. Install in accordance with the Drawings and the final approved shop drawings. Install plumb, level, true and straight with no distortions. Shim as required, using concealed shims. Where laboratory casework abuts other finished work, scribe and apply filler strips for accurate fit with fasteners concealed where practicable.
- B. Base Cabinets: Set cabinets straight, plumb, and level. Adjust sub-tops within 1/16" of a true plane. Fasten each individual cabinet to floor at toe space, with fasteners of type and spacing recommended by manufacturer. Bolt continuous cabinets together. Secure individual cabinets with not less than 2 fasteners into floor, where they do not adjoin and fasten to other cabinets.
 - 1. Where practical assemble individual units into one integral unit with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16".
- C. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.03 INSTALLATION OF TOPS

- A. Field Jointing: Where practicable, make in same manner as factory jointing using dowels, splices, adhesives, and fasteners recommended by manufacturer. Locate field joints as shown on approved shop drawings. Factory-prepare joints to avoid job site processing of top and edge surfaces.
- B. Joinery and Fastenings:
 - 1. Plastic laminate faced tops: Use concealed clamping devices for field joints, located within 6" of front, at back edges and at intervals not exceeding 24". Tighten in accordance with manufacturer's instructions to exert a constant, heavy clamping pressure at joints. Secure tops to cabinets with "Z" type fasteners or equivalent, using 2 or more fasteners at each front, end, and back.

- C. Workmanship: Abut top and edge surfaces in one true plane, with internal supports placed to prevent any deflection. Provide flush hairline joints in top units using clamping devices.
- D. After installation, carefully dress joints smooth, remove any surface scratches, clean and polish entire surface.
- E. Provide scribe moldings for closures at junctures of top, curb and splash with walls as recommended by manufacturer for materials involved. Use chemical resistant, permanently elastic sealing compound as recommended by manufacturer.

3.04 INSTALLATION OF ACCESSORIES

- A. Install in a precise manner in accordance with manufacturer's directions. Turn screws to a flat seat; do not drive or overtighten. Adjust moving parts to operate freely without excessive bind.

3.05 CLEANING AND PROTECTION

- A. Advise General Contractor of procedures and precautions for protection of materials and installed laboratory casework from damage by subsequent work of other trades. Casework shall be protected until acceptance by Owner.
- B. Repair or remove and replace defective or damaged work as directed by Owner's Representative upon completion of installation.
- C. Clean shop-finished surfaces, touch-up as required, and remove or refinish damaged or soiled areas. Touch-up and refinishing shall blend with undamaged and unblemished areas.
- D. Clean all exposed and semi-exposed casework surfaces, including tops.
- E. Remove all installation debris such as cartons protective wrapping, sawdust, scraps and excess fasteners from the work area and dispose of legally.

END OF SECTION

INSTRUCTIONS FOR EDITING

SECTION 12304

PLASTIC LAMINATE FACED CASEWORK AND FIXTURES

INSTRUCTIONS FOR EDITING:

1. GENERAL

- A. 1.04, DESCRIPTION OF WORK and 2.05, TOPS, SINKS AND ACCESSORIES:
Edit and Delete, or add information as required by Project Scope and in order to fit requirements of Elementary, Middle and High Schools.

SECTION 12304

PLASTIC LAMINATE FACED CASEWORK AND FIXTURES

PART 1- GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including Division One Specification Sections, apply to this Section with special attention to the following:
 - 1. Shop Drawings, Product Data and Samples: Section 01340
 - 2. Substitutions and Product Options: Section 01630.

1.02 RELATED WORK

- A. Section 06400- Architectural Woodwork (miscellaneous wood shelving, mounting blocks, and other millwork)
- B. Section 06651- Solid Surface Fabrications
- C. Section 08710- Finished Hardware
- D. Section 09660- Resilient Tile Flooring and Base
- E. Section 11061- Musical Instrument Storage Equipment
- F. Section 11425- Residential Appliances
- G. Section 12302- Wood Casework and Fixtures
- H. Division 15-Service waste lines, connections and vents.
- I. Division 16- Electrical Service Fixtures.

1.03 REFERENCED STANDARDS

- A. Architectural Woodwork Institute (AWI), "Architectural Quality Standards Illustrated."
- B. National Electrical Manufacturer's Association (NEMA) "Architectural Quality Standards." (www.awinet.org)

1.04 DESCRIPTION OF WORK

- A. Full Overlay Door (Laminate Clad Casework)
- B. Countertops
- C. PVC body edging for doors and drawers and cabinet bodies.
- D. Independent toe base.
- E. Extent of plastic laminate-faced casework and fixtures is shown on the Drawings.
 - 1. Laboratory casework is any casework item within Biology/Chemistry, Physics, Geo-Systems, Multi-Purpose Science, Chemical Storage, Special Education Science, D/HoH & Science labs, Focus Science and associated Prep Rooms.

- F. Work shall include the fabrication and installation of base cabinets, wall cabinets, storage cabinets, cabinet under-structures for fume hoods, shelf units, mailboxes, and other components as indicated on the Drawings.
- G. Tops, box curbs and splash rims associated with plastic laminate-faced casework are included in the work of this Section.
- H. Cutouts in tops to accommodate sinks, faucet assemblies, and other hardware are included in the work of this Section.
- I. Furnishing and installing of sinks, sink accessories (including tailpieces), mechanical and electrical services fixtures associated with laboratory casework (as indicated below in Part 2) are included in the Work of this Section. Utility rough-ins and final connections of service fixtures (including sink traps) are part of the Mechanical Work of Division 15 and Electrical Work of Division 16.
- J. Middle and High School sinks with the exception of Clinic sinks which are furnished under Division 15, are included in the work of this section.
- K. All Elementary School sinks are furnished under Division 15.

1.05 WORK EXCLUDED

- A. All final connection to plumbing fixtures are provided by Division 15. Contractor shall coordinate with Division 15 trades to ensure proper location and size of such cutouts.
- B. Furnishing and installing of rough framing, in-wall reinforcement, or other means of support shall be provided under the Work of other Sections.

1.06 QUALITY ASSURANCE

- A. Manufacturer: Provide single source responsibility for all plastic laminate-faced casework. Submit evidence of at least five years' experience in successful manufacturing for installations of laminated-faced casework similar in size and scope to the work required for this project.
- B. Casework: Manufacturer shall comply with the design, quality of materials, level of workmanship and standards of detailing established by the approved manufacturer in Part 2 of this Section.
- C. Installation: Install casework under the supervision of the Manufacturer's authorized representative, using mechanics certified by the Manufacturer.

1.07 WARRANTY

- A. All casework shall be warranted for a period of five (5) years from date of warranty commencement against manufacturing defects and workmanship.

1.08 DELIVERY, STORAGE AND HANDLING

- A. Deliver and store casework, countertops and related products in undamaged condition and in original protective packaging. Protect from weather, temperature and humidity extremes, construction hazards and unauthorized access. Packaging shall remain intact on casework until ready for final placement.
- B. Remove casework from storage only when "wet trades" have completed their work in the area of placement.

1.09 COORDINATION

- A. Coordinate layout and installation of rough framing, in-wall reinforcement, blocking, and other means of support for the work of this section.
- B. Coordinate locations of utilities that will penetrate tops, splashes and cabinets.

1.10 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, specifications and installation instructions for each type of casework and hardware type.
- B. Samples: Submit 6" x 6" samples of each type of exposed and semi-exposed finish construction specified, including countertops, cabinet and drawer fronts, interior and underside cabinet surfaces, and edges.
- C. Colors: Provide manufacturer's standard color selections for high-pressure plastic laminate and pressure fused laminated finishes.
- D. Shop Drawings: Submit shop drawings for each type of casework, including the following:
 - 1. Plans and elevations showing relationship to surrounding and adjacent walls, doors, and windows.
 - 2. Cross sections
 - 3. Anchoring details and locations of anchorage
 - 4. Locations of sink cutouts
 - 5. Joinery details for each type of joinery condition used in the fabrication process.

PART 2- PRODUCTS**2.01 ACCEPTABLE MANUFACTURERS**

- A. Case Systems, Inc., Midland, MI, as represented by Diversified Educational Systems (DES), 540-687-7060.
- B. Paragon Casework, Chantilly, VA 703 802-1517.
- C. TMI Systems Design Corporation, Dickinson, ND as represented by VA School Equipment, 434-455-2000.
- D. Stevens Industries, Inc., Teutopolis, IL, as represented by Nycom, Inc. 804-794-3044.
- E. Specified Woodworking, Laurel, MD, 301-598-8200.
- F. Blair-Dumond, Inc., Richmond, VA, 804-359-2090.
- G. Mastercraft Woodworking, Inc., Shoemakersville, PA, 610-926-1500.
- H. Cabinets by Design Inc., Duluth, GA: 814-619-6232 or 770-418-1200.
- I. Other manufacturers pre-bid approved in accordance with Section 01630 and complying with the standard of quality described in this Section.

2.02 MATERIALS

- A. Definitions: The following definitions apply to casework units;
 - 1. "Exposed" portions of casework include surfaces visible when doors and drawers are closed. Bottoms of cases more than 4'0" above floor shall be considered as exposed. Visible members in open cases or behind glass doors also shall be considered as exposed portions.
 - 2. "Semi-exposed" portions of casework include those members behind solid doors and drawers, such as shelves, dividers, interior faces of ends, case back, drawer sides, backs and bottoms, and back face of doors. Tops of cases 6'-6" or more above floor shall be considered semi-exposed.
 - 3. "Concealed" portions of casework include sleepers, web frames, dust panels, and other surfaces not usually visible after installation.
- B. Laminated Plastic Finishes
 - 1. Exterior cabinet surfaces (exposed finish): High pressure decorative laminate (HPDL), NEMA LD3-1995-VGS 0.028" thick. Provide HPDL

Manufacturer's full range of standard colors for selection. Exposed surfaces include the following:

- a. Doors and drawer fronts (when closed).
 - b. Exterior cabinet ends.
 - c. Bottoms of wall cabinets
 - d. Interiors of open cabinets (no doors)
2. Semi-exposed surfaces: Pressure fused laminate; Melamine, resin-impregnated, 80-gram PSM minimum, complying with NEMA LD3-1995-VGS GP 28 and LD3-1991 CL20. All concealed surfaces shall be balanced with phenolic backer. Color: Colorfast "white", "gray", or "putty". Semi-exposed surfaces include the following:
- a. Interior of all cabinet surfaces (cabinets with doors).
 - b. Tops of tall cabinets and wall cabinets.
3. Countertops: High pressure decorative laminate, NEMA LD3-1995 HGS .050" thick, solid color, horizontal grade. Provide HPDL Manufacturer's full range of standard colors for selection. All countertop edges shall be self-edge with laminate.
4. Balancing sheet: White or neutral colored, .020" cabinet liner, NEMA CL-20 for balanced construction.
5. "Acid Resistant Laminate" NEMA LD3-1995, Wilsonart "Chem Surf" Pointe "Chemguard" or comparable at exposed cabinet surfaces in combination Chemistry/Biology Science Labs.
- C. Cabinet Edging: High impact, solid, acid resistant PVC, with homogenous color throughout; machined applied with hot melt adhesive. Minimum number of color selections: 27.
1. Doors and Drawers: 3 mm thick.
 2. Cabinet body edging: 1 mm thick.
- D. Particle Board Core: minimum 47 lb. density; balanced construction with moisture content not to exceed 8%. Comply with ANSI A208.1-2009 or current edition, type M-2 Industrial Grade.
- E. Fiberboard: Fiberboard Core is not Acceptable.
- F. Hardware:

1. Hinges: Five knuckle 270° swing, institutional type hinge; wrap around, tempered steel. Provide one pair per door to 48" in height, one and one-half pair per door over 48" high. Finish: Chrome plated with satin finish.
2. Pulls: Satin chrome, 4" wire pull.
3. Drawer slides: Minimum 75-pound dynamic load rating, with adjuster cam to control side swat, and in-stop, out-stop and keeper to maintain 80% open position.
4. Catches: 6-pound magnetic catch for base and wall cabinet doors. Provided two catches at tall cabinets.
5. Elbow catches: Ives #2, A14 (chrome) or comparable.
6. Shelf-supports: Adjustable type, twin pin design to prevent rotation and provided with anti-tip shelf restraints. Load rating: 300 pounds per support. Support shall retard shelf slide-off. Shelf supports shall friction-fit into end panels and intermediate vertical dividers.
7. Locks: CompX National or CompX Timberline –Disc tumbler design; provide locks for all drawers and doors. All locks shall have metal strike/receiver. All locks shall be keyed alike by room.
 - a. Rough-ins for locks shall comply with manufacturer's recommendation to avoid gaps around the locks.
 - b. Provide four (4) Master keys.

2.03 GENERAL WORKMANSHIP

- A. All casework shall be square, plumb and true.
- B. Cabinet parts shall be accurately machined and bored, utilizing concealed dadoes, dowels or interlocking mechanical fasteners, as appropriate.
- C. No nails, screws or other fasteners shall be visible on exposed surfaces.
- D. Provide 3/4" hang rails at all cabinets to provide rigidity and ease of installation.
- E. High-pressure decorative laminate tops shall be fabricated in longest possible lengths. Field joints shall not be allowed within 12" of a sink cutout. Splice field joints with bolt type fasteners.
- F. Bolt high-pressure decorative laminate sheets to core using adhesive recommended by the HPDL manufacturer.
- G. Provide balanced construction of all unfinished core stock surfaces (with the exclusion of stock edges).

- H. Fabricate casework, countertops and related products to dimensions, profiles and details as shown on drawings.

2.04 CABINET CONSTRUCTION

- A. Toe Base: Separate and continuous water resistant, $\frac{3}{4}$ " exterior grade plywood platform. Provide concealed fastening to cabinet.
- B. Cabinet tops and bottoms:
 - 1. Base cabinet and tall cabinet bottoms: $\frac{3}{4}$ " thick particle board backed with cabinet liner on concealed side, fused laminate on interior side.
 - 2. Base Cabinet: $\frac{3}{4}$ " particleboard, prefinished.
 - 3. Wall cabinet bottoms: $\frac{3}{4}$ " thick particle board with 0.30" plastic laminate on exposed side, fused laminate on the interior (semi-exposed side).
 - 4. Wall cabinet tops: $\frac{3}{4}$ " thick particle board with fused laminate on both sides.
- C. Exposed cabinet body edges: .020" PVC, color matched to cabinet, or as otherwise selected from standard colors.
- D. Wall and base cabinet ends (between units): $\frac{3}{4}$ " thick particle board with fused laminate on interior (semi-exposed) side, backing sheet on concealed side.
- E. Exposed wall and base cabinet ends: $\frac{3}{4}$ " thick particle board with .030" plastic laminate on exposed side; fused laminate on interior (semi-exposed) side.
- F. Fixed and adjustable shelves: $\frac{3}{4}$ " thick particle board for shelves in cabinets up to 27" wide; provide 1" thick particle board for shelves over 27" wide. Provide fused laminate on both sides with color matched PVC edges.
- G. Cabinet backs: $\frac{1}{2}$ " thick, particleboard, or $\frac{1}{4}$ " thick MDF, core pressure fused; cabinet backs shall be recessed and fully housed (4 sides), with stiffeners and hot melt adhesive. Finish: manufacturer's standard white or neutral finish.
 - 1. Optional back construction: Full overlay, plant-on back; edge of back shall not be exposed at finished ends. Secure with minimum #8, low root, high treated screws spaced 8" on center maximum.
 - 2. Comply with AWI Standards 400 B-T-10 and 1600-T-11.
- H. Door and Drawer Fronts: $\frac{3}{4}$ " particle board core with plastic laminate on exposed face, backing sheet on interior (semi-exposed) face; backing sheet to be color matched to interior faces of cabinet body. Doors and drawer fronts shall overlay cabinet body with a maximum $\frac{1}{8}$ " reveal. Exposed PVC edges shall be

machine radiused and buffed for consistent finish and profiled, corners and length, inside and out.

- I. Door catches: Dual, self-aligning, magnetic type. Strike shall be plated steel. Inactive leaf of door pair shall have one (1) magnetic catch and one (1) elbow catch. Inactive doors over 4'-0" tall shall have one (1) magnetic catch and one (1) surface bolt.
- J. Drawers:
 - 1. Subfronts, sides and backs: White or neutral finish, 1/2" minimum thick particleboard, laminated with Thermally Fused Melamine, doweled and glued into sides. 5/8" particleboard thick for subfronts. Edges: color matched PVC.
 - 2. Bottoms: 1/2" minimum pressure fused laminate particleboard, spreader-reinforced (one at 24", two at 36", four at 48").
- K. Countertops, and splashes for base cabinets: High pressure, decorative laminate on minimum 3/4" thick particle board, with 1/2" buildup for a total of 1 1/4" thickness. Concealed sides shall be balanced with backing sheet. Where multiple units are set end to end in a line, provide continuous tops to minimize seams.
 - 1. Countertops and splashes for sink base units: Same construction features as above, except provide moisture resistant particle board countertops and splashes extending a minimum of 24" past both sides of the sink. Where sinks occur in countertops where multiple base units are grouped together, and the total length is six feet or less, the entire countertop and all splashes shall be moisture resistant.
 - 2. Moisture resistant particleboard: "Duraflake MR" as manufactured by Willamette Industries, Inc., or equivalent. Material shall comply with ANSI 1-M-3, 47 pounds per cubic foot (pcf) density. Material shall demonstrate maximum of 1.5% thickness swell and 7% absorption after exposure to a 24-hour water soak test.
 - 3. Provide drip groove on underside of countertop overhang at sink locations.
- L. Countertops for computer counters: High pressure, decorative laminate on 3/4" thick particle board and 3/4" thick plywood (for a total core thickness of 1-1/2"). Concealed side shall be balanced with backing sheet. Tops shall be as long as practical in order to minimize seams.
- M. Vertical and Horizontal Dividers: 3/4" particle board with pressure fused laminate both sides, color matched PVC at edges.

- N. Provide moisture resistant, solid core 1 1/4" thick particleboard for divider/supports at computer workstations.

2.05 TOPS, SINKS AND ACCESSORIES FOR LABORATORY CASEWORK

A. Tops, Box Curbs, and Splash Rims:

1. Epoxy Resin: Chemical and abrasion resistant, 1" thick cast material consisting of epoxy resins and other inert ingredients, homogeneous throughout, oven cured and annealed, with a uniform low sheen black finish. Material shall have been tested for 24-hour exposure to a variety of reagents. All exposed edges shall have a 1/8" x 45-degree chamfer.
 - a. Compressive Strength (ASTM D695): 35,000 PSI
 - b. Flexural Strength (ASTM D790): 16,000 PSI
 - c. Tensile Strength (ASTM D638): 10,500 PSI
 - d. Density (ASTM D792): 123 lbs/ft³
 - e. Rockwell M Hardness (ASTM D785): 110
 - f. Heat distortion (Temp. @ 264 PSI per ASTM D648): 350° F
 - g. Fire Resistance (ASTM D635): Self extinguishing

- B. Top Sizes: Furnish tops in maximum practicable lengths, to minimize field splined joints. No joints shall be allowed at or within 12" of a sink cutout.

- C. Drip Edge and Overhang: Provide front and end overhang of 1" over base cabinets, formed with continuous drip groove on underside of overhang 1/2" from edge on units with sinks.

- D. Epoxy Resin Sinks: (Standard Drop-in Sinks) One-piece, molded modified epoxy resin, resistant to mechanical and thermal shock. Interior corners shall be rounded to 1-1/2" radius. Slope sink bottom to outlet opening. Finish: Soft gloss, black. Provide the following sink sizes:

1. Type 1: At Student location: HC location: 18" x 15" x 5" depth, corner drain hole.
 - a. Durcon Number A25.
2. Type 2: At Student location: Non-HC locations: 18" x 15" x 11" depth, corner drain hole
 - a. Durcon Number D30.
3. Type 3: 25" x 15" x 5" depth, corner drain hole, at ADA Accessible Sinks

- a. Durcon Number A55.
 4. Type 4: 25" x 15" x 10" depth, corner drain hole (all other locations)
 - a. Durcon Number D 55.
 5. Provide the following accessories:
 - a. 1 ½" sink outlets and strainers, 70464
 - b. Overflows, 70466
 - c. Stoppers, 70468
 - d. Supplemental support assemblies for under-slung sinks.
- E. Service Fixtures: 85% copper content, brass castings, and forgings. Provide fixtures complete with supply nipples, locknuts and tailpieces where applicable for type of fixture. Provide as scheduled or noted on the drawings:
1. Emergency Eyewash Assemblies: (Unit must comply with current ANSI provisions)
 - a. Counter type: Guardian G1805 Eyewash, deck mounted Auto Flow 90° Swivel, Right Hand Mounting, with backflow preventer and hands-free provision. Provide ANSI- compliant identification sign.
 - b. Provide Eyewash with these accessories (see drawings for locations):
 1. Stainless Steel dust cover for each spray head
 2. In-line vacuum breaker for installation between valve and spray head.
 3. Provide G3600LF –Thermostatic Mixing Valve
 - c. Other acceptable manufacturers per this section:
 1. Bradley company
 2. Water Saver company
 3. Pre-bid approved manufacturer (see Section 01630)
 2. Deck Mounted Service Faucets (vandal resistant): Water Saver Faucet Company. Gooseneck type with hose tip and vacuum breaker. Polished chrome finish.

- a. (VR411-VB) Provide at non-HC locations (provide BO124 splash eliminator for use with BO127S Aspirator). the BO127 Aspirators are located at student's workstation sinks in High School Chemistry and Biology Labs only.
 - b. (L411VB-BH) Provide at all HC locations.
 - c. Pre-bid approved manufacturer (see Section 01630)
3. Gas cock (vandal resistant): Water Saver Faucet Company VR4100-132AWSA Turret base, deck-mounted, 90°.
- a. Ground key hose cock (2).
 - b. Provide mounting shank.
4. Emergency Eyewash and shower safety station Water Saver Faucet Company SSBF909
- a. Combination WideArea eye/face wash and shower safety station with vandal-resistant construction.
 - b. Unit shall comply with ADA requirements for accessibility by handicapped persons.
 - c. Shower Head: 10" diameter chrome plated cast brass shower.
 - d. Eye/Face Wash Bowl: 11 ½" stainless steel with 4 GS-plus heads
 - e. Stainless steel cover for eye/face wash bowl
 - f. Power coated orange finish on galvanized pipe and fittings
 - g. ANSI-compliant identification sign
 - h. Other acceptable manufacturers per this section:
 1. Bradley company
 2. Guardian Equipment
 3. Pre-bid approved manufacturer to comply with this section and Section 01630)
5. Acid Neutralization Tank
- a. Neutralizing Tank: Provide in Chemical storage room and all science Prep room labs. Tank to be installed inside the cabinet as shown on drawing. Storage shall be as manufactured by Town & Country Model NT-5, 5 Gallon, seamless, High Density

Polyethylene Tank (HDPE) with either a bolted or a threaded cover. Provide 100 pounds of limestone chips for each basin. Tanks fully equal to the item specified as manufactured by Nalge (Nagle Nunc International, www.nalgenunc.com) or Enfield shall be acceptable.

F. Science Fume Hood:

HEMCO model #21421 Auxiliary Air Fume Hood 48" w x 32" d x 59" h or other pre-bid approved manufacturer(s) in accordance with Section 01630.

1. Provide fume hood complete with base cabinet and ventilated hood.
2. Hood outer wall shall be chemical resistant flame retardant composite polyresin. The interior fume chamber is molded of same polyresin material yielding a one-piece seamless interior liner with all corners coved.
3. Air management shall be constant volume through open sash or through bypass chamber when sash closed.
4. Standard Features:
 - a. Fluorescent light fixture and Switch accessed from outside the chamber.
 - b. Stainless steel bottom sill
 - c. Dished epoxy top
 - d. Louvered front panel (Air-bypass through front slot opening)
5. Services include:
 - a. 1 gas cock, apron mounted remote.
 - b. 1 cold water goose neck with apron mount remote. (Hot water not required)
 - c. 1 apron mount duplex AC receptacle
 - d. (1) 3" x 6" oval cup sink.
 - e. 1 switch (only) for blower.
6. Safety Flammable Cabinet BS-45-Self close door 45 Gallon -43"W x 18"D x 65"H
 - a. 18 gauge construction with 1 ½" insulating air space.
 - b. 2" leakproof sill to contain leaks.
 - c. Lockable flush mounted handle with 2 keys.
 - d. Doors shall have 3 point locking system and radius edge.
 - e. Doors shall be double walled, 14 gauge outside and 18 gauge inside.

- f. Twin 2" flame arrester vents.
- g. Adjustable leveling feel and grounding connector.
- h. Powder coated yellow finish.
- i. Safety signage in large RED letters.
- j. Galvanized (2) steel shelves adjust on 2 1/2" centers.
- k. Must comply with OSHA and NFPA code 30 & UFC 79 standards.
- l. Capacity 45 gal.

7. Chemical Storage Cabinet:

Justrite Wood Laminate Storage Acid Cabinets-42"W x 17 7/8"D x 60"H
Safety cabinets for corrosive has two sliding doors and be used to store up to 49 2 1/2-liter bottles of acids or corrosive liquids.

- a. Constructed of 3/4" thick laminate wood, which is resistant to corrosion and certain chemicals.
- b. Provide 2 adjustable shelves to hold up to 120 pounds.
- c. Four adjustable feet with safety warning labels.
- d. Finish color to be blue.

8. Wooden Microscope Storage Cabinet by SARGENT WELCH # WLG4710

- a. Oak Veneer construction
- b. Unbreakable aluminum Sliding door glides and lock

10. Google Cabinet:

- a. Monitor 2000 Germicidal Cabinet
- b. Model number: S90494

2.06 SINKS FOR HIGH AND MIDDLE SCHOOLS. (See Division 15 for Health Room sinks and High and Middle School only and Elementary school sinks are provided in Division 15.

A. ART CASEWORK (ADDITIONAL MATERIALS AND ACCESSORIES)

Stainless Steel Sinks: Seamlessly drawn 20 Gauge, Type 302 (18-8) nickel bearing stainless steel, machine polished bright finish unless otherwise indicated. Fabricate with horizontal and vertical corners rounded and cover to at least 5/8" radius. Slope sink bottoms to pitch to outlet. Provide double wall construction for sink partitions with top edge rounded to at least 1/2" diameter. Continuous butt-weld joints and provide factory punching for fixtures. Sink units shall be self-rimming, set in mastic or sealant to form a positive seal with top. Apply

approximately 1/8" thick heat resistant underseal to undersink surfaces for condensation prevention and sound deadening.

1. Art Room and Photo Lab Sinks:
 - a. Regular (non-handicapped) unit: Elkay "Lustertone" Single Bowl sink DLRS-332212-3 18 gauge, (12" bowl depth with 3 faucet holes), 3 1/2" drain opening, fully undercoated, or pre-bid approved substitution.
2. Accessible Unit for all Accessible locations:
 - a. Elkay "Lustertone" Single bowl sink LRAD312255-3 18 gauge, (5 1/2" bowl depth with 3 faucet holes), 3 1/2" drain opening-off center, fully undercoated, or pre-bid approved substitution.
3. Other areas as shown on the drawing not limited to (Workrooms, Lounges, Admin suites, Duplication, Conference rooms, Concessions, Custodial Lounge, Band suites; etc: provide sink as follows: (Health Rooms sinks for High and Middle School are provided in Division 15.
 - a. Regular (non-handicapped) unit: Elkay "Lustertone" Single Bowl sink DLRS-2522-3 18 gauge , (10" bowl depth with 3 faucet holes), 3 1/2" drain opening, fully undercoated, or pre-bid approved substitution.
4. Faucet Assembly: Elkay LK232-S-BH5 (hot and cold), or approved equal Per section 01630.
5. Art Fume Hood: AMS, the Eliminator, AMS-36-PB
 - a. Design for complete 100% mechanical outside exhaust system.
 - b. Vapor proof light, filters with switches for the light and exhaust system.
 - c. Hood to be mounted on a 36" wide casework cabinet with countertop (by others).

2.07 FAMILY AND CONSUMER SCIENCES CASEWORK (ADDITIONAL MATERIALS AND ACCESSORIES)

- A. Elkay LR-3319 double bowl sink (3 holes) with LK-2442 faucet. Include sink outlet, strainer and stopper.
- B. Elkay LWR-3322-R double bowl sink with LK-2442 faucet. Include sink outlet, strainer and stopper. Provide at the handicapped station.

- C. Garbage Disposal: Provide GE GFC530F, ½ HP motor; 2600 RPM, direct wire at all sinks including handicapped stations.

- D. Demonstration Mirror: Advance Tabco MI-60 Tilting demo Mirror, (24 x 60) Stainless Steel
 - 1. Stainless steel Tilting demo mirror with unbreakable mirror
 - 2. Ceiling Mounted
 - 3. Stainless Tubular mounting support (4 feet, 1 5/8" post, Rainbow uprights for added support)
 - 4. Overall size :66" L x 25 1/2" W
 - 5. NSF certified
 - 6. Pre-bid approved manufacturer to comply with this section and Section 01630)

PART 3- EXECUTION

3.01 INSPECTION

- A. Inspect areas where casework shall be installed in order to ensure that utility rough-ins, where applicable, have been correctly installed in the proper locations and are sufficiently complete to prevent damage to casework by rough-in trades. Verify that no adverse conditions exist that would prevent the proper installation of casework. Notify Owner's Representative and Architect if any such conditions have been corrected.

- B. Verify dimensions of on-site cabinet locations prior to fabrication of casework.

3.02 PREPARATION

- A. Condition casework to the average prevailing humidity for the conditioned room and spaces in which the casework will be permanently installed.

3.03 INSTALLATION AND PROTECTION

- A. Install casework in accordance with the Drawings and final approved shop drawings. Install casework plumb, level, true and straight. Shim where required using only concealed shims.

- B. Where casework abuts other adjacent finished work, carefully scribe and cut for close, accurate fit.

- C. Provide filler strips, scribe strips, or other trim required by the drawings.

- D. Anchor casework securely in place using manufacturer's recommendations.

- E. Install all hardware using at least the minimum number of fasteners required by the manufacturer.
- F. Adjust all doors, hinges and drawers for proper operation, fit and finished appearance. Moving parts shall operate freely, without excessive bind.
- G. Repair minor damage in accordance with manufacturer's written recommendations. Replace other casework units, components and hardware that exhibit significant damage or defects.
- H. Protect installed casework and accessories from damage until acceptance by Owner, in accordance with manufacturer's recommended written instructions.

3.04 CLEAN UP

- A. Remove all installation debris such as cartons, protective wrapping, sawdust, scraps and fasteners from the premises, and dispose of legally off-site.
- B. Clean all exposed and semi-exposed surfaces of casework and tops in accordance with manufacturer's recommended written procedures.

END OF SECTION

INSTRUCTIONS FOR EDITING AND COORDINATION

SECTION 12360

LIBRARY CASEWORK (ELEMENTARY AND MIDDLE SCHOOL)

INSTRUCTION FOR EDITING:

1. Paragraph 2.04 Equipment: Edit these items to conform to Elementary and Middle School requirements as required for the project.
2. Metal Library Shelving with Oak end panels and laminate continuous tops shall be provided in the Library with casters at all free-standing locations .
3. Casework for all support spaces shall be covered under Section 12304. Metal Shelving indicated at other locations per Ed Spec shall be covered under Section 10670
4. Double-sided free-standing shelves shall be 48”H. Single at perimeter walls to be 72” H. in the Library. Other locations to be 84” H unless otherwise noted.
5. Shelves underneath the windows shall be 48” H
6. All shelvings to be 12” deep actual dimension with the exception of 16” deep actual dimension for the Musical Storage Rooms.

SECTION 12360
LIBRARY CASEWORK
(ELEMENTARY AND MIDDLE SCHOOL)

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Conditions of Contract, including Division One through Division Sixteen Specification sections, apply to the work of this Section, with special attention to the following:

1. Shop Drawings, Product Data and Sample: Section 01340
2. Substitutions and Product Options: Section 01630

1.02 RELATED WORK

- A. Section 06400: Architectural Woodwork
- B. Section 12302 – Wood Casework and Fixtures
- C. Section 12304: Plastic Laminate Faced Casework and Fixtures

1.03 DESCRIPTION OF WORK

- A. Extent of library shelving is indicated on the Drawings
- B. Types of library equipment required include, but are not necessarily limited to the following:
 1. Circulation desk
 2. Cantilevered steel library shelving units in the reading/stacks area of the Library and all shelving, and the following rooms:
 - a. Professional Resource
 - b. Office/Workroom
 - c. Reading Room
 3. Shelving end panels
 4. Continuous countertop for shelving units 48" H and below.

1.04 QUALITY ASSURANCE

- A. All cantilevered steel shelving shall be the product of a single manufacturer, shall have been tested in accordance with the "Library Technology Report" referenced elsewhere herein, and shall comply with performance standards and other requirements of this section.
- B. All wood end panels, continuous tops, and circulation desk shall be the product of one manufacturer and shall comply with performance standards and other requirements of this section.
- C. Prior to fabrication, field verify that all shelving clearances are in compliance with local code accessibility and egress requirements; immediately notify the Architect of any discrepancies.
 - 1. Field Measurements are required to verify tolerances for Steel Cantilevered Library shelving units.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver product to Project site in original factory packaging. Deliver product to Project site only when their installation sites are ready to receive them. Accompany all shipments and deliveries with packing slips and/or delivery tickets containing the following for each item delivered:
 - Name/address of company filling order
 - Manufacturer's name
 - Article name/stock number
- B. Storage: Store product in weather tight and well-ventilated locations. Avoid use of non-vented plastic or canvas that could create humidity chambers. If cardboard packaging becomes wet, remove carton immediately.
- C. Final placement shall not begin until all "wet" trades have completed work in the area of placement.

1.06 SUBMITTALS

- A. General: Submit in accordance with the requirements of Section 01340.
- B. Statement of Qualifications: Letter stating manufacturer has minimum of five years experience in the manufacturing of library shelving and listing at least five installations of comparable scope to this project.
- C. Certification of Compliance: Submit notarized letter from shelving manufacturer stating that shelving complies with all specified requirements.

- D. Test Reports: Submit current product test reports showing test results from the American Library Association "Library Technology Report" as required by paragraphs 1.04 and 2.02 herein.
- E. Shop Drawings: Submit drawings, to scale, illustrating all shelving units, end panels and tops that shall be provided; include all dimensions, colors and finishes, cross references to the product designations scheduled and/or indicated. Denote whether dimensions shown are actual or nominal dimensions.
- F. Layout Plan: Submit plan, to scale, showing dimensioned layout of all shelving units and ranges, relationships to building assemblies, items of coordination with the work of other trades, and cross references to product designations scheduled.
- G. Fabrication/Record Drawings: Prior to release for product fabrication, revise shop drawings by incorporating all review comments; submit a minimum of 3 sets as record drawings for the Owner and Architect's use.
- H. Samples:
 - 1. Finish and Color Samples: Submit in triplicate, 4 inches square minimum size, for each finish and color selected. Label each sample with manufacturer's name, finish/color designation, and cross reference to the product designations scheduled and/or indicated.
 - 2. Full-Size Shelving Samples: Provide when requested by the Architect, and deliver to an examination location designated by the Architect. Neither the Owner nor the Architect will be responsible for any samples that are destroyed or mutilated in examination. Upon written notification the Contractor shall remove samples; samples not removed within 30 calendar days after notification will either be stored at the Contractor's risk and expense, or deemed abandoned property and disposed of as such.

1.07 WARRANTY

- A. Include steel shelving manufacturer's standard 10-year product warranty in the Warranty Manual specified under Section 01740.
- B. Include wood furnishings manufacturer standard **25**-year product warranty in the Warranty Manual specified under Section 01740.

1.08 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install library furnishings until building is enclosed, wet work and utility roughing-in are complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.09 COORDINATION

- A. Coordinate installation of Library Furnishings with electrical and service outlets.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

- A. All proposed product substitutions shall be subject to the Architect's approval no less than 10 days prior to bid due date. Products of the same quality, function, and performance may be submitted for the Architect's review in accordance with the requirements of Section 01630. Variations in products, where substantial differences occur from those indicated, shall be specifically shown for the Architect's evaluation.

2.02 PERFORMANCE STANDARDS

- A. Comply with or exceed minimum performance requirements of American Library Association Library Technology Reports Nov. / Dec. 1998 Standard ANSI/NISO Z39.73-1994 performance requirements for shelving type listed herein.

2.03 ACCEPTABLE MANUFACTURERS

- A. Cantilevered Steel Library Shelving:

1. Manufacturer: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following. Similar products that are equal in design, function, performance, and quality may be provided if approved by the Architect. The specifications outline minimum material and construction standards; only products meeting or exceeding this minimum standard will be acceptable.

- a. Estey (**Basis of Design**) (<http://www.estey.com>)
- b. MJ (www.mjindustries.com)
- c. Library Bureau Steel (www.librarybureausteel.com)
- d. Montel (www.montel.com)

- B. Wood Equipment Items:

1. Manufacturer: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following. Similar products that are equal in design, function, performance, and quality may be provided if approved by the Architect. The specifications outline minimum material and construction standards; only products meeting or exceeding this minimum standard

will be acceptable.

- a. Brodart Company (<http://www.brodartfurniture.com>)
- b. Tesco Industries (<http://www.tesco-ind.com>)
- c. Worden (www.wordencompany.com)
- d. Russwood Company (<http://www.russwood.net>)

2.04 EQUIPMENT

A. Cantilevered Steel Shelving Units

1. General: Provide steel book stack shelving units of cantilever design. Bookstacks are to be of a starter and adder unit construction to constitute a given bookstack range. Starter units shall consist of a complete modular unit with two tubular uprights and two cross members. Each additional adder unit shall be provided with one tubular upright and two cross members. The uprights and cross member supports make up the frame construction. Uprights are punched for attaching additional units into the book stack range. Each shelf shall be interchangeable from frame to frame, except where widths are incompatible.
2. Shelf heights shall be adjustable in 1" increments. Components, joints, and shelves shall be designed to withstand the most severe possible book loading condition with normal factor of safety. The requirements listed below are in addition to the shelving unit descriptions indicated in the Library Shelving Schedule.
 - a. Dimensions listed in the schedule are nominal dimensions, not actual dimensions, unless otherwise indicated.
3. Material: Sheet steel shall be ASTM A 366, cold rolled carbon steel sheet, commercial quality, stretcher leveled, Class 1, matte finish. Provide in minimum gauges as specified below by component.
4. Provide wall attachment brackets for all single-faced shelving units to stabilize and secure the units to the wall. Brackets shall not be visible above canopy tops where tops are indicated.
5. Capacity Requirements: Each shelf shall have a minimum clearance between end brackets of 35-13/32" based on a 36" wide nominal shelf. Units shall be capable of supporting 50 lbs. evenly distributed weight per linear foot of shelving, multiplied times the number of shelves per unit, without deflection considered excessive by industry standards.
6. Standard Unit Sizes: Except as otherwise indicated, provide units of standard 36" nominal width measured from center of upright to center of

adjoining upright.

7. Upright Columns: Shall be formed from no less than #14 gauge tubular steel. Overall dimensions are 2-1/2" in the web and 1-1/2" across the front and rear area surfaces. Uprights are perforated the full height with a series of 5/16" x 5/8" slots spaced on 1" vertical centers and located within 3/4" of the outer web surface to the center of the slot. All slots are rectangular in shape to allow ease of installation and resting of shelves. Every fifth and sixth slot has a rounded top for visual alignment of shelves. Side slots are located at the top, bottom and middle of the upright with a special design allowing the strut to lock into place. Base supports are welded into place creating a single upright and base supports assembly, with leveling bolts at each end of the base support.
 - a. Single Entry uprights have a support foot on one side of the upright.
 - 1) Actual unit measurement is 2-3/8" deeper than nominal measurement (example: 13"Deep nominal dimension unit is actually 15-3/8"Deep).
 - b. Double Entry uprights have a support foot on two sides of the upright.
 - 1) Actual unit measurement is 7/8" deeper than nominal measurement (example: 26"Deep nominal dimension unit is actually 26-7/8"Deep).
8. Top and Bottom Spreader: Shall be formed of not less than #16 gauge steel in a channel shape, measuring 1-1/32" x 4-11/32" in cross-section. It is attached to the uprights by means of a pressure lock system and secure cover insuring any possible walking of strut from upright.
9. Toe Kicks: Shall be formed of no less than #16 gauge steel into an angle shape, measuring 8-5/64"D x 3-1/4"H in cross-section and attached to the base support through four predrilled holes.
10. Toe Kicks With Electrical Knockout: Shall be formed of no less than #16 gauge steel into an angle shape, measuring 8-5/64"D x 3-1/4"H in cross-section and attached to the base support through four predrilled holes. Will have knockout centered in kickplate at units designated to have electrical/data in base of shelving units.
11. Toe Kicks For Mobile Shelving: Shall be formed of no less than # 20 gauge steel into an angle shape, measuring 1" x 2-17/32" in cross-section and attached to the base support through predrilled holes.
12. Adjustable Integral Back Shelf: Shall be formed of no less than #18 gauge steel. Shelf shall be designed for 50 lbs./sq.ft. loading with not

more than 3/16" deflection; with three bend construction on the front edge and a 2" integral backstop on the back edge. Shelf shall measure 13"D nominal dimension. The nominal depth is 1" greater than the actual dimension (example: 13"Deep nominal shelf is 12"Deep actual dimension). The sides of the shelf are flanged for locking into the end bracket.

13. End Brackets: Shall be formed of no less than #16 gauge steel. The bracket incorporates a "J" flange at the bottom of the bracket for securing the shelf to the bracket. The "J" flange is formed with a 45° lip that allows automatic seating of shelf to bracket. The bracket design allows for greater shelf adjustment upward and downward (i.e. "walking-the-shelf") without disturbing any of the other shelves. Brackets fit flush to one another to prevent overlapping or miss-alignment of adjoining brackets. Brackets extend at least 6" above the shelf surface.
14. Metal Canopy Tops: (For use on units 6' and taller) Shall be formed of no less than #19 gauge steel. Tops have a 13/16" front edge and extend the full width of the unit base. Tops are supported by #14 gauge brackets engaged in slots in the frame uprights. A canopy top filler of one-piece construction and formed of not less than #20 gauge steel will fit snugly between two canopy top brackets and adjacent to the flat canopy shelf. The filler has 90 degree return flanges front and back measuring 1/2".
15. Shelf Quantities: Except where other shelf arrangements are shown or scheduled, provide the following number of adjustable bracketed shelves for each face of each unit.
 - a. 84-inch high units: (At Professional Resource only) 6 shelves.
 - b. 72-inch high units: 5 shelves
 - c. 48-inch high units: 3 shelves
16. Metal book support: Provide one 9" high, non-losable, plate-type book support, constructed of #16-19 gauge steel with magnet on the base for each shelf.
17. Pivoting Periodical Shelving: Consists of pivoting display shelves hinged to shelf brackets, which engage in slots in upright. Sloped display shelves are 14" actual height with a 1-5/16" flange at the bottom and boxed flange upwards with an inside safety hem. Standard storage shelf is 13" deep (D) nominal dimension. Brackets allow for a slope of approximately 20 degrees from vertical.
18. Divider Style Picture/Easy Book Shelving: Consists of a standard adjustable storage shelf with slots on 1" centers to receive dividers and an integrated 6" high backstop with matching slots which serves as a back for the shelf. Shall be formed of no less than #18 gauge steel.

Standard shelf is 13"D (nominal dimension). Shall have five (5) dividers per shelf with and overall height of 7-7/16.

19. Mobile Units: Consists of a standard shelving unit as specified above with the exception of having a caster inserted in place of a leveling glide. Unit will also have pins which lock top and bottom spreader permanently in place. Maximum of two (2) sections put together in a row.
20. Shelving Unit Schedule and Components: Coordinate with drawings. Where indicated in the Shelving Schedule, provide the following; all items listed below may not be required by the Shelving Schedule:
- a. Unit A – 84"H x 36"W x 13"D – Single Face
- | | | |
|----|--------------|-----------------------------------|
| 1) | EDSUPT8413 – | 84"H x 13"D Upright |
| 2) | DSTRUT36 – | 36"W Connector Strut |
| 3) | DBLIB3613A – | 36"W x 12"D Integral Back Shelf |
| 4) | DSDKP36G16– | Kickplate |
| 5) | DCTS3613 – | Canopy Top |
| 6) | BSM9 -- | 9"H Book Support W/ Magnetic Base |
| 7) | WCLIP -- | Wall Attachment Bracket |
- b. Unit B – 72"H x 36"W x 13"D – Single Face
- | | | |
|----|--------------|-----------------------------------|
| 1) | EDSUPT7213 – | 72"H x 13"D Upright |
| 2) | DSTRUT36 – | 36"W Connector Strut |
| 3) | DBLIB3613A – | 36"W x 13"D Integral Back Shelf |
| 4) | DSDKP36G16– | Kickplate |
| 5) | DCTS3613 – | Canopy Top |
| 6) | BSM9 -- | 9"H Book Support W/ Magnetic Base |
| 7) | WCLIP -- | Wall Attachment Bracket |
- c. Unit C – 48"H x 36"W x 13"D – Single Face (Elementary School)
- | | | |
|----|--------------|---------------------------|
| 1) | EDSUPT4613 – | 46"H x 13"D Upright |
| 2) | DSTRUT36 – | 36"W Connector Strut |
| 3) | DDS3613A – | 36"W x 13"D Divider Shelf |
| 4) | DSDKP36G16– | Kickplate |
| 5) | DCTIB13S – | Continuous Top Bracket |
| 6) | WCLIP -- | Wall Attachment Bracket |
- d. Unit D – 48"H x 36"W x 13"D – Single Face
- | | | |
|----|--------------|-----------------------------------|
| 1) | EDSUPT4613 – | 46"H x 13"D Upright |
| 2) | DSTRUT36 – | 36"W Connector Strut |
| 3) | DBLIB3613A – | 36"W x 13"D Integral Back Shelf |
| 4) | DSDKP36G16– | Kickplate |
| 5) | BSM9 -- | 9"H Book Support W/ Magnetic Base |
| 6) | DCTIB13S – | Continuous Top Bracket |

- 7) WCLIP -- Wall Attachment Bracket
- e. Unit E – 48”H x 36”W x 26”D – Double Face (Mobile) (Elementary School)
- 1) EDDUPT4413 – 44”H x 26”D Upright
 2) DSTRUT36 – 36”W Connector Strut
 3) DDS3613A – 36”W x 13”D Divider Shelf
 4) DKP36A – Kickplate
 5) DCTIB13S – Continuous Top Bracket
 6) DCKS -- Caster Assembly
- f. Unit F – 48”H x 36”W x 26”D – Double Face (Mobile)
- 1) EDDUPT4413 – 44”H x 26”D Upright
 2) DSTRUT36 – 36”W Connector Strut
 3) DBLIB3613A – 36”W x 13”D Integral Back Shelf
 4) DKP36A – Kickplate
 5) BSM9 -- 9”H Book Support W/ Magnetic Base
 6) DCTIB13S – Continuous Top Bracket
 7) DCKS -- Caster Assembly
- g. Unit G – 48”H x 36”W x 26”D – Single Face – Periodical
- 1) EDSUPT4613 – 46”H x 13”D Upright
 2) DSTRUT36 – 36”W Connector Strut
 3) DPDS3613A – 36”W x 13”D Periodical Shelf
 4) DSDKP36G16– Kickplate

B. End Panels and Continuous Tops:

1. Manufacturer: Unless otherwise indicated, the products listed in the Library Shelving Schedule are 94T Series by Brodart. Similar products that are equal in design, function, performance, and quality may be provided if approved by the Architect.
- a. Wood Species: Northern Grown Red Oak
2. End Panels: End panels are 1-3/16" thick, 3-ply particleboard with select oak-veneer faces. All edges are externally banded with 5/8" solid red-oak bullnose edge bands. All edges are eased. End panels are not machined.
3. Continuous Tops: Tops are 1-3/16" thick, 3-ply, 45# density particleboard, including a top surface of .50" thick, high-pressure plastic laminate, with a backing sheet not less than .020" thickness for balanced construction. Edges are solid Northern-grown red oak, 1-3/16"D x 5/8"W. Edge band is shaped to form a bullnose. Edges are applied to the core after the top and bottom laminate sheets are applied, constituting an

external edge band. The two long edges are banded on double-faced tops and one long edge will be banded on single-faced tops constituting a pinched style.

- a. The maximum width of any shelving top segment is 108". This covers a range of three standard shelving sections. Tops wider than 108" are built in multiple sections by the factory based on the total number of shelving units in the shelving range.
 - b. Joints are to be set so they coincide with the joint in the shelving sections. Tops are splined at the joints so they can be leveled. Joint fasteners and machining for joint fasteners are included.
4. Plastic Laminates: Patterns, colors, textures, and surface sheens shall be as indicated. NEMA LD-3 General Purpose; provide at exposed and semi-exposed locations unless otherwise indicated.
 - a. Horizontal Grade GP50 (0.050 inch): Provide at tops and edges of top panels for library shelving.
 5. Laminate Backing Sheets: NEMA LD-3 Backing Grade BK20 (0.020 inch) undecorated plastic laminate; provide on bottom surfaces of laminate tops for library shelving.
 6. Adhesives: Types recommended by AWI and laminate manufacturers to suit application.

C. Circulation Desk and Librarian Desk

1. Manufacturer: Unless otherwise indicated, the products listed in the Library Shelving Schedule are Maxim Series by Brodart. Similar products that are equal in design, function, performance, and quality may be provided if approved by the Architect.
 - a. Wood Species: Northern Grown Red Oak
2. Desktops: Standard desktops are 1-3/16" thick, 3-ply, 45# density, particleboard core, with a top surface of .050" thick, high-pressure plastic laminate, with a backing sheet not less than .020" thickness for balanced construction. Plastic laminate has a lo-glare finish resistant to scratches, fading, and staining that meets or exceeds NEMA standards. Top receives a 5/8" x 1-3/16" thick, solid Northern-grown red oak edge band on the patron side with edges radiused 7/8" to form a bullnose shape. A 1/4" thick, solid Northern-grown red oak edge band is applied to the remaining three sides, with top and bottom edges radiused. All edges are applied to the desktop after the top and bottom laminate sheets are applied, constituting an external edge band. Desktop is positioned over the end panels of the desk module, flush with the outside edges of the end panels.

3. End Panel: Desk module end panels are 1" thick, 3-ply, 45# density particleboard core with select plain-sliced oak veneer on both sides. Exposed edges are externally banded with a 1-3/8" x 1.6mm thick, solid Northern-grown oak edge band. The end panels and front panel are joined and secured with 3/4" x 3/4" thick solid hardwood cleats screwed to the inside surfaces of the panels. The bottom of each end panel receives two adjustable glides to allow leveling of the individual units. Each end panel receives a 3" diameter egress and grommet to provide for wire passage.
4. Front Panels: The front panel shall be 3/4" thick, comprised of select plain-sliced face veneers of Northern-grown red oak over a 45# density particleboard core. Exposed edges shall be externally banded with a 1" x 1.6mm thick, solid Northern-grown oak edge band. The front shall incorporate a 6" H x 3/4" D recessed, ebonized, toe space at the bottom of the panel. The front panel is positioned over the end panels of the desk module, flush with the outside edges of the end panels. Double wide units have two front panels to give the appearance of two individual units.
5. Shelves: Shelves shall be constructed of 7-ply, furniture-grade hardwood veneer-core plywood, with plain sliced solid-oak face veneer. Exposed edges shall receive a 1.6mm thick, solid-oak edge band.
6. Drawers: Drawers shall be constructed of solid hardwood with 1/4" thick wood bottom panel. Drawers have 3-ply particleboard fronts with select oak-face veneer. Box drawers shall have extension slides with 100# load capacity. File drawers shall have full-extension slides with 100# load capacity.
7. Circulation desk overall height to be 32" AFF (with the exception of 30" AFF for the ADA Transaction Station)
8. Circulation Desk – Maxim Series Modules:
 - a. Item J1 – Book Return Unit – Model #73-E15-S00
 - 1) Unit has a 5" deep x 12" wide finished opening centered in the front panel for passage of books and a book chute to direct books over a mobile depressible book truck.
 - 2) Two 3" diameter grommets are located in the work surface.
 - 3) Unit to be supplied with one (1) Model #TO-914-S00 depressible book truck with rubber bumpers on corners for protection.
 - 4) Unit to be supplied with one (1) Model #TO-025-S02 knee space drawer with lock.

- b. Item J2 – 90 Degree Open Corner Unit – Model #73-E43-S00
 - 1) Unit is used to form a right-angle turn in a desk arrangement.
 - 2) Unit has one fixed base shelf and one adjustable shelf.
 - 3) Modified to have electrical pass through in base.
- c. Item J3 – Cupboard Storage Unit – Model #73-E23-S00-MOD
 - 1) Unit has twin locking doors.
 - 2) Unit has one (1) adjustable shelf inside cabinet.
 - 3) Two 3" diameter grommets are located in the work surface.
- e. Item J4 – Single Wide Desk – Model #73-E14-S00
 - 1) Unit to have Model #60-465-S00 Articulating Keyboard Pullout.
 - 2) Two 3" diameter grommets are located in the work surface.
- f. Item J5 – 90 Degree Open Corner Unit – Model #73-E43-S00
 - 1) Unit is used to form a right-angle turn in a desk arrangement.
 - 2) Unit has one fixed base shelf and one adjustable shelf.
 - 3) Modified to have electrical pass through in base.
- g. Item J6 – ADA Transaction Unit – Model #73-E32-S00-MOD
 - 1) Unit designed to provide wheelchair access on the patrons' side.
 - 2) Modified to be 30"H AFF.
 - 3) Modified to have flat front profile to match other desk modules.
- h. Item J7 – Finishing End Panels – Model 73-E78-S00
 - 1) Designed to cover grommet and connection holes in end of desk units.

2.05 FINISH AND COLORS

A. Steel Shelving:

1. Finish: The shelving shall be painted with an electrostatically applied powder coating system using epoxy polyester hybrid or approved equal that shall not emit gasses or fumes. Exposed steel parts shall be prepared for painting by a multi-stage cleaning and phosphatization process. Finish shall be hard and shall be chip and scratch resistant. Paint shall be applied to achieve an average minimum thickness of 1.8 mils with the thinnest area 1.5 mils thick. The shelving finish shall be smooth and uniform, without runs, wrinkles, grit, or "orange peel" effects. Shelving shall have a uniform overall matte finish with a fine granular finish.
 - a. Abrasion Resistance: Comply with or exceed requirements of ASTM Method D965-51, Sand Abrasion Test. Withstand at least 30 liters of sand.
2. Color:
 - a. Provide Estey Standard color as approved by Architect

B. Wood Shelving, End Panels, Continuous Tops, Circulation Desk

1. Pre-Finish: Prior to the finishing operation, all furniture shall be hand-sanded, cleaned and inspected for imperfections. Before entering a positive airflow finishing room, all components shall be cleaned with pressurized air to remove any foreign materials.
2. Pre-Stain Conditioner: The furniture shall be treated with a pre-stain conditioner to promote surface penetration of special-formulated stains designed for maximum penetration and adhesion.
3. Stain Application: The selected stain shall be applied on all visible surfaces in a uniform manner, drying in a dust-free environment. Catalyzed conversion sealer shall then be applied and oven-cured (approximately 115°) to dry.
4. Ultraviolet (UV) Finish: Shelving shall be topcoat-finished with Ultraviolet (UV) curable finish. This topcoat shall be an extremely durable 100% solids acrylic, UV-cured finish; the process shall be completely emission-free. The UV finishing line shall have 100% recovery of any unused finish materials for a waste and emission-free process that does not harm the environment.

5. Stain Color:
 - a. Provide Brodart standard color as approved by Architect
6. Laminate Color:
 - b. Submit standard color selection for Architect's selection approval

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Inspection: Prior to product installation, review installation sites, delivery areas, and routes through the Building to the sites with the installer, allowing the installer to become completely familiar with the Building and other factors that may affect the work.
- B. Protection:
 1. Provide protective padding and coverings as required to prevent damage to product and to Building finished surfaces.
- C. Shelving Placement:
 2. Place shelving product at locations indicated, square, plumb, level and true to line, and in accordance with manufacturer's instructions and recommendations.
 3. Level all shelving ranges once each is completely installed.
 4. Shelving shall be installed in such a manner as to comply with the Americans with Disabilities Act for aisle widths.
- D. End Panels and Tops: Install end panels and tops on shelving at locations indicated, square, plumb, level and true to line, and in accordance with manufacturer's instructions and recommendations. Shelving ranges shall have been leveled prior to installation of end panels and tops.

3.02 CLEANING

- A. Remove all packing materials, debris, and other residue produced by the installation on a daily basis; dispose of such waste materials off site.
- B. Clean all surfaces of the product at completion of the work.

END OF SECTION

12360-14

11/19

INSTRUCTIONS FOR EDITING AND COORDINATION

SECTION 12362

LIBRARY CASEWORK (HIGH SCHOOL)

INSTRUCTION FOR EDITING:

1. Paragraph 2.04 Equipment: Edit these items to conform to High School requirements as required for the project.
2. Note: Oak veneered casework shall be provided in both the Media Center and all support spaces as listed in the Educational Specification. Casework for all support spaces shall be covered under Section 12302.
3. All High double-sided free-standing shelves shall be 48"H. High school wall shelves – 84"H
4. Shelves underneath the windows if possible can be 42"H; if not 36"H is acceptable and is the only place where 36"H shelving are used.

SECTION 12362

LIBRARY CASEWORK (HIGH SCHOOL)

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Conditions of Contract, including Division One through Division Sixteen Specification sections, apply to the work of this Section, with special attention to the following:
 - 1. Shop Drawings, Product Data and Sample: Section 01340
 - 2. Substitutions and Product Options: Section 01630

1.02 RELATED WORK

- A. Section 06400: Architectural Woodwork
- B. Section 12302: Wood Casework and Fixtures (Oak veneered end panels and circulation desk)
- C. Section 12304: Plastic Laminate Faced Casework and Fixtures (Continuous countertops for shelving)

1.03 DESCRIPTION OF WORK

- A. Extent of library shelving is indicated on the Drawings
- B. Types of library equipment required include, but are not necessarily limited to the following:
 - 1. Circulation desk
 - 2. Shelving end panels
 - 3. Shelving continuous countertops (for units 48"H and below)
 - 4. Cantilevered steel library shelving units in the reading/stacks area of the Media Center and all shelving in the below listed support areas:
 - a. Library Workroom
 - b. Conference/Professional Library
 - c. Career Center

1.04 QUALITY ASSURANCE

- A. All cantilevered steel shelving shall be the product of a single manufacturer, shall have been tested in accordance with the "Library Technology Report" referenced elsewhere herein, and shall comply with performance standards and other requirements of this section.
- B. All wood end panels, continuous tops, and circulation desk shall be the product of one manufacturer and shall comply with performance standards and other requirements of this section.
- C. Prior to fabrication, field verify that all shelving clearances are in compliance with local code accessibility and egress requirements; immediately notify the Architect of any discrepancies.
 - 1. Field Measurements are required to verify tolerances for Steel Cantilevered Library shelving units.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver product to Project site in original factory packaging. Deliver product to Project site only when their installation sites are ready to receive them. Accompany all shipments and deliveries with packing slips and/or delivery tickets containing the following for each item delivered:
 - Name/address of company filling order
 - Manufacturer's name
 - Article name/stock number
- B. Storage: Store product in weather tight and well-ventilated locations. Avoid use of non-vented plastic or canvas that could create humidity chambers. If cardboard packaging becomes wet, remove carton immediately.
- C. Final placement shall not begin until all "wet" trades have completed work in the area of placement.

1.06 SUBMITTALS

- A. General: Submit in accordance with the requirements of Section 01340
- B. Statement of Qualifications: Letter stating manufacturer has minimum of five years experience in the manufacturing of library shelving and listing at least five installations of comparable scope to this project.
- C. Certification of Compliance: Letter from shelving manufacturer stating that shelving complies with all specified requirements.
- D. Test Reports: Submit current product test reports showing test results from the

American Library Association "Library Technology Report" as required by paragraphs 1.04 and 2.02 herein.

- E. Shop Drawings: Submit drawings, to scale, illustrating all shelving units, end panels and tops that shall be provided; include all dimensions, colors and finishes, cross references to the product designations scheduled and/or indicated. Denote whether dimensions shown are actual or nominal dimensions.
- F. Layout Plan: Submit plan, to scale, showing dimensioned layout of all shelving units and ranges, relationships to building assemblies, items of coordination with the work of other trades, and cross references to product designations scheduled.
- G. Fabrication/Record Drawings: Prior to release for product fabrication, revise shop drawings by incorporating all review comments; submit a minimum of 3 sets as record drawings for the Owner and Architect's use.
- H. Samples:
 - 1. Finish and Color Samples: Submit in triplicate for each finish and color to be selected. Label each sample with manufacturer's name, finish/color designation, and cross reference to the product designations scheduled and/or indicated.
 - 2. Full-Size Shelving Samples: Provide when requested by the Architect, and deliver to an examination location designated by the Architect. Neither the Owner nor the Architect will be responsible for any samples that are destroyed or mutilated in examination. Upon written notification the Contractor shall remove samples; samples not removed within 30 calendar days after notification will either be stored at the Contractor's risk and expense, or deemed abandoned property and disposed of as such.

1.07 WARRANTY

- A. Include steel shelving manufacturer's standard 10-year product warranty in the Warranty Manual specified under Section 01740.
- B. Include wood furnishings manufacturer standard 25-year product warranty in the Warranty Manual specified under Section 01740.

1.08 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install library furnishings until building is enclosed, wet work and utility roughing-in are complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.09 COORDINATION

- A. Coordinate installation of Library Furnishings with electrical and service outlets.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

- A. All proposed product substitutions shall be subject to the Architect's approval no less than 10 days prior to bid due date. Products of the same quality, function, and performance may be submitted for the Architect's review in accordance with the requirements of Section 01630. Variations in products, where substantial differences occur from those indicated, shall be specifically shown for the Architect's evaluation.

2.02 PERFORMANCE STANDARDS

- A. Comply with or exceed minimum performance requirements of American Library Association Library Technology Reports Nov. / Dec. 1998 Standard ANSI/NISO Z39.73-1994 performance requirements for shelving type listed herein.

2.03 ACCEPTABLE MANUFACTURERS

- A. Cantilevered Steel Library Shelving:

- 1. Manufacturer: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following. Similar products that are equal in design, function, performance, and quality may be provided if approved by the Architect. The specifications outline minimum material and construction standards; only products meeting or exceeding this minimum standard will be acceptable.

- a. Estey (**Basis of Design**) (<http://www.estey.com>)
- b. BCI (<http://www.bcilibraries.com>)
- c. Biblmodel (<http://www.biblmodel.com>)

- B. Wood Equipment Items:

- 1. Manufacturer: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following. Similar products that are equal in design, function, performance, and quality may be provided if approved by the Architect. The specifications outline minimum material and construction

standards; only products meeting or exceeding this minimum standard will be acceptable.

- a. Brodart Company (<http://www.brodartfurniture.com>)
- b. Tesco Industries (<http://www.tesco-ind.com>)
- c. Worden (<http://www.wordencompany.com>)
- d. Russwood Company (<http://www.russwood.net>)

2.04 EQUIPMENT

A. Cantilevered Steel Shelving Units

1. General: Provide steel book stack shelving units of cantilever design. Bookstacks are to be of a starter and adder unit construction to constitute a given bookstack range. Starter units shall consist of a complete modular unit with two tubular uprights and two cross members. Each additional adder unit shall be provided with one tubular upright and two cross members. The uprights and cross member supports make up the frame construction. Uprights are punched for attaching additional units into the book stack range. Each shelf shall be interchangeable from frame to frame, except where widths are incompatible.
2. Shelf heights shall be adjustable in 1" increments. Components, joints, and shelves shall be designed to withstand the most severe possible book loading condition with normal factor of safety. The requirements listed below are in addition to the shelving unit descriptions indicated in the Library Shelving Schedule.
 - a. Dimensions listed in the schedule are nominal dimensions, not actual dimensions, unless otherwise indicated.
3. Material: Sheet steel shall be ASTM A 366, cold rolled carbon steel sheet, commercial quality, stretcher leveled, Class 1, matte finish. Provide in minimum gauges as specified below by component.
4. Provide wall attachment brackets for all single-faced shelving units to stabilize and secure the units to the wall. Brackets shall not be visible above canopy tops where tops are indicated.
5. Capacity Requirements: Each shelf shall have a minimum clearance between end brackets of 35-13/32" based on a 36" wide nominal shelf. Units shall be capable of supporting 50 lbs. evenly distributed weight per linear foot of shelving, multiplied times the number of shelves per unit, without deflection considered excessive by industry standards.

6. Standard Unit Sizes: Except as otherwise indicated, provide units of standard 36" nominal width measured from center of upright to center of adjoining upright.
7. Upright Columns: Shall be formed from no less than #14 gauge tubular steel. Overall dimensions are 2-1/2" in the web and 1-1/2" across the front and rear area surfaces. Uprights are perforated the full height with a series of 5/16" x 5/8" slots spaced on 1" vertical centers and located within 3/4" of the outer web surface to the center of the slot. All slots are rectangular in shape to allow ease of installation and resting of shelves. Every fifth and sixth slot has a rounded top for visual alignment of shelves. Side slots are located at the top, bottom and middle of the upright with a special design allowing the strut to lock into place. Base supports are welded into place creating a single upright and base supports assembly, with leveling bolts at each end of the base support.
 - a. Single Entry uprights have a support foot on one side of the upright
 - 1) Actual unit measurement is 2-3/8" deeper than nominal measurement (example: 12"Deep nominal dimension unit is actually 14-3/8"Deep)
 - b. Double Entry uprights have a support foot on two sides of the upright
 - 1) Actual unit measurement is 7/8" deeper than nominal measurement (example: 24"Deep nominal dimension unit is actually 24-7/8"Deep)
8. Top and Bottom Spreader: Shall be formed of not less than #16 gauge steel in a channel shape, measuring 1-1/32" x 4-11/32" in cross-section. It is attached to the uprights by means of a pressure lock system and secure cover insuring any possible walking of strut from upright.
9. Toe Kicks: Shall be formed of no less than #16 gauge steel into an angle shape, measuring 8-5/64"D x 3-1/4"H in cross-section and attached to the base support through four predrilled holes.
10. Toe Kicks With Electrical Knockout: Shall be formed of no less than #16 gauge steel into an angle shape, measuring 8-5/64"D x 3-1/4"H in cross-section and attached to the base support through four predrilled holes. Will have knockout centered in kickplate at units designated to have electrical/data in base of shelving units.
11. Toe Kicks For Mobile Shelving: Shall be formed of no less than # 20 gauge steel into an angle shape, measuring 1" x 2-17/32" in cross-section and attached to the base support through predrilled holes.

12. Adjustable Integral Back Shelf: Shall be formed of no less than #18 gauge steel. Shelf shall be designed for 50 lbs./sq.ft. loading with not more than 3/16" deflection; with three bend construction on the front edge and a 2" integral backstop on the back edge. The nominal depth is 1" greater than the actual dimension (example: 12"Deep nominal shelf is 11"Deep actual dimension). The sides of the shelf are flanged for locking into the end bracket.
13. End Brackets: Shall be formed of no less than #16 gauge steel. The bracket incorporates a "J" flange at the bottom of the bracket for securing the shelf to the bracket. The "J" flange is formed with a 45° lip that allows automatic seating of shelf to bracket. The bracket design allows for greater shelf adjustment upward and downward (i.e. "walking-the-shelf") without disturbing any of the other shelves. Brackets fit flush to one another to prevent overlapping or miss-alignment of adjoining brackets. Brackets extend at least 6" above the shelf surface.
14. Metal Canopy Tops: (For use on units 6' and taller) Shall be formed of no less than #19 gauge steel. Tops have a 13/16" front edge and extend the full width of the unit base. Tops are supported by #14 gauge brackets engaged in slots in the frame uprights. A canopy top filler of one-piece construction and formed of not less than #20 gauge steel will fit snugly between two canopy top brackets and adjacent to the flat canopy shelf. The filler has 90 degree return flanges front and back measuring 1/2".
15. Shelf Quantities: Except where other shelf arrangements are shown or scheduled, provide the following number of adjustable bracketed shelves for each face of each unit.
 - a. 84-inch high units: (At Professional Resource only) 6 shelves.
 - b. 72-inch high units: 5 shelves
 - c. 48-inch high units: 3 shelves
16. Metal book support: Provide one 9" high, non-losable, plate-type book support, constructed of #16-19 gauge steel with magnet on the base for a for shelf level.
17. Pivoting Periodical Shelving: Consists of pivoting display shelves hinged to shelf brackets, which engage in slots in upright. Sloped display shelves are 14" actual height with a 1-5/16" flange at the bottom and boxed flange upwards with an inside safety hem. Standard storage shelf is 12" deep nominal. Brackets allow for a slope of approximately 20 degrees from vertical.
18. Mobile Units: Consists of a standard shelving unit as specified above

with the exception of having a caster inserted in place of a leveling glide. Unit will also have pins which lock top and bottom spreader permanently in place. Maximum of two (2) sections put together in a row.

19. Shelving Unit Schedule and Components: Coordinate with drawings. Where indicated in the Shelving Schedule, provide the following; all items listed below may not be required by the Shelving Schedule:

a. Unit A – 84”H x 36”W x 12”D – Single Face

- | | | |
|----|--------------|----------------------------------|
| 1) | EDSUPT8412 – | 84”H x 12”D Upright |
| 2) | DSTRUT36 – | 36”W Connector Strut |
| 3) | DSDKP36G16– | Kickplate |
| 4) | DBLIB3612A – | 36”W x 12”D Integral Back Shelf |
| 5) | BSM9 – | 9” Book Support W/ Magnetic Base |
| 6) | DCTS3612 – | Canopy Top |
| 7) | WCLIP – | Wall Attachment Bracket |

b. Unit B – 72”H x 36”W x 12”D – Single Face

- | | | |
|----|--------------|----------------------------------|
| 1) | EDSUPT7212 – | 72”H x 12”D Upright |
| 2) | DSTRUT36 – | 36”W Connector Strut |
| 3) | DSDKP36G16– | Kickplate |
| 4) | DBLIB3612A – | 36”W x 12”D Integral Back Shelf |
| 5) | BSM9 – | 9” Book Support W/ Magnetic Base |
| 6) | DCTS3612 – | Canopy Top |
| 7) | WCLIP -- | Wall Attachment Bracket |

c. Unit C – 72”H x 36”W x 12”D – Single Face – Periodical

- | | | |
|----|--------------|-------------------------|
| 1) | EDSUPT7212 – | 72”H x 12”D Upright |
| 2) | DSTRUT36 – | 36”W Connector Strut |
| 3) | DSDKP36G16– | Kickplate |
| 4) | DPDS3612A – | 36”W x 12”D Pivot Shelf |
| 5) | WCLIP – | Wall Attachment Bracket |

d. Unit D – 48”H x 36”W x 12”D – Single Face

- | | | |
|----|--------------|----------------------------------|
| 1) | EDSUPT4712 – | 47”H x 12”D Upright |
| 2) | DSTRUT36 – | 36”W Connector Strut |
| 3) | DSDKP36G16– | Kickplate |
| 4) | DBLIB3612A – | 36”W x 12”D Integral Back Shelf |
| 5) | BSM9 – | 9” Book Support W/ Magnetic Base |
| 6) | DCTIB13S – | Continuous Top Bracket |
| 7) | WCLIP – | Wall Attachment Bracket |

- e. Unit E – 48”H x 36”W x 24”D – Double Face (Mobile)
- | | | |
|----|--------------|----------------------------------|
| 1) | EDDUPT4412 – | 44”H x 24”D Upright |
| 2) | DSTRUT36 – | 36”W Connector Strut |
| 3) | DSDKP36G16– | Kickplate |
| 4) | DBLIB3612A – | 36”W x 12”D Integral Back Shelf |
| 5) | BSM9 – | 9” Book Support W/ Magnetic Base |
| 6) | DCTIB13S – | Continuous Top Bracket |
| 7) | DCKS – | Caster Assembly |

B. End Panels and Continuous Tops:

1. Wood end panels are to be provided at each end of each shelving range unless noted otherwise.
2. Continuous countertops are to be provided over each run of shelving 48”H or below.
3. Manufacturer: Unless otherwise indicated, the products listed in the Library Shelving Schedule are Epoch Series by Brodart. Similar products that are equal in design, function, performance, and quality may be provided if approved by the Architect.
 - a. Wood Species: Northern Grown Red Oak
4. End Panels: End panels are 1-3/16" thick, 3-ply 45# density particleboard core with select plain-sliced, slip-matched oak veneer on the inside and outside face. The vertical edges and top edge of the end panel have a 1.6 mm oak external edge band. All panel edges are eased. A 1/4" x 1/4" square steel rod is embedded 3/16"D up 4" from the bottom edge and is powder coated. The vertical edges of the double face end panels angle out from the bottom at 92°. The top edge is radiused 2" over the flat line of the top edge.
5. Continuous Tops: Tops are 1-3/16" thick, 3-ply, 45# density particleboard, including a top surface of .50" thick, high-pressure plastic laminate, with a backing sheet not less than .020" thickness for balanced construction. Edges are solid Northern-grown red oak, 1-3/16"D x 1"W. Edges are beveled down at a 20° angle with a 1/2" radius at the leading edge forming a waterfall bull nose shape. Edges are applied to the core after the top and bottom laminate sheets are applied, constituting an external edge band. The two long edges are banded on double-faced tops and one long edge will be banded on single-faced tops constituting a pinched style.
 - a. The maximum width of any shelving top segment is 108". This covers a range of three standard shelving sections. Tops wider

than 108" are built in multiple sections by the factory based on the total number of shelving units in the shelving range.

- b. Joints are to be set so they coincide with the joint in the shelving sections. Tops are splined at the joints so they can be leveled. Joint fasteners and machining for joint fasteners are included.
6. Plastic Laminates: Patterns, colors, textures, and surface sheens shall be as indicated. NEMA LD-3 General Purpose; provide at exposed and semi-exposed locations unless otherwise indicated.
 - a. Horizontal Grade GP50 (0.050 inch): Provide at tops and edges of top panels for library shelving.
 7. Laminate Backing Sheets: NEMA LD-3 Backing Grade BK20 (0.020 inch) undecorated plastic laminate; provide on bottom surfaces of laminate tops for library shelving.
 8. Adhesives: Types recommended by AWI and laminate manufacturers to suit application.

C. Circulation Desk and/or Librarian Desk

1. Manufacturer: Unless otherwise indicated, the products listed in the Library Shelving Schedule are Epoch Series by Brodart. Similar products that are equal in design, function, performance, and quality may be provided if approved by the Architect.
 - a. Wood Species: Northern Grown Red Oak
2. Desktops: Desktops shall be solid core with a top surface of solid polymer material. Top edge on patron side will have edges beveled down at a 20 degree angle with a 1/2" radius at the leading edge forming a waterfall bull nose shape. Top edge on staff side will be flat, but eased. Desktop will be positioned over the end panels of the desk module, flush with the outside edges of the end panels.
3. Work Surface: Work surfaces shall be solid core with a top surface of solid polymer material. Top edge on patron side will have edges beveled down at a 20 degree angle with a 1/2" radius at the leading edge forming a bull nose shape. Top edge on staff side will be flat, but eased. The back edge of the work surface shall have a black strip, 1-1/2" W, which projects above the work surface 1/4" to act as a retainer. The work surface is 24-1/2" D and is positioned 1-1/2" away from the front panel, creating a cord drop space.

4. Solid Polymer Material:
 - a. Specified product: CORIAN® SURFACES from the DuPont Company,
 - b. Material: Homogeneous filled acrylic; not coated, laminated or of composite construction; meeting ANSI Z124.3 & .6, Type Six, and Fed. Spec. WW-P-541E/GEN.
 - 1) Superficial damage to a depth of 0.010" shall be repairable by sanding and polishing.
 - c. Color: To be selected from manufacturers standard solid color line in Group A or B offerings.
 - d. Performance Characteristics:
 - 1) Tensile strength: 6000 psi ASTM D63 passed.
 - 2) Flexural strength: 8000 psi ASTM D790 passed.
 - 3) Thermal expansion: ASTM D696 passed.
 - 4) Color stability: NEMA LD 3-3.10 passed.
 - 5) Impact resistance: NEMA LD 3 -3.3 passed.
 - 6) Material weight: %" -700 lbs per sq. ft. for particulate colors.
5. End Panel: Desk module end panels shall be 1" thick, 3-ply, 45# density particleboard core with select plain-sliced oak veneer on both sides. Exposed edges shall be externally banded with a 1-3/8" x 1.6mm thick, solid Northern-grown oak edge band. The end panels and front panel shall be joined and secured with 3/4" x 3/4" thick solid hardwood cleats screwed to the inside surfaces of the panels. The bottom of each end panel shall receive two adjustable glides to allow leveling of the individual units. Each end panel shall receive a 3" diameter egress and grommet to provide for wire passage.
6. Front Panels: The front panel shall be 3/4" thick, comprised of select plain-sliced face veneers of Northern-grown red oak over a 45# density particleboard core. Exposed edges shall be externally banded with a 1" x 1.6mm thick, solid Northern-grown oak edge band. The front shall incorporate a 6" H x 3/4" D recessed, ebonized, toe space at the bottom of the panel. The front panel is positioned over the end panels of the desk module, flush with the outside edges of the end panels. Double wide units

have two front panels to give the appearance of two individual units.

7. 3Form Front Design: A 1/4"thick x 12" high 3Form accent will be attached to the front panels. One panel for single wide units, two panels for double units, and two panels for square corner units. The 3Form is held back 1" from each end of the unit. A 2-1/2" diameter x 1/2" thick metal cap nut is used to bolt the 3Form panel to the front desk panel. A felt or rubber washer is used against both surfaces of the panel. Loc-tite is used on the bolt to keep the cap nut from turning after positioned. The cap nuts are centered in 3-1/2" from the end of the panel and down 3" and 4-1/2". There are four cap nuts on each piece of 3Form panel. The cap nuts will be powdercoated. Powdercoat color to be selected from manufactures' standard colors.
8. 3Form Specifications: Unless otherwise specified all 3Form panels shall be 1/4" thick Varia Ecorsin series. Color and finish shall be selected from manufacturers' standard colors in Group A or B.
9. Shelves: Shelves shall be constructed of 7-ply, furniture-grade hardwood veneer-core plywood, with plain sliced solid-oak face veneer. Exposed edges shall receive a 1.6mm thick, solid-oak edge band.
10. Drawers: Drawers shall be constructed of solid hardwood with 1/4" thick wood bottom panel. Drawers have 3-ply particleboard fronts with select oak-face veneer. Box drawers shall have extension slides with 100# load capacity. File drawers shall have full-extension slides with 100# load capacity.
11. Circulation Desk – Epoch Series Modules:
 - a. Book Return Unit
 - 1) 59-015-S00-OAK-COR
 - 2) Modified as necessary per Architectural Drawings
 - 3) Worksurface is at 39"H.
 - 4) Two 3" diameter grommets are located in the work surface. One 3-1/2" diameter egress with sleeve is located in each end panel for wire passage.
 - 5) Unit has a 5" deep x 12" wide finished opening centered in the top, at the front of the work surface for passage of books and a book chute to direct books over a mobile depressible book truck.

- b. Depressible Book Truck
 - 1) TO-915-S02
 - 2) Oak wood construction with rubber bumpers
 - 3) Depressible platform
- c. Open Unit with Pull Out Printer Shelf
 - 1) 59-174-OAK-COR
 - 2) Modified as necessary per Architectural Drawings
 - 3) Worksurface is at 39"H
 - 4) Two 3" diameter grommets are located in the work surface. One 3-1/2" diameter egress with sleeve is located in each end panel for wire passage.
 - 5) Unit has full-depth fixed base shelf and pull-out printer shelf
- d. Cupboard Unit with Full Width Drawer
 - 1) 59-135-S00-OAK-COR
 - 2) Modified as necessary per Architectural Drawings
 - 3) Worksurface is at 39"H
 - 4) Two 3" diameter grommets are located in the work surface. One 3-1/2" diameter egress with sleeve is located in each end panel for wire passage.
 - 5) Cupboard and drawer to have locks.
- e. Single Wide Desk with Patron Ledge
 - 1) 59-012-S00-OAK-COR
 - 2) Modified as necessary per Architectural Drawings
 - 3) Worksurface is at 29"H
 - 4) One 3-1/2" diameter egress with sleeve is located in each end panel for wire passage. Back edge of worksurface to

have retainer and 1-1/4" space at back edge for wire passage.

- f. ADA Transaction Station
 - 1) 59-E32-S00-OAK-COR
 - 2) The ADA transaction station is designed to provide wheelchair access on the patron's side.
 - 3) The work surface is at 32"H.
 - 4) The work surface is modified to have a straight front to match other units
 - 5) Two 3" diameter grommets are located in the work surface. One 3-1/2" diameter egress with sleeve is located in each end panel for wire passage.
- g. Finished End Panels
 - 1) 59-178-S00-OAK

2.05 FINISH AND COLORS

A. Steel Shelving:

- 1. Finish: The shelving shall be painted with an electrostatically applied powder coating system using epoxy polyester hybrid or approved equal that shall not emit gasses or fumes. Exposed steel parts shall be prepared for painting by a multi-stage cleaning and phosphatization process. Finish shall be hard and shall be chip and scratch resistant. Paint shall be applied to achieve an average minimum thickness of 1.8 mils with the thinnest area 1.5 mils thick. The shelving finish shall be smooth and uniform, without runs, wrinkles, grit, or "orange peel" effects. Shelving shall have a uniform overall matte finish with a fine granular finish.
 - a. Abrasion Resistance: Comply with or exceed requirements of ASTM Method D965-51, Sand Abrasion Test. Withstand at least 30 liters of sand.
- 2. Color:
 - a. To be determined by architect from manufacturers standard selections

- B. End Panels, Continuous Tops, Circulation Desk:
1. Pre-Finish: Prior to the finishing operation, all furniture shall be hand-sanded, cleaned and inspected for imperfections. Before entering a positive airflow finishing room, all components shall be cleaned with pressurized air to remove any foreign materials.
 2. Pre-Stain Conditioner: The furniture shall be treated with a pre-stain conditioner to promote surface penetration of special-formulated stains designed for maximum penetration and adhesion.
 3. Stain Application: The selected stain shall be applied on all visible surfaces in a uniform manner, drying in a dust-free environment. Catalyzed conversion sealer shall then be applied and oven-cured (approximately 115°) to dry.
 4. Ultraviolet (UV) Finish: Shelving shall be topcoat-finished with Ultraviolet (UV) curable finish. This topcoat shall be an extremely durable 100% solids acrylic, UV-cured finish; the process shall be completely emission-free. The UV finishing line shall have 100% recovery of any unused finish materials for a waste and emission-free process that does not harm the environment.
 5. Stain Color:
 - a. To be determined by architect from manufacturers standard selections.
 6. Laminate Color:
 - a. To be determined by architect from WilsonArt standard selections.
 7. Corian Color:
 - a. To be determined by architect from Corian standard selections
 8. 3-Form Color:
 - a. To be determined by architect from 3-Form standard selections.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Inspection: Prior to product installation, review installation sites, delivery areas, and routes through the Building to the sites with the installer, allowing the installer to become completely familiar with the Building and other factors that

may affect the work.

B. Protection:

1. Provide protective padding and coverings as required to prevent damage to product and to Building finished surfaces.

C. Shelving Placement:

1. Place shelving product at locations indicated, square, plumb, level and true to line, and in accordance with manufacturer's instructions and recommendations.
2. Level all shelving ranges once each is completely installed.
3. Shelving shall be installed in such a manner as to comply with the Americans with Disabilities Act for aisle widths.

D. End Panels and Tops: Install end panels and tops on shelving at locations indicated, square, plumb, level and true to line, and in accordance with manufacturer's instructions and recommendations. Shelving ranges shall have been leveled prior to installation of end panels and tops.

3.02 CLEANING

- A. Remove all packing materials, debris, and other residue produced by the installation on a daily basis; dispose of such waste materials off site.
- B. Clean all surfaces of the product at completion of the work.

END OF SECTION

SECTION 12494

MOTORIZED WINDOW SHADES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Motorized, roll-up fabric interior window shades including motor operator, controls, and mounting hardware.

1.02 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry
- B. Section 07900 – Sealants
- C. Section 09110 – Non-Load Bearing Wall Framing Systems.
- D. Section 09510 – Acoustical Tile Ceilings.
- E. Division 16 – Electrical: Electrical supply, conduit, and wiring for motorized window shades.

1.03 REFERENCES

- A. NFPA 70 – National Electrical Code.
- B. NFPA 701-99 – Fire Tests for Flame-Resistant Textiles and Films.
- C. GREENGUARD Environmental Institute Children & Schools.

1.04 SUBMITTALS

- A. Submit under provisions of Section 01330 - Submittal Procedures:
- B. Product Data: Manufacturer's data sheets on each product specified, including:
 - 1. Preparation instructions and recommendations.
 - 2. Installation and maintenance instructions.
 - 3. Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.
 - 4. Storage and handling requirements and recommendations.
 - 5. Mounting details and installation methods.
 - 6. Typical wiring diagrams including integration of motor controllers with

building management system, audiovisual and lighting control systems as applicable.

- C. Shop Drawings: Plans, elevations, sections, product details, installation details, operational clearances, wiring diagrams and relationship to adjacent work.
- D. Window Treatment Schedule: For all roller shades. Use same room designations as indicated on the Drawings, field verified window dimensions, quantities, type of shade, controls, fabric, and color, and include opening sizes and key to typical mounting details.
- E. Selection Samples: For each finish product specified, two complete sets of shade cloth options and aluminum finish color samples representing manufacturer's full range of available colors and patterns.
- F. Verification Samples: For each finish product specified, two complete sets of shade components, unassembled, demonstrating compliance with specified requirements. Shade fabric sample and aluminum finish sample as selected, representing actual product, color, and patterns. Mark face of material to indicate interior faces.
- G. Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.
- H. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Obtain roller shades through one source from a single manufacturer with a minimum of twenty years experience in manufacturing products comparable to those specified in this section.
- B. NFPA Flame-Test: Passes NFPA 701. Materials tested shall be identical to products proposed for use.
- C. Mock-Up: Provide a mock-up of one of each type roller shade assembly specified for evaluation of mounting, appearance and accessories.
 - 1. Locate mock-up in window(s) designated by Architect.
 - 2. Do not proceed with remaining work until mock-up is accepted by Architect.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver window shades until building is enclosed and construction within spaces where shades will be installed is substantially complete.

- B. Deliver products in manufacturer's original, unopened, undamaged containers with labels intact.
- C. Label containers and shades according to Window Shade Schedule.
- D. Store products in manufacturer's unopened packaging until ready for installation.

1.07 SEQUENCING

- A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.
- B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.08 PROJECT CONDITIONS

- A. Install roller shades after finish work and ambient temperature, humidity and ventilation conditions are maintained at levels recommended for project upon completion.

1.09 WARRANTY

- A. Hardware and Shade Fabric: Draper's standard twenty-five year limited warranty.
- B. Motors and Controls: Draper's standard five year limited warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Draper, Inc.; 800-238-7999;765-987-7999; Email: drapercontract@draperinc.com; Web: www.draperinc.com
- B. Mechoshade Systems, Inc.; 718-729-2020; info@mechoshade.com, www.mechoshade.com
- C. Requests for substitutions will be considered in accordance with provisions of Section 01630.

2.02 MOTORIZED WINDOW SHADES

- A. Type: Motorized vertical roll-up, fabric, window shade with motors, controls, mounting brackets, and other components necessary for complete installation; Motorized FlexShade as manufactured by Draper, Inc.

1. Endcaps and headbox.
- B. Shade Motor and Control System
 1. Quiet Standard Motor - 110 VAC motor operates at 44 Db measured 3 feet from the motor. Makes no audible clicks when motor stops or starts. Tubular motor concealed inside each shade roller tube.
 - a. Individual Control:
 - 1) Wall Switch - Toggle three position wall switch.
- C. Roller: Fabricated from extruded aluminum or steel. Diameter, wall thickness, and material selected by manufacturer to accommodate shade size. Provide with roller idler assembly of molded nylon and zinc-plated steel pin. Sliding pin to allow easy installation and removal of roller. Fabric connected to the roller tube with LSE (low surface energy) double sided adhesive specifically developed to attach coated textiles to metal. Adhesive attachment to eliminate horizontal impressions in fabric.
- D. Endcap covers to match fascia/headbox finish.
- E. Coupling system: Couplings to join motorized shade rollers to allow operation by single motor. FlexShade Coupling System as manufactured by Draper, Inc. Provide endcaps to receive couplers and support multiple shades.
 1. One motorized band, with two panels, three panels or four panels when applicable and within motor's lifting capacity.
- F. Shade slat: Slat encased in heat seamed hem.
- G. Headbox, Pocket Style: Aluminum fabrication with removable closure, endcaps, and U-shaped pocket:
 1. Finish: White powder coat.

2.03 FABRIC

- A. Light-Filtering Fabrics
 1. Series SW2703 SheerWeave: Duplex basketweave fabric—light exterior color combined with dark interior color for thermal comfort and view-through. GREENGUARD Children & Schools certified as a low emitting fabric. Manufacturer to supply GREENGUARD Children & Schools certificate. Fire rating: NFPA 701. SW2703—3 percent open.
- B. Color and pattern: As selected by Architect from manufacturer's standard range.

PART 3 - EXECUTION**3.01 EXAMINATION**

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Coordinate requirements for blocking, construction of shade pockets, and structural supports to ensure adequate means for installation of window shades.
- B. Coordinate requirements for power supply conduit, and wiring required for window shade motors and controls.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install roller shades level, plumb, square, and true. Allow proper clearances for window operation hardware.
- C. Install the following items to conceal roller and operating mechanism. Do not use exposed fasteners.
 - 1. Closure panels.

3.04 TESTING AND DEMONSTRATION

- A. Test motorized window shades to verify that controls, limit switches, interface to other building systems, and other operating components are functional. Correct deficiencies.
- B. Test window shades to verify that operating mechanism, fabric retainer, and other operating components are functional. Correct deficiencies.
 - 1. Motorized operating mechanism.
- C. Demonstrate operation of shades to Owner's designated representatives.

3.05 PROTECTION

- A. Protect installed products until completion of project.

- B. Touch-up, repair or replace damaged products before Substantial Completion.

3.06 SCHEDULES

- A. Refer to Drawings for shade types and locations.

END OF SECTION

SECTION 12505

LOCKDOWN SHADES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General General Conditions and Division 1 Specifications, apply to the work of this Section.

1.02 RELATED WORK

- A. Section 08100 – Metal Doors and Frames
- B. Section 08211 – Wood Doors

1.03 DESCRIPTION OF WORK

- A. Provide and install Lockdown shade to all doors with glass vision panels in the following areas:
 - 1. All instructional classroom doors accessible from the main corridor, lobby, Commons, courtyard and including exterior doors.
 - 2. All conference and itinterant door accessible from the main corridor, lobby, Commons or courtyard.
 - 3. Cafeteria exterior door and interior doors accessible from the main corridor,lobby or courtyard.
 - 4. Library both interior and exterior doors.
 - 5. Kitchen exterior door only.
 - 6. All doors from corridors, lobby or common areas only leading into the administrative office suite, student services office suite, Health (clinic) office and Student activities office suite.
- B. The actual fabric size shall be (width of glass) plus 4" X length of glass plus 6"
Where a door has two (2) vision panels one on top of the other, fabric shall be one piece covering the entire two (2) vision panels.
 - 1. Bottom of fabric panel shall have double weighted hem rod.
 - 2. Refer to door types for actual glass vision sizes and add the additional inches as required above.

1.04 REFERENCE STANDARDS

- A. NFPA 701-99 (or current requirement) – Fire Tests for Flame-Resistant Textiles
- B. GREENGUARD Environmental Institute Children & Schools.

1.05 SUBMITTALS

- A. Comply with Section 01340, Shop Drawings, Product Data and Samples.
- B. Product Data: Manufacturer's data sheets on each product specified, including:
 - 1. Preparation instructions and recommendations.
 - 2. Installation and maintenance instructions.
 - 3. Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.
 - 4. Storage and handling requirements and recommendations.
 - 5. Mounting details and installation methods.
 - 6. Plans and elevations indicating locations of the lockdown shade and sizes.
- C. Flame spread rating: Provide certification of flame spread rating, for fabric for the door vision panel shade that meets requirement of NFPA bulletin 701 or current version.
- D. Samples: Provide actual finish product sample representing actual product, specified color, size and patterns. Mark face of material to indicate interior face.

1.06 QUALITY ASSURANCE

- A. NFPA Flame-Test: Passes NFPA 701. Materials tested shall be identical to products proposed for use.
- B. Mock-Up: Provide a mock-up of the shade assembly specified for evaluation of mounting, appearance and accessories.
 - 1. Locate mock-up in door vision panel(s) designated by Architect.
 - 2. Do not proceed with remaining work until mock-up is accepted by Architect.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver window shades until building is enclosed and construction within spaces where shades will be installed is substantially complete.
- B. Deliver products in manufacturer's original, unopened, undamaged containers with labels intact.

- C. Label containers and shades according to Window Shade Schedule.
- D. Store products in manufacturer's unopened packaging until ready for installation.

1.08 PROJECT CONDITIONS

- A. Install door vision panel shades after finish work and ambient temperature, humidity and ventilation conditions are maintained at levels recommended for project upon completion.

1.09 WARRANTY

- A. Hardware and Fabric: One year limited warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. The Hideaway Helper, (School Safety Solution, LLC.)
www.schoolsafety solution.com, 888-733-0406. Hamburg, NJ 07419
- B. The Security Roll, (The Specialty Group, LTD dba LuXout)
www.luxout.com/products/securityroll, 804-264-3700. Richmond, VA 23220.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01630.

2.02 LOCKDOWN SHADES:

- A. FABRIC – 100% polyester with a minimum weight of 12 ounces and 22 mi thick
- B. FABRIC Color – shall be black (No Substitution)

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Coordinate requirements for blocking, construction of shade pockets, and structural supports to ensure adequate means for installation of shades.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install lockdown shades level, plumb, square, and true. Allow proper clearances as required to cover the vision glass pane

3.04 TESTING AND DEMONSTRATION

- A. Demonstrate operation of shades to Owner's designated representatives.

3.05 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 12510

HORIZONTAL LOUVER BLINDS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 DESCRIPTION OF WORK

- A. Provide all labor, materials and equipment, and performance of all operations related to new operating horizontal aluminum slat blinds as indicated, required and hereinafter specified.
- B. Blinds shall be products of same manufacturer or source; mixing of components of different manufacturers shall not be permitted.

1.03 SUBMITTALS

- A. Comply with applicable provisions of Section 01630.
- B. Provide manufacturer's descriptive literature and installation instructions. Provide diagrams identifying major components of blind assembly.
- C. For large window areas, provide drawings or other information indicating maximum width and arrangement of blinds, where multiple blind assemblies are required.
- D. Furnish samples of slats and tape showing color and physical properties for approval.
- E. Provide manufacturer's written recommendations for cleaning and maintenance.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver blinds to site wrapped and crated in manufacturer's original packaging, with identifying labels intact, so as to prevent damage to components or marring of surfaces.
- B. Store blinds in a clean, dry area, laid flat and blocked off ground to prevent sagging, twisting or warping.

1.05 LOCATION

- A. Exterior: All exterior windows shall receive new blinds, with the exception of the following locations: Stair windows, windows Vestibule, Gym clerestory, frosted glass windows or/and as shown on the drawings. Provide blind at all the door sidelight at exterior doorframe.
- B. Interior: New blinds shall be provided and installed at all interior windows and all interior doorframe sidelight locations.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. Basis of Specification: Hunter Douglas Contract Aluminum Blinds, Poway, CA; website: <http://contract.hunterdouglas.com>. Products of other manufacturers complying with the characteristics of the specification basis shall be acceptable. Materials shall be consistent with manufacturer's published literature for products specified.

2.02 MATERIALS

- A. Slats: 1" wide, .008" thick (prior to painting) 0611 aluminum alloy, spring tempered and heat treated. Finish: manufacturer's baked on "Dust Shield" paint finish. Slats per foot: No less than 13.8.
- B. Slat Support: 100% polyester braided ladders. Yarn color shall be compatible with slat finish.
- C. Headrail: U-shaped profile, rolled edges, 1" x 1 1/2" x .024" all steel construction. Ends shall be finished with .030" steel end locks with adjustable tab. Finish: Baked on polyester paint, color matched to slats.
- D. Bottom Rail: Steel, formed with double lock seam into closed oval shape. Finish: Based on polyester paint, color matched to slats.
- E. Lifting Mechanism: Crash proof steel cord lock with manufacturer's corrosion resistant finish. Two-ply polyester cord filler in braided polyester left cords, with cord equalizers, cord lock adapter and safety tassel. Locate on side opposite of tilt-control wand.
- F. Tilt-Control Wand: Ribbed, tubular 7/16" diameter extruded clear plastic. Locate on side opposite of lifting mechanism.
- G. Tilting Mechanism: Permanently lubricated, die-cast worm and gear type tilter, in fully enclosed housing, with clutch action designed to prevent over rotation of tilt rod.

- H. Mounting Hardware: Manufacturer's standard steel box brackets with baked on polyester finish, color match to slats. For blind units 60" and wider, provide additional brackets.

2.03 FABRICATION

- A. Blinds shall be fabricated in accordance with approved final submittals and sized to suit windows indicated. Blinds shall be furnished as complete functioning assemblies, with all mounting hardware and support brackets required for installation within jambs as shown, and with all operating wands and hardware.
- B. Blind measurements shall be accurate to within $\pm 1/8"$, or as otherwise recommended by manufacturer.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Verify existing conditions and dimensions in field before beginning fabrication. Notify Architect and Owner's Representative in writing of any conditions that could affect proper installation and operation of blinds. Do not proceed until such conditions have been corrected.

3.02 INSTALLATION

- A. Install blinds in accordance with final approved shop drawings and manufacturer's written installation procedures. Provide intermediate support brackets where required and where recommended by manufacturer. Depending on actual conditions, the blind assembly head rail shall be attached to either a steel or concrete masonry lintel spanning the window opening. In no case shall blinds be attached to window frames. Blinds shall be installed with adequate clearance to permit unencumbered operation. Clearance shall not exceed 1/4" from each edge of window opening.

3.03 ADJUSTMENT

- A. Adjust parts as required for smooth operation.
- B. Replace bent, dimpled, marred, or otherwise damaged components.

3.04 CLEANING

- A. Clean soiled blind surfaces and components with a mild soap solution in strict accordance with manufacturer's printed recommendations. To ensure proper drying, provide adequate ventilation, remove end caps from bottom rails, and tip head and bottom rails to remove water that may have penetrated into the rails.

- B. Clean other surfaces affected by the work of this section.
- C. Remove all trash and debris resulting from the work of this section and dispose of legally.

END OF SECTION

SECTION 12690

FLOOR MATS AND FRAMES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and other Division 1 Specification Sections, apply to the Work of this Section.

1.02 RELATED WORK

- A. Section 09660, Resilient Tile Flooring and Base
- B. Section 03300, Cast in Place Concrete

1.03 SUBMITTALS

- A. Submit manufacturer's specifications, installation instructions and guidelines for care and maintenance.
- B. Submit shop drawings showing layout, profiles and product components where fibered modular tile and fibered roll good systems are combined.
- C. Submit samples of mat material and aluminum frame in accordance with Section 01340.

1.04 WARRANTY

- A. Warranty documentation: For specified products and accessories, submit product supplier's warranty documents.

PART 2 - PRODUCTS

2.01 ENTRANCE MAT

- A. Tile: Material construction shall be 100% solution-dyed polypropylene fiber with bitumen backing; Super Nop 52 Tile as manufactured by Mats Inc., Stoughton, MA; 1-800-628-7462 or 703-585-2158 (www.matsinc.com) or Pre-Bid approved manufacturer's according to Section 01630. Mat tiles shall be 19 11/16" x 19 11/16" x 7/16"; weight shall be 141.0 ounces/square yard. Color to be selected by the Architect from the full range of manufacturer's standard colors.
- B. Roll Goods: Material construction shall be 100% solution-dyed polypropylene fiber with rubber backing; Super Nop 52 Tile as manufactured by Mats Inc., Stoughton, MA; 1-800-628-7462 or 703-585-2158 Pre-Bid approved manufacturer's according to Section 01630. Roll goods shall be selected from manufacturer's available widths; weight shall be 93 ounces/square yard. Color

to be selected by the Architect from the full range of manufacturer's standard colors.

- C. Mat shall comply with Federal Flammability Regulations DOC-FF-170.

2.02 MAT FRAMES

- A. Recessed Frame (New Construction): ALLFR, Aluminum "L" frame or manufacturer's recommended compatible frame. Provide corner pins and anchor keys at 16" o. c. (See drawings for application type; Recessed frames to be located at addition areas only.)
- B. Surface Mounted Frames (Existing Construction): "Ultraflex" nosing or manufacturer's approved equal, sewn to mat with mitered corners to transition from 3/8" tile down to existing terrazzo.

2.03 ADHESIVES

- A. Use only the Mat Manufacturer's branded adhesive. Installations using other than the specified adhesive shall be rejected.
- B. "Multi-Bond" Carpet/ Mat adhesive for roll goods and "Release Bond" for mat tile installation.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install mats and frames at entrance doors and at all corridor exits as indicated on the Drawings.
- B. Accessory selection: Where indicated for recessed or wall-to-wall applications provide aluminum framework as recommended by manufacturer. Where indicated for surface-mounted applications, provide tapered vinyl moldings with flanges sewn to back of mat on all four sides with mitered corners.
- C. New construction: Set frame with top of frame flush with adjacent floor finish.
- D. Lay tile from center marks established with graphic inlay or general entrance area, discounting minor offsets, so that the tiles at opposite edges of flooring area are of equal width. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Begin in center and install the corner of the first tile with the cross of the caulk center line. Quarter-turn tiles using directional arrows as marked on the underside of the tile. When done properly, directional arrows printed on the back of each tile should point in two directions only. Do not quarter-turn haphazardly, as the resulting pattern may not exactly match, and

this is noticeable, particularly in larger areas. Coordinate installation with adjacent work to ensure proper clearances and to prevent tripping hazards.

- E. Sizes: Where not indicated otherwise, provide single unit for each mat installation, but do not exceed manufacturer's maximum size recommendation for units intended for removal and cleaning. Where possible, verify sizes by field measurement before shop fabrication.
- F. Apply adhesive in accordance with mat manufacturer's written instructions.

3.02 CLEANING

- A. Remove excess materials and debris from work area, and legally dispose of off-site.

END OF SECTION

SECTION 12710

FIXED AUDITORIUM SEATING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to this section

1.02 REFERENCE DOCUMENTS

- A. Fire-Performance Characteristics of Seat Padding: Provide seating that complies with the following:
 - 1. Test Method: California Technical Bulletin 117.
- B. Fire Performance Characteristics of Upholstered Seating: Chairs shall have been tested and certified as complying with BIFMA voluntary upholstered furniture flammability standard F-1-1978 (revised 1980) sponsored by the Business and Institutional Furniture Manufacturer's Association.

1.03 DESCRIPTION OF WORK

- A. Provide and install fixed seating with upholstered seats, upholstered backs, aisle and center standards. Chairs shall be floor mounted with self-lifting seat mechanism in quantity and configuration shown on the equipment plan on the Drawings.
- B. Rows shall be removable to provide space for orchestra set up. See Auditorium equipment layout on the Drawings for location and quantity of seating required to be removable.

1.04 SUBMITTALS

- A. Comply with applicable provisions of Section 01340.
- B. Submit product data for each type of product specified. Include installation methods for each type of substrate.
- C. Submit shop drawings showing a complete seating layout, seat-numbering scheme, chair sizes, and aisle widths.
- D. Provide samples for initial selection in the form of manufacturer's color charts or samples of materials showing the full range of standard colors, finishes, patterns and textures available for each exposed material.

- E. Provide samples for verification of selections for each exposed material from which seating units and accessories are composed, in each color, finish, pattern, and texture indicated. Include samples of the following:
 - 1. Plastic Laminate: Manufacturer's standard size unit, not less than 3 inches square.
 - 2. Baked Enamel Finishes: Manufacturer's standard size unit, not less than 3 inches square.
 - 3. Aluminum Finishes: Manufacturer's standard size unit, not less than 3 inches square.
 - 4. Wood and Plywood Materials and Finishes: Manufacturer's standard size unit, not less than 3 inches square.
 - 5. Molded Plastic: Manufacturer's standard size unit, not less than 3 inches square.
- F. Two-Seat Unit: Full size with finishes and accessories specified.
- G. Upholstery Fabric: Full-width sample, not less than 36 inches long, with specified treatments applied. Show complete pattern repeated. Top and right side of pattern shall be indicated.
- H. Number and Letter Plates: Manufacturer's standard with sample letter and number fastened to the two-seat unit sample.
- I. Exposed Fasteners: Provide samples of each type specified or required by manufacturer.
- J. Take field measurements prior to fabrication to verify and supplement dimensions indicated. Contractor shall be responsible for accurate fit of work (See 3.01, Inspection).

1.05 QUALITY ASSURANCE

- A. Installer shall have at least five (5) years successful experience in installing fixed auditorium seating for projects of size and scope comparable to the work required by this Section.

1.06 WARRANTY

- A. Provide manufacturer's warranty covering materials and workmanship for a period of one (1) year.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Irwin Seating Co., Grand Rapids, MI. (www.irwin-seat.com) shall be the basis of specification and standard of quality. Citation Model: 90.12.66-4-Other manufacturers listed herein shall be acceptable subject to the requirements of this Section.
- B. Hussey Seating Co., North Berwick, ME (www.husseyseating.com).
- C. Krueger International (KI), Green Bay, WI (www.ki.com).
- D. Other fixed auditorium seating manufacturers, pre-bid approved in accordance with Section 01630, shall be acceptable.

2.02 MATERIALS

- A. Steel: All steel shall have smooth surfaces and be of gauge thickness as required in 2.03. All welds shall be gas shielded, arc welded.
- B. Padding Material: Seat and back padding material shall be of new (prime manufacture) polyurethane foam. Padding material shall comply with the California Technical Information Bulletin #117, resilient cellular materials, section A & D, dated February 1975, when tested in accordance with Federal Test Method Standard 191, Method 5903.2.
- C. Wood: Plywood, exposed or concealed, shall be hot press laminated using a high frequency process. Interior plies shall be class 3 or better. Exposed exterior plies shall be class 1. Particle core shall be 55 pounds density. Solid wood specie shall be oak.
- D. Fabric:
 - 1. Upholstery fabric shall meet Class 1 requirements of the U. S. Department of Commerce Commercial Standard 191-53 per Bulletin #117 (California code) Manufacturer's standard color range shall be utilized. Chairs shall have been tested and certified as complying with BIFMA voluntary upholstered furniture flammability standard F-1-1978.
 - 2. Upholstery Fabric material shall be 100% polyolefin Sherpa or Shire pattern by Absecon Mills, Inc., with the following properties:
 - a. Weight: 16 oz. per lineal yard (± 1 oz.)
 - b. Tensile Strength: 270 lbs per ASTM D1682.
 - c. Tear Strength: 50 lbs per ASTM D2262.

- d. Surface Abrasion: In excess of 250,000 heavy-duty double rubs per ASTM D4157, class 5 specifications for color fastness and light fastness.
 - e. Seam Strength: 80 lbs per ASTM D4034.
3. Fabric shall be soil/stain resistant, static resistant, and resistant to bacteria and mold.
- E. Plastic (Indoor Use): Plastic shall be one-piece high impact linear polyethylene, with built in ultra-violet light inhibitors to retard fading. Plastic shall have a burn rate of 1" per minute when tested in accordance with ASTM D635 or the Department of Transportation Motor Vehicle Safety Standard No. 302.
- F. Finish (Indoor Use):
- 1. Surface preparation: Prior to the application of the final finish, all metal surfaces shall be cleaned of dirt, grease, and other contaminants using a five-stage Bonderization process.
 - 2. Powder coat finish: Immediately after cleaning and pretreatment, a powder coat finish shall be electrostatically applied to a thickness of 3 mils minimum. The powder coat finish shall be a hybrid of epoxy/polyester/ polyurethane powder. After finish coating, parts shall be oven baked at 350 degrees for 20 minutes. The finish shall have the following features:
 - a. 4H Pencil Hardness.
 - b. Impact resistant: 100 lbs.
 - c. Contain no solvents.
 - d. Rust and corrosion resistant.
- G. Hardware (Indoor Use): All assembly hardware shall be rust resistant, black plated.

2.03 CONSTRUCTION

- A. Upholstered Chair Backs - Plastic, 2" Pad (#90 "Citation" Back)
- 1. Backs shall be rectangular shaped padded and upholstered on their face, with a one-piece injection molded polymer rear panel. The foundation of the back component shall be provided by a 7/16" thick, 5-ply hardwood inner panel that shall also serve as the upholstery substrate. The face of the back shall be upholstered over a 2" thick polyurethane foam pad. The polyfoam pad shall be securely cemented to the plywood inner panel and upholstered with a 1-piece cover securely fastened to the hardwood inner panel by means of upholstery staples to facilitate ease of re-upholstering. The rear designer panel shall be injection molded HDPE plastic, high

impact-resistant, with textured outer surface, formed to enclose the edges of the inner upholstery panel at the top and both sides of the back, extending down the rear of the seat. There shall be no exposed screws above the armrests. Wings used for the attachment of the complete back assembly to the standards shall be not less than 14 gauge (.0747") steel. Wings shall be firmly secured to the inner panel through the use of threaded t-nuts fastened to the inner panel. Assembled chair shall have a nominal back height of 34". The back assembly shall be certified through ISO testing to withstand a 250 lb. static load test applied approximately 16" above the seat assembly and a 100,000 cycle 40 lb. swing impact test.

2. The exposed rear of the back panel shall be smooth without protrusions or horizontal surfaces large enough to collect dust, gum, or other foreign substances.
3. The inner upholstery panel shall be covered and enclosed by the outer panel and shall be no less than 3/8" thick curved plywood.
4. The panel shall be covered with a full size, 2" thick polyfoam pad of controlled density, securely cemented to the plywood inner panel. The upholstery panel, mounted by concealed fasteners, shall be easily removable for recovering.

B. Upholstered Cushion Seat Assembly (#12 Seat). A plywood seat foundation is acceptable.

1. The seat component shall be upholstered and padded on its top surface, with an injection-molded plastic bottom shell, and shall automatically self-lift to three-quarter fold when unoccupied. Seat shall have provision to achieve a full-fold position when extra rearward pressure is exerted by the occupant to permit additional passage room while the occupant is standing. The seat shall be a properly contoured foundation conforming to the human form, and shall support the Ischial area with thick padding, and the Popliteal region with softer padding.
2. The upholstery topper shall have a 7/16" 5-ply contour molded plywood foundation, with molded polyurethane foam padding and fabric upholstery cover. The padding shall be thicker at the center and thinner toward the edges. A carefully tailored cover of the specified fabric shall be upholstered over the polyurethane foam pad and stapled to the bottom of the plywood panel.
3. Support structure for the seat shall be 12 gauge (.105") flanged steel support arms. The seat structure shall rotate on two self-compensating, fully independent 5/8" diameter high-strength solid steel hinge rods. Silent operation of the hinges shall be assured by lifetime lubricated nylon shoulder bushings. Seat-lift shall be accomplished by dual 13 gauge

extension springs providing gentle, quiet seat uplift, dampened at both uplift and down-stop positions.

a. The seat shall be certified as passing the following tests:

- 1) 100,00 cycle Seat Oscillation Test per ASTM F851-87 for self-rising seat mechanisms.
- 2) Sand bag test.
- 3) Seat shall withstand a 600 lb static load, laterally distributed 3" from leading edge of seat.

4. The entire bottom of the seat, including the seat-lifting mechanism and upholstery workings, shall be totally enclosed by an injection-molded linear polyethylene seat bottom cover. The cover shall prevent tampering with the seat mechanism, but with the proper procedure, permit easy access for authorized maintenance. The cover shall be contoured to a shape compatible with the entire chair design and shall complement the design of the back, with identical texture and color as the rear of the back.

C. Aisle Standard (#66 Pedestal and Panel)

1. Aisle standards shall be pedestal design with 14 ga. (.0747) steel, 1" x 3" vertical rectangular column. A formed panel of 16 ga. (.0598) steel shall be welded to the column to accept a decorator panel. Welded to the top of the column shall be a 14 ga. (.0747) dovetail for attachment of armrest. Bracket for seat attachment shall be of 11 ga. steel welded on inside of standard. A wing plate of 14 gauge steel shall be welded to the column to provide for attachment of the back. Fabricate aisle standards to maintain the proper and consistent seat and back height and angle.
2. Decorator panel - laminate: a rectangular (11-1/2" x 17-1/2") aisle standard decorator panel shall be high-density particle core surfaced with plastic laminate as selected. The panel shall be shaped with a rounded bottom to complement the overall design of the chair.

D. Center Standards (#8 Pedestal): Center standards shall be modern pedestal design, 14 ga. (.0747) steel, 1" x 3" rectangular column. Welded to top of the column shall be one piece 14 ga. (.0747) dovetail for attachment of armrest. A wing plate of 14 ga. (.0747) steel shall be welded to the column to provide for attachment of the back. Brackets for seat attachment shall be of heavy 11 ga. welded on each side of the standard.

E. Foot Base - Floor Attached: Floor mounted standards shall be provided with a formed 14 ga. (.0747) steel foot, welded to the bottom of the rectangular column. This weldment shall be 360 degrees around the column, and fully concealed. The standard shall be fabricated to be compatible with the floor incline, and to maintain proper and consistent seat and back height and angle.

- F. Armrests - Solid Oak Hardwood: Shall be solid hardwood with all edges well rounded. Armrests shall be furnished with two keyhole slots in the bottom and shall lock securely to dovetail lugs provided on aisle and center standards. One security screw shall be utilized.

- 1. Accessibility: #92 Aisle Standard (flip-up arm)

PART 3 - EXECUTION

3.01 INSPECTION

- A. Prior to beginning work, examine substrates and conditions, with Installer, Architect and Owner's Representative present to verify compliance with requirements for construction tolerances, material properties as they affect anchors and fasteners, and location of junction boxes. Note any deviations or other unsatisfactory conditions that would affect proper installation, fit and performance of fixed seating.
- B. Do not proceed until the observed unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. General: Install fixed seating in accordance with the Drawings, the approved, final shop drawings, and the manufacturer's printed instructions for installation.
- B. Standards: Anchored with not less than two anchoring devices.
- C. Install chairs using manufacturer's recommended hardware and fasteners. Chairs in curved rows shall be installed at smooth radius.
- D. Verify that moving components operate smoothly and quietly.

3.03 ADJUSTING

- A. Make adjustments in accordance with manufacturers written instructions.
- B. Adjust self-rising seat mechanisms to ensure seats in each row are aligned when in upright position.
- C. Repair minor abrasions and imperfections in painted finishes with a manufacturer-supplied coating that matches the factory applied finish.
- D. Replace upholstery fabric damaged during installation.
- E. Replace chairs which are damaged or defective, and which cannot be adjusted for proper operation.

3.04 CLEAN UP

- A. Remove all excess materials, packaging, and other miscellaneous items associated with the work of this Section from the premises, and dispose of legally.

END OF SECTION

INSTRUCTIONS FOR EDITING

SECTION 12760

TELESCOPING BLEACHERS

1. Paragraph 1.03, Work Summary: Edit removal and repair references to fit project requirements, depending upon whether or not repair or removal of existing units is part of work scope.
2. Paragraph 3.01: Delete this passage if removal of existing bleachers is not part of work scope.

SECTION 12760

TELESCOPING BLEACHERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions, and Division 1 Specifications, apply to the work of this Section. In addition, work under this section shall be coordinated with the following Sections:
 - 1. Division 16 – Electrical
 - 2. Division 09 – Flooring

1.02 REFERENCE STANDARDS

- A. NFPA 102 "Standard for Assembly Seating, Tents and Membrane Structures", Chapter 5 ("Folding and Telescoping Seating").
- B. AWS Structural Welding Codes D1.1 and D1.3.
- C. Virginia Uniform Statewide Building Code (VUSBC)
- D. ADA Accessibility Guidelines (ADAAG), U.S. Architectural and Transportation Barriers Compliance Board

1.03 WORK SUMMARY

- A. This Section includes the following:
 - 1. All necessary components, materials, equipment, tools, and labor required to provide and install complete, functioning wall-attached telescoping bleacher units with contoured seat modules and encapsulated closed deck.
 - 2. Removal of existing bleacher units as shown on Drawings (*Renovations*)

1.04 SYSTEM PERFORMANCE REQUIREMENTS

- A. Structural Performance
 - 1. Design, fabricate and install bleacher units to support the following loads as specified in NFPA 102, Chapter 5:
 - a. Seating: 100 pounds per square foot live load.

- b. Seatboards and footboards: 120 pounds per linear foot live load.
 - c. Sway force parallel to seats: 24 pounds per linear foot.
 - d. Sway force perpendicular to seats: 10 pounds per linear foot.
- B. Electric Operation:
- 1. Each bank of seating shall be electrically operated by the specified power system.

1.05 QUALITY ASSURANCE

- A. Work shall be performed by an experienced specialty installer, regularly engaged in the installation of telescoping bleachers.
- B. Installer shall be an authorized installer of the approved manufacturer, with a minimum of five (5) years experience in installing telescoping bleachers similar to those required by this Section.
- C. Welding: Welding processes and operators shall be qualified in accordance with AWS D1.1 and D1.3 for welding of steel components.

1.06 SUBMITTALS

- A. Submit the following in accordance with Section 01340:
 - 1. Product data for each type of telescopic bleacher unit, including major components, power system, and accessories.
 - 2. Shop drawings indicating the following:
 - a. Layout of telescopic bleacher units, with dimensions and locations coordinated with Drawings and field verified measurements. (Indicate total number of seats and accessible (wheelchair) viewing positions.
 - b. Seat heights, row spacing, rise, and aisle widths.
 - c. Overall unit dimensions in open and closed position.
 - d. Typical connection details and interface with adjoining surfaces.
 - 3. Wheel-Load Diagrams: Provide diagrams showing the load applied to each wheel supporting the bleacher system. Furnish drawings which identify and locate the vertical understructure frames and wheel locations

of each bleacher section. Coordinate information with Resilient Athletic Flooring Contractor for Section 09622. Do not install bleacher if the floor is not ready for bleacher installation.

4. Structural computations, material characteristics and other analyses signed and sealed by a registered professional engineer licensed in the Commonwealth of Virginia, demonstrating compliance with applicable codes and jurisdictional requirements.
5. Manufacturer's standard recommended installation procedures, which shall form the basis for acceptance or rejection of the telescopic bleacher installation.
6. Manufacturer's operating and maintenance manuals, including detailed instructions for proper operation and maintenance of each type of telescopic bleacher unit and accessory required.
7. Manufacturer's standard colors on sample of actual material. Include color name and number imprinted on each sample. Minimum sample size shall be 6" x 6".
8. Motor characteristics, including detailed electrical requirements.

1.07 PROJECT CONDITIONS

- A. Refer to Drawings for size and location of telescoping bleachers.
- B. Check actual dimensions of surrounding work by accurate field measurements prior to fabrication, and indicate on shop drawings.

1.08 WARRANTIES

- A. Warranty the bleacher units against defects in material and workmanship for a period of ten (10) years, to include annual inspection of units (each year of warranty period) and callback service. Call back service shall include maintenance and repair required to correct damage due to abuse, vandalism, improper operation as well as normal "wear and tear." Provide inspection reports indicating conditions that would render bleacher units unsafe for use. Catastrophic occurrences shall exclude the contractor from warranty responsibility.
 1. The repair service provider shall be located within 125 miles of Fairfax, VA, in order to ensure timely service response.
 2. Response time for callback service shall be as follows:
 - a. 24 hours or less for non-emergency repairs

- b. 4 hours or less for emergency repairs
 - c. Owner shall establish the status of the call response (emergency or non-emergency).
- B. Warranty Agreement Funding
1. Funds to support warranty shall be set-aside in escrow, controlled by Owner.
 2. 10% shall be released annually to Contractor to fund warranty work.
 3. Contractor shall keep any surplus each year, and shall absorb any annual loss.
 4. In the event that the Contractor should go out of business, Owner shall control funds remaining in escrow, and shall use such funds to support service and warranty work.

PART 2 - PRODUCTS

2.01 APPROVED MANUFACTURERS

- A. Provide products of the following:
1. Interkal Telescopic Seating System (www.interkal.com), subject to the requirements of this Section.
 2. Folding Bleacher Company Telescopic Bleacher, Subsidiary of Irwin Seating Company, (www.irwintelescopicseating.com) subject to the requirements of this Section.
 3. Hussey Seating Company (www.husseyseating.com)
 4. Pre-bid approved manufacturer in accordance with requirements of Section 01630.

2.02 GENERAL REQUIREMENTS

- A. Bleacher units shall comply with all of the following requirements.
1. Seat height: 17" minimum.
 2. Fully encapsulated closed deck.
 3. Steel nose beam on seat modules.

4. Contoured seat modules, sloped at front and curved at rear; one-piece construction.
5. Continuous Wheel Channel: wheel channels shall consist of a one piece formed steel channel welded to the base of a vertical column. Each wheel channel shall be fitted with not less than eight (8) wheels under each moving row for rows 1 to 10, ten (10) wheels under each moving row for rows 11 – 15, and twelve (12) wheels starting with row 16.
6. Wheels: 3-1/2" diameter with 1-1/8" non-marring soft rubber face with rounded edges designed to protect wood or synthetic floor. Provide 1/2" diameter axle for all wheels.
7. Columns: Electrically welded closed rectangular steel tube, 2" x 3" minimum size, 14 gauge steel fitted with a rear welded gusset at the wheel channel.
8. Row Interlocks: Join each row structure front to rear by means of two (2) interacting steel connections, plus automatic gravity row locks where Engineering determines they are required.
 - a. Lower: Lower track guides shall be an external superslide rod to guarantee positive engagement of vertical supports without binding and assures smooth operation over uneven floor conditions.

2.03 CONSTRUCTION

A. Contoured Seat Modules

1. Provide one of the following:
 - a. High impact, structural polyethylene foam.
 - b. Blow molded, double walled, high density, impact resistant linear polyethylene
2. Full perimeter, structural interlock to progressively engage modules in each row.
3. Mounting hardware shall be concealed and tamper-proof.
4. Each seating row shall have closed ends.
5. Seating depth: 10"
6. Individual seat and row numbering shall be recessed into module.

7. Finish: Textured; Color shall be selected by Architect from Bleacher Manufacturer's standard colors.
- B. Automatic Operation:
1. Floor Friction Power System.
 - a. Interkal "Wide Track" System
 - b. Folding Bleacher Company Friction Power System
 - c. Provide friction power system under the front row. Power system shall incorporate two friction drive roller assemblies as an integral part of both first row vertical column assemblies. Each section of bleacher shall have a power system that shall consist of two vertical column roller assemblies which shall include two 6" diameter by 2 1/2" wide cast drive wheels for a minimum of four friction roller contact points per section of bleacher. The two friction roller assemblies shall be installed a minimum of 10' apart per section. The two friction roller assemblies are linked together by a continuous drive shaft driven by a 1/2 HP, 208 volt, 3 phase motor that shall enable the rollers to work simultaneously. Entire system shall be U L rated.
 - d. Units shall be capable of being locked in any position. Movement of units shall be reversible from any position.
 3. Each power unit shall have a 1/2 HP or greater gear motor. (208V, 3-phase)
 4. Limit Switches shall regulate the extended and closed positions of the bleacher system and shall prevent end-users from continuing to power drive wheels after the bleacher is either fully closed or opened (*Synthetic Flooring*).
 5. Manufacturer shall provide motor starters, safety switches, limit switches and key control switches for power systems. Coordinate with electrical contractor for location of conduit, wiring and junction box to be provided under the work of electrical trades.
- C. Footrest panels: Each row shall be enclosed at the footrest level with panels encapsulated by structural beams at the front and rear of the row. Panels shall be continuous across beam joints to create a continuous horizontal truss along entire row length.

- D. Nose beam: Rigid aluminum front structural beam with continuous lateral mounting slot for modules and to support footrest level aisles.
- E. Aisles: Footrest level only; walking surface to be smooth, with no exposed hardware or other protruding components.
- F. Deck: Not less than 5/8" nominal APA "CD" grade with solid crossband; full platform, closed deck. Finish shall be vinyl.
- G. Understructure: Fully enclosed main support columns made from rectangular structural steel tubing. Each column shall have no less than eight (8) 3 1/2" diameter, 1" wide soft rubber wheels with sintered iron bearings.
- H. Wall attachment: Construct units to allow for permanent attachment of understructure to wall or floor construction.
- I. Row spacing and rise: Where units are to replace existing units, match existing spacing and rise. Rise: 10 1/2" unless noted otherwise. Row spacing shall be as noted on drawings (22", 24", 31" or 33" are standard).
- J. Provide intermediate steps where risers are 8" or greater.
- K. Each row shall open and close using a telescopic action, with free floating frames on a vertical column post type understructure.
- L. Accessibility: Provide recoverable truncated rows to provide the required number of accessible seating positions. Refer to bleacher layout on the Drawings.
- M. Row Interlocks: Join each row structure front to rear by means of two (2) interacting steel connections, plus automatic gravity rowlocks.
 - 1. Lower: The lower track guides shall be an external superslide rod, to guarantee positive engagement of vertical supports without binding and assures smooth operation over uneven floor conditions.
 - 2. Upper: Upper track guides shall completely interlock adjacent understructure support. A welded stop to ensure correct extension of bleacher unit on deck support. Use of bolt and nut stops are not acceptable.
- N. Heavy duty metal moving support frame.
- O. Heavy-duty vertical boxed steel column support with diagonal sway braces.

P. Accessories

1. Self-Storing end rails: 16-gauge plated square steel tubing, 42" high, with intermediate rails spaced at 4" intervals.
2. End Panels: Provide at all exposed ends of seating banks to cover ends in the closed position. Panels shall be 5/8" APA "AC" grade plywood with manufacturers standard steel support structure. Finish: Modified urethane paint. End panels shall be manufactured to conform to the contours of the seating when the bleachers are in the closed position.
3. Rear fillers (including supports) for closing gaps between top row and rear wall of adjoining construction.
4. Aisle rails: Provide non-removable aisle rails, permanently attached to the mounting pocket to all rails to fold within the deck.
5. Front rails: Provide front rails at "notch outs" where accessible seating is indicated and at locations of truncated bleacher sections.
6. End rails: Provide end rails at both ends of each bank. End rails shall be self-storing.
7. Controllers:
 - a. Provide two controllers. Controllers shall be removable and shall connect with a NEMA rated, twist lock receptacle to concealed connection at the first row kickboard. One controller shall be capable of operating all bleacher functions.

PART 3 - EXECUTION**3.01 REMOVAL OF EXISTING BLEACHERS (*edit based on scope of work requirements*)**

- A. Existing bleachers including all accessories, anchorages and debris shall be removed and legally disposed of by the Contractor.
- B. The Contractor shall provide protection to the floors, doors, and frames, walls and the general path of travel during the removal of the bleachers.
- C. The Contractor shall be responsible for patching and repairing holes in the walls resulting from removal of anchoring devices associated with the removal of the existing bleachers.

3.02 INSPECTION AND INSTALLATION

- A. Inspect conditions under which work is to be performed and verify that such conditions are acceptable for commencement of work. Notify Owner's Representative and Architect of any unsuitable conditions. Do not proceed until such conditions have been corrected.
- B. Field verify actual dimensions of surrounding work to establish compatibility with installation.
- C. Install telescoping bleacher units, including all accessories in accordance with Manufacturer's instructions and approved shop drawings.
- D. Provide all other secondary components such as anchors, fasteners, inserts, hardware and other items necessary for a complete functioning installation, including permanent attachment of bleacher units to adjoining walls or other construction.
- E. Protect gymnasium floor during installation of bleachers. Make any repairs to flooring damaged as a result of the Work of this Section. Protect walls, doors and frames, other adjacent surfaces and equipment during installation.

3.03 ADJUSTMENT AND CLEANING

- A. Upon completion of installation and when work of other trades will not adversely affect unit operation and condition, lubricate, test and adjust each bleacher unit to ensure ease of operation, in accordance with Manufacturer's specifications.
- B. Clean all exposed and semi-exposed surfaces in accordance with manufacturer's recommendation.
- C. Touch-up factory finishes to restore soiled, marred, scratched or otherwise superficially damaged surfaces.

3.04 PROTECTION

- A. Protect and maintain bleachers units in a manner acceptable to Manufacturer and Owner's Representative, in order to ensure proper operation and condition of bleacher units at time of substantial completion and final acceptance. Replace, repair, or adjust damaged or defective components.

3.05 OPERATION AND CARE

- A. Instruct Owner's personnel in the proper operation and normal care of telescoping bleachers, as outlined in the manufacturer's operating and maintenance data.

- B. Schedule demonstration of telescopic bleacher operation to Owner's personnel after completion of installation and performance of all cleaning and adjustments.
- C. Provide operation and maintenance manuals in accordance with Section 01730.

3.06 CLEANUP

- A. Remove all debris, excess materials, packaging, and other items associated with the Work of this section from the project area, and dispose of legally offsite.

3.07 EXTRA STOCK

- A. Deliver stock of maintenance materials to Owner. Furnish materials from same manufactured lot as installed bleacher system, enclosed in manufacturer's original packaging with intact identification labels.
- B. Provide a minimum of six (6) contoured seat modules, in color matching modules installed in bleacher system

END OF SECTION