

Provide Renovation & Addition Construction Services (Phases II & III)
at Leith Walk Pre-K to 8th School #245
Baltimore City Public Schools (City Schools)

**Baltimore City Public Schools “City Schools”
Material Management Department.
200 E. North Avenue, Room #401
Baltimore, MD 21202**



ADDENDUM No. 2

July 23, 2010

**Solicitation: BCS -10081
PSC No. 30.194.06/09/11C**

Response Due Date: July 29, 2010 at 11:00 a.m.

**Provide Renovation & Addition Construction Services (Phases II & III)
at Leith Walk Pre-K to 8th School #245
Baltimore City Public Schools (City Schools)**

TO THE BIDDERS: PLEASE ATTACH TO YOUR CONTRACT DOCUMENTS.

The following changes, additions, deletions and clarifications are hereby made part of the Contract Documents for the above referenced project and shall be taken into account in the preparation of the proposals and execution of all work. Vendors shall acknowledge receipt of this addendum on the Contract Proposal Form.

Notice: The following changes and additions should be considered as amendments to the above referenced bid documents.

BID DOCUMENT REVISIONS:

Item #1:

Prospective contractors, Baltimore City Public Schools (City Schools) strongly urge each bidder to attend a second walk-through project site, scheduled for July 26, 2010 from 2:00 p.m. to 4:00 p.m. at:

Leith Walk Pre-k to 8th School #245
1235 Sherwood Avenue
Baltimore, MD 21229

For additional information related to this subject please contact, City Schools Project Manager Mr. Reuben/Tony Marshall at 410-396-8697 or 410-340-1794 and at rmarshal@bcps.k12.md.us

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Item #2:

Prospective contractors for your information please see attached with this Addendum #2 City Schools responses to Requests for Information (RFI) received from various contractors.

Item #3:

Prospective contractors for your information please see attached with this Addendum #2 New Additional Specification Section #012345-Laboratory Casework.

Item #4:

Prospective contractors for your information please see attached with this Addendum #2 New Additional Specification Section #017170-Bentonite Waterproofing.

Item #5:

Prospective contractors for your information please see attached with this Addendum #2 New Additional Specification Section #084123-Fire Rated Door and Window Framing.

Item #6:

Prospective contractors for your information please see attached with this Addendum #2 New Additional Specification Section #126100-Fixed Audience Seating.

All other terms and conditions shall remain unchanged.

Failure to acknowledge and respond to this addendums on the Bid Proposal Form may result in the Bid Proposal being considered non-responsive.

City Schools Responses to Requests for Information by Various Contractors

- 1.1 Door 1433A is addressed in Addendum #1, 2.47.
- 1.2 Roller Shades are addressed in Addendum #1, 3.9.

Clarifications and Additional Information: Drawings

- 2.1 Sheet A-601, door S001D to have no fire rating.
- 2.2 Sheet A-109, door 146A in Rec Center to be changed to 147A. Door to be PR 3'-0"x7'-0"x1-3/4", Door Type G, Door Material FRP, Door Frame A, Glaze 01, no rating.
- 2.3 Sheet A-602, Door S101B to be PR 3'-0"x7'-0"x1-3/4".
- 2.4 Sheet A-113, corridor door 206A changed to door number C203A.

Clarifications and Additional information: Specifications

- 3.1 Add Specification Section 123450 Laboratory Casework
- 3.2 Specification Section 084123 fire Rated Doors and Window Frames:
Add under Section 2.6-D Door Hardware:

Each single door to have the following hardware:

	Item	Description	Manufacturer	Finish *
3	Hanging Devices	Weld on Pivots	Technical Glass Products	PTM
1	Exit Device	F5100 Concealed	Dorma	630
1	Lever Trim	Rectangular lever handles	Technical Glass Products	630
1	Cylinder	ANSI Mortise Schlage C Keyway	Technical Glass Products	626
1	Closing Devices	TS 93 Surface Applied Closer	Dorma	689
1	Auto door Bottoms	420APKL Smoke Seal	Pemko	MA
1	Auxiliary Fire Latch	Used with exit device with no bottom rod	Technical Glass Products	630
1	Weather Seal	Perimeter Gasket	Technical Glass Products	

Balance of hardware by others

* FINISH LEGEND:

- PTM Painted to match frame
- MA Mill Finish Aluminum
- 689 Aluminum Paint
- 630 Satin Stainless Steel
- 626 Satin Chrome Plated

- 3.3 Delete Specification Section 071113 Bituminous Dampproofing in its entirety.
- 3.4 Specification Section 233113 – 3.11.B.3a
Delete: ‘...2 inch wg...’
Add: ‘...3 inch wg...’
- 3.5 Add Specification Section 087160 Automatic Door Operators
- 3.6 Add Specification Section 126100 Fixed Audience Seating
- 3.7 Add Specification Section 071700 Bentonite Waterproofing
- 3.8 Specification Section 087100,
Delete Section 3.8 Door Hardware Schedule

Add Section 3.8 Door Hardware Schedule as follows:

DOOR HARDWARE SCHEDULE

A. General product types:

1. Hinges – Five Knuckle Full Mortise Heavy Weight - 4 ½ x 4 ½ BHMA 630
 - a. McKinney T4T4B3786
 - b. Hager BB1199
 - c. Stanley FBB199
2. Continuous Hinges BHMA 630
 - a. Select SL11HD
 - b. Roton 780-112HD
3. Mortise Locks and Latches BHMA 630
 - a. Best 35H Series.
 - b. Sargent 8200 Series less cylinder.
 - c. Schlage L9000 Series less cylinder.
4. Exit Devices BHMA 630
 - a. Yale 7150 Square Bolt Series
 - b. Percision 2130 Series
 - c. Von Duprin 99 Series
5. Closers Match BHMA 630
 - a. Ryobi D-4550 Series
 - b. LVN 4041 Series
 - c. Norton 7500 Series
6. Cylinders and Interchangeable Cores BHMA 630
 - a. Best 1E/1CB Patented 150
7. Thresholds – as required BHMA 628
 - a. NGP 424E, 425E, 426E
 - b. Zero 654, 655,656
 - c. Pemko 1700, 1710, 1720

Door Hardware Set No. 1:

Doors 001H, 004A, 018A, 018B, 020A, 021A, 022A, 023A, 024A, 039A, 040C, 047A, 047C, 049A, 055J, 113B, 125B, 125C, 125D, 125E, 125F, 125G, 125H, 125J, 125N, 127D, 128E, 128F, 128H, 131B, 131C, 131D, 131H, 134A, 135A, 138A, 138C, 138D, 245A

1 1/2 Pair	Hinges
1	Lockset x F05 (Classroom)
1	Wall Stop
3	Silencers

Door Hardware Set No. 1A:

Doors 001G, 131G

3 Pair	Hinges
1	Lockset x F05 (Classroom)
2	Wall Stop
6	Silencers

Door Hardware Set No. 2: Doors

Doors 026A, 026E, 027A, 030A, 040D, 040F, 040G, 047B, 054A, 055H, 056A, 113C, 117B, 120A, 120B, 131E, 136A, 136B, 220A, 220B, 231A, 238B, 241A, 242A

1 1/2 Pair	Hinges
1	Lockset x F07 (Storage)
1	Wall Stop
1	Kick Plate
3	Silencers
1	Perimeter Door Seals

Door Hardware Set No. 2A: Doors

Doors 044A, 055G

3 Pair	Hinges
1	Lockset x F07 (Storage)
2	Wall Stop
2	Kick Plate
6	Silencers
1	Perimeter Door Seals

Door Hardware Set No. 3:

Doors 007A, 007B, 008A, 008B, 012A, 012B, 013A, 013B, 014A, 014C, 025A, 050A, 051A, 059A, 061A, 101A, 102A, 103A, 104A, 105A, 106A, 107A, 108A, 109A, 110A, 111A, 112A, 115A, 116A, 117A, 118A, 123A, 124A, 127A, 132A, 137A, 140A, 140B, 141A, 141B, 142A, 144A, 200A, 201A, 202A, 203A, 204A, 205A, 206A, 207A, 208A, 209A, 210A, 211A, 212A,

213A, 214A, 215A, 216A, 217A, 217B, 218A, 224A, 225A, 226A, 227A, 228A, 235A, 235F, 238A, 238C, 243A, 244A

1 1/2 Pair	Hinges
1	Lockset x F05 (Classroom)
1	Wall Stop
3	Silencers
2	Kickplates

Door Hardware Set No. 3A:

Doors 101D, 224D

3 Pair	Hinges
1	Lockset x F05 (Classroom)
1	Coordinator
2	Wall Stop
6	Silencers

Door Hardware Set No.4:

Doors: C003D, C004A, C010B

3 Pair	Hinges
2	Exit Device x F08 (Entrance) x electric
2	Closers
1	Weather Stripping
1	Astragal Weather Stripping
2	Door Bottom Seal
2	Threshold
6	Silencers
1	Power Supply
2	Door Position Switch
1	Card Reader
1	Automatic Door Opener

Door Hardware Set No.4A:

Doors: 001C, 003B, 055E, 055F, 062A, C001A, 146A

3 Pair	Hinges
2	Exit Device x F08 (Entrance) x electric
2	Closers
1	Weather Stripping
1	Astragal Weather Stripping
2	Door Bottom Seal
2	Threshold
6	Silencers
2	Door Position Switch??

Door Hardware Set No.4A:

Doors: C001A, 145A, 145B, S105A

3 Pair	Hinges
2	Exit Device x F08 (Entrance) x electric
2	Closers
1	Weather Stripping
1	Astragal Weather Stripping
2	Door Bottom Seal
2	Threshold
6	Silencers
2	Door Position Switch??
2	Automatic Door Opener

Door Hardware Set No. 5:

Doors 001F, 001J, 002A, 003C, 005B, 005G, 006A, 007C, 008D, 009A, 010A, 012C, 13D, 014D, 019A, 026C, 026D, 028A, 029A, 035A, 040B, 040H, 046A, 052A, 060A, 100A, 101B, 101C, 113D, 119A, 125K, 125P, 125Q, 131K, 132C, 137B, 140C, 141C, 206C, 217C, 217D, 219A, 224B, 224C, 235B, 235C, 235D, 235E, 245A, R001, R002, R301, R302, R303

1 1/2 Pair	Hinges
1	Lockset x F07 (Storage)
1	Wall Stop
1	Kickplate
3	Silencers

Door Hardware Set No. 5A:

Doors 011A, 011B, 034A, 037A, 055C, 055D

3 Pair	Hinges
1	Lockset x F07 (Storage)
2	Wall Stop
2	Kickplate
6	Silencers

Door Hardware Set No.6: *(Coordinate with specification section 084113)*

Doors: C007A, S104B

1 1/2 Pair	Pivot Hinges
1	Exit Device x F08 (Entrance)
1	Closers
1	Weather Stripping
1	Door Bottom Seal
1	Threshold
3	Silencers

Door Hardware Set No.6A: *(Coordinate with specification section 084113)*

Doors: 036B, 046B, C003A, C003B, C003C, C003D, C010B, C010C, 145A, 145B,
S102B,
S103A, S105A

3 Pair	Pivot Hinges
1	Exit Device x F08 (Entrance)
1	Closers
1	Weather Stripping
1	Door Bottom Seal
1	Threshold
3	Silencers
1	Automatic, self latching flushbolts, top and bottom

Door Hardware Set No.6B: *(Coordinate with specification section 084113)*

Doors: 040E, C101A

3 Pair	Pivot Hinges
1	Exit Device x F08 (Entrance)
1	Automatic Opener
1	Weather Stripping
1	Door Bottom Seal
1	Threshold
3	Silencers
1	Power Supply
2	Door Position Switch
1	Card Reader
1	Automatic, self latching flushbolts, top and bottom

Door Hardware Set No. 7:

Doors: 015A, 017A, 031A, 033A, 057A, 058A, 121A, 122A, 128A, 129A, 133A, 143A,
222A, 223A, 232A, 223A, 236A, 237A

1 1/2 Pair	Hinges
1	Push / Pull
1	Wall Stop
1	Closer
3	Silencers

Door Hardware Set No. 8:

Doors 007D, 008C, 012D, 013C, 014B, 018C, 018D, 026B, 042A, 043A, 047D, 047E,
055K, 114A, 125L, 126B, 126C, 128G, 131F, 131J, 132B, 137C, 138B, 139A, 140D,
141D, 229A, 230A

1 1/2 Pair	Hinges
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1 Lockset x F22 (Privacy)
1 Wall Stop
3 Silencers

Door Hardware Set No. 8A:

Doors 016A, 032A, 040J, 053A, 130A, 146A, 221A, 234A, 239A

1 1/2 Pair Hinges
1 Lockset x F04
1 Wall Stop
3 Silencers
2 Kick Plate

Door Hardware Set No.9:

Doors: 005A, S001B, S001C

1 1/2 Pair Hinges
1 Exit Device x F08 (Entrance)
1 Closers
1 Weather Stripping
1 Door Bottom Seal
1 Threshold
3 Silencers

Door Hardware Set No.10:

Doors: 001D, 001E, 055A, 055B,, 036A, 036C, 038B, 045B, 046C, C010A, S001A, 113A, 113E, 126A, C110A, S105B, C205A, S201A, S202B, S204A

3 Pair Hinges
2 Exit Device x F08 (Entrance)
2 Closers
6 Silencers
2 Wall Stops
4 Kick Plates

Door Hardware Set No.10A:

Doors: 001A, 001B, 004A, 004B, 005D, 038A, 038C, 040A, 045A, 045C, 125A, 125M, 240A, 240B

1 1/2 Pair Hinges
1 Exit Device x F08 (Entrance)
1 Closers
3 Silencers
1 Wall Stops
2 Kick Plates

Door Hardware Set No.11:

Doors: C005A, C105A, C203A

4 Pair	Hinges
2	Exit Device (Passage)
2	Closers
2	Magnetic Lock
6	Silencers
4	Kick Plates

Door Hardware Set No.11A:

Doors: 038D, 045D

4 Pair	Hinges
2	Exit Device (Passage)
2	Closers
2	Hold Opens
6	Silencers
4	Kick Plates

- 3.9 Specification Section 084113 Aluminum Framed Entrance Systems:
Add Section 2.8 Entrance Door Hardware

ENTRANCE DOOR HARDWARE

- B. General: Provide entrance door hardware and entrance door hardware sets indicated in door and frame schedule in section 087100 for each entrance door to comply with requirements in this Section.
1. Entrance Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and products complying with BHMA standard referenced.
 2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
 3. Opening-Force Requirements:
 - a. Egress Doors: Not more than 15 lbf to release the latch and not more than 15 lbf to set the door in motion and not more than 15 lbf to open the door to its minimum required width.
 - b. Accessible Interior Doors: Not more than 5 lbf to fully open door.
- C. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of entrance door hardware are indicated in "Entrance Door Hardware Sets" Article. Products are identified by using entrance door hardware designations as follows:
1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum

- requirements. Manufacturers' names are abbreviated in "Entrance Door Hardware Sets" Article.
2. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.
- D. Opening-Force Requirements:
1. Latches and Exit Devices: Not more than 15 lbf (67 N) required to release latch.
- E. Pivot Hinges: BHMA A156.4, Grade 1.
1. Offset-Pivot Hinges: Provide top, bottom, and intermediate offset pivots at each door leaf.
- F. Mortise Auxiliary Locks: BHMA A156.5, Grade 1.
- G. Automatic and Self-Latching Flush Bolts: BHMA A156.3, Grade 1.
- H. Panic Exit Devices: BHMA A156.3, Grade 1, listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.
- I. Cylinders: As specified in Division 08 Section "Door Hardware."
1. Keying: Master key system. Permanently inscribe each key with a visual key control number and include notation "DO NOT DUPLICATE" to be furnished by Owner.
- J. Strikes: Provide strike with black-plastic dust box for each latch or lock bolt; fabricated for aluminum framing.
- K. Operating Trim: BHMA A156.6.
- L. Closers: BHMA A156.4, Grade 1, with accessories required for a complete installation, sized as required by door size, exposure to weather, and anticipated frequency of use; adjustable to meet field conditions and requirements for opening force.
- M. Door Stops: BHMA A156.16, Grade 1, floor or wall mounted, as appropriate for door location indicated, with integral rubber bumper.
- N. Weather Stripping: Manufacturer's standard replaceable components.
1. Compression Type: Made of ASTM D 2000, molded neoprene, or ASTM D 2287, molded PVC.
 2. Sliding Type: AAMA 701, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.
- O. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.
- P. Silencers: BHMA A156.16, Grade 1.
- Q. Thresholds: BHMA A156.21, raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch (13 mm).

- R. Finger Guards: Manufacturer's standard collapsible neoprene or PVC gasket anchored to frame hinge-jamb at center-pivoted doors.

All other drawings, specifications and terms remain as stated in the original document. This addendum is hereby made part of the Contract Documents, on which the construction contract is based and is intended to modify, explain, correct and/or add to the original contract documents.

Attachments:

Specifications: Section 123450 Laboratory Casework, 087160 Automatic Door Operators, 126100 Fixed Audience Seating, 071700 Bentonite Waterproofing

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SECTION #123450 LABORATORY CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Extent of wood laboratory casework and fixtures is shown on drawings.
 - 2. Work includes the fabrication and installation of standard laboratory furniture components of base cabinets, wall cabinets, storage cabinets, as indicated on the drawings.
 - 3. Epoxy tops and sinks common to laboratory casework are included as work of this section.

1.3 QUALITY ASSURANCE

- A. Single Source Responsibility: Provide laboratory casework manufactured or furnished by same laboratory furniture company for single responsibility.
- B. Catalog Standards: Manufacturer's catalog numbers may be shown on drawings for convenience in identifying certain laboratory cabinet work. Unless modified by notation on drawings or otherwise specified, catalog description for indicated number constitutes requirements for each such cabinet.
 - 1. The use of catalog numbers, and specific requirements set forth in drawings and specifications, are not intended to preclude the use of any other acceptable manufacturer's product or procedures which may be equivalent, but are given for purpose of establishing standard of design and quality for materials, construction and workmanship.
- C. Chemical and Physical Resistance of Finish: Submit an independent testing laboratory report certifying that the exterior finish of laboratory casework is capable of withstanding following tests, with no change, or slight change of gloss, slight discoloration, or slight temporary softening of film with no loss of adhesion and no loss of film protection.
 - 1. Acids: Not less than 5 drops (0.25 cc) applied to finish surface, covered with watch glass for 60 minutes, then washed and dried.

- a. 10% Hydrochloric Acid
 - b. 25% Sulphuric Acid
 - c. 10% Nitric Acid
 - d. 25% Phosphoric Acid
 - e. 50% Acetic Acid
2. Solvent: Not less than 5 drops (0.25 cc) applied to finish surface, covered with watch glass for 60 minutes, then washed and dried.
- a. Ethyl Alcohol
 - b. Butyl Alcohol
 - c. Methyl Alcohol
 - d. Ethyl Acetate
 - e. Ethyl Ether
 - f. Methyl Ethyl Ketone
 - g. Toluene
 - h. Acetone
 - i. Benzene
 - j. Carbon Tetrachloride
 - k. 37% Formaldehyde
 - l. Gasoline
 - m. Naptha
 - n. Kerosene
 - o. Xylene
 - p. Glycerin
 - q. Furfural
3. Bases and Salts: Not less than 5 drops (0.25 cc) applied to finish surface, covered with watch glass for 60 minutes, then washed and dried.
- a. 10% Sodium Hydroxide
 - b. 28% Ammonium Hydroxide
 - c. 10% Potasium Hydroxide
 - d. Saturated Zinc Chloride
 - e. Saturated Sodium Chloride
 - f. Saturated Sodium Sulphide
 - g. Saturated Sodium Carbonate
4. Moisture Resistance: No visible effect when finish surface exposed to the following:
- a. Hot water at a temperature of 190 F (91 C) to 205 F (96 C), trickled down surface at a 45 angle for 5 minutes.
 - b. Constant Moisture using a 2" x 3" x 1" cellulose sponge, soaked with water, in contact with surface for 100 hours.

- c. Cold Crack: No effect when subjected to 10 cycles of temperature change from 20 F (14 C) for 60 minutes to 125 F (52 C) for 60 minutes.
- d. Adhesion and Flexibility: No peeling or cracking or exposure of metal when metal is bent 180 degrees over a 1/4" diameter mandrel.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's data and installation instructions for each type of laboratory furniture unit. Include independent laboratory certification that applied finish complies with specified chemical and physical resistance requirements.
- B. Samples: Submit 6" x 6" samples of specified finishes, including top material. Samples will be reviewed by Architect for color, texture, and pattern only. Compliance with other specified requirements is exclusive responsibility of Contractor.
- C. Shop Drawings: Submit shop drawings for laboratory furniture showing plans, elevations, ends, cross-sections and service run spaces. 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. Initially, submit one blue/black-line print and one correctable transparency; transparency will be processed and returned. Print processed transparency for job use or distribution. Submittals received with multiple blue/black prints lacking transparencies will be returned for resubmittal.
 - 1. Coordinate shop drawings with other work involved, indicating locations of necessary reinforcements and structures concealed in wall construction.

1.5 PRODUCT HANDLING

- A. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or other protective covering.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Fisher-Hamilton Industries, Inc.
- B. Kewaunee Scientific Corp.:
 - a. Basis of Design: Signature Series Wood Laboratory Furniture.
 - i. Refer to drawings for specific requirements.

C. Leonard Peterson & Company, Inc

2.2 WOOD LABORATORY CASEWORK

- A. Solid Wood: All lumber kiln dried to uniform moisture content of six percent.
- B. Exposed Solid Wood: Oak hardwood lumber, clear, dry premium-grade red oak, free from defects and selected for compatible grain and color. 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 which are noticeably dissimilar in grain, figure, and natural character markings.
- C. Interior Solid Wood: Sound hardwood of selected species suitable for intended purpose.
- D. Plywood: Oak and hardwood (maple faced poplar) plywood: Balanced construction of cross and face plies glued with water resistant resin glue.
 - 1. Oak veneer: Plain sliced red oak veneer on all exposed faces. Match existing in color and cabinet style.
- E. Welded Fiber Board: Wood fibers and resin binders formed under heat and pressure.
- F. Glue: Type 2 or type 3 water resistant glue.

2.3 FABRICATION

- A. Base Units
 - 1. Cabinet Ends: 3/4" plywood with 1/8" thick oak facer on exposed front edges. Exposed ends: oak plywood; unexposed ends: hardwood plywood. Machine interior faces for drawer frames and rails and bore for shelf support clips.
 - 2. Front Top Rail: L-shaped rail of two pieces of 3/4" hardwood, grooved and glued together; solid oak for exposed member. Secure to cabinet ends with mortise and tenon, glued and screwed joints.
 - 3. Top Horizontal Rails At Side And Back: 1-1/2" x 3/4" hardwood blind mortised and tenoned into front horizontal rail and back vertical rail, and glued in place.
 - 4. Vertical Back Top Rails: Solid hardwood, grooved for cabinet back; mortised, tenoned, glued and pinned to cabinet ends and reinforced with glue blocks.
 - 5. Front Bottom Rail And Toe Space Rail: 1-1/2" x 3/4" solid oak front bottom rail and 4-5/8" x 3/4" hardwood toe space rail, forming at minimum a 4" high x 2-1/2" deep toe space, closed to cupboard bottom. Mortise and tenon, glue and pin both rails to cabinet ends. Plywood toe space rail is unacceptable.

6. Base Unit Bottoms: At minimum a 5/8" thick five ply hardwood plywood; 9/16 " thick oak veneered plywood in open units. Set flush, tenoned and grooved into cabinet ends and front bottom rail, pinned and reinforced with glue blocks.
7. Base Unit Backs: 1/4" oak veneered welded fiber board in open units. Provide backs full width of unit.
8. Vertical Dividers: Full height dividers shall be a minimum 3/4" thick construction with hardwood frame and 1/4" hardwood plywood each side, hardwood behind shelf pins, glued and screwed from cupboard bottom, back top rail, top front and back horizontal rail.
9. Horizontal Intermediate Box Frames Below Drawers: Solid oak front rail and hardwood side and back rails, blind mortised, tenoned, glued, pinned and screwed into vertical dividers and cabinet ends.
10. Shelves: 3/4" five ply hardwood plywood with front edge oak faced, set on pin and sockets. Provide oak plywood shelves in open units. Plastic support system not acceptable.
11. Drawer Construction: Back and sides a minimum 7/16" thick solid hardwood and bottom of 1/4" thick welded fiber board, supported on hardwood keel and grooved 1/4" into front, sides and back.
12. Drawer Heads: 3/4" thick five ply oak veneer with solid hardwood core, joined to sides with lock shoulder joint, dovetailed.
13. Hardwood Guides: Manufacturers standard roller suspension drawers guides. File drawers shall be 100-pound capacity full extension, and standard drawers shall be 75-pound guides.
14. Doors: 3/4" thick hardwood framed, solid core, oak veneer both sides, five ply construction, lipped overlay design.

B. Wood Table Frames

1. Perimeter Rails: 3/4" x 4-5/16" solid oak hardwood with attached steel corner braces, grooved and screwed into both rails at each corner. Groove rails for "Z" irons or drill for top attachment.
2. Reinforcing Cross Rails: Solid hardwood glued into front and back rail grooves and pinned at intervals not more than 33" o.c. in tables without drawers. Reinforce cross rails with glue blocks.
3. Legs: 2" x 2" solid oak.
4. Leg shoes: Black rubber or vinyl with provision for floor clip.

2.4 WOOD FINISH

A. Preparation: Sand surfaces smooth, free from dirt, defects, and mill marks resulting from machining.

- B. Application: Apply stain of color selected and finish coats evenly, under proper room temperatures, and allow surfaces to completely dry under controlled conditions before applying subsequent coats. Force dry in dust-free atmosphere, sand and wipe clean surfaces between coats.
- C. Stain: Apply stain to all exterior and interior casework surfaces. Apply and wipe dry in a manner to achieve a match with the selected color sample upon completion of application of the finish coats.
 - a. Architect to select from manufacturer's standard stain colors.
- D. Finish Surface: Smooth, satin luster finish. Finish on exterior and interior surfaces exposed to view shall be water clear and bright. Cloudy, muddy finishes or finishes carrying tinting pigments will not be acceptable.
- E. Finish Coats: Apply finish in the following number of coats:
 - 1. 3 coats: Areas of casework exposed after installation and with doors and drawers closed and interior of cases where exposed to view.
 - 2. 3 coats without sanding between coats: Toe space.
 - 3. 2 coats: Drawer sides and interior surfaces, interior of cupboard compartments.

2.5 FABRICATION

- A. General: Complete assembly and finish work at point of manufacture. Perform unit assembly on precision jigs, to provide units which are square, fully reinforced with angles, gussets, and channels, integrally framed and welded to form a dirt and vermin retardant enclosure. Where applicable, reinforce base cabinets for heavy sink support. Maintain uniform clearance around door and drawer fronts, not exceeding 3/32". Fabricate units on precision dies to provide field interchangeability of drawers, hinged doors, and similar pieces.
 - 1. Flush Doors: Outer pan and inner pan formed and telescoped into box formation, with channel reinforcements around perimeter of each pan. Fill doors solid with fire-resistant, sound deadening material.
 - 2. Hinged Doors: Mortise at flanges for hinges and reinforce with minimum 16-gage angle, welded inside inner pan at hinge edge. Provide nylon roller catches and stainless steel strike welded to door assembly.
 - 3. Adjustable Shelves: Sides and ends formed down, and returned to front and back, adjustable on 1/2" centers.
 - 4. Filler Strips: Provide where required for closing space between cabinets and walls and ceilings, of same material and finish as cabinets. Hem exposed edges. Job fabricated fillers not acceptable.
 - 5. Utility Space: Provide space, cut-outs, and holes for pipes, conduits and fittings in cabinet bodies to accommodate services and their support-strut assemblies.
 - 6. Toe Space: Approximately 4" high by 3" deep, closed metal with no open pockets.

2.6 EPOXY TOPS, SINKS AND ACCESSORIES

- A. Epoxy Tops, Box Curbs, Splash Rim: Provide smooth, clean exposed tops and edges, in uniform plane free of defects. Make exposed edges and corners uniformly rounded.
- B. Top Sizes: Furnish tops in maximum practicable lengths.
- C. Top Thickness: Maintain 1" 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 surface 1/2" from edge.
- D. Cast Epoxy Resin: Factory molded tops of modified epoxy resin formulation, uniform mixture throughout full thickness.
 - 1. Color: non-glaring black.
 - 2. Physical Properties: Flexural strength - 4000 psi; compressive strength - 14,000 psi; hardness; Rockwell M - 197; water absorption in 24 hours - 0.05%; heat distortion point - 400f248 F (204f248 C); highly resistant to thermal shock.
 - 3. Chemical Resistance: Spot test of following reagents in standard laboratory concentrations, in contact with finished top for 24 hours, entirely uneffected or slight dulling of finish; glacial acetic acid, hydrochloric acid, nitric acid, phosphoric acid, sulphuric acid, chromic acid, ammonium hydroxide, calcium hypochlorite, sodium hydroxide, acetone, amyl acetate, aqua regia, benzene, butyl alcohol, ethyl acetate, ethyl alcohol, ethyl ether, formaldehyde, hydrogen peroxide, methyl alcohol, methyl ethyl ketone, kerosene, phenol, silver nitrate, trichloroethylene, xylene, zinc chloride.
 - 4. Workmanship: Cast surfaces very smooth, with factory cut-outs for sinks and drip grooves. Plain butt type joints assembled with epoxy adhesive and prefitted, concealed metal spline.

2.7 CASEWORK HARDWARE AND ACCESSORIES

- A. Provide service ledge panels, filler panels, end panels, scribes, and rails as needed.
- B. Provide manufacturer's standard, satin finish hardware units, unless otherwise indicated.
 - 1. Hinges: Institutional type, 5 knuckle 14 ga. steel, chrome plated. Provide one pair for doors less than 4 ft. high and 1-1/2 pair for doors over 4 ft.
 - 2. Pulls: Solid metal, for drawers and swing doors, mounted with 2 screws fastened from back. For sliding doors, provide recessed flush pulls. Provide 2 pulls for drawers over 24" wide.
 - 3. Door Catches: Nylon roller spring catch or dual self-aligning permanent magnet type. Provide 2 catches on doors over 4 ft. high.

4. Drawer Stops: Designed to permit easy removal, and yet prevent inadvertent drawer removal. Provide on all drawers, located on the inside.

2.8 SINKS AND CUPS

- A. Sizes: As indicated in the drawings or manufacturer's closest stock size of equal or greater volume, as acceptable to Architect.
- B. Cast Epoxy Resin Sinks: Nonglare black, molded in one piece with surfaces smooth, corners coved and bottom sloped to outlet. Minimum physical properties and chemical resistance as specified for cast epoxy resin tops. Thickness, 1/2" minimum.
- C. Cup Sinks: Cast epoxy resin. Conform to requirements for materials as specified for tops or sinks, or provide units as recommended.

2.9 MECHANICAL SERVICE FIXTURES

- A. As indicated on drawings, and as specified in mechanical section.

2.10 FABRICATION

- A. Fabricate laboratory furniture to dimensions, profiles, and details shown.
- B. Assemble units in the shop in as large components as practicable to minimize field jointing.
- C. 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.
- D. Allow for final field adjustment after installation.

PART 3 - EXECUTION

3.1 CASEWORK INSTALLATION

- A. Install plumb, level, true and straight with no distortions. Shim as required, using concealed shims. Where laboratory furniture 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 single plane. Fasten each individual cabinet to floor at toe space, with fasteners spaced 24" o.c. Bolt continuous cabinets together. Secure individual cabinets with not less than 2 fasteners into floor, where they do not adjoin other cabinets.
 - 1. Where required, assemble units into one integral unit with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16".
- C. Wall Cabinets: Securely fasten to solid supporting material, not plaster, lath, or wallboard. Anchor, adjust, and align wall cabinets as specified for base cabinets.
 - 1. Reinforcement of stud walls to support wall-mounted cabinets will be done during wall erection by trade involved, but responsibility for accurate location and sizing of reinforcement is part of this work.
 - 2. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.2 INSTALLATION OF TOPS

- A. Field Jointing: Where practicable, make in same manner as factory jointing using dowels, splines, adhesives, and fasteners recommended by manufacturer. Locate field joints as shown on accepted shop drawings, factory prepared so there is no job site processing of top and edge surfaces.
- B. Fastenings: Use concealed clamping devices for field joints, except for epoxy tops, 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.
 - 1. Except for natural stone, composition stone and epoxy tops, secure tops to cabinets with "Z" type fasteners or equivalent, using 2 or more fasteners at each front, end and back. For epoxy tops, secure to cabinets with epoxy cement applied at each corner and along perimeter edges of not more than 48" o.c.
- 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. At stone type material joints, use manufacturer's recommended adhesives and holding devices to provide joint widths not more than 1/16" wide at any location, completely filled and flush with abutting edges.
 - 1. Where necessary to penetrate tops with fasteners, countersink heads approximately 1/8" and plug hole flush with material equal in chemical resistance, color, hardness and texture to top surface.

- D. After installation, carefully dress joints smooth, remove any surface scratches, clean and polish entire surface.
- E. Provide holes and cutouts as required for mechanical and electrical service fixtures.
- F. Provide scrub 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 where recommended by manufacturer.

3.3 INSTALLATION OF SINKS

- A. Drop-in, self-rimming Installation: Install per manufacturer's recommended system for table type and cabinet type installations.

3.4 CLEANING AND PROTECTION

- A. Repair or remove and replace defective work as directed upon completion of installation.
- B. Clean shop-finished surfaces, touch-up as required, and remove or refinish damaged or soiled areas, as acceptable to Architect.
- C. Protection: Advise Contractor of procedures and precautions for protection of materials and installed laboratory furniture from damage by work of other trades.

END OF SECTION

SECTION #071700 BENTONITE WATERPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

The general provision of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

1.2 DESCRIPTION OF WORK

The extent of Geotextile/Bentonite Clay waterproofing membrane is shown on the drawing and/or as specified herein.

1.3 RELATED WORK

- A. Concrete
- B. Masonry
- C. Backfill
- D. Expansion Joints

1.4 QUALITY ASSURANCE

- A. Manufacturer: Provide Geotextile/Bentonite Clay waterproofing membrane produced by a manufacturer with a minimum of 5 years experience in the waterproofing industry.
- B. Installer: A firm with a minimum of 2 years experience in installing bentonite clay or other related waterproofing products.

1.5 SUBMITTALS

- A. Manufacturer: Submit six copies of product data sheets, specifications, installation instructions and general recommendations for each type of product specified.
- B. Installer: Submit detail drawings for installation of product specified.
- C. Warranty: Submit specimen of manufacturers' standard warranty.

1.6 WARRANTY

- A. Upon completion and acceptance of the work required by this section, the manufacturer will issue a warranty agreeing to promptly replace defective materials for a period of 5 years.

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original manufacturer's packaging and store materials in strict accordance with manufacturer's instructions.
- B. Remove and replace products that have been prematurely exposed to moisture.

1.8 PROJECT CONDITIONS

- A. Install materials in accordance with all safety and weather conditions required by the manufacturer.
- B. Install materials only after work on the applicable substrate is complete.

PART 2 - PRODUCTS

2.1 WATERPROOFING SYSTEM

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Basis of Design: The Geotextile/Bentonite clay waterproofing membrane shall be CCW MiraCLAY supplied by Carlisle Coatings & Waterproofing Incorporated, 900 Hensley Lane, Wylie, Texas 75098, Phone (800) 527-7092 Fax: (972) 442-0076.
 - 2. Other Manufacturers:
 - a. Cetco: Swelltite
- B. Physical Properties for Geotextile/Bentonite Clay Waterproofing Membrane:

CCW MiraCLAY Physical Properties:

Property	Test Method	Value
Bentonite Content	—	1.0 lb./ft ² (.488 kg/m ²)*
Nominal Dry Thickness	—	0.25 in. (6.4 mm)
Weight	—	75 lb./ft ² (34.05 kg/m ²)
Permeability	ASTM D 5084	5 x 10 ⁻⁹ cm/sec
Grab Tensile Strength	ASTM D 4632	95 lb. (422 N)
Grab Elongation	ASTM D 4632	150%
Puncture Resistance	ASTM D 4833	120 psi (828 kPa)
Hydrated Internal Shear	ASTM D 5321	500 psf (24 kPa)
Swell Index	ASTM D 5890	2g (24 ml) min.
Fluid Loss	ASTM D 5891	18 ml max

*@ 12% moisture content

- C. Waterproofing system accessories supplied by waterproofing membrane manufacturer:
 - Mastic: CCW MiraCLAY Mastic is used for detailing at terminations and penetrations. Also used to fill minor voids in concrete and as a fillet in angle changes.
 - Granules: CCW MiraCLAY Granules used for horizontal to vertical transitions and for detailing at seams and slab penetrations.
 - Waterstop: CCW MiraSTOP used as a waterstop at cold concrete pours and between pre-cast concrete panels.
- D. Membrane to Substrate Fasteners: Fasteners, of the type and length suitable for the substrate, shall be used in conjunction with washers, of at least 1” diameter, to attach the geotextile/bentonite clay waterproofing membrane to the substrate.
- E. Membrane to Membrane Fasteners: Mechanically fasten membrane sheets together with a box-stapler or similar device for horizontal applications.
- F. The Geotextile/Bentonite membrane shall consist of geotextile panels of sodium bentonite clay sandwiched between two layers of needle-punched woven and non-woven polypropylene fabrics.

- G. Drainage Composite: Shall be CCW MiraDRAIN® as recommended by the manufacturer for each condition.
- H. Perimeter Drainage System: Where required shall be CCW QuickDRAIN™.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine substrate and condition under which waterproofing will be installed. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

- A. Concrete Applications:
 - 1. Fill all spaces that are over 1" (25mm) in width with grout or concrete to a smooth and uniform surface. Cover large gaps with 1/2" (12mm) plywood or CCW MiraDRAIN 6000 or 6000XL.
 - 2. Trowel CCW MiraCLAY Mastic around all tieback plates and soldier beams a minimum of 1 1/2" (39mm) thick and extend a minimum of 4" (10cm) beyond the flange.
 - 3. Remove projections from the wall surface in excess of 3/4" (20mm).
- B. Grade Substrates: Shall be level and uniform that is compacted to a minimum of 85% modified proctor.
- C. Concrete Application:
 - 1. Apply CCW MiraCLAY Mastic to all construction joints at a minimum of 1/4" (7mm) thickness and a 3" (8cm) minimum width.
 - 2. Remove projections from the wall surface in excess of 3/4" (20mm).

3.3 INSTALLATION

- A. Prevent geotextile/bentonite clay waterproofing membrane from hydrating before being covered with overburden. When threat of rain is imminent or backfill is not immediate, geotextile/bentonite clay waterproofing membrane should be covered with polyethylene sheeting.
- B. Lagging Application
 - 1. Install a stripping piece of CCW MiraCLAY over each soldier beam that extends a minimum of 8" (20cm) beyond either side of the beam. Each soldier beam shall have a double layer of CCW MiraCLAY Membrane.
 - 2. Install CCW MiraCLAY with the stenciled side out.
 - 3. Starting at the bottom of the wall, unroll CCW MiraCLAY and nail across top of panel one nail per 12" (31cm) on center. Allow sheet to hang down nailing only as required to stabilize.
 - 4. Install adjacent membrane by overlapping edges a minimum of 4" (10cm).
 - 5. Fasten membrane once every 18" (45cm) on seams or as required to prevent blousing.

6. Extend waterproofing membrane to or above grade and fasten membrane once every 12" to 15" (31cm to 39cm).
 7. Install CCW MiraSTOP at all pour joints and exterior perimeter of tie-back box outs.
- C. Underslab Application: (Concrete slab shall have a minimum thickness of 4" if reinforced or 5" if not reinforced).
1. Install CCW MiraCLAY with the stenciled side up.
 2. Overlap edges a minimum of 4" (10cm).
 3. Protect CCW MiraCLAY from damage caused by chairs with sharp edges or points by placing a patch of CCW MiraCLAY under the chair.
 4. Staple joints often enough to prevent excessive movement.
 5. Pour CCW MiraCLAY Granules or trowel CCW MiraCLAY Mastic around all penetrations and press in "cut to fit" collars of CCW MiraCLAY.
 6. Extend the installation of CCW MiraCLAY 12" (31cm) up or beyond the perimeter slab forms.
 7. Inspect and repair any damaged material before concrete pour.
- D. Concrete Wall Application:
1. Install CCW MiraCLAY with the stenciled side out.
 2. Starting at the bottom of the wall, unroll CCW MiraCLAY and nail across top of panel one nail per 12" (31cm) on center. Allow sheet to hang down nailing only as required to stabilize.
 3. Install adjacent membrane by overlapping edges a minimum of 4" (10cm).
 4. Fasten membrane once every 18" (45cm) on seams or as required to prevent blousing with 3/4" (20mm) to 1" (25mm) concrete nails with washers.
 5. Extend waterproofing membrane to or above grade and fasten membrane once every 12" (31cm) or use termination bar. Trowel a 1/2" (12mm) thick and 2' (5cm) wide bead of CCW MiraCLAY Mastic at top edge of membrane.
 6. Create a cant at any vertical to horizontal transition by applying a 1.5" to 2" (4cm to 5cm) cant of CCW MiraCLAY Granules or CCW MiraCLAY Mastic.
 7. Strip in all corners and transitions with a 12" to 15" (31cm to 39cm) piece of CCW MiraCLAY membrane to double cover these areas.

3.4 PROTECTION AND DRAINAGE

1. Protect the geotextile/bentonite clay waterproofing membrane with CCW MiraDRAIN Drainage Composite.
2. Install the CCW MiraDRAIN Drainage Composite according to the detailed drawings for the specific installation requirements of the project.

END OF SECTION 071700

SECTION #084123 - FIRE RATED DOOR AND WINDOW FRAMING SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Fire rated door and framing systems for installation as full vision fire rated doors, sidelights, borrowed lights, windows, and transoms.

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM E2074-00: Standard Test Method for Fire Tests of Door Assemblies, Including Positive Pressure Testing of Side-Hinged and Pivoted Swinging Door Assemblies.
 - 2. ASTM E2010-01: Standard Test Method for Positive Pressure Fire Tests of Window Assemblies.
- B. National Fire Protection Association (NFPA):
 - 1. NFPA 80: Standard for Fire Doors and Fire Windows.
 - 2. NFPA 251: Standard Methods of Tests of Fire Endurance of Building Construction and Materials.
 - 3. NFPA 252: Standard Methods of Fire Tests of Door Assemblies.
 - 4. NFPA 257: Standard on Fire Test for Window and Glass Block Assemblies.
- C. Underwriters Laboratories, Inc. (UL):
 - 1. UL 9: Fire Tests of Window Assemblies.
 - 2. UL 10B: Fire Tests of Door Assemblies.
 - 3. UL 10C: Positive Pressure Fire Tests of Door Assemblies.
 - 4. UL 263: Fire tests of Building Construction and Materials
- D. American National Standards Institute (ANSI):
 - 1. ANSI Z97.1: Standard for Safety Glazing Materials Used in Buildings.
- E. Consumer Product Safety Commission (CPSC):
 - 1. CPSC 16 CFR 1201 Categories I and II: Safety Standard for Architectural Glazing Materials.
- F. New York City approval
 - 1. MEA# 242-00-M

1.4 DEFINITIONS

- A. Manufacturer: A firm that produces primary glass, fabricated glass or framing as defined in referenced glazing publications.

1.5 PERFORMANCE REQUIREMENTS

- A. Design Requirements:
 - 1. Dimensions – Door and Framing:
 - a. Door framing face dimension: 1 15/16-inch.
 - b. Depth of door framing: 1 15/16-inch.
 - c. Door style face dimension: 3 1/8-inch.
 - d. Door cross rail (if applicable) Face: 3 9/16-inch.
 - e. Depth of stile, header, sill and cross rail: 1 15/16-inch
 - 2. Dimensions -- Window Assembly:
 - a. Perimeter framing face dimension: 2 3/4-inch at head, sill and jamb.
 - b. Horizontal and/or vertical mullions: 3 9/16-inch on the face.
 - c. Depth of perimeter and mullion: 1 15/16-inch.
 - 3. Construction: Roll formed and profiled steel tubes, factory-welded or complete with mechanical joints for simplified installation or shipped spliced for assembly at the building site or for fitting through available building openings.
 - a. Knock down frames are not permitted.

1.6 SUBMITTALS

- A. Product Data: Submit latest edition of manufacturer's product data providing product descriptions and technical data.
- B. Shop Drawings: Show doors, frames, hardware and steel frame components as shown on drawings and schedules. Detail any need for on-site fabrication on shop drawings.
- C. Hardware schedule: list of manufacture supplied hardware and verification of cylinder size complying with Section 08 71 00
- D. Samples for Initial Color Selection: For steel frames with factory-applied powder coat color finishes.
 - 1. Duplicate copies of manufacturer's powder coating color charts showing the full range of colors available.
- E. Samples: For following products:
 - 1. Two 8-inch by 10-inch samples for glass.
 - 2. Sample of Stainless Steel frame
 - 3. Verification Sample of selected finish on steel frame piece
- F. Glazing Schedule: Use same designations indicated on drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.
- G. Certificates of compliance from glass and glazing materials manufacturers attesting that glass and glazing materials furnished for project comply with requirements.

1. Separate certification will not be required for glazing materials bearing manufacturer's permanent label designating type and thickness of glass, provided labels represent a quality control program involving a recognized certification agency or independent testing laboratory acceptable to authority having jurisdiction.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association Glazier Certification Program as Level 2 (Senior Glaziers) or Level 3 (Master Glaziers).
- B. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for Project and whose work has resulted in construction with a record of successful in-service performance.
- C. Source Limitations for Glazing Accessories: Obtain framing system, glazing and glazing accessories from one source for each product and installation method indicated.
- D. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by UL, for fire ratings indicated, based on testing according to NFPA 252. Assemblies must be factory-welded or come complete with factory-installed mechanical joints and must not require job site fabrication.
- E. Fire-Rated Window Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by UL, for fire ratings indicated, based on testing according to NFPA 257. Assemblies must be factory-welded or come complete with factory-installed mechanical joints and must not require job site fabrication.
- F. Listings and Labels - Fire Rated Assemblies: Under current follow-up service by Underwriter Laboratory maintaining a current listing or certification. Label assemblies accordance with limits of manufacturer's listing.

1.8 PRE-INSTALLATION MEETING

- A. Conduct a pre-installation conference at least one week prior to the work of this section.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle under provisions specified by manufacturer. For details on storage and product handling, please contact Technical Glass Products and request information on storage and product handling.
- B. Deliver materials to specified destination in manufacturer or distributor's packaging undamaged.
- C. Store off ground, under cover, protected from weather and construction activities.

1.10 PROJECT CONDITIONS

- A. Obtain field measurements prior to fabrication of frame units. If field measurements will not be available in a timely manner coordinate planned measurements with the work of other sections.
 - 1. Note whether field or planned dimensions were used in the creation of the shop drawings.
- B. Coordinate the work of this section with others effected including but not limited to: other interior components and door hardware beyond that provided by this section.

1.11 WARRANTY

- A. Provide manufacturer's five year warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS - FIRE RATED DOOR AND WINDOW ASSEMBLY

- A. Glass Material:
 - 1. Technical Glass Products, 8107 Bracken Place SE, Snoqualmie, WA 98065 (800-426-0279) fax (800-451-9857).
 - 2. Approved equal.
- B. Frame System:
 - 1. Technical Glass Products, 8107 Bracken Place SE, Snoqualmie, WA 98065 (800-426-0279) fax (800-451-9857).
 - 2. Approved equal.

2.2 MATERIALS - GLASS

- A. Fire Rated Glazing: ASTM C 1036 and ASTM C 1048; composed of polished ceramic glazing material.
- B. Thickness of Glazing Material: 5/16" FireLite Plus.
- C. Approximate Visible Transmission: Varies with thickness (approximate range 88 percent).
- D. Logo: Each piece of fire-rated glazing shall be labeled with a permanent logo including name of product, manufacture, testing laboratory (UL[®] only), fire rating period, safety glazing standards, and date of manufacture.
- E. Performance: Glass must be rated to stop fire from either direction and must meet all testing requirements including the required hose-stream test (where fire-rating exceeds 20 minutes).

2.3 MATERIALS – STEEL FRAMES AND DOORS

- A. Steel Framing System including 45-minute rated doors, 45 and 60 - minute rated windows.
 - 1. Steel: Profiled steel tubing formed using cold drawn and profiled steel tubing.

2. Fasteners: As recommended by manufacturer
3. Glazing Accessories: calcium silicate setting blocks.
4. Glazing Compounds:
 - a. FireLite[®], FireLite Plus[®], FireLite[®] NT, FireLite[®] IGU, Fireglass[®] 20, or Pilkington Pyrostop[™] #45-200: Approved closed cell PVC tape, Fibrefrax, or pure silicone sealant. Glaze glass panels that exceed 1,393 sq. inches for 90-minute ratings with “Kerafix 2000” glazing tape supplied by manufacturer.

2.4 FABRICATION

- A. Furnish frame assemblies pre-welded.
 1. When necessary, splice frames too large for shop fabrication or shipping or to fit in available building openings.
 2. Fit with suitable fasteners.
 3. Knock-down frames are not permitted
- B. Field glaze door and frame assemblies.
- C. Factory prepares steel door assemblies for field mounting of hardware when necessary.
- D. Fabrication Dimensions: Fabricate to field dimensions.
- E. Obtain approved shop drawings prior to fabrication.

2.5 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish frames after assembly.
- C. Protect finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- D. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable. Noticeable variations in the same piece are not acceptable.

2.6 DOOR HARDWARE

- A. Furnish hardware with 45 minute fire door by the manufacturer.
- B. Select hardware from door manufacturer's standard recommended and approved hardware groups as specified in Division 8 Section – Door Hardware.
- C. Provide high traffic areas or areas requiring a door motion force of greater than 20 pounds with power assisted hardware for use with manufacturer’s frame system.

- D. Operating hardware for Designer Series Single Inswing Doors with Mortise Locking. Each to have the Operating hardware for Fireframes® Designer Series Active-Active Pair of Doors Outswing with Exit Device. Each pair to have the following.

Item	Description	Manufacturer	Finish*	
6	Hanging Devices	Weld on Pivots	Technical Glass Products	PTM
2	Exit Device	F5100 Concealed	Dorma	630
2	Lever Trim	Rectangular lever handles	Technical Glass Products	630
1	Cylinder	ANSI Mortise Schlage C Keyway	Technical Glass Products	626
2	Closing Devices	TS 93 Surface Applied Closer	Dorma	689
1	Coordinator	GSR	Dorma	689
2	Auto door Bottoms	420APKL Smoke Seal	Pemko	MA
1	Auxiliary Fire Latch	Used with exit device with no bottom rod	Technical Glass Products	630
1	Weather Seal	Perimeter Gasket	Technical Glass Products	

Balance of hardware by others

* FINISH LEGEND:

PTM Painted to match frame

MA Mill Finish Aluminum

689 Aluminum Paint

630 Satin Stainless Steel

626 Satin Chrome Plated

Each single door to have the following hardware:

Item	Description	Manufacturer	Finish*	
3	Hanging Devices	Weld on Pivots	Technical Glass Products	PTM
1	Exit Device	F5100 Concealed	Dorma	630
1	Lever Trim	Rectangular lever handles	Technical Glass Products	630
1	Cylinder	ANSI Mortise Schlage C Keyway	Technical Glass Products	626
1	Closing Devices	TS 93 Surface Applied Closer	Dorma	689
1	Auto door Bottoms	420APKL Smoke Seal	Pemko	MA
1	Auxiliary Fire Latch	Used with exit device with no bottom rod	Technical Glass Products	630
1	Weather Seal	Perimeter Gasket	Technical Glass Products	

Balance of hardware by others

* FINISH LEGEND:

PTM Painted to match frame

MA Mill Finish Aluminum

689 Aluminum Paint

630 Satin Stainless Steel

626 Satin Chrome Plated

2.7 ACCESSORY MATERIALS

- A. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos; formulated for 30-mil (0.762-mm) thickness per coat.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and members to which the work of this section attaches or adjoins prior to frame installation.
- B. Provide openings plumb, square and within allowable tolerances.
 - 1. Provide 3/8 inch shim space at all walls
- C. Notify Architect of any conditions which jeopardize the integrity of the proposed fire wall / door system.
- D. Do not proceed until such conditions are corrected.

3.2 INSTALLATION

- A. Install fire window and door by a specialty contractor with appropriate experience qualifications; and in strict accordance with the reviewed shop drawings.
- B. Install fire safing / fire stopping at edges of system
- C. Install glazing in strict accordance with fire resistant glazing material manufacturer's specifications.
 - 1. Field cutting or tampering is not permissible.
- D. Do not install damaged frames or chipped glassing units.
- E. Install plumb and true. Limit out of plumb or true to 1/8 inch in 10'-0" in any dimension.

3.3 REPAIR AND TOUCH UP

- A. Limited to minor repair of small scratches. Use only manufacturer's recommended products.
 - 1. Such repairs shall match original finish for quality or material and view.
- B. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged.

3.4 ADJUSTING

- A. Adjust door function and hardware for smooth operation. Coordinate with other hardware suppliers for function and use of any other attached hardware.

3.5 PROTECTION AND CLEANING

- A. Protect glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.
 - 1. Do not clean with astringent cleaners. Use a clean “grit free” cloth and a small amount of mild soap and water or mild detergent.
 - 2. Do not use any of the following:
 - a. Steam jets
 - b. Abrasives
 - c. Strong acidic or alkaline detergents, or surface-reactive agents
 - d. Detergents not recommended in writing by the manufacturer
 - e. Do not use any detergent above 77 degrees F
 - f. Organic solvents including but not limited to those containing ester, ketones, alcohols, aromatic compounds, glycol ether, or halogenated hydrocarbons.
 - g. Metal or hard parts of cleaning equipment must not touch the glass surface
- B. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove them immediately as recommended by glass manufacturer.
- C. Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass manufacturer.

END OF SECTION

SECTION #126100 - FIXED AUDIENCE SEATING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes fixed audience seating with the following:
 - 1. Standard mounting.
 - 2. Upholstered chairs.
- B. Owner-Furnished Material: Upholstery fabric.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for fixed audience seating. Include electrical characteristics.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
 - 1. Seating Layout: Show seating layout, aisle widths, row-lettering and chair-numbering scheme, chair widths, and chair spacing in each row.
 - 2. Accessories: Show accessories, including locations of left- and right-hand tablet arms, electrical devices, accessibility provisions, and attachments to other work.
 - 3. Wiring Diagrams: For power, signal, and control wiring.
- C. Samples for Initial Selection: For each type of exposed finish, color, texture, and pattern indicated.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:
 - 1. Baked-on Coating Finishes: Manufacturer's standard-size unit, not less than 3 inches (75 mm) square.
 - 2. Wood and Plywood Materials and Finishes: Manufacturer's standard-size unit, not less than 3 inches (75 mm) square.
 - 3. Upholstery Fabric: Full width by 36-inch- (914-mm-) long section of fabric from dye lot to be used for the Work, with specified treatments applied. Show complete pattern repeat. Mark top and face of fabric.
 - 4. Row-Letter and Chair-Number Plates: Full-size units with letters and numbers marked.
 - 5. Exposed Fasteners: Full-size units of each type.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of flame-retardant treatment of fabric, from manufacturer.
- B. Field quality-control reports.
- C. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For fixed audience seating to include in maintenance manuals. Include the following:
 - 1. Methods for maintaining upholstery fabric.
 - 2. Precautions for cleaning materials and methods that could be detrimental to seating finishes and performance.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials from the same production run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Chair Seats and Backs: Furnish a quantity of full-size units equal to 5 percent of amount installed for each type and size of chair seat and back.
 - 2. Armrests: Furnish a quantity of full-size units equal to 5 percent of amount installed for each type of armrest.

1.7 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of seating required, including accessories and mounting components, from single source from single manufacturer.
 - 1. Upholstery Fabric: Obtain fabric of a single dye lot for each color and pattern of fabric required.
- B. Fire-Test-Response Characteristics of Upholstered Chairs:
 - 1. Fabric: Class 1 according to DOC CS 191 and 16 CFR 1610.61, tested according to California Technical Bulletin 117.
 - 2. Padding: Comply with California Technical Bulletin 117.
 - 3. Full-Scale Fire Test: Comply with California Technical Bulletin 133.
- C. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
 - 1. Build mockups for the following types of fixed audience seating including fabric, finishes, and accessories:
 - a. Size: Two typical seats or a typical two-seat unit.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

D. Preinstallation Conference: Conduct conference at Project site.

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install seating until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary or permanent HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Verify actual dimensions of seating layout and construction contiguous with seating by field measurements before fabrication.

1.9 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of fixed audience seating that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Structural failures including standards, beams, and pedestals.
 - b. Faulty operation of self-rising seat mechanism.
 - c. Faulty operation of electrical components.
 - d. Wear and deterioration of fabric and stitching beyond normal use.
 - e. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
 2. Warranty Periods: As follows, from date of Substantial Completion.
 - a. Structural: 10 years.
 - b. Operating Mechanisms: Five years.
 - c. Electrical Components: Five years.
 - d. Plastic, Wood, and Paint Components: Five years.

PART 2 - PRODUCTS

2.1 MATERIALS AND FINISHES

- A. Steel: ASTM A 36/A 36M plates, shapes, and bars; ASTM A 513 mechanical tubing; ASTM A 1008/A 1008M cold-rolled sheet; and ASTM A 1011 hot-rolled sheet and strip.

- B. High-Pressure Decorative Laminate: NEMA LD-3, Grade VGS.
- C. Finish:
 - 1. Wood Finishes: Manufacturer's standard finish and stain.
 - 2. Metal Finishes: Manufacturer's standard baked-on powder coating.
 - 3. Color: As selected by Architect from manufacturer's full range.
- D. Hardwood Lumber: Clear Beech, plain-sawn or sliced.
- E. Medium Density Fiberboard: ANSI A208.2, Grade MD, made with formaldehyde-free binder.
- F. Row Numbering Plaques, Seat Numbering Plaques, and Donor Plaques: brass alloy with black lettering.
- G. Exposed Plywood: HPVA HP-1, Face Grade AA, hardwood veneer core with color-matched hardwood-veneer faces, made with adhesive containing no urea formaldehyde.
 - 1. Beech Veneer Hardwood Plywood: HPVA HP-1, 11-ply, AA-grade, rotary cut , made with formaldehyde-free adhesives. The seat back must be a minimum of 11-ply .75 thick plywood. The seat bottom must be a minimum of 5-ply .50 thick plywood. Plywood edges are stained to match the veneered faces. The armrests shall be solid wood
- H. Fabric: Manufacturer's standard olefin and polyester with flame-retardant treatment.
 - 1. Weight: 20 oz./linear yd. (0.62 kg/linear m).
 - 2. Color and Pattern: As selected by Architect from manufacturer's full range.
- I. Upholstery Padding: Flexible, cellular, molded or slab polyurethane foam.

2.2 FIXED AUDIENCE SEATING

- A. Fixed Audience Seating: Interior assembly-space seating in permanent arrangement as shown on Drawings.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 2. Basis-of-Design Product: Subject to compliance with requirements, provide Wenger Corporation Series 200 or comparable product by one of the following:
 - a. American Seating Company.
 - b. Ducharme Seating International Inc.
 - c. Hussey Seating Company.
 - d. Interkal LLC.
 - e. Irwin Seating Company.
 - f. JG Seating; Division of USSC Group.
 - g. KI, Inc.
 - h. Preferred Seating.
 - i. Seating Concepts LLC.
 - j. Series International; Series USA.
 - k. Sitmatic.

1. Theatre Solutions, Inc.
- B. Chair Mounting Standards: Floor attached of the following material:
- a. Chair Mounting Standards: Wood grain polyester resin finish on a MDF core panel with formed steel mounting shoe, floor-attached.
 - b. Upholstery: Flame-retardant Treated
 - c. Color and Pattern: As selected from manufacturer's standard colors.
 - d. Seat:
 - 1) Plywood Bottom: .50 thick minimum 5-ply hardwood veneer plywood, acoustically-perforated.
 - 2) Cushion foam: High resiliency polyurethane is a minimum of 2.5 thick.
 - 3) Width: 19 inch (483 mm).
 - e. Back:
 - 1) Plywood Back: .75 inches thick 11-ply hardwood veneer plywood. Plywood less than .75 inches thick will not be acceptable.
 - 2) Cushion foam: High resiliency polyurethane is a minimum of 1.5 inches thick. Back cushion is shaped to provide a 2.5 minimum thickness lumbar support for long-term comfort.
 - 3) Pitch: Standard degrees of 18, 22 and 26.
 - f. Armrest: Solid hardwood with rounded corners for a stylish appearance.
 - g. Wood Stain color: As selected from manufacturer's standard colors.
 - h. Seat Lift Device: Self-lifting torsion spring and damper mechanism. A gravity self-lifting mechanism or a self-lifting system without a damper mechanism will not be acceptable.
- C. Row-Letter and Chair-Number Plates: Manufacturer's standard.
1. Material: Brass Alloy with black embossed characters.
 2. Attachment: Manufacturer's standard method.
- D. Accessible Seating:
1. Provide swing-away chairs where wheelchair spaces are indicated.
 2. Provide chairs with retractable arm on aisle side in locations indicated, but not less than 5 percent of aisle seats. Identify these seats with a sign or marker.

2.3 FABRICATION

- A. Floor Attachments: Fabricate to conform to floor slope, if any, so that standards and pedestals are plumb and chairs are maintained at same angular relationship to vertical throughout Project.
- B. Upholstery: Fabricate fabric-covered cushions with molded padding beneath fabric and with fabric covering free of welts, creases, stretch lines, and wrinkles. For each upholstered component, install pile and pattern run in a consistent direction.
- C. Upholstered Chairs: Fabricate as follows:
 1. Fabricate upholstered chairs with fabric free of creases and wrinkles. Install warp and woof of fabric and pattern in consistent direction.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine floors, risers, and other adjacent work and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
- B. Examine locations of HVAC supply ducts.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install seating in locations indicated and fastened securely to substrates according to manufacturer's written installation instructions.
 - 1. Use installation methods and fasteners that produce fixed audience seating assemblies with individual chairs capable of supporting an evenly distributed 600-lb (272-kg) static load without failure or other conditions that might impair the chair's usefulness.
 - 2. Install standards and pedestals plumb.
- B. Install seating with chair end standards aligned from first to last row and with backs and seats varied in width and spacing to optimize sightlines.
- C. Install riser-mounted attachments to maintain uniform chair heights above floor.
- D. Install chairs in curved rows at a smooth radius.
- E. Install seating so moving components operate smoothly and quietly.

3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
 - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Prepare test and inspection reports.

3.4 ADJUSTING

- A. Adjust chair backs so that they are aligned with each other in uniformly curved rows.
- B. Adjust self-rising seat mechanisms so seats in each row are aligned when in upright position.
- C. Verify that all components and devices are operating properly.

- D. Verify that seating returns to correct at-rest position.
- E. Repair minor abrasions and imperfections in finishes with coating that matches factory-applied finish.
- F. Replace upholstery fabric damaged during installation.

END OF SECTION 126100