Fullerton Joint Union High School District

1051 W. Bastanchury Rd
Fullerton, CA 92833
714-680-5622

Bid/DSA # - 04-124966

SOHS Science Classroom Modernization

ADDENDUM # 2

Date: **March 12, 2026**

Owner: **Fullerton Joint Union High School District**
Facilities and Construction
1027 S Leslie St.
La Habra, California 90631

The following changes, additions, deletions, corrections, etc. shall become a part of the drawings, details, specifications or work project documents for the project named above and all other conditions shall remain the same. This addendum supercedes previously published information and in the event of conflict, the Addendum takes precedence. The bidding Contractor/Consultant shall be responsible for giving this information to any and all of his subcontractors/subconsultant, material suppliers, etc. prior to the closing of bids(RFQ/P) to ensure that the following addendum item(s) are incorporated into the contractor's/consultant's bid(RFQ/P) proposal:

Item No. 1.1:

- **Supplemental information**

ATTACHMENTS:

1) Updated Pre-Qualified Contractors Lists (3-10-26)

Item No. 2.1:

- **Pre-Bid RFI and Substitution Request**

ATTACHMENTS:

1) RFI and Substitution Request responses from LPA Architect

Item No. 3.1:

- **Clarification for prequalification for Self-perform from Prime Contractor**

A Prime Contractor holding a Class B license must be prequalified. If the Prime Contractor intends to self-perform any trades that require prequalification (such as C-7, C-10, C-20, or C-36), the contractor must also be prequalified under the corresponding trade classification in addition to the Class B license.
If your firm believes this determination applies to you in **error**, you must submit an **appeal** to the District no later than **March 13, 2026, at 3:00 PM.**

END OF ADDENDUM#2

Item 1.1 - attachment

MASTER PREQUALIFICATION CONTRACTOR LIST (Updated 3/10/26)			
Bid # 04-124966, SOHS Science Classroom Modernization			
CONTACTOR	**LICENSE**	**EMAIL**	**PHONE #**
BETA Investments and Contracts, Inc.	B	haro@betacontractsinc.com	818-241-6774
CABD Construction, Inc.	B	info@cabdinc.com	323-447-8335
Construct 1 One, Corp.	B	brianhundley@construct1.com	714-259-5400
Dalke & Sons Construction, Inc.	B	barry@dalkeandsons.com	951-274-9880
Full Swing Contruction, Inc.	B	office@fullswinginc.com	714-536-4440
Griffith Company	B	kmcleod@griffithcompany.net	714-984-5500
Klassic Engineering & Construction, Inc.	B	bids@kecigroup.com	714-369-8389
KYA Services LLC	B	prequal@thekyagroup.com	714-659-6477
Monet Construction, Inc.	B	info@monetinc.net	818-330-7308
Morillo Construction, Inc.	B	tonym@morilloconstruction.com	626-796-3800
New Dynasty Construction Co.	B	building@new-dc.com	949-502-6400
Newman Midland Corp	B	estimating@newmanmidland.com	562-254-1901
Paul C. Miller Construction Co., dba. Miller Construction	B	hailey@millercon.com	909-484-1009
Plyco Corp	B	plyco@plycocorp.com	951-727-8200
SS+K Construction, Inc.	B, C-10	kay@sskconstructioninc.com	818-943-3844
The Nazerian Group	B	greg@nazerian.net	818-298-9204
Woodcliff Corporation	B	bids@woodcliff.net	310-312-1400
Allegiance Electricm Inc.	C-10	acentanni@allegianceelec.com	951-970-5871
Aris Construction, Inc.	C-10	info@aconstruction.org	818-395-3837
Gilbert and Stearns. Inc.	C-10	sean@bilertstearns.com	949-713-2800
Rhino Electrical Construction, Inc.	C-10	rhinoelec@aol.com	909-463-3838
RLH Fire Protection, Inc.	C-10	prequals@rlhfp.com	661-322-9344
Wakeland Electric, Inc.	C-10	bids@wakelandelectric.com	951-399-0987

ACH Mechanical Contractors, Inc.	C-20	amandas@achmechanical.com	909-307-2850
Franklin Mechanical Systems, Inc	C-20	seth@fmshvac.net	951-845-1000
KFY United Mechanical Contractors, Inc. dba. United Mechanical Contractors	C-20	jeremy@umcontractors.com	805-583-1010
Empyrean Plumbing, Inc.	C-36	office@empyreanplumbing.com	951-776-4616
JPI Development Group, Inc.	C-36	estimating@jpidevelopment.com	951-973-7680
Pro-Craft Construction, Inc.	C-36	estimating@procraftci.com	909-790-5222
Verne's Plumbing	C-36	ceci@vernesplumbing.com	714-994-1971
PCC Network Solution	C-7	contractadmin@pccinc.com	818-407-1911
Radonich Corp dba Cal Coast Telecom	C-7	mgaffrey@cctcom.net	408-275-8888
Giannelli Electric, Inc.	C-7, C-10	cgiannelli@gnle.net	909-393-3010
Intercom Clock & Signal Service dba. ICS Service	C-7, C-10	j.abbasi@icsservice.net	951-683-3637
JAM Corporation	C-7, C-10	mike.mongillo@jamcorporation.com	626-256-4400
Mel Smith Electric, Inc.	C-7, C-10	estimating@melsmithelectric.com	714-761-3205
PMK Professional, Inc.	C-7, C-10	bids@pmkpro.com	949-679-9800
Red Wave Communications & Electrical Systems, Inc.	C-7, C-10	amy@redwavecomm.com	949-873-0823
Telenet VoIP, Inc.	C-7, C-10	emmeline@telenetvoip.com	310-253-9000

IRVINE • SACRAMENTO • SAN DIEGO • SAN JOSE • AUSTIN • DALLAS • SAN ANTONIO

March 10, 2026

Addendum No.
To the contract documents for Sonora HS Science Classrooms
DSA File No. 30-H3
DSA No.: 04-124966
LPA Project No. 32433

NOTICE TO BIDDERS

This addendum forms a part of the contract and modifies the original Bidding Documents. Note documents are not DSA approved. Non-DSA documents are dated 01/27/26. It is intended that all work affected by the following modifications shall conform to related provisions and general conditions of the Contract of the original drawings and specifications. Modify the following items wherever appearing in any drawings or sections of the specifications. Acknowledge receipt of Addendum No. 002 in the space provided on the Bid Form. Failure to do so may be subject to disqualification.

General Items

Item No. 1 See RFI responses attached. See pre-bid substitutions attached.

Changes to Specifications

Item No. 1	Division 09	09 96 00 – High Performance Coating
Item No. 2	Division 12	12 35 53.19 – Wood Laboratory Casework
Item No. 3	Division 11	11 53 13 – Laboratory Fume Hood Division 09
Item No. 4	Division 23	23 09 00 – Building Automation System

Drawings and Documents Issued

Item No. 1	Laboratory By Design, Inc / ICI Scientific - Wood Laboratory Casework “Substitution Request”
Item No. 2	Laboratory By Design, Inc / ICI Scientific – Isolator Gen5 Fume Hood “Substitution Request”

End of Addendum No.002

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No. DWG - 02 (Bid Pkg. - RFI No.)

FROM: Dennis O'Donnell

DWG. REF.: A1.02

FAX No.: N/A

Cost Impact: Yes ☐ No ☑

(For cost impact, provide detailed breakdown of the change for approval)

School: SOHS

Bid Pack: DWG - Demo
Trade not BP No.

Spec. Ref: N/A

Date:

Description of Problem/Clarification/Information Required:

Keynote 02.15 calls for demo/relocation of fire alarm power supply & amplifier. Are we to demo or relocate?

Drawings attached: A1.02

Proposed Solution:

Question By: **Date:**

Response:

Existing fire alarm power supply will be relocated. Fire alarm amplifier will be new.

Response By: Melanie Marcelo, WSP **Date:** 03/06/2026

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: NA

RFI No. DW6 (Bid Pkg.) - 02 (RFI No.)

FROM: Dennis O'Donnell

DWG. REF.: C1.01

FAX No.: N/A

Cost Impact: Yes ☑ No ☐

(For cost impact, provide detailed breakdown of the change for approval)

School: SOHS

Bid Pack: DW6 - Demo
Trade not BP No.

Spec. Ref: N/A

Date:

Description of Problem/Clarification/Information Required:

Will the Western Walkway Running the length of building 400 be able to be used for machine access to and from the building for debris offland purposes?

Costs will increase significantly if this is not possible.

Drawings attached: C1.01

Proposed Solution:

Question By: **Date:**

Response: Yes, Contractor is to provide barrier/temp fences along the firelane between BLDG 400 and BLDG 900, towards to the south parking lot(designated laydown area)

District will coordinate the logistics during post bid interview.

Response By: Andy Kim - FJUHSD **Date:**

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No. DW6 - 03 (Bid Pkg. - RFI No.)

FROM: Dennis O'Donnell

DWG. REF.: C1.01

FAX No.: N/A

★ Cost Impact: Yes ☑ No ☐

(For cost impact, provide detailed breakdown of the change for approval)

School: SOHS

Bid Pack: DW6 - Demo (Trade not BP No.)

Spec. Ref: N/A

Date:

Description of Problem/Clarification/Information Required:

~~Will machine operations be permitted inside the building? If so, please~~

Which machines are restricted from working inside the building?

★ Significant restrictions will result in significant increases in cost.

Drawings attached:

Proposed Solution:

Question By: **Date:**

Response: No, as long as the machine fits inside of the building, there are no machine restrictions.

Please make sure all safety requirements are followed and any traffic marking cleared completely after the project.

Response By: Andy Kim - FJUHSD **Date:**

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim andykim@fjuhsd.org Ref No.: 1

RFI No. GC (Bid Pkg.) - 1 (RFI No.)

FROM: Construct 1 One Corp. DWG. REF.: _____

FAX No.: _____

Cost Impact: Yes ☐ No ☐

(For cost impact, provide detailed breakdown of the change for approval)

School: Sonora High School

Bid Pack: GC
Trade not BP No.

Spec. Ref: Division 00

Date: 02/27/2026

Description of Problem/Clarification/Information Required:

Please provide specific insurance limits/requirements.

Drawings attached:

Proposed Solution:

Question By: Construct 1 One Corp. **Date:** 02/227/2026

Response:

Commercial General Liability, with Products and Completed Operations Coverage	$1,000,000 each occurrence $2,000,000 aggregate
Automobile Liability, Any Auto, Combined Single Limit	$1,000,000 each occurrence $2,000,000 aggregate
Workers Compensation	Statutory limits pursuant to State law
Employers' Liability	$1,000,000 each incident, disease $2,000,000 policy limit

Response By. Andy Kim - FJUHSD **Date.**

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 1
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: G0.20

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

School: Sonora High School

(For cost impact, provide detailed breakdown of the change for approval)

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: DIV 00 & DIV 01

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Does this project include PLA, CWA, PSA, CBA or any other type or form of labor agreements?

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response: No.

Response By: Andy Kim- FJUHSD **Date:**

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 2
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: G0.20

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

School: Sonora High School

(For cost impact, provide detailed breakdown of the change for approval)

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: DIV 00 & DIV 01

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Is STW (Skilled & Trained Workforce) required on this project? (Per public contract code sections 2600 - 2603)

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response: No.

Response By: Andy Kim - FJUHSD **Date:**

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 3
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: G0.20

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

(For cost impact, provide detailed breakdown of the change for approval)

School: Sonora High School

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: DIV 00 & DIV 01

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Can you provide the insurance requirements for the Subcontractors on this project?

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response: Insurance requirements are same with prime and subcontractors.

Response By: Andy Kim - FJUHSD **Date:**

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 4
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: G0.20

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

School: Sonora High School

(For cost impact, provide detailed breakdown of the change for approval)

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: DIV 00 & DIV 01

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Is the subcontractor required to provide the same insurance limits as the General Contractor?

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response: Yes.

Response By: Andy Kim - FJUHSD **Date:**

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No. GC - 5 (Bid Pkg. / RFI No.)

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: G0.20

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

School: Sonora High School

(For cost impact, provide detailed breakdown of the change for approval)

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: DIV 00 & DIV 01

Date: 2/27/2026

Description of Problem/Clarification/Information Required: Is this project subject to Davis-Bacon?

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response: No. Federal funding or assistance were not involved in project.

California DIR law applies under Sections 1170 et seq. of the California Labor Code.

Response By: Andy Kim- FJUHSD **Date:**

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 6
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: E0.01 to E5.05

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

(For cost impact, provide detailed breakdown of the change for approval)

School: Sonora High School

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: 26 00 00

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Please provide Photos and information of Electrical Room and the Electrical panel , as it wasn't accessible during Job walk

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response: Substation USS-3 is located in the electrical room in building 600 just across bldg 650.
Refer to the attached photos from the initial walk in 2025.
Contractor shall be responsible to field verify current condition of existing equipment prior to bid.

Response By: Ronald Dela Cruz, WSP **Date:** 03/05/2026

Reviewed By: **Date:**


USS-3
SQUARE D COMPANY


4B
6A
4EA
6EA
6EB
USS3
6H
6C
4G
4A
6M
6N
4C
4D
6B
6L
6J
6D
6F
6K
6B
6D
4F
6P
642
C82


SQUARE D


DANGER / PELIGRO / DANGER
USS-3


HVL/CC
4160V. 3PH. 3W
FUSE: 125E
DANGER
WARNING
AVERTISSEMENT
USS-3


HVL / cc
LOAD CURRENT INTERRUPTER SWITCHGEAR
ORDER NO.
MANUF. DATE
RATED MAX. VOLTAGE kV
IMPULSE (BIL) kV
POWER FREQ. WITHSTAND kV
FREQUENCY HZ
SW. CONT. CURR. A SYM
MAIN BUS CONT. CURR. A SYM
MOMENTARY CURR. kA ASYM
SHORT TIME CURR. kA SYM
TIME SEC
FAULT CLOSE CURR. kA ASYM
FUSE DATA
CAT. #
FUSE SIZE
MAX. DIRECT ACTING TRIP
FUSE SIZE
N/A
INTEGRATED SW & FUSE
SHORT CIRCUIT CURRENT
kA SYM
MOTOR
CLOSE
TRIP
SQUARE D COMPANY
SMYRNA, TN USA
OPEN
CLOSED

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No. GC (Bid Pkg.) - 7 (RFI No.)

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: EFA0.01 to EFA2.01

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

(For cost impact, provide detailed breakdown of the change for approval)

School: Sonora High School

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: 28 16 00 & 28 3100

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Please advise the existing Fire Alarm System Provider / vender/ manufacture.

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response:

Existing fire alarm system is Farenhyt by Silent Knight with Gentex as A/V manufacturer.

Response By: Melanie Marcelo, WSP **Date:** 03/05/2026

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 8
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: EFA0.01 to EFA2.01

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

(For cost impact, provide detailed breakdown of the change for approval)

School: Sonora High School

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: 28 16 00 & 28 3100

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Please confirm if the complete Fire alarm system will be replaced by new one , unless advised otherwise

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response: Only control panel and power supply is existing to remain.

Confirming the remaining equipment/devices shall be replaced with new.

Response By: Melanie Marcelo, WSP **Date:** 03/05/2026

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 9
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: FP0.01 to FP1.02

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

(For cost impact, provide detailed breakdown of the change for approval)

School: Sonora High School

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: 21 13 13

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Please confirm if the Fire Sprinklers existing system will be replace with new one , unless advise otherwise

In the project scope of work only:
All existing sprinklers shall be demolished, and new sprinklers shall be provided.

All existing sprinklers shall remain untouched, outside of the scope of work of the project.

WSP, 3/9/2026

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response:

Response By: **Date:**

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No. GC - 10 (Bid Pkg. / RFI No.)

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: A1.34, A2.09, A2.31, A8.22

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

(For cost impact, provide detailed breakdown of the change for approval)

School: Sonora High School

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: 08 62 23

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Please advise if the Existing Tubular Skylights on Roof will be replaced by new Tubular Skylights , unless advise otherwise

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response:

There are no existing tubular lights. Reference Sheet A1.34 Existing Demolition Plan for existing skylights to be demolished. Also reference Sheet A2.09 Roof Plan.

Response By: Maribel Abrica **Date:** 03/05/26

Reviewed By: Maribel Abrica **Date:** 03/05/26

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 11
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: A1.34, A2.09, A8.21, A8.22, S2.02, P2.20

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

School: Sonora High School

(For cost impact, provide detailed breakdown of the change for approval)

Bid Pack: General Construction
Trade not BP No.

Spec. Ref: 07 01 50.19 07 52 16.13

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

As notice during site walk , there is indication of roof leakage , please advise if the whole existing roofing will be removed and replaced by new roofing system and please provide leakage inspection report if any.

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response: See Drawings for new roof. Reference Sheet A1.34 Existing Demolition Plan.

For proposed roof plans reference Sheet A2.09 Roof Plan .

Response By: Maribel Abrica **Date:** 03/05/26

Reviewed By: Maribel Abrica **Date:** 03/05/26

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No. GC - 12 (Bid Pkg. / RFI No.)

FROM: Tovey/Shultz Construction

DWG. REF.: A6.11, A6.12

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

(For cost impact, provide detailed breakdown of the change for approval)

School: Sonora High School

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: 08 71 00 -17

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

The hardware sets indicate the following note:

"New cylinder to match existing campus standard – consult campus locksmith. Existing Medeco keying system."

In order to provide an accurate estimate for the required construction cores and permanent cores, please provide clarification on the specific Medeco keyway that is to be matched

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response:

LPA RESPONSE:
SPECIFIC MEDECO KEYWAY TO BE PROVIDED BY DISTRICT. PLEASE SEE DIV 08 7100 SECTION 2.9 (A) KEYING REQUIREMENTS. REFERENCED DRAWINGS SHEET A6.11 AND 6.12 DO NOT NOTE MEDECO KEYWAY.

Response By:

-A. ABRICA 03/09/2026

Reviewed By:

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 13
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: A6.11

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

School: Sonora High School

(For cost impact, provide detailed breakdown of the change for approval)

08 11 13
08 14 16

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: 08 80 00

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

The Door Elevation B on Sheet Schedule on Sheet A6.11 show a vision lite in the door.
Are these to be integral vision lites within the doors or lite frames required?

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response:

LPA RESPONSE:
DOOR TYPE B VISION LITES TO BE INTEGRAL VISION LITES WITHIN THE DOOR.

-M.ABRICA 03/05/2026

Response By: **Date:**

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 14
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: A9.31

FAX No.: 951-471-5645

Cost Impact: Yes ☐ No ☐

(For cost impact, provide detailed breakdown of the change for approval)

School: Sonora High School

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: 12 35 53.19

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Wood Laboratory Casework Specs call for Hamiton, Kewaunee, Mot Manufacturing a Proprietary Specs. Can you Clarify if K&Z Cabinet Co. can be a Substitute Manufacture?

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response:

LPA RESPONSE:
SCIENCE LAB CASEWORK SUBSTITUTION IS ACCEPTABLE. PENDING SUBSITUTION REQUEST STILL IN PROGRESS FOR OFFICAL APPROVAL

-M.COBB 03/05/2026

Response By: **Date:**

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 15
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: A9.31

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

School: Sonora High School

(For cost impact, provide detailed breakdown of the change for approval)

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: 12 35 53.19

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Please confirm if conference room 420 casework to be per 064100 and all other casework to be per 123553.19.

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response:

LPA RESPONSE:
CORRECT, CASEWORK IN CONFERENCE ROOM ARE TO FOLLOW TYPICAL WI CASEWORK SPECIFICATIONS

-M.COBB 03/05/26

Response By: **Date:**

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No. GC - 16 (Bid Pkg. / RFI No.)

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: M0.01 & M0.02

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

(For cost impact, provide detailed breakdown of the change for approval)

School: Sonora High School

Bid Pack: General Contracting, Inc.
Trade not BP No.

Spec. Ref: 23 09 00

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

EMS, BMS, DDC specifications 230900 state to have BACnet EMS operating systems. The plans call out for Pelican controls. Please provide the updated specifications for Pelican controls as shown on the plans.

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response: Use Specification 230900 "Building Automation System"

for Pelican Controls which will be provided.

Response By: Austin Largent **Date:** 03-09-2026

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 17
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: M0.01 to M6.02

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

(For cost impact, provide detailed breakdown of the change for approval)

School: Sonora High School

Bid Pack: General Contracting, Inc.
Trade not BP No.

Spec. Ref: 23 07 13
23 31 13

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

The duct insulation specs 230713 shows larger thickness than spec section 233113 and the plans show.
Please clarify that the plan thickness for duct liner is correct as shown in Spec section 233113 and the plan pages.

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response: Provide duct lining and insulation per plans and specification 233113.

Response By: Austin Largent - WSP **Date:** 03/06/2026

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 18
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: 19/L5.01

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☒

School: Sonora High School

(For cost impact, provide detailed breakdown of the change for approval)

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: 05 52 13

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Please confirm that the Hot Dipped Galvanized Barrier Rails are not field painted

Drawings attached:

Proposed Solution:

N/A

Question By: Hany Soryal **Date:** 2/27/2026

Response:

Hot Dipped Galvanized Barrier Rails are not field painted.

Response By: Laurie Shih **Date:** March 9, 2026

Reviewed By: Laurie Shih **Date:** March 9, 2026

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 19
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: M3.01

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

School: Sonora High School

(For cost impact, provide detailed breakdown of the change for approval)

09 91 13
09 96 00

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: 23 31 13

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Does the rooftop ductwork require painting, if so which paint system is to be applied.

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response: No paint required on roof top duct work.

Response By: Maribel Abrica **Date:** 03/05/26

Reviewed By: Maribel Abrica **Date:** 03/05/26

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No. GC - 20 (Bid Pkg. / RFI No.)

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: A3.01, A6.12, A8.11, A8.21

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

School: Sonora High School

(For cost impact, provide detailed breakdown of the change for approval)

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: 09 96 00

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

The High performance coating spec 099600 calls for Elastomeric coating on the exterior block and plaster, but also calls for a Urethane coating on exterior block and plaster. what system is to be applied?

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response:

Provide elastomeric coating. Urethane Coating can be disregarded.

Response By: Steve Key **Date:** 3/9/2026

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 21
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: A2.01, A2.09, A3.01. A3.11, L0.02

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

(For cost impact, provide detailed breakdown of the change for approval)

School: Sonora High School

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: 05 05 13

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Please clarify where the High Performance Metallic Fluoropolymer is to be applied on

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response:

Spec 099600 applies to any exterior metal that is to be primed and painted in the field to have high perforamce coating.
All Storefront to have factory finish using Fluoropolymer finsh, however metalic version is not to be used on this project.

Steve Key 3/9/2026

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No. GC - 22 (Bid Pkg. / RFI No.)

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: A2.01, A2.09, A3.01. A3.11, L0.02

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

School: Sonora High School

(For cost impact, provide detailed breakdown of the change for approval)

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: 09 96 00

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Is anti-graffiti coating required to be applied on the exterior?
Please advise the location of the application.

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response:

Not required.

Response By: Steve Key **Date:** 3/9/2026

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
BID NO: 04-124966
REQUEST FOR INFORMATION
(RFI)

(ALL LINE ITEMS MUST BE COMPLETED PRIOR TO SUBMITTAL)

TO: Andy Kim

Ref No.: N/A

RFI No.
GC - 23
Bid Pkg. RFI No.

FROM: Tovey/Shultz Construction, Inc.

DWG. REF.: A2.21

FAX No.: 951-471-5345

Cost Impact: Yes ☐ No ☐

(For cost impact, provide detailed breakdown of the change for approval)

School: Sonora High School

Bid Pack: General Contractor
Trade not BP No.

Spec. Ref: 09 91 23
09 96 00

Date: 2/27/2026

Description of Problem/Clarification/Information Required:

Please provide the locations of the interior P-2 accent paint color, which is listed in the Finish Schedule

Drawings attached:

Proposed Solution:

Question By: Hany Soryal **Date:** 2/27/2026

Response:

LPA RESPONSE:

NO P-2 IN PROJECT, ALL WALLS TO RECEIVE VISTA PAINT, ANTIQUE WHITE #50

-M.COBB 03/09/26

Response By: **Date:**

Reviewed By: **Date:**

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
1051 W. Bastanchury Road
Fullerton, CA 92833
(714) 680-5622

SUBSTITUTION REQUEST FORM

#_____

DATE: 2-23-26

TO: Andy Kim

PROJECT: Sonora High School Science Classrooms Modernization

SPECIFIED ITEM:

Section	Page	Paragraph	Description
123553.19	3	2.01	Wood Laboratory Casework Manufacturers

The undersigned requests consideration of the following:

PROPOSED SUBSTITUTION: Wood laboratory casework as manufactured by ICI Scientific

This is the same manufacturer as provided on previous FJUHSD projects La Habra High School 16162 and Fullerton Union High School 16159.

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request. Applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents which the proposed substitution will require for its proper installation.

The undersigned certifies that the following paragraphs, unless modified by attachments are correct:

1. The proposed substitution does not affect dimensions shown on drawings:
2. The undersigned will pay for changes to the building design, including engineering design, detailing, and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse effect on other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts will be locally available for the proposed substitution.
5. The proposed substitution is submitted within the time frames indicated in the Contract Documents.

The undersigned further states that the function, appearance, and quality of the proposed substitution are equivalent or superior to the specified item.

Submitted by: John Schmidt

Signature: John Schmidt

Firm: Laboratory by Design

Address: 20 Enterprise Court, Suite 3, Napa CA 94558

Remarks: _____

Date: 2-23-26

Telephone: 707-252-8218 Fax: _____

(For Use By The Design Consultant)

___ Accepted ___ Accepted as noted

___ Not Accepted ___ Received too late

Reviewed By _____

Date: _____

LPA RESPONSE:
WE TAKE NO EXCEPTION TO THE SUBSTITUTION REQUEST.

-M. ABRICA 03/10/2026

Laboratory by Design, Inc.
The Key to Your Lab Needs

Cabinets
Countertops
Fume Hoods
LabsByDesign.com

ICI Scientific

Wood Laboratory Casework Substitution Request

Table of Contents

Northern California: 20 Enterprise Court, Suite 3, Napa, CA 94558
Southern California: 24445 Hawthorne Blvd., Suite 205, Torrance, CA 90505
Phone: 707-252-8218 | Fax: 707-252-8226
CA Contractors License #616947 | DIR # 1000002753 | Dept. of General Services SB #14822

Laboratory by Design, Inc.
The Key to Your Lab Needs
Cabinets
Countertops
Fume Hoods
LabsByDesign.com

Substitution of ICI Scientific Casework and Fume Hoods

Specifications 115313, 123553.19

Laboratory by Design (LBD) is requesting substitution approval of laboratory casework and fume hoods manufactured and supplied by ICI Scientific for the Sonora HS project. This same manufacturer was provided successfully for FJUHSD at La Habra HS and Fullerton Union HS. The following documents include specifications, test reports, and background information on ICI Scientific's manufacturing capabilities.

ICI Scientific is a laboratory grade line of casework that has a solid history of use and has been tested to meet or exceed SEFA-8 requirements. LBD requests the proposed substitute casework be considered as it offers a competitive bid and consolidates manufacturers of casework and fume hoods without change in detail, construction, and scheduling of related work. It is LBD's belief that this casework will provide the same or better performance as intended in the specification while offering a similar finish look to the manufacturer specified.

Any further information required to accept this substitution can be provided upon request.

Photo Example of Proposed Casework and Fume Hoods at Santa Rosa Junior College

Northern California: 20 Enterprise Court, Suite 3, Napa, CA 94558
Southern California: 24445 Hawthorne Blvd., Suite 205, Torrance, CA 90505
Phone: 707-252-8218 | Fax: 707-252-8226
CA Contractors License #616947 | DIR # 1000002753 | Dept. of General Services SB #14822

History - Since 1951

Institutional Casework Inc. (ICI Scientific) is uniquely positioned to serve your complete project needs from steel, stainless steel, or custom wood laboratory and science casework to equipment, fixtures, work surfaces and fumes hoods.

ICI is privately owned, ensuring a primary focus on quality. This focus enables us to build a strong connection with our customers, employees, distributors and suppliers.

Introducing ICI Scientific - specifically designed and positioned to meet the requirements of Tier One laboratory specifications. ICI Scientific brings your preliminary concept to life; assisting from design through installation in partnership with our world-wide distributor network; delivering post-sale service and support through the lifetime of our products.

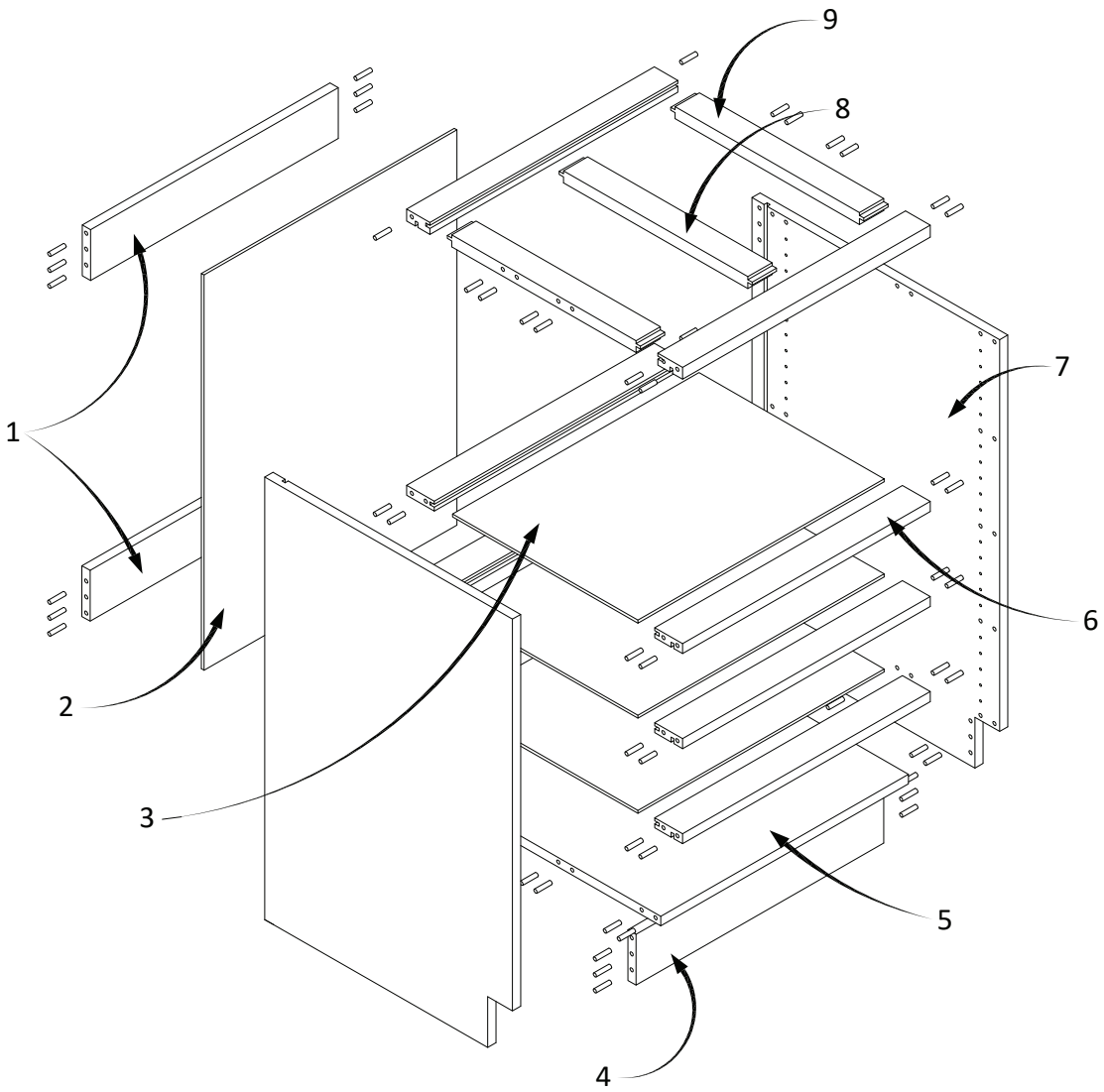
ICI Scientific is your single source for a complete laboratory. With brands steeped in a rich history, ICI Scientific is uniquely positioned to provide the complete laboratory project. Being privately owned, we ensure our primary focus is on quality, without the distraction of fluctuating stocks. We are focused on building a strong connection with employees, dealers, distributors, customers and end users.

All levels of laboratories and learning environments are created at ICI through flexibility, function, innovation and design.

American Made

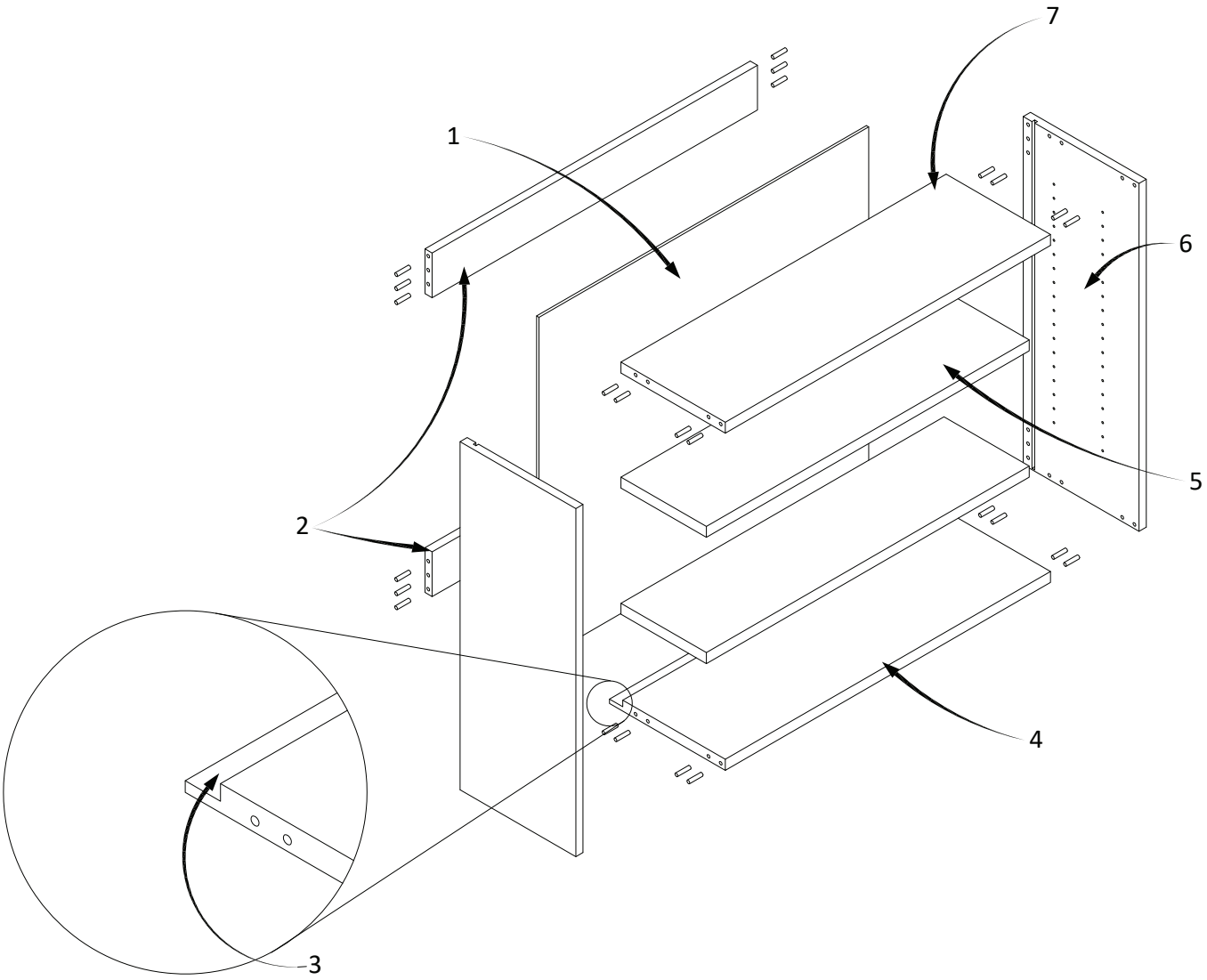
ICI's three manufacturing facilities comprise 450,000 sq. ft. with 250 associates; ICI Scientific is a global provider of American Made products.

Base Cabinet Construction



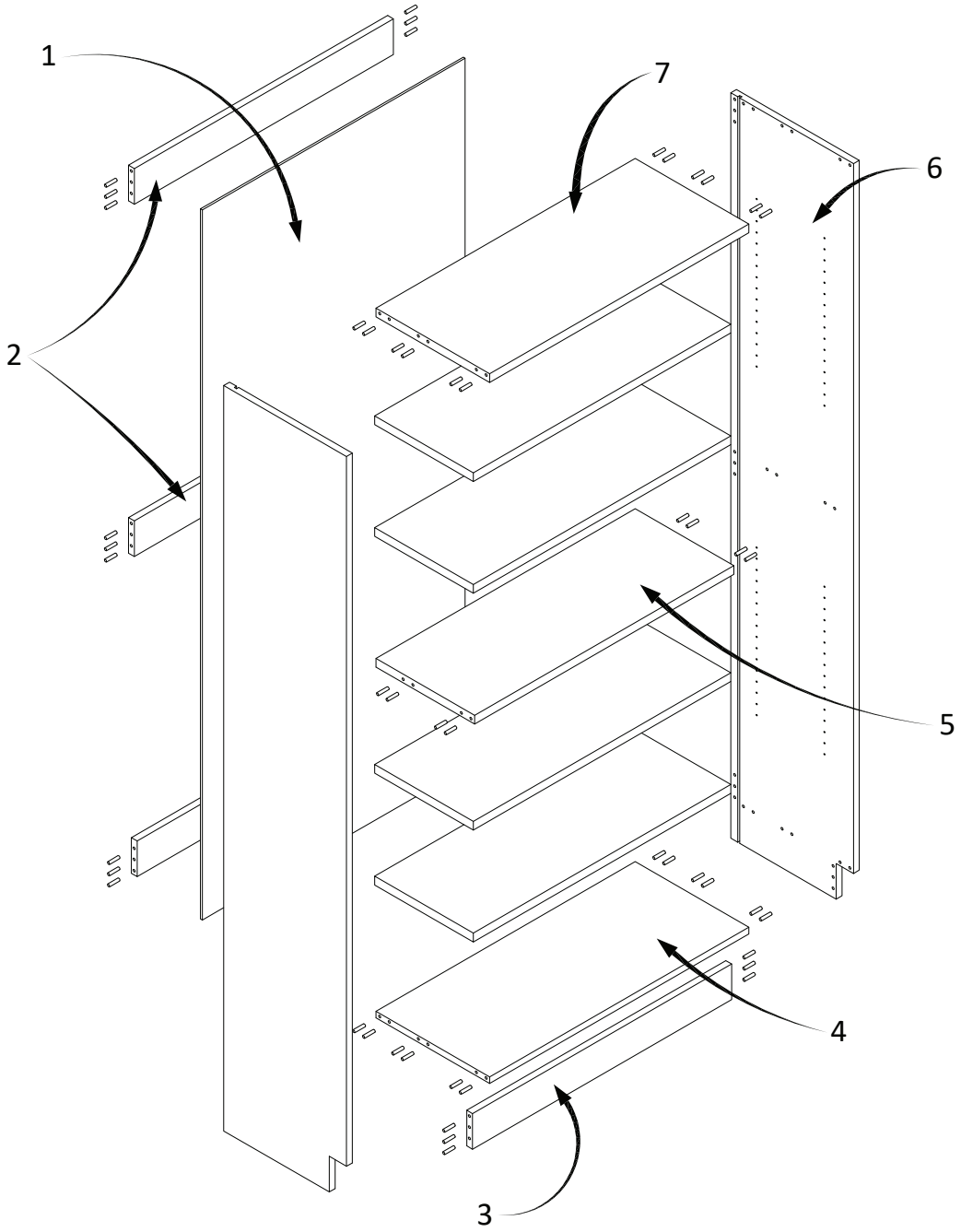
1. Rear anchor rails are 3/4” hardwood plywood, bored, doweled and glued into end panels.
2. Cabinets with exposed interiors have 1/4” hardwood plywood backs. Cabinets with unexposed interior have 1/4” color coordinated MDF backs. All backs are recessed and let into dadoed end panels and screwed to the back top rail and bottom panel. Cabinets with exposed backs are 3/4” hardwood plywood bored, doweled and glued into end panels.
3. Drawer separators (furnished only when requested) are 1/4” color coordinated MDF secured into dadoed intermediate front and back rails.
4. Toe rails are 4” high, 3/4” hardwood plywood, bored, doweled and glued into end panels.
5. Bottom panel is bored, doweled and glued into end panels. Bottom is 3/4” hardwood plywood.
6. All intermediate rails are bored, doweled and glued into end panels. Front rail: 2 1/2” x 3/4” solid hardwood with a solid edge band. Back rail: (when required) 2 1/2” x 3/4” solid hardwood.
7. End Panels are 3/4” hardwood plywood.
8. Center mullions are 2 1/8” x 1” solid hardwood tenoned, and glued into front and back rails. Center mullions are provided on cabinets wider than 30”.
9. Full horizontal top frame is bored, doweled, glued, and screwed to end panels. Front top rail: 2 1/4” x 1” solid hardwood with 3mm edge banding on front edge; rear top rail: 2 1/8” x 1” solid hardwood; side rails: 2 1/8” x 1” solid hardwood tenoned, and glued into front and back rails.

Wall Cabinet Construction



1. Cabinets with exposed interiors have 1/4” hardwood plywood backs. Cabinets with unexposed interior have 1/4” color coordinated MDF backs. All backs are recessed and let into dadoed end panels and screwed to the back top rail and bottom panel. Cabinets with exposed backs are 3/4” hardwood plywood bored, doweled and glued into end panels.
2. Rear anchor rails are 3/4” hardwood plywood, bored, doweled and glued into end panels.
3. Bottom panel is half-lapped, providing a full depth finished bottom.
4. Bottom panel is bored, doweled and glued into end panels. Bottom is 1” hardwood plywood.
5. Adjustable shelves are 1” hardwood plywood.
6. End panels are 3/4” hardwood plywood.
7. Top panel is bored, doweled and glued into end panels. Top panel is 1” hardwood plywood.

Tall Cabinet Construction



1. Cabinets with exposed interiors have 1/4” hardwood plywood backs. Cabinets with unexposed interior have 1/4” color coordinated MDF backs. All backs are recessed and let into dadoed end panels and screwed to the back top rail and bottom panel. Cabinets with exposed backs are 3/4” hardwood plywood bored, doweled and glued into end panels.
2. Rear anchor rails are 3/4” hardwood plywood, bored, doweled and glued into end panels.
3. Toe rails are 4” high, 3/4” hardwood plywood, bored, doweled and glued into end panels.
4. Bottom panel is bored, doweled and glued into end panels. Bottom is 3/4” hardwood plywood.
5. Adjustable shelves are 1” hardwood plywood. Center shelf is fixed for structural support.
6. End panels are 3/4” hardwood plywood.
7. Top panel is 1” hardwood plywood, bored, doweled, and glued into end panels.

Classic (Group A)

Holding to true traditional, classic wood casework design, this style demonstrates a bold strength of body with the smooth arc of style.
Styling: A unique style of squared overlay design accented with a classic radius front while the back edge remains squared.
Material: Available in Oak and Maple
Drawer and Door Grain Direction: Drawers - Horizontal grain. Doors - Vertical grain
Pull: Black Aluminum Bow Rod
Latching/Locking Handles: Black
Locks: Black
Hinges: Black Finished Steel
Dimension Style: Fractional (Group A)

Spectrum (Group A)

Offering a wide variety of color with plastic laminate faces and a clean tailored look.
Styling: Squared edges with black PVC edge band applied after lamination, overlap the opening by 1/4".
Material: Available in Oak and Maple
Drawer and Door Grain Direction: When required, to be horizontal on drawers and vertical on doors
Pull: Black Powder Coated Rod
Latching/Locking Handles: Black
Locks: Black
Hinges: Black Finished Steel
Dimension Style: Fractional (Group A)

Signature II (Group A)

Plain sliced oak or rotary cut maple, combo-grain veneer faces with solid wood edging.
Styling: Edges are squared & overlap the opening by 1/4".
Material: Available in Oak and Maple
Drawer and Door Grain Direction: Drawers - Horizontal grain. Doors - Vertical grain
Pull: Aluminum Rod
Latching/Locking Handles: Chrome
Locks: Chrome
Hinges: Chrome
Dimension Style: Fractional (Group A)

Proposed substitute style

Empire (Group B)

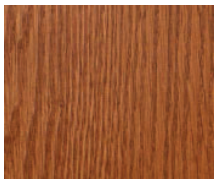
Plain sliced oak or rotary cut maple, vertical grain veneer faces with solid wood edging.
Styling: Full flush overlay with squared edges.
Material: Available in Oak and Maple
Drawer and Door Grain Direction: Drawers and Doors - Matched Vertical grain
Pull: Aluminum Rod
Latching/Locking Handles: Chrome
Locks: Chrome
Hinges: Chrome
Dimension Style: Even (Style B)

1. CampbellRhea selects the finest Quality Oak and Maple lumber and veneer-faced plywoods.
2. All surfaces are progressively sanded smooth, starting with #120 grit sandpaper and finishing with #220 grit sandpaper.
3. After sanding, surfaces are vacuumed and blown to eliminate all dust particles.
4. An equalizing toner is applied to establish consistent color uniformity.
5. The specified NGR (non-grain raising) stain is pressure applied to reveal the hidden beauty of the grain. The stain coat is allowed to air dry.
6. CampbellRhea's catalyzed vinyl conversion varnish sealer is pressure applied, penetrating all exposed wood surfaces for uniform protection.
7. The sealed product is placed in specially designed high temperature ovens at 135-140°F to ensure a complete & thorough cure.
8. All surfaces are again hand sanded, providing a smooth consistent surface to accept two coats of CampbellRhea's catalyzed conversion varnish top coat.
9. Our standard finish meets AWI/QCP requirements by receiving two applications of the catalyzed conversion varnish and the product is again place in specially designed high temperature ovens at 135-140°F to ensure a complete & thorough cure.
10. The unique CampbellRhea stains and the custom finish, provide a high quality luster to the surface and maximum resistance to scuffing, dents, moisture, chemicals and solvents in the laboratory environment - or any casework application.

Oak Finishes


#1000-Natural


#2000-Honey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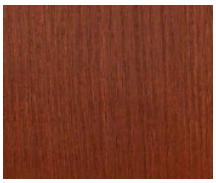
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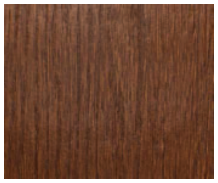
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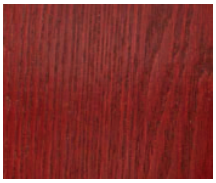
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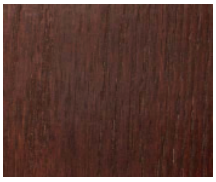

#7000-Mocha

Maple Finishes


#1000-Natural

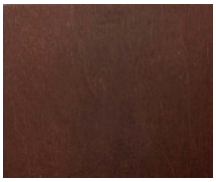

#2000-Honey


#3000-Amber


#4000-Auburn


#5000-Harvest


#6000-Chili


#7000-Mocha

Hardware can be modified to match
project specification as required

CampbellRhea "Empire" Oak Specification

SECTION 123553
MANUFACTURED CASEWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Fixed modular casework furniture with finished interiors.

B. Countertops.

C. Fixtures.

D. Sinks, faucets, and plumbing accessories.

E. Electrical fixtures and accessories.

F. Fume hoods.

G. Utility-space closure panels between base cabinets and at exposed ends of utility spaces.

H. Utility-space framing at backs of base cabinets and between backs of base cabinets.

I. Related equipment.

1.2 RELATED SECTIONS

A. Section 06100 - Rough Carpentry: Framing and blocking in walls, floors and ceiling to support equipment.

B. Section 09650 - Resilient Flooring: base for casework including floor cabinets and table legs.

C. Section 15050 - Basic Mechanical Materials and Methods: Connections for drain lines, service piping, vents, re-vents, in-line vacuum breakers, special plumbing fixtures, traps and tailpieces to service fixtures.

D. Section 16050 - Basic Electrical Materials and Methods: Connections for electrical service lines, wire and conduit to service fixtures.

1.3 REFERENCES

A. ADA (ATBCB ADAAG): Americans with Disabilities Act Accessibility Guidelines.

B. ANSI/AIHA 9.5: American National Standard for Laboratory Ventilation.

C. ANSI/ASHRAE 110: Method of Testing Performance of Laboratory Fume Hoods.

D. ANSI 2358.1: Minimum Performance Requirements for Emergency Showers.

E. ASTM A167: Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

F. ASTM A 666: Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

G. Architectural Woodwork Institute (AWI): Quality Standards.

H. FS W-C-596: Electrical Power Connector, Plug, Receptacle, and Cable Outlet.

I. NEMA WD 1: General Color Requirements for Wiring Devices.

J. NEMA WD 6: Devices-Dimensional Requirements.

K. NEMA LD 3: High Pressure Decorative Laminates.

L. NFPA 30: Flammable and Combustible Liquids Code.

M. NFPA-45: Standard for Fire Protection for Laboratories Using Chemicals.

N. OSHA 29-CFR-1910.1450: Occupational Exposure to Hazardous Chemicals in Laboratories.

O. SEFA 1: Laboratory Fume Hoods - Recommended Practices.

P. SEFA 7: Laboratory and Hospital Fixtures--Recommended Practices.

Q. SEFA 8: Laboratory Furniture--Casework, Shelving and Tables--Recommended Practices.

R. UL 498: Attachment Plugs and Receptacles.

S. UL 1805: Laboratory Hoods and cabinets, where applicable.

T. FSC: Forest Stewardship Council.

U. CARB: California Air Resources Board.

V. “American Made”: Casework wholly manufactured and assembled in USA.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Manufacturer's data sheets on each product to be used, including:
   1. Test reports certifying that the casework finish complies with SEFA-8 standards for chemical and physical resistance performance requirements.
   2. Performance test reports from an independent testing lab on each specified top material.
   3. Preparation instructions and recommendations.
   4. Storage and handling requirements and recommendations.
   5. Installation methods.

C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
   1. Indicate locations of blocking and reinforcements required for installing laboratory casework.
   2. Indicate locations and types of service fittings, together with associated service supply connection required.
   3. Include details of utility spaces.
   4. Include indicators of exposed conduits, if required, for service fittings.

5. Indicate locations of and clearances from adjacent walls, doors, windows, other building components, and other laboratory equipment.
6. Include coordinated dimensions for laboratory equipment specified in other Sections.

D. Certificate of Origin: Manufacturer must supply with first submittal, an example of their Certificate of Origin declaring casework is wholly manufactured and assembled specifically in the United States, including city, county, and state locations. A notarized Certificate of Origin must be provided with closeout documents.

E. Selection Samples: For each finish product specified, one complete set of color chips representing manufacturer's full range of available colors and patterns.
1. One set of samples indicating full range of finishes for countertop specified.
2. One set of casework samples indicating full range of finishes for casework specified.

F. LEED Submittals: Provide documentation affirming that specific products listed in this section contribute to the following LEED Credits:
1. MR Credit 4: Recycled Content.
2. MR Credit 5: Regional Material.
3. MR Credit 6: Rapidly Renewable Materials.
4. MR Credit 7: Certified Wood.
5. IEQ Credit 4.1: Low-emitting Materials – Adhesives & Sealants.
6. IEQ Credit 4.2: Low-emitting Materials – Paints & Coatings.
7. IEQ Credit 4.4: Low-emitting Materials – Composite Wood & Agrifiber Products.

1.5 QUALITY ASSURANCE

S. Manufacturer Qualifications: Not less than 5 years experience in the actual production of specified products. Casework shall be wholly manufactured and assembled in the USA: i.e. “American Made”.

T. Installer Qualifications: Firm with 5 years experience in installation or application of systems similar in complexity to those required for this Project, plus the following.
1. Authorized distributor of manufacturer.

U. Mock-Up: Provide a mock-up for evaluation of fabrication techniques and application workmanship.
1. Installation in area designated by Architect.
2. Do not proceed with remaining work until installation is approved by Architect.
3. As selected and required by Architect's request for mock-up: Install base cabinet with drawer and cupboard, one adjustable shelf, hinged door and applicable hardware. Wall case with adjustable shelf, hinged door and applicable hardware. Tall case with adjustable shelves, fixed center shelf, hinged door and applicable hardware, including a 3-point latching system.

1.6 DELIVERY, STORAGE, AND HANDLING

Store products in manufacturer's unopened packaging until project conditions are ready for installation.

1.7 PROJECT CONDITIONS

A. For delivery and installation of laboratory casework and equipment, building conditions shall comply with AWI Standard 10.5 and 10.6 and be as follows:
1. Flooring required to be placed under casework and equipment installed.

2. Wood or metal blocking (wall grounds) installed within partitions to allow for immediate installation upon delivery.
3. Heating and air conditioning systems providing consistent temperature and humidity conditions to comply with by AWI Standard Section 2.
4. Relative humidity not less than 40 percent, nor more than 60 percent.
5. Temperatures not less than 65 degrees F (18 degrees C) and not greater than 80 degrees F (27 degrees C) in areas of casework and equipment installation.
6. Overhead mechanical, electrical and plumbing rough-in work is complete.
7. Wet operations complete prior to delivery.
8. Ceiling grids (with or without ceiling tiles), overhead soffits, ductwork and lighting installed.
9. Painting complete.

1.8 WARRANTY

A. Casework Manufacturer Warranty: 3 years from date of delivery. Warranty is for the conditions indicated below, and when notified in writing from Owner, manufacturer shall promptly investigate and address said deficiencies.
   1. Defects in materials and workmanship.
   2. Deterioration of material and surface performance below minimum SEFA 8 standards as certified by independent third party testing laboratory.
   3. Within the warranty period, we shall, at our option, repair, replace, or refund the purchase price of defective casework.

B. Casework manufacturer shall be notified immediately of defective products, and be given a reasonable opportunity to inspect the goods prior to return. Casework manufacturer will not assume responsibility, or compensation, for unauthorized repairs or labor. Casework manufacturer makes no other warranty, expressed or implied, to the merchantability, fitness for a particular purpose, design, sale, installation, or use, of casework; and, shall not be liable for incidental or consequential damages, losses of or expenses, resulting from the use of their products.
   1. The warranty with respect to products from another company sold by the casework manufacturer is limited to the warranty extended by that other company.

C. Casework manufacturer shall provide, with close-out documents, a Certificate of Warranty for products provided.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: ICI (Institutional Casework Inc.) manufacturer of CampbellRhea, which is located at: 1865 Highway 641 North; Paris, TN 38242; Tel: 731-642-4251; Fax: 731-642-4262; Email: Request info: sales@iciscientific.com ; Web: www.iciscientific.com

B. Product Designations: Drawings indicate sizes and configurations of laboratory casework by referencing designated manufacturer's catalog numbers. Other manufacturers' laboratory casework of similar sizes, similar door and drawer configurations, and complying with the Specifications, including certification to SEFA-8 standards for construction and chemical resistance, may be requested for approved substitution. Requests for substitutions will be considered in accordance with provisions of Section 01600. No exceptions will be made for casework that is not wholly manufactured and assembled in USA: i.e. “American Made”.

2.2 APPLICATIONS/SCOPE

A. Casework Group: Manufacturer shall offer an integrated product line serving the user function indicated with a coordinated design, supply and installation of casework, equipment, work surfaces, and accessories:
   1. General casework.
   2. Technology.
   3. Laboratory.
   4. ADA compliant.
   5. Life skills.
   6. Art
   7. Photographic
   8. Music
   9. Shop
   10. Library

2.3 CONSTRUCTION

A. Wood veneer on plywood core: ICI/CampbellRhea Casework: Red oak – plain sliced

B. Cabinet Finish, Interiors and Exteriors Match Finished: Standard factory finish, select from manufacturer's standard stains

C. Drawer and Door Styles:
Empire Drawer and Door Styling: Both door and drawer fronts are 3/4 inch (19 mm) thick; have a slight radius to the squared edges. Full flush overlay, vertical match grain, plain sliced oak veneer doors and drawer fronts have a particleboard core with a plain sliced vertical grain oak and a 1/8 inch (3mm) lumber edge-band.

D. Door and Drawer Hardware Style:
   1. Drawer and door pulls:
      AL-2: Extruded aluminum wire design finger pull.
   2. Sliding wood door pulls:
      RS -1: Recessed, metal finger grip is nickel-plated pull.
   3. Sliding glass door pulls:
      RS-2: Recessed, metal two-piece, screw together style with a bright chrome finish.
   4. Hinges:
      CP-1: Heavy-duty, institutional type, 5-knuckle hospital tipped, made from 0.083 inch (2 mm) thick chrome plated steel. Hinge is semi-concealed, 2-3/4 inches (70mm) high and has off-set wings; each wing has 5 screw holes for the door leaf and 4 screw holes for the case leaf, two of which are slotted for adjustability. Hinges are attached with Euro screws.
   5. Latching Handle:
      CP: Latching handle CP LH-1 is chrome plated, 4 1/4 inches (108 mm) long and streamline in design. Handle operates with 1/4 turn. Double door cases have latching handles on the right door and dummy handles on the left door. A three point latching system provides a positive engagement at the top and bottom of the door with tapered aluminum rods, which pull the door snug when they engage plastic strike plates. The rods are 5/16 inch (8 mm) in diameter and move in nylon guides attached to the back of the door. The middle of the door is secured by a latch plate, which engages the side of the case, or latches behind the left door on cases with double doors.
   6. Locking Handle:
      CP: Chrome plated locking handle is a latching handle with a lock mechanism incorporated into the handle head. On double door cases, the left door has a

dummy handle, and the right door has the locking handle. Lock is laboratory grade with a 5-disc tumbler mechanism with a brushed chrome face. Tumblers and keys are brass, while the plug and cylinder is die cast zinc alloy. There are 500 key changes standard. Locks are keyed differently, master keyed and furnished with 2 keys per lock. Locks and corresponding keys are alpha-numerically coded for a quick match.

7. Locks: Removable core standards:
   CP: Lock CP SL-1 is laboratory grade, cylinder cam lock, with a 5-disc tumbler mechanism with a chrome plated face. Tumblers and keys are brass, while plug and cylinder is die cast zinc alloy. A 180-degree turn of the key moves the lock cam into, or out of, a slot cut to receive it. There are 500 key changes standard. Locks are keyed differently, master keyed and furnished with 2 keys per lock. Locks and corresponding keys are alpha-numerically coded for a quick match. Lock CP SL-1 is equipped with a removable core, keying control. With the use of a control key, the key core of the lock assembly can be removed and a new key core inserted, changing the entire locking system in a matter of minutes. Key cores can be held out of the lock assembly until the project is completed, removing the security risk of lost or stolen keys during installation and construction. Casework manufacturer can provide control keys and replacement cores as required. Locks are furnished only when specified.
8. Drawer Slides:
   a. Drawer slides DS-1: Epoxy powder coated, cold rolled steel, bottom/side mount, heavy-duty with a 100 lbs (45 kilograms) load capacity. They are equipped with heavy-duty, nylon rollers for smooth effortless operation. Slides are self-closing; and have automatic positive stop to prevent drawer's accidental removal, but allow for quick removal without tools.
9. File Drawer Slides:
   a. File drawer slides FD-1: Zinc plated, cold rolled steel, heavy-duty, side mounted, and have a 125 lbs (56.25 kg) load capacity. They are equipped with heavy-duty, precision ball bearings, for smooth effortless operation. Slides are full extension with a positive stop, and a trigger finger release.

2.4 MATERIALS

A. Oak Lumber: Grade FAS or better, air-dried and kiln dried to 6 percent moisture content, then tempered to 7 to 8 percent prior to fabrication. Lumber exposed to view, is free of stains, splits, shakes, season checks and other similar defects. Other hardwoods are grade FAS or better, air dried to 6 percent moisture content, then tempered to 7 to 8 percent prior to fabrication. Other hardwoods are used in semi-exposed, or unexposed, areas and comply with NHLA grading for FAS or better lumber.

B. Oak Plywood: Plywood is plain sliced, book-matched Oak, select grade A-1, cross-banded, and has a veneer core. The 1 inch (25 mm) is a minimum of 9-ply, the 3/4 inch (19 mm) plywood is a minimum of 7-ply, 1/2 inch (12 mm) is a minimum of 5 ply, 1/4 inch (6 mm) is minimum of 3 ply, and 3/32 inch (2.4 mm) is 3-ply. Other hardwood plywood is sound grade, has a solid core and is suitable for semi-exposed or unexposed areas. All plywood shall be CARB Phase 2 compliant.

C. Hardboard used in drawer bottoms and unexposed backs, consists of super-refined wood fibers and chips, highly compressed into a hard, dense, 1/4 inch (6 mm) thick, homogeneous sheet, faced with a color coordinated (to cabinet finish) melamine on the exposed face. Natural finish selections have a white melamine face. All other

finish colors have a flat, color coordinated melamine face. Physical properties: Average MOR is 5,000 lbs/sq inches (3.5 kgf/sq mm); density is 48 lbs/cu ft (0.6 kg/cu m); and MOE of 500,000 psi (350 kgf/sq mm). All hardboard shall be CARB Phase 2 compliant.

2.5 FABRICATION

A. Units and configurations designated for accessibility by users shall comply with ATBCB ADAAG (ADA standards).

B. Design, material and construction of casework, shelving and tables shall comply with SEFA 8W performance and resistance standards.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for its intended use.

D. Base cabinets have a 2-1/4 inches (57 mm) by 1 inch (25 mm), solid hardwood horizontal front top frame member and 2-1/8 inches (54 mm) by 1 inch (25 mm), solid hardwood horizontal rear and side top frame members. Front intermediate rails are 3/4 inch (19 mm) by 2 1/2 inches (64 mm) solid wood. Back intermediate rails are furnished only when drawer separators are specified. Exposed exterior backs are 3/4 inch (19 mm) plywood. Cabinets with exposed interiors but unexposed exteriors have 1/4 inch (6 mm) plywood backs. Backs are 1/4 inch (6 mm) finished plywood in cabinets with exposed interiors; and, in cabinets with unexposed interiors, backs are 1/4 inch (6 mm) thick hardboard with melamine face, color coordinated to the interior stain. Exposed end panels are 3/4 inch (19 mm) plywood. Unexposed end panels are 3/4 inch (19 mm) hardwood plywood. End panels with unexposed interior and unexposed exterior are 3/4 inch (19 mm) hardwood plywood. Bottom, shelves, and dividers in cabinets with exposed interiors are 3/4 inch (19mm) plywood; with unexposed interiors is 3/4 inch (19 mm) hardwood plywood. If cabinet exceeds 36 inches (914 mm) in width, shelves shall be 1 inch (25mm) thick. Exposed edges of front top horizontal frame and intermediate rail members; end panels, bottom, shelves, and dividers are edged with 1/8 inch (3 mm) solid wood. Drawer separators, furnished only when specified, are 1/4 inch (6 mm) thick hardboard with wood grained melamine face.

E. Cabinet construction is bored, doweled, dadoed, glued and screwed construction. Cabinets are enclosed without the use of common partitions. A full horizontal, mortise, tenon and glued, top frame is bored, doweled, glued, and reinforced with six (6) screws into the cabinet. Intermediate front rails and bottom rear horizontal parting rails are provided as required. Separators, where specified, are let into routed intermediate rails. Backs are recessed and encapsulated into dadoed end panels then screwed into the top and bottom case members. A standard enclosed toe space, 2-1/4 inches (57 mm) by 4 inches (102 mm) high, is provided, with toe rail bored, doweled and glued to end panels. Shelves are supported on heavy-duty, laboratory grade, twin pin plastic shelf clips, which fit into two double rows of holes drilled 1-1/4 inches (32 mm) on centers, in the case end panels for maximum shelf adjustability.

F. Construction - Wall and Upper Cases: Wall and upper cases have a 1 inch (25 mm) plywood top and bottom panel. Adjustable shelves are 1 inch (25 mm) finished plywood in cases with exposed interiors and 1 inch (25 mm) hardwood plywood in cases with unexposed interiors. Backs are 1/4 inch (6 mm) finished plywood in cases with exposed interiors; and, in cases with unexposed interiors, backs are 1/4 inch (6 mm) thick hardboard with melamine face, color coordinated to the interior stain. End panels in cabinets with exposed interiors are 3/4 inch (19 mm) finished

plywood; end panels in cabinets with unexposed interiors are 3/4 inch (19 mm) hardwood plywood. Exterior hanger rails are 4 inches (102 mm) by 3/4 inch (19 mm) hardwood plywood.

G. Construction - Tall Cases: Top panels in tall cases with exposed interiors are 1 inch (25 mm) hardwood plywood; tall cases with unexposed interiors have top panels of 1 inch (25 mm) plywood. Bottom panels in tall cases with exposed interiors are 3/4 inch (19 mm) hardwood plywood; and unexposed interiors have 3/4 inch (19 mm) plywood. Interiors, whether exposed or unexposed, are stain color matched to the exterior finish. Adjustable shelves are 1 inch (25 mm) thick hardwood plywood if exposed; 1 inch (25 mm) plywood if unexposed. Shelves are edged with 1/8 inch (3 mm) solid hardwood edging. Backs in tall cases with exposed interiors and exposed exteriors, are 1/4 inch (6 mm) hardwood plywood. Backs are 1/4 inch (6 mm) finished plywood in cases with exposed interiors; and, in cases with unexposed interiors, backs are 1/4 inch (6 mm) thick hardboard with melamine face, color coordinated to the interior stain. End panels in tall cases with exposed end panels have 3/4 inch (19 mm) hardwood plywood. End panels in cases with unexposed end panels have 3/4 inch (19 mm) plywood. All exposed edges of hardwood plywood components and plywood components are edged with 1/8 inch (3mm) solid hardwood edging. Tall cases have two exterior hardwood plywood cross rails, 4 inches by 3/4 inch (102 mm x 19 mm). Tall cases are rigidly constructed, integral units with the strongest, most advanced joinery methods utilized of bored, doweled, dadoed, glued and screwed construction. Each case is completely enclosed without the use of common partitions and has flush construction with overlapping doors to provide a dust resistant interior. The top panel is bored, doweled and glued into end panels; and the bottom panel is bored, doweled and glued into end panels and glued and screwed to the back. Additional back cross rails are provided as required. Backs are recessed and encapsulated into dadoed end panels and screwed to the top and bottom tall case members. An enclosed toe space 2-1/4 inch by 4 inches (57 mm by 102 mm) is provided with toe rail securely bored, doweled and glued to end panels and bottom panel. Adjustable shelves are supported on heavy-duty laboratory grade, twin pin plastic shelf clips, which fit into two rows of holes drilled 1-1/4 inches (32 mm) on centers in the end panels, for maximum shelf adjustability.

H. Drawer front is 3/4 inch (19 mm) thick.Drawer faces are screwed to the face of a full drawer box. Drawer box front, sides and back are 1/2 inch (12 mm), 9-ply laminated hardwood plywood, FSC 100% and CARB Phase 2 compliant. Drawer bottom is 1/4 inch (6 mm) thick hardboard with white melamine face. All four corners of the drawer are dovetailed and glued. The top edges of drawer box are radiused. Drawer bottom is let in on four sides, and securely glued underneath with a continuous bead of glue around the perimeter of the drawer bottom. In cabinets 24 inches (610 mm) or less in width, drawers have one pull. In cabinets over 24 inches (610 mm) wide, drawers have two pulls.

I. Construction - Hinged Doors:
   1. Hinged solid doors 48 inches (1219 mm) or less in height, 3/4 inch (19 mm) thick and overlap the opening on all sides. Doors have one pull. Door has two heavy-duty, institutional type, and 5-knuckle hinges. Doors are secured by a friction roller catch and a metal strike plate.
   2. Hinged solid doors, over 48 inches (1219 mm) in height, are 3/4 inch (19 mm) thick and overlap the opening on all sides. Single doors and right door of double doors have a latching handle. A three point latching system provides single doors and right door of double doors positive engagements at the top and bottom of the door with tapered aluminum rods, which engage plastic, strike plates and pull the door snug. The rods are 5/16-inch (8 mm) in diameter and move in nylon guides attached to the back of the door. The

middle of the door is secured by a latch plate, which engages the side of the case, or latches behind the left door on cases with double doors and securely hold the door shut. Right door of double doors lap over an applied astragal on left door. Doors have four hinges. On double doors left door is additionally secured with two friction roller catches with metal strike plates.

3. Hinged glazed doors 48 inches (1219 mm) or less in height are 3/4 inches (19 mm) by 3 inches (76 mm) with glass panel. Right door of double doors laps over an applied astragal on the left door. Doors have one pull, two hinges and are secured by friction roller catches with metal strike plate. Glass panels are held in place by a press-fit, flexible and removable, rubber strip.
   a. Glass is tempered safety glass is specially heat-treated glass, 1/4 inch (6 mm) thick with a minimum of 88 percent clarity.
   b. Glass is DSB glass is double strength, grade “B”, and 1/8 inch (3 mm) thick.
4. Hinged glazed doors, over 48 inches (1219 mm) in height, same construction with a 3/4 inch (19 mm) by 4 inch (102 mm) center cross frame member and glass panel. Single doors and right door of double doors have a latching handle. Left door of double doors has a fixed handle, which is the same size and finish as a latching handle. A three point latching system provides single doors and right door of double doors positive engagement at the top and bottom of the door with tapered aluminum rods, which engage plastic, strike plates and pulls the door snug. The rods are 5/16-inch (8 mm) in diameter and move in nylon guides attached to the back of the door. The middle of the door is secured by a latch plate, which engages the side of the case, or latches behind the left door on cases with double doors and securely hold the door shut. Right door of double doors laps over an applied astragal on the left door. Doors have four hinges. The left door of double doors is additionally secured by two friction roller catches and metal strike plates. Glass panels are held in place by a press-fit, flexible and removable, rubber strip.
   a. Glass is tempered safety glass is specially heat-treated glass, 1/4 inch (6 mm) thick with a minimum of 88 percent clarity.
   b. Glass is DSB glass is double strength, grade “B”, and 1/8 inch (3 mm) thick.

J. Construction - Sliding Doors:
1. Sliding solid doors are 3/4 inch (19 mm) thick with squared edges; and operate in an overhead aluminum sliding door track assembly with adjustable nylon roller hangers. Doors are secured at the bottom of the cabinet with two plastic guides per door that operate in recessed, channels. Each door has one recessed pull with finger grip. Pull is located on outside edge of the door face. Lock is furnished when specified.
2. Sliding glazed doors, 48 inches (1219 mm) or less in height, have a 3/4 inch (19mm) by 4 inches (102 mm), plywood frame with 1/8 inch (3 mm) thick DSB glass. The balance of the door is glass. Doors operate in an overhead aluminum sliding door track assembly with adjustable nylon roller hangers. Doors are secured at the bottom of the cabinet with two plastic guides per door, which operate in recessed channels. Each door has one pull recessed nickel-plated metal pull with finger grip. Pull is located on outside edge of the door face. Lock is furnished when specified. Glass panels are held in place by a press-fit, flexible and removable, rubber strip.
   a. Glass is tempered safety glass specially heat-treated glass, 1/4 inch (6 mm) thick, with a minimum of 88 percent clarity.
   b. Glass is DSB glass is double strength, grade “B”, and 1/8 inch (3 mm) thick.

3 Sliding glazed doors, over 48 inches (1219 mm), have a 3/4 inch (19 mm) by 3 inches (76 mm), plywood frame with a center cross frame member and 1/4

inch (6 mm) tempered glass. Doors operate in an overhead aluminum sliding door track assembly with adjustable nylon roller hangers. Doors are secured at the bottom of the cabinet with two plastic guides per door, which operate in recessed channels. Each door has one recessed nickel-plated metal pull with finger grip. Pull is located on outside edge of the door face. Lock is furnished when specified. Glass panels are held in place by a press-fit, flexible and removable, rubber strip .Glass is tempered safety glass is specially heat-treated glass, 1/4 inch (6 mm) thick with a minimum of 88 percent clarity.

4. Sliding glass doors are 1/4 inch (6 mm) thick float glass. Doors have polished vertical edges and swiped horizontal edges. Doors operate in sliding aluminum door track assembly, which has an aluminum track at the bottom, and an aluminum channel mounted at the top of the cabinet. The glass rests in aluminum shoes with nylon rollers. The top swiped edge of the glass is fitted with plastic glide clips to assure smooth movement in the channel. Each door has one two-piece recessed round pull. Pull is located on outside edge of the door face. Lock is furnished when specified.

K. Construction - Tables: Open Frame Table exterior rails are 4-13/16 inches (122 mm) by 13/16 inch (21 mm), solid hardwood lumber. Interior rails are a minimum of 3/4 inch (19 mm) hardwood plywood. Compartment bottoms are 1/4 inch (6 mm) plywood. Legs are 2 1/4 inches (57 mm) square solid hardwood; legs are not laid up. Leg stretchers, when specified, are 2-1/8 inches (54 mm) by 1 inch (25 mm) thick, solid hardwood Openings are routed in the one-piece rail when drawers or compartments are required. A minimum of two interior cross rails are doweled and glued into exterior rails. Compartment bottoms are let into dadoed grooves in cross rails and the front and back rails, then glued on all four edges. Exterior rails are grooved to receive 3/8 inch (9 mm) flanges on the 13 gauge steel corner stabilizing bracket. Legs are secured to the stabilizing bracket with a 5/16 inch (8 mm) threaded hanger bolt, machine screwed into the solid leg a depth of at least 1-1/2 inches. The stabilizing bracket is attached to the leg bolt by a 5/16”locking nut with serrated flange. Tightening the locking nut on the bolt, draws the stabilizing bracket flanges against the solid hardwood rail, and clamps them against the solid hardwood leg. The stabilizing bracket is further secured to the solid hardwood rails by four (4) Euro screws. Legs have molded black polyethylene, closed bottom, leg shoes. Exterior rails are also grooved to accept Z- clips for attaching the top.

2.6 FINISHES

A. Wood Cabinets: Exterior and interior surfaces of cabinets receive the full finishing process consisting of baked on: specified NGR stain, two coats of protective moisture resistant sealer and two applications of a topcoat of clear catalyzed chemical resistant lacquer.

1. Interior Surfaces: The unexposed interior surfaces of cupboards, wall cases, upper cases, and tall cases must match exterior color and receive stain (color coat), a protective coat of moisture resistant sealer, and two applications of a clear, catalyzed, chemical resistant conversion varnish topcoat.
2. Other Surfaces: Unexposed surfaces such as unexposed end panels, unexposed backs, are processed through standard finishing steps and receive a baked on protective coat of moisture resistant sealer, but no stain (color coat).
3. Finish shall comply with SEFA-8W resistance standard acceptable levels for casework surfaces. An independent 3rd party testing facility's written certification must be provided to establish that final finish has no more than four, SEFA-8W "Level 3" conditions.
4. Any deviations from the specified finishing procedures will be considered defective work and be rejected by the Architect.

2.7 CABINET HARDWARE

A. Provide laboratory casework manufacturer's standard finish, commercial-quality, heavy-duty hardware complying with requirements indicated for each type.

B. Lock GL-1 is ratchet type glass door lock, with a disc tumbler mechanism and a polished nickel plate finish. The ratchet bar adjusts from 1 inch (25 mm) to 3 3/8 inches (86 mm). Two keys are provided; master keying is not available. Locks are furnished only when specified.

C. Friction roller catch is zinc plated steel catch with a spring cushioned; polyethylene roller, and a metal strike plate. Screw mounted catches and strike plate have slotted holes for adjustability.

D. Sliding door track assembly DT-1 has an overhead aluminum track and adjustable, nylon roller hangers. The lipped edge of the upper aluminum track prevents rollers from jumping track. Two hard plastic guides are mounted on the bottom interior of the door and operate in recessed channels.

E. Sliding glass door track assembly GT-1 has an aluminum bottom track, and an aluminum channel mounted at the top of the cabinet. The glass rests in aluminum shoes with nylon rollers, which operate in the bottom track. The top swiped edge of the glass is fitted with plastic glide clips to assure smooth movement in the channel.

F. Shelf clips are made from clear polycarbonate and are laboratory standard grade. Clips have double, 3/16 inch (5 mm) diameter pins and are equipped with shelf lock hold down tabs for 3/4 inch (18 mm) or 1 inch (25 mm) thick shelves.

G. Sliding door lock, when specified, 5-disc tumbler mechanism with a dull chrome plated face. Tumblers and keys are brass, while plug and cylinder are die cast steel. Pushing in on the lock while turning the key, engages a lock bolt into the strike plate; a turn of the key, unlocks the bolt. There are 200 key changes standard. Locks are keyed differently, master keyed and furnished with 2 keys per lock. Locks and corresponding keys are alpha-numerically coded for a quick match.

H. Leg shoes are closed-bottom style, 2 1/4 inches (57 mm) square, and molded of 1/8 inch (3 mm) black polyethylene.

2.8 COUNTER TOPS

A. Chem-Surf exposed surface and edges are horizontal grade, high pressure, plastic laminate applied to particleboard core. Finished top is 1 inch (25 mm) thick, and the curb is 4 inches (102 mm) high. A phenolic backing sheet is applied to the bottom surface. Standard Color: Black.

B. Maple top is composed of laminated strips of electronically glued, select hard maple in natural finish color. The top surface is finished with two coats of UV cured, penetrating acrylic sealer; and, the bottom surface receives one coat. Standard thickness is 1 3/4 inches (44 mm) and the applied curb is four inches (102 mm) high and 3/4 inch (19 mm) thick.

C. Phenolic is a solid resin material composed of laminates of high-pressure thermoset plastic. The finished top is 1 inch (25 mm) thick, and the curb is 4 inches (102 mm) high. Standard Color: Black with a black core.

D. Epoxy resin (Rhearesin) is 1 inch (25 mm) thick, molded from a modified epoxy resin. Exposed edges and corners are radiused, and a drip groove is provided under surface in areas where sinks are installed. Curb is 4 inches (102 mm) high.

Standard Color: Black.

E. Sandstone (Rhearock) is natural quarried sandstone, free of veins, laminations and stratifications, is first impregnated with a highly chemical resistant polymerizing resin. A 5 mil thick (four base coats and three finish coats), chemical resistant resinous coating is then applied to exposed surfaces. The impregnating resin and surface coatings are heat polymerized to cure the resin, toughen the stone, and provide a chemical and heat resistant, uniform surface. Exposed edges and corners are radiused, and a drip groove is provided on the under surface, when specified. Top is one inch thick, and the curb is 4 inches (102 mm) high. Standard Color: Black.

F. Rheatex exposed surface and edges are horizontal grade, high pressure, plastic laminate applied to particleboard core. Finished top is 1 inch (25 mm) thick, and the curb is 4 inches (102 mm) high. A phenolic backing sheet is applied to the bottom surface. Standard Color: Black.

G. Stainless Steel top is fabricated from 16 gauge stainless steel, and exposed surfaces have a No. 4 satin finish. The sink is reinforced on the full length of the underside with number 16-gauge steel, U-type, structural channels. A wood or steel frame, around the front and ends, is provided for fastening to cabinet. Sink bowls are seamless, electrically welded, and ground and polished to a hand blended satin finish. Drain boards, flanges, curbs and back splashes are integral. Joints are electrically welded, then ground and polished to a hand blended satin finish. The entire unit is sound deadened.

H. Tuf-Surf exposed surface and edges are horizontal grade, extra-high wear resistant, high pressure plastic laminate. The laminate is bonded to particleboard core. The finished top is 1 inch (25 mm) thick, and the curb is 4 inches (102 mm) high. Standard Color: Black with matte, textured finish.

2.9 ACCESSORIES:

A. Burette Rods: 1/2 inch (12 mm) diameter, anodized aluminum, and either 18 inches (457 mm) or 24 inches (610 mm)long. Rods are furnished with a tapered aluminum adapter to fit rod socket.

B. Clamps: 1 inch (25 mm) square aluminum stock, with two, 3/4 inch (19 mm) diameter openings, at right angles to each other, bored through sides. Openings are for upright rods and crossbars, or Greenlaw Arms. Thumb screw into each end of the clamp; tighten against the rods to hold positions.

C. Crossbars and Greenlaw Arms: 3/4 inch (19 mm) diameter, anodized aluminum rods, with ends rounded.

D. Rod Sockets: Mushroom type, machined from a solid aluminum rod. Sockets are held in place by a heavy aluminum lock nut and washer.

E. Upright Rods: 3/4 inch (19 mm) diameter, anodized aluminum, 36 inches long with a rounded top and a tapered bottom to fit rod sockets.

F. Reagent Shelves: Provide as indicated, fabricated from same material as adjacent countertop, unless otherwise indicated.

G. Adjustable Wall Shelf Supports: Standard is anodized chrome standard and shelf brackets. Epoxy powder coating is an option and must be specified.

H. Metal Key Cabinets.

I. Plastic Tote Tray.

J. Pegboards: Clear acrylic, epoxy, or phenolic-composite pegboards with removable polypropylene pegs and stainless-steel drip troughs with drain outlet.

2.10 SERVICE FIXTURES

A. Electrical Components, Devices, and Accessories shall be labeled to comply with NFPA 70, Article 100 and marked for its intended use.

B. Provide service fixtures and fittings that comply with SEFA 7.
   1. Provide service fixtures and fittings that comply with recommendations of SEFA 7.

C. Electrical Fixtures are 3-wire grounded, 20 A, 125V AC, with stainless steel cover plates and cadmium-plated steel boxes. Pedestal boxes are black, cast aluminum with conduit nipples and lock nuts. When specified, G.F.C.I., ground fault circuit interrupter fixtures are available. G.F.C.I. fixtures are 20 A, 125V AC, with black nylon faceplate.
   1. Receptacles: Comply with NEMA WD 1, NEMA WD 6, FS W-C-596, and UL 498. Duplex type, Configuration 5 20R.

D. Epoxy resin sinks are drop-in style, non-glaring black, and specially modified epoxy resins, molded in one solid piece or optimum physical and chemical resistance. Inside corners are coved and the bottom is dished to the outlet. Outlets are polypropylene with 1 1/2 inch (38 mm) NPS threads.

E. Gas, Air and Vacuum Cocks: Ground key cocks, made from high grade, brass forgings, have integral ten-serration, non-slip hose end. Wing or knob handle has color-coded index, is one-piece construction, precision ground, and lapped to fit cock chamber. Handle operates with a 1/4 turn, and is spring-loaded for constant pressure and automatic take up. Provide needlepoint valves for high pressures and oxygen service where scheduled.

F. Multiple Service Fixtures: Triple chrome plated or electro-statically applied polyester powder coated fixtures have one cold water faucet and two ground key cocks for gas, air, or vacuum services. Faucet has a rigid gooseneck, one four-arm or knob handle, and serrated hose nozzle. Vacuum breaker furnished when specified. Faucet with integral vacuum beaker is furnished, when specified. Ground key cocks have serrated non-slip hose end and color-coded, spring-loaded wing handles.

G. Service Fixtures: Triple chrome plating or electro-statically applied polyester powder coating, heavy-duty construction for water, gas, steam, or other services and specifically designed for laboratory use. Hot and/or cold Water Faucets are cast from red brass with color-coded index handles. Faucets have serrated hose nozzles, unless specified otherwise. Goosenecks are rigid. Fixture outlets are tapped 3/8-inch (10 mm) I.P.S. for aerators, vacuum breakers, hose connections, or other accessories. Standard: Faucets with an integral vacuum breaker.

H. Stainless steel sinks have a satin finish. Sink is 18 gauge, type 304, 18-8 stainless steel, with heavily undercoated bottoms and positive pitch drains. Outlets are chrome-plated brass. Drain holes are 3 1/2 inches (89 mm) diameter for 4 1/2 inches (114 mm) stainless steel cup strainers. The cup strainer has a neoprene stopper.

I. Vacuum Breakers: Watts NLF-9 or comparable, vacuum breakers are brass with polished chrome plating, screw-in type with stainless steel working parts, and durable rubber diaphragm and disc. Vacuum breaker is for hot or cold faucet and

has a primary valve with a soft disc that seat against mating part. The secondary check valve utilizes a soft disc to metal seating. Breaker is tapped 3/8-inch (10 mm) N.P.T. Vacuum breaker is not intended for constant high pressures. Vacuum breakers shall be furnished where scheduled.

2.11 EQUIPMENT AND APPLIANCES

A. Flammable Liquid Storage Cabinets: Provide units that comply with requirements of NFPA 30. Standard is Wood, UL rated cabinet.

2.12 FUME HOODS

Please refer to ICI Fume Hood Specifications for options.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.
   1. Walls and openings are plumb, straight and square.
   2. Concrete floors level within 1/8 inch (3 mm) level per 10 foot (3000 mm) run, non-accumulative, when tested with a straight edge in any one direction.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 COORDINATION

A. Laboratory equipment contractor shall furnish equipment to the building, setting in place, leveling and scribing to walls and floors. Furnish plumbing and electrical fixtures, including nipples and lock nuts needed to secure each fixture to the equipment.

B. Coordination with mechanical contractor who shall furnish, install and connect drain lines, service piping, vents, re-vents, in-line vacuum breakers, special plumbing fixtures, traps and tailpieces. Work to be completed through, under or along backs of working surfaces as required and complete final connection of services. Assemble, install and make final connections of service fixtures furnished by casework contractor, including service fixtures in fume hoods. Furnish, install and connect fume hood blowers, motors and all related ductwork. Furnish, install and connect service piping within fume hoods, including final connection.

C. Coordination with electrical contractor who shall furnish, install and connect electrical service lines, wire and conduit within the equipment, including reagent racks and fume hoods. Work to be completed through, under or along backs of working surfaces as required and complete final connection of services. Install and make final connections of electrical fixtures provided by casework installer, including electrical fixtures in fume hoods.

3.3 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.4 INSTALLATION

A. Install casework in accordance with manufacturer's instructions.
   1. Installation of casework shall be plumb, level, true and straight, with no distortions.
   2. Use concealed shims as required.
   3. Where laboratory casework or equipment butts against other finished work, scribe and cut for an accurate fit.
   4. Lubricate operating hardware as recommended by the manufacturer.

B. Install countertop and edge surfaces in one plane with flush hairline seams. Locate seams where shown on Shop Drawings.
   1. Provide required holes and cutouts for service fittings as shown on Shop Drawings.
   2. Seal unfinished edges and cutouts in plastic-laminate countertops.
   3. Provide scribe moldings for closures at junctures of countertop, curb, and splash, with walls as recommended by manufacturer for materials involved. Match materials and finish to adjacent laboratory casework. Use chemical-resistant, permanently elastic sealing compound where recommended by manufacturer.
   4. Carefully dress joints smooth, remove surface scratches, and clean entire surface.

C. Coordination with Mechanical, Plumbing and Electrical Contractors: Coordinate work of this Section with work of other Sections including but not limited to:
   1. Water and laboratory gas service fittings, piping, electrical devices, and wiring.
   2. Installation of fittings according to Shop Drawings and manufacturer's written instructions.
   3. Setting bases and flanges of sink and countertop-mounted fittings in sealant recommended by manufacturer of sink or countertop material.
   4. Anchorage of fittings, piping, and conduit to laboratory casework, unless otherwise indicated.

3.5 PROTECTION

A. Cover installed casework and equipment with 4-mil polyethylene.

B. Protect installed products until completion of project.

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

D. A qualified manufacturer representative shall demonstrate operation and maintenance procedures of the installed casework and equipment to the Owners personnel.

END OF SECTION

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ICIscientific
Laboratory Products Division
Steel & Stainless Steel Casework, Fume Hoods, and
Adaptable Systems Furniture
503 East Reelfoot Avenue Union City TN 38261

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Celgene
C2 Core
Location: Summit, NJ
Architect: Design Build
Lab Consultant: N/A
Completed: 2019- $484,000

Drexel University
CAT Lab
Location: Philadelphia, PA
Completed: 2019- $550,000

Cuyahoga Community College
Location: Highland Hills, OH
Architect: Stantec
Completed: 2019- $700,000

Wright State University
Dayton, OH
Architect: SPGB Architects
Completed: 2019 $400,000

Cleveland State
Learning Laboratories
Location: Cleveland, OH
Architect: Van Auken Aikins Arch.
Lab Consultant: Research Facilities Design
Completed: 2020- $1,250,000

IVC
Location: Northridge, CA
Architect: Cannon Design
Lab Consultant: Research Facilities Design
Completed: 2009 $645,774.00

Eastern Kentucky University

Location: Richmond, KY
Architect: OMNI
Completed: 2017- $1.8M

Purdue Discovery & Learning Research

Lafayette, IN
Architect: Jacobs
Completed: 2018 $400,000

University of Utah—Crocker Science Center

Location: Salt Lake City, Utah
Lab Planner: Research Facility Design
Architect: EDA
Completed: 2017- $1,600,000

Blinn College Science Bldg

Location: Bryan, TX

Architect: Kirksey

Completed: 2017- $280,000

Missouri Western- Science & Math Building

Location: St. Joseph, MO

Architect: Ellison-Auxier Architects, Inc.

Completed: 2011- $971,683.00

Taylor University- Euler Science Complex

Location: Upland, IN

Architect: The Troyer Group

Completed: 2012- $396,316.00

Desert Community College

Location: Palm Desert, CA

Architect: Steinberg Architects

Lab Consultant: Jacobs Consultancy

Completed: 2012- $96,706.00

Suffolk County Community College

Life Sciences Building

Location: Brookhaven, NY

Architect: BBS Architecture/Engineering

Completed: 2014- $529,338.00

Project Listing

Rowan University Science Building

Location: Glassboro, NJ
Architect: Clarke Caton Hintz
Lab Consultant: Research Facilities Design
Completed: 2017- $600,000

Inland Empire Water

San Diego, CA

Architect: Austin Company

Completed: 2018 $760,000

University of California at Riverside

Geology & Physics Building

Location: Riverside, CA

Architect: WWCOT

California State University

Science Building V

Location: Northridge, CA

Architect: Cannon Design

University of California at San Diego

Structural & Materials Engineering Building

Location: La Jolla, CA

Architect: Safdie Rabines Architects

Lab Consultant: Research Facilities Design

University of California at Riverside

Genomics Building

Location: Riverside, CA

Architect: RBB Architects

Green Local K-12 School

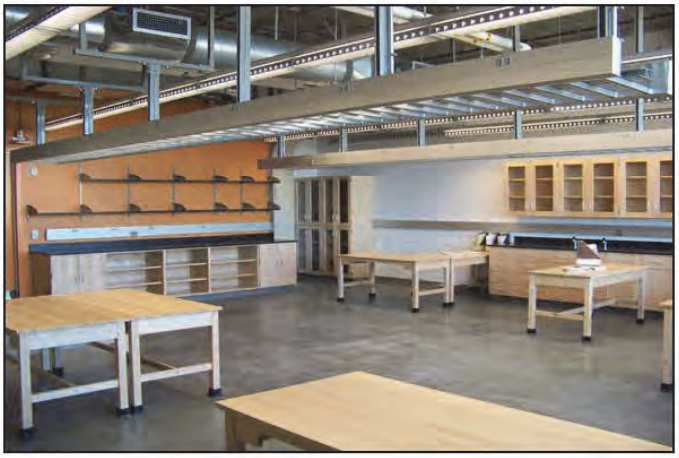
Location:	Smithville OH
Architect:	Sol Harris Day Architects
ICIscientific Product:	CampbellRhea Educational

University of MO/Western - Science & Math Building

Location:	St. Louis MO
Architect:	Ellison-Auxier Architects, Inc
ICIscientific Product:	CampbellRhea Educational, LabShield™ Fume Hoods

Taylor University - Euler Science Complex

Location:	Upland, IN
Architect:	The Trover Group
ICIscientific Product:	CampbellRhea Educational, Isolator Gen^5 Fume Hoods

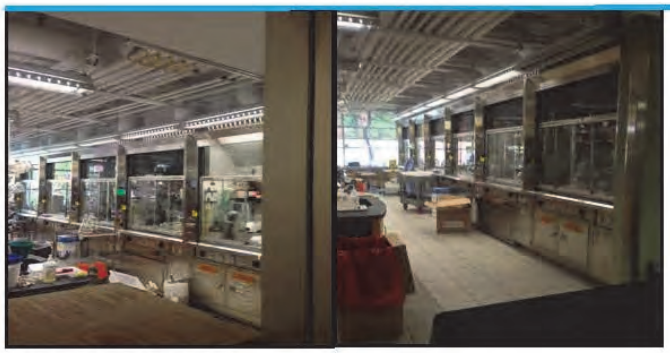


University of California at San Diego, Structural & Materials Engineering Building

Location:	La Jolla CA
Architect:	Safdie Rabines Architects
ICIscientific Product:	CampbellRhea Educational Wood, FlexCore

Belmont University - Wedgewood Academic Center

Location:	Nashville TN
Architect:	Strategic Science & Technology (SST) Planners
ICIscientific Product:	Tier One Wood, Isolator Gen^5 Fume Hoods



Harvard University

Location:	Cambridge, Massachusetts
Architect:	Ellenzweig Associates, Inc.
Casework / Fume Hoods Value:	$400,000
ICIscientific Product:	Inset Steel, Isolator Fume Hood

Tennessee Bureau of Investigation

Location:	Nashville, Tennessee
Architect:	Kline Swiney & Gobbel Hayes
Casework / Fume Hoods Value:	$1,300,000
ICIscientific Product:	Flush Overlay Steel, Isolator Fume Hoods

Vanderbilt University

Location:	Nashville, Tennessee
Architect:	P.S. & S. Architects
Casework / Fume Hoods Value:	$500,000
ICIscientific Product:	Tier One Wood, FlexCore

Desert Community College

Location:	Palm Desert CA
Architect:	Steinberg Architects
Lab Consultant:	Jacobs Consultancy
ICIscientific Product:	Tier One Wood, Isolator Fume Hoods

University of California Riverside - Geology & Physics Building

Location:	Riverside CA
Architect:	WWCOT
Lab Consultant:	Research Facilities Design
ICIscientific Product:	Tier One Wood, FlexCore, Isolator Fume Hoods

California State University - Science Building Y

Location:	Northridge CA
Architect:	Cannon Design
Lab Consultant:	Research Facilities Design
ICIscientific Product:	CampbellRhea Educational Wood, FlexCore

Hanford Waste Water Treatment Facility

Location:	Richland, Washington
Architect:	U.S. Dept. of Energy
Casework / Fume Hoods Value:	$1,021,564
ICIscientific Product:	Inset Steel, Stainless Steel & Isolator Fume Hoods

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Mane Flavorings

Location:	Milford, Ohio
Architect:	Hixson, Inc. (Bryon Sutherly)
Casework / Fume Hoods Value:	$1,450,000
ICIscientific Product:	Inset Steel, Stainless Steel


University of California-Riverside, School of Medicine Research Building

Location:	Riverside, California
Architect:	SRG Partnership Inc. / RFD
Casework / Fume Hoods Value:	$186,000
ICIscientific Product:	Tier One Wood, Envision


Glaxo Smith Kline-Building 28

Location:	King of Prussia, Pennsylvania
Architect:	Wick Fisher White
Casework / Fume Hoods Value:	$1,119,000
ICIscientific Product:	Inset Steel, Isolator Fume Hoods


University of Central Florida

Location:	Orlando, Florida
Architect:	Ponikvar & Associates, Inc.
Casework / Fume Hoods Value:	$370,000
ICIscientific Product:	Inset Steel, Envision, Isolator Fume Hoods


Cornell University

Location:	Ithaca, New York
Architect:	Burt Hill
Casework / Fume Hoods Value:	$1,114,000
ICIscientific Product:	Tier One Wood, Envision, Isolator Fume Hoods

Kraft Foods

Location:	Tarrytown, New York
Architect:	The Burns Group
Casework / Fume Hoods Value:	$282,000
ICIscientific Product:	Inset Steel, FlexCore

Case Western Reserve University-H.G. Wood

Location:	Cleveland, Ohio
Architect:	Milan Bender
Casework / Fume Hoods Value:	$350,000
ICIscientific Product:	Flush Overlay Steel

Cleveland Clinic Heart Center

Location:	Cleveland, Ohio
Architect:	NBBJ, Inc.
Casework / Fume Hoods Value:	$360,000
ICIscientific Product:	Inset Steel, FlexiLab, Isolator Fume Hoods

Case Western Reserve University-FC Robbins

Location:	Cleveland, Ohio
Architect:	Burt Hill / Milan Bender
Casework / Fume Hoods Value:	$1,075,000
ICIscientific Product:	Inset Steel, FlexiLab, Isolator Fume Hoods

University of Cincinnati

Location:	Cincinnati, Ohio
Architect:	Harley Ellis
Casework / Fume Hoods Value:	$3,500,000
ICIscientific Product:	C-frame, Inset Steel, Isolator Fume Hood

NINT-University of Alberta

Location:	Edmonton, Alberta
Architect:	Cohos Evamy Partners
Casework / Fume Hoods Value:	$1,014,000
ICIscientific Product:	Inset Steel, Isolator Fume Hoods

Avon Products, Inc.

Location:	Suffern, New York
Architect:	HLW International, LLP
Casework / Fume Hoods Value:	$2,600,000
ICIscientific Product:	Stainless Steel

Aberdeen Proving Grounds

Location:	Edgewood, Maryland
Architect:	Gaudreau, Inc.
Casework / Fume Hoods Value:	$4,000,000
ICIscientific Product:	Inset Steel, Isolator Fume Hood

Glaxo Smith Kline

Location:	Collegeville, Pennsylvania
Architect:	Hillier (NJ)/Bovis Lend Lease
Casework / Fume Hoods Value:	$2,000,000
ICIscientific Product:	Inset Steel & Custom FlexiLab

North Carolina Central University

Location:	Durham, North Carolina
Architect:	The Freelon Group, Inc.
Casework / Fume Hoods Value:	$1,800,000
ICIscientific Product:	Tier One Wood, FlexCore, Isolator Fume Hood

University of Chicago

Location:	Chicago, Illinois
Architect:	Ellenzweig Associates, Inc.
Casework / Fume Hoods Value:	$2,500,000
ICIscientific Product:	Inset Steel, Isolator Fume Hood

National Institute of Health Bldg. 37

Location:	Rockville, Maryland
Architect:	Louviere, Stratton & Yokel, LLC
Casework / Fume Hoods Value:	$3,000,000
ICIscientific Product:	Inset Steel, Flexcore

Carnegie Mellon University

Location:	Pittsburgh, Pennsylvania
Architect:	Burt Hill (Jill Swenson)
Casework / Fume Hoods Value:	$1,500,000
ICIscientific Product:	Inset Steel, FlexCore

United States Geological Survey

Location:	Lakewood, Colorado
Architect:	H.O.K. & G.P.R. (Jerry Koenigsberg)
Casework / Fume Hoods Value:	$3,300,000
ICIscientific Product:	Flush Overlay Steel, FlexCore, Isolator Fume Hoods

California Department of Health Services

Location:	Richmond, California
Architect:	NBBJ of San Francisco, California Department of General Services
Casework / Fume Hoods Value:	$3,500,000
ICIscientific Product:	Inset Steel, Stainless Steel, FlexCore

Astra Zeneca

Location:	Wilmington, Delaware
Architect:	Hillier Group (Tom Walters)
Casework / Fume Hoods Value:	$1,600,000
ICIscientific Product:	Inset Steel, Isolator Fume Hood

University of Central Florida

Location:	Orlando, Florida
Architect:	Unknown
Casework / Fume Hoods Value:	$1,000,000
ICIscientific Product:	Inset Steel, Isolator Fume Hood

Purdue Pharmaceuticals

Location:	Cranbury, New Jersey
Architect:	P.S. & S Architects
Casework / Fume Hoods Value:	$850,000
ICIscientific Product:	Inset Steel, Isolator Fume Hood

Roche Diagnostics-Building R-13

Location: Indianapolis, Indiana

Architect: CSO Architects

Northwestern University-J Wing

Location: Evanston, Illinois

Architect: Flad Architects

$1,900,000

Arizona Chemical

Location: Savannah, Georgia

Architect: Perkins & Will Architects

Casework / Fume Hoods Value: $541,000

ICIscientific Product:: Inset Steel & Isolator Fume Hoods

Purdue University-Wang Hall

Location: West Lafayette, Indiana

Architect: BSA LifeStructures / RFD

Casework / Fume Hoods Value: $175,000

ICIscientific Product: Inset Steel, Isolator Fume Hoods, FlexiLab

USAMRICD

Location: Edgewood, Maryland

Architect: Flad Architects

Casework / Fume Hoods Value: $2,800,000

ICIscientific Product: Flush Overlay, Isolator FH, FlexiLab

Myatt Drive Crime Lab

Location: Madison, Tennessee

Architect: Thomas Miller & Partners

Casework / Fume Hoods Value: $100,000

ICIscientific Product: Inset Steel w/Wood Faces, & Stainless Steel

ICI scientific

Products

- Metal Casework with inset flush front construction for all applications
- Metal Casework with full overlay front construction for all applications
- Metal Casework with full overlay, wood-front construction for all applications
- Stainless Steel Casework for all applications including, Hospitals and Healthcare
- Stainless Steel Counter Tops for all applications
- Stainless Steel Custom Products: Blanket Warmers, Solution Warmers, and OR Nurses Stations
- Phenolic Resin Counter Tops, Casework and Shelving Systems
- Plastic Laminate Counter Tops and Shelving Systems
- Flexible Furniture Systems
- Premium Wood Casework for University, Research, Industrial and Pharmaceutical markets
- Wood Casework and Furniture for K-12 & Community College, Educational markets
- Wood Casework Manufactured from Red Oak, Maple, Steamed Beech, Bamboo or numerous exotic veneers
- Fume Hoods for Industrial, Laboratory, and University markets
- Fume Hoods for custom applications (Oversize, Floor-Mounted, Radioisotope, etc.)
- Fume Hoods for Science Teaching Classrooms: Elementary, High School & Community College markets

Services

- Consultation
- Planning
- Initial Layouts, Preliminaries, Submittals/Shop Drawings
- REVIT™ BIM 3D Modeling, AutoCAD™ and SolidWorks™
- Programming & Stage Scheduling
- Budget Planning
- Project Management
- Global Distribution: National and International Dealer Distributorships
- American Made
- 3-Year Guarantee
- Post-sale Service and Support through the Lifetime of ICI products
- Fume Hood Testing (As Manufactured, As Installed)
- Fume Hood Maintenance and Retrofits
- Factory Storage and Warehousing
- Installation and Warranty Service Work

Credentials & Certifications

Companies & Corporation Established	1943-2009 Jamestown Metal Products
	1951-2006 CampbellRhea
INSTITUTIONAL CASEWORK INC.	2006 ICIscientific
Product Specifications	Visit & Register: www.iciscientific.com
REVIT/BIM Images	Visit & Register: www.iciscientific.com
AutoCad Blocks	Visit & Register: www.iciscientific.com
	Visit & Register: www.iciscientific.com
Manufacturing facilities: Paris TN	600,000 sq. ft., 4 campuses
Union City TN	
Jamestown NY	
Quick Ship Program, Wood & Metal	Yes, "*INSTOCK*"; Visit & Register: iciscientific.com
Fume Hood compliance	ANSI/ASHRAE 110-1995
UL. Certified, Fume Hood	Yes 1805
UL. Certified, Flammable Storage Cabinets	Yes, Wood or Metal 1275
SEFA (Scientific Equipment & Furniture Association)	ICI Products Meet or Exceed SEFA Resistance & Performance Standards
AWI/Quality Certified Product	Yes, if Specified
FSC™ Chain Of Custody Certified	Yes, if Specified
LEED Contributor	Yes, if Specified
CARP (California Air Resources Board)	Phase 1, Yes;
	Phase 2, Yes
AIA/CES (American Institute of Architects, Continuing Education Provider)	Yes, Four Courses

ICI scientific

intertek
Total Quality. Assured.

INSTITUTIONAL CASEWORK, INC.
TEST REPORT

SCOPE OF WORK
SEFA 8W-2016 RECOMMENDED TESTING STANDARDS FOR LABORATORY GRADE WOOD CASEWORK on Base Cabinet 1554, Wall Cabinet 4722, Table 6510

REPORT NUMBER
103050505GRR-001

ISSUE DATE
25-July-2017

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TEST REPORT FOR INSTITUTIONAL CASEWORK, INC.

Report No.: 103050505GRR-001
Date: 25 July 2017
P.O.: 51380

SECTION 1

CLIENT INFORMATION

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SECTION 2

SUMMARY AND CONCLUSION

Date Received	04-May-2017
Dates Tested	05-May-2017 to18-Jul-2017

DESCRIPTION OF SAMPLES

Part Description:	on Base Cabinet 1554, Wall Cabinet 4722, Table 6510
Condition of Samples:	Production

WORK REQUESTED/APPLICABLE DOCUMENTS

SEFA 8W-2016 RECOMMENDED TESTING FOR LABORATORY GRADE WOOD CASEWORK
Intertek quote 00782679

CONCLUSION

TEST		RESULTS
4.2	Cabinet Load Test	Conforming
4.3	Cabinet Concentrated Load Test	Conforming
4.4	Cabinet Torsion Test	Conforming
4.5	Cabinet Submersion Test	Conforming
5.1	Door Hinge Test	Conforming
5.3	Door Cycle Test	Conforming
6.1	Drawer Static Test	Conforming
6.3	Drawer Impact Test	Conforming
6.4	Drawer Internal Rolling Impact Test	Conforming
6.5	Drawer Cycle Test	Conforming
7.2	Shelf Load Test	Conforming
8.1	Chemical Spot Test	Conforming
8.2	Hot Water Test	Conforming
9.2	Wall Cabinet Load Test	Conforming
10.2	Table Static Load Test	Conforming
10.3	Table Racking Test	Conforming

The submitted sample met the acceptance criteria of all the tests listed above, and therefore is Certified to be SEFA Compliant with the Recommended Practice SEFA 8W-2016.

SAMPLE DISPOSITION

The samples were returned to Institutional Casework, Inc. at conclusion of testing.

TEST EQUIPMENT

ASSET NUMBER	DESCRIPTION	LAST CAL	NEXT DUE
114233.1	Timer 4 Channel	07/28/2016	07/28/2018
117330	DIGITAL THERMOMETER	05/08/2017	05/08/2018
138012	SCALE/0-1,000#	10/18/2016	10/18/2017
138100	Vertical Cylinder	VBU	VBU
138112	GRADUATED RULE 36"	10/11/2013	10/11/2018
138148	DIGITAL PROTRACTOR	09/20/2016	09/20/2017
138296.1 - .41	Steel Bar	01/04/2017	01/04/2022
138386	Dial Indicator	03/03/2017	03/03/2018
138426	SCIENTIFIC STOPWATCH	04/26/2017	04/26/2018
149010	DIGITAL FORCE GAUGE	12/10/2016	12/10/2017

4.1 SEFA 8W-2016 – DESCRIPTION OF TEST UNIT:

Dates Tested: 05-May-2017
Condition of Test Samples: Production
Number of Samples Tested: One (1)

MODEL NUMBER	DESCRIPTION OF SAMPLE	DIMENSIONS
1554	Base Cabinet	48” x 36” x 22”
4722	Wall Cabinet	48” x 12” x 30 1/8”
6510	Table	59” W x 22” D x 35” H

PART DESCRIPTION:

Base unit has one drawer, two doors and a shelf.

The hardware on the units is as follows:

MODEL NUMBER	DESCRIPTION OF SAMPLE
205142	SS Hinges
203346	Full Extension Slides

Refer to the following pages for photographs.

Test Unit (Base Unit)

Drawer Slide

Hinge

Door/Drawer Pull

Shelf Support

4.2 SEFA 8W-2016 – CABINET LOAD TEST:

Date Tested: 15-June-2017 to 16-June-2017
Condition of Test Samples: Production
Number of Samples Tested One (1)

DESCRIPTION OF SAMPLES:

MODEL NUMBER	DESCRIPTION OF SAMPLE
1554	Base Cabinet

TEST PROCEDURE:

4.2.2 Test Method: Verify that the cabinet is level. Load the cabinet top by using 2000 lbs. (907.2 kg) of solid steel bars (Per Section 3.1) stacked 4 high and evenly spaced. After 24 hours, unload the cabinet.

Number of Samples Tested: One (1)

ACCEPTANCE CRITERIA:

4.2.3 Acceptance Level: The cabinet will have no signs of permanent failure.

RESULTS:

The submitted sample met the acceptance criteria for the test described above. Refer to the following page for photograph.

Cabinet Load Test

4.3. SEFA 8W-2016 – CABINET CONCENTRATED LOAD TEST:

Date Tested: 16-June-2017
Condition of Test Samples: Production
Number of Samples Tested: One (1)

DESCRIPTION OF SAMPLES:

MODEL NUMBER	DESCRIPTION OF SAMPLE
1554	Base Cabinet

TEST PROCEDURE:

4.3. Test Method: Using 50 lb. solid weights or 10 lb sandbags (per Section 3.1), apply a total of 200 lbs. (90.70 kg) to the top of the cabinet along the cabinet center line and operate doors and drawers.

Number of Sample Tested: One (1)

ACCEPTANCE CRITERIA:

4.3.3 Acceptance Level: Door and drawer operation shall be normal under condition of test load. There shall be no sign of permanent deformation to front rail, cabinet joinery, doors, or drawers. Doors and drawers shall operate normally.

RESULTS:

The submitted sample met the acceptance criteria for the test described above. Refer to the following page for photograph.

Cabinet Concentrated Load Test

4.4 SEFA 8W-2016 – CABINET TORSION:

Date Tested: 16-June-2017 to 17-June-2017
Condition of Test Samples: Production
Number of Samples Tested: One (1)

DESCRIPTION OF SAMPLES:

MODEL NUMBER	DESCRIPTION OF SAMPLE
1554	Base Cabinet

TEST PROCEDURE:

4.4.2 Test Method: The cabinet shall be tested in its normal upright position, raised not less than four inches off the floor and supported on rear and one front corner. The area of support under the cabinet shall be centered on the leveling feet of the cabinet. Per Section 3.1, secure the cabinet diagonally from the supported corner with seven solid steel bars so that 350 lbs. (158.75 kg.) of weight is placed on the top of the cabinet to prevent over-turning. Apply four solid steel bars (200 lbs (90.72 kg.)) to the unsupported corner for a period of 24 hours. Remove weight and place the cabinet on the floor in its normal upright position observe the cabinet joinery. Level the cabinet and measure the face and back of the cabinet across the diagonal corners.

ACCEPTANCE CRITERIA:

4.4.3 Acceptance Level: When returned to normal position, the operation of the cabinet shall be normal, and there will be no signs of permanent damage. The difference between the two measurements taken from measuring the diagonal corners shall be no more than 1/8” (3.175 mm).

RESULTS:

The submitted sample met the acceptance criteria for the test described above. There was no change in the measurement. Refer to the following page for photograph.

Cabinet Torsion

4.5 SEFA 8W-2016 – CABINET SUBMERSION TEST:

Date Tested: 19-June-2017
Condition of Test Samples: Production
Number of Samples Tested: One (1)

DESCRIPTION OF SAMPLES:

MODEL NUMBER	DESCRIPTION OF SAMPLE
1554	Base Cabinet

TEST PROCEDURE:

4.5.2. Test Method: The material thickness along the perimeter of the cabinet shall be measured on 6" increments. Record the thickness of the material to be submerge in water. Place the entire test cabinet in its upright position such that the cabinet is submerged in 2" of water. After 4 hours, remove the unit from the water and immediately measure the thickness of the material at the points measure initially. Calculate the new arithmetic mean.

Number of Samples Tested: One (1)

ACCEPTANCE CRITERIA:

4.5.3 Acceptance Level: The cabinet will show no permanent deformation or deterioration. Increase in thickness shall not exceed 10% of the initial mean measurements.

RESULTS:

The submitted sample met the acceptance criteria of the test described above. The thickness increased by 6.4%. Refer to the following page for photograph.

Cabinet Submersion Test

5.1 SEFA 8W-2016 – DOOR HINGE TEST:

Date Tested: 21-June-2017
Condition of Test Samples: Production
Number of Samples Tested: One (1)

DESCRIPTION OF SAMPLES:

MODEL NUMBER	DESCRIPTION OF SAMPLE
1554	Base Cabinet

TEST PROCEDURE:

5.1.2. Test Method: Remove the shelf for this test. With unit and top set as described in Section 4.1, add sufficient weight to the top in order to prevent overturning. With cabinet door opened 90 degrees, hang a sling made up of two 100 lb. (45.35 kg) weights (shot bags or solid weights) over top of the door at a point 12" (304.8 mm) out from the hinge center-line. Slowly move door through the two full cycles of the hinge up to a 160 degree arc. Remove weight and swing door through its full intended range of motion and close door.

ACCEPTANCE CRITERIA:

5.1.3 Acceptance Level: The open door shall withstand a load of 200 lbs. (90.70 kg) when applied at a point 12" (304.8 mm) from the hinge centerline without significant permanent distortion. Operation of the door, after test, shall show no significant permanent distortion that will cause binding of the door or hinges or that will adversely affect operation of the catch.

RESULTS:

The submitted sample met the acceptance criteria of the test. The door operated normally through its entire range of motion, and the door catch operated normally. Refer to the following page for photograph.

Door Hinge Test

5.3 SEFA 8W-2016 – DOOR CYCLE TEST:

Date Tested: 05-May-2017 to 12-May-2017
Condition of Test Samples: Production
Number of Samples Tested: One (1)

DESCRIPTION OF SAMPLES:

MODEL NUMBER	DESCRIPTION OF SAMPLE
1554	Base Cabinet

TEST PROCEDURE:

5.3.2. Test Method: This test shall be in conformance to the ANSI test procedure A156.9, Grade 1, requirements for cycle testing of doors. A cycling mechanism shall swing door 90-degrees. Door shall operate for 100,000 cycles with a speed not greater than 15 cycles per minute.

ACCEPTANCE CRITERIA:

5.3.3 Acceptance Level: Door shall operate for the full cycle period without deterioration that will significantly affect the function of the door. The door shall operate freely without binding.

RESULTS:

There was no functional or structural damage to the unit. The doors operated freely without binding. The submitted sample met the acceptance criteria for the test described above. Refer to the following page for photograph.

Door Cycle Test

6.1 SEFA 8W-2016 – DRAWER STATIC LOAD TEST:

Date Tested: 15-June-2017
Condition of Test Samples: Production
Number of Samples Tested: One (1)

DESCRIPTION OF SAMPLES:

MODEL NUMBER	DESCRIPTION OF SAMPLE
1554	Base Cabinet

TEST PROCEDURE:

6.1.2. Test Method: With unit and top set as described in Section # 4.1, add sufficient weight to the top in order to prevent overturning. Open the drawer to 13" (330.2 mm.) of travel and hang 150 pounds (68.0 kg.) from the drawer head at the center line of the drawer for five minutes. Remove the weight and operate the drawer through the full cycle.

ACCEPTANCE CRITERIA:

6.1.3. Acceptance Level: There shall be no permanent damage that will interfere with the normal operation of the drawer and the drawer head should remain tightly fastened to the drawer.

RESULTS:

The submitted sample met the acceptance criteria for the test described above. Refer to the following page for photograph.

Drawer Static Load Test

6.3 SEFA 8W-2016 – DRAWER IMPACT TEST:

Date Tested: 15-June-2017
Condition of Test Samples: Production
Number of Samples Tested: One (1)

DESCRIPTION OF SAMPLES:

MODEL NUMBER	DESCRIPTION OF SAMPLE
1554	Base Cabinet

TEST PROCEDURE:

6.3.2 Test Method: Remove drawer; support each corner with 2”x2”x1” (50.8 x 50.8 x 25.4 mm) supports. Drop a 10 pound (4.545 Kg) sand or shot bag from a height of 24” (609.6 mm) into the bottom of the drawer at the center of the width of the drawer. Remove the sand or shot bag.

ACCEPTANCE CRITERIA:

6.3.3. Acceptance Level: Operate the drawer through the full cycle. Drawer shall operate normally. Any deformation will not cause binding or interference with the operation of the drawer.

RESULTS:

The submitted sample met the acceptance criteria of the test described above. Refer to the following page for a photograph.

Drawer Impact Test

6.4 SEFA 8W-2016 – DRAWER INTERNAL ROLLING IMPACT TEST:

Date Tested: 15-June-2017
Condition of Test Samples: Production
Number of Samples Tested: One (1)

DESCRIPTION OF SAMPLES:

MODEL NUMBER	DESCRIPTION OF SAMPLE
1554	Base Cabinet

TEST PROCEDURE:

6.4.2. Test Method: Position the drawer on a table at a 45 degree angle. Place a 2" (50.8 mm.) diameter by 12" (304.8 mm.) long steel rod (approximately 10 lbs. (4.535 kg.) 13" (330.2 mm.) from the target impact area such that the rod will roll freely to impact the back of the drawer. Subject the back to three impacts and reverse the drawer to subject the front to three additional impacts.

ACCEPTANCE CRITERIA:

6.4.3. Acceptance Level: The drawer shall show no permanent damage. All joinery shall be intact and the drawer, when replaced in the unit, shall operate normally. Minor scratches and dents are acceptable.

RESULTS:

The submitted sample met the acceptance criteria for the test described above. Refer to the following page for photograph.

Drawer Internal Rolling Impact Test

6.5 SEFA 8W-2016 – DRAWER CYCLE TEST:

Date Tested: 22-May-2017 to 27-May-2017
Condition of Test Samples: Production
Number of Samples Tested: One (1)

DESCRIPTION OF SAMPLES:

MODEL NUMBER	DESCRIPTION OF SAMPLE
1554	Base Cabinet

TEST PROCEDURE:

6.5.2. Test Method: A dynamic load of 75 lbs. (34.019 kg) shall be uniformly distributed in the drawer. Measure force required to activate the drawer. Operate over the full range of motion without engaging bumpers, stops or self-closing features for 50,000 cycles at a rate not to exceed 10 ± 2 cycles per minute.

ACCEPTANCE CRITERIA:

6.5.3. Acceptance Level: The drawer shall operate freely without evidence of binding. The force required to open and close loaded drawer shall not be greater than 8 pounds (3.628 kg.) to activate hardware.

RESULTS:

The submitted sample met the acceptance criteria for the test described above. Pull force at the end of the test was 6.6 lbf. Refer to the following page for photograph.

Drawer Cycle Test

7.2 SEFA 8W-2016 – SHELF LOAD TEST:

Date Tested: 30-Jun-2017 & 18-Jul-2017
Condition of Test Samples: Production
Number of Samples Tested: One (1)

DESCRIPTION OF SAMPLES:

MODEL NUMBER	DESCRIPTION OF SAMPLE
1554	Base Cabinet
4722	Wall Cabinet

This test is only shelf deflection of the shelf in a base cabinet.

TEST PROCEDURE:

7.2.2 Test Method: A shelf shall be mounted in the manner in which it is designed. Measure the distance from the underside of the shelf to a reference point perpendicular to the center of the shelf. Use shot or sand bags weighing 10 lbs. (4.535 kg) each. Unless otherwise specified, load the shelf uniformly to 40 lbs. (18.14 kg) per square foot shelf area to a maximum of 200 lbs. (90.70 kg). Measure the deflection on the shelf by measuring the distance to the reference point and calculating the difference between the two measurements. Record data and remove the load.

ACCEPTANCE CRITERIA:

7.2.3. Acceptance Level: The allowable maximum deflection of a shelf is 1/180 of the span and not in excess of .25” (6.35 mm.). Maximum allowable deflection shall not exceed 0.25”.

RESULTS:

SHELF TYPE	SHELF LOAD	DEFLECTION MEASURED	RESULTS
Base Cabinet Shelf-1.25” thick	200 lbs.	.139 in.	Conforming
Wall Mount Shelf-1.25” thick	106 lbs.	.161 in.	Conforming

The submitted sample met the acceptance criteria for the test described above. Refer to the following page for photograph.

Shelf Load Test – Base Cabinet

8.1 CHEMICAL SPOT TEST

Date Received:	04-May-2017
Date Tested:	05/17/17 - 05/18/17
Location Tested:	Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description:	Oak Rift Panels
Material Submitted:	2 of 14" x 24" Wood Panels
Condition of Samples:	Production

TEST PROCEDURE:

Test Method: Per SEFA-8W-2016 Section 8.1:
The received sample to be tested for chemical resistance as described herein: Place panel on flat surface, clean with soap (Liqui-Nox at 5% concentration) and water and blot dry. Condition the panel for 48-hours at 73±3°F (23±2°C) and 50 ± 5% relative humidity. Test the panel for chemical resistance using forty-nine (49) different chemical reagents by the following methods.

Method A: Test volatile chemicals by placing a cotton ball saturated with reagent in the mouth of a 1-oz. (29.574cc) bottle and inverting the bottle on the surface of the panel. The cotton ball shall remain in contact with the sample for duration of the test.

Method B: Test non-volatile chemicals by placing five drops of the reagent on the surface of the panel and covering with a 24 mm watch glass, convex side down.

For both of the above methods, leave the reagents on the panel for a period of one hour. Wash off the panel with water, clean with detergent (Liqui-Nox at 5% concentration) and naphtha, and rinse with deionized water. Dry with a towel and evaluate after 24 hours at 73±3°F (23±2°C) and 50 ± 5% relative humidity using the following rating system.

Rating Scale:	**Level 0**	**No detectable change.**
	Level 1	**Slight change in color or gloss.**
	Level 2	**Slight surface etching or severe staining.**
	Level 3	**Pitting, cratering, swelling, or erosion of coating. Obvious and significant deterioration.**

Side:	Side away from client label
Number of Samples:	One (1)

ACCEPTANCE CRITERIA:

Per SEFA-8W-2016 Section 8.1:
The range of results is provided to establish the acceptable range for Laboratory Grade Finish. Results will vary from manufacturer to manufacturer. Laboratory grade finishes should result in no more than four (4) Level 3 conditions. Suitability for a given application is dependent upon the chemicals used in a given laboratory.

RESULTS:

VOLATILE CHEMICALS					
TEST NO.	**CHEMICAL**	**METHOD**	**RANGE**	**RATING**	**COMMENTS**
1	Acetate, Amyl	A	0-1	0	
2	Acetate, Ethyl	A	0-1	0	
4	Acetone	A	0	0	
6	Alcohol, Butyl	A	0-1	0	
7	Alcohol, Ethyl	A	0	0	
8	Alcohol, Methyl	A	0-1	0	
10	Benzene	A	0-1	0	
11	Carbon Tetrachloride	A	0-1	0	
12	Chloroform	A	0	0	
14	Cresol	A	0-2	0	
15	Dichloroacetic Acid	A	0-3	3	Surface Erosion
16	Dimethylformanide	A	0-2	0	
17	Dioxane	A	0-1	0	
18	Ethyl Ether	A	0-1	0	
19	Formaldehyde, 37%	A	0	0	
21	Furfural	A	0-1	2	Staining
22	Gasoline	A	0	0	
27	Methyl Ethyl Ketone	A	0	0	
29	Mono Chlorobenzene	A	0-1	0	
30	Naphthalene	A	0	0	
34	Phenol, 90%	A	0-2	0	
46	Toluene	A	0	0	
47	Trichloroethylene	A	0	0	
48	Xylene	A	0	0	

NON-VOLATILE CHEMICALS					
TEST NO.	**CHEMICAL**	**METHOD**	**RANGE**	**RATING**	**COMMENTS**
3	Acetic Acid, 98%	B	0-1	0	
5	Acid Dichromate, 5%	B	0-1	1	Color Change
9	Ammonium Hydroxide, 28%	B	0-2	2	Color Change
13	Chromic Acid, 60%	B	0-1	1	Gloss Change
20	Formic Acid, 90%	B	0-1	1	Color/Gloss Change
23	Hydrochloric Acid, 37%	B	0-2	2	Staining
24	Hydrofluoric Acid, 48%	B	0-2	1	Gloss Change
25	Hydrogen Peroxide, 30%	B	0-1	0	
26	Iodine, Tincture of	B	0-2	2	Staining
31	Nitric Acid, 20%	B	0	1	Gloss Change
32	Nitric Acid, 30%	B	0-2	1	Color/Gloss Change
33	Nitric Acid, 70%	B	2-3	3	Surface Erosion
35	Phosphoric Acid, 85%	B	0-1	1	Gloss Change
36	Silver Nitrate, Saturated	B	0-1	1	Gloss Change
37	Sodium Hydroxide, 10%	B	0-2	2	Staining
38	Sodium Hydroxide, 20%	B	0-2	2	Staining
39	Sodium Hydroxide, 40%	B	0-2	1	Color Change
40	Sodium Hydroxide, Flake	B	0	0	
41	Sodium Sulfide, Saturated	B	0	0	
42	Sulfuric Acid, 33%	B	0-1	1	Gloss/Color Change
43	Sulfuric Acid 77%	B	0-1	1	Gloss Change
44	Sulfuric Acid, 96%	B	1-3	3	Surface

NON-VOLATILE CHEMICALS					
TEST NO.	**CHEMICAL**	**METHOD**	**RANGE**	**RATING**	**COMMENTS**
					Erosion
45	Sulfuric Acid, (77%) and Nitric Acid (70%), equal parts	B	1-3	3	Surface Erosion
49	Zinc Chloride, Saturated	B	0	0	

TOTALS			
ITEMS	**REQUIREMENT**	**NO. REAGENT WITH 3 RATINGS**	**DISPOSITION**
Volatile Subtotal:	-	1	---
Non-volatile Subtotal:	-	3	---
Grand Totals:	No More than Four Level 3 Conditions	4	Conforming*

***Suitability for a given application is dependent upon the chemicals used in a given laboratory.**

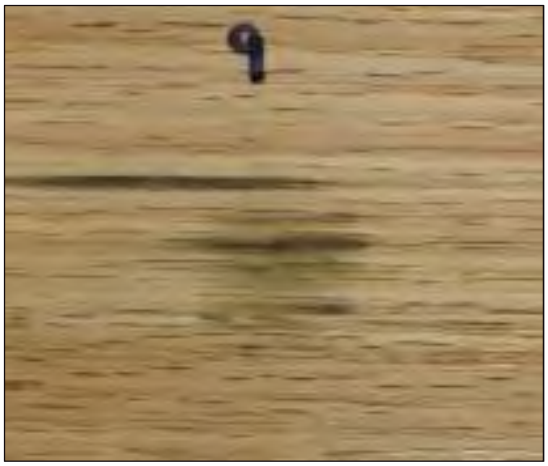
Refer to the following pages for photographs.

Chemical Spot Test Photographs

Non-Volatile & Volatile
Set-up

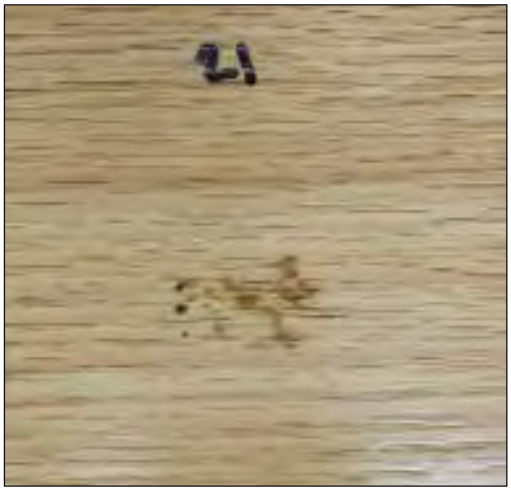
After Exposure

Chemical Spot Test Photographs



9 Ammonium Hydroxide, 28%, Rating 2, Color Change

15 Dichloroacetic Acid, Rating 3, Surface Erosion



21 Furfural, Rating 2, Staining

Chemical Spot Test Photographs

26 Iodine, Tincture of, Rating 2, Staining

33 Nitric Acid, 70%, Rating 3, Surface Erosion

37 Sodium Hydroxide, 10%, Rating 2, Staining

Chemical Spot Test Photographs

38 Sodium Hydroxide, 20%, Rating 2, Staining

44 Sulfuric Acid, 96%, Rating 3, Surface Erosion

45 Sulfuric Acid, (77%) and Nitric Acid (70%), equal parts, Rating 3, Surface Erosion

SECTION 3

8.2 HOT WATER TEST

Date Received:	04-May-2017
Date Tested:	24-May-2017
Location Tested:	Intertek Kentwood, MI

DESCRIPTION OF SAMPLES:

Part Description:	Oak Rift Panels
Material Submitted:	2 of 14" x 24" Wood Panels
Condition of Samples:	Production

TEST PROCEDURE:

Test Method:	Per SEFA-8W-2016 Section 8.2:
Procedure:	Hot water (190 to 205°F [88°C to 96°C]) shall be allowed to trickle (with a steady stream and at a rate of not less than 6 ounces [177.44 cc] per minute) on the finished surface, which shall be set at an angle of 45-degrees, for a period of five minutes.
Side:	Side away from client label
Test Notes	
Number of Samples:	One (1)

ACCEPTANCE CRITERIA:

Per SEFA-8W-2016 Section 8.2:
After cooling and wiping dry, the finish shall show no visible effect from the hot water.

RESULTS:

SAMPLE	EDGE SEAL BY INTERTEK	VISIBLE EFFECTS FROM HOT WATER	DISPOSITION
1	No	No Change	Conforming

Refer to the following pages for photographs.

Hot Water Test Photographs

Set-up

After Exposure

9.2 SEFA 8W-2016 – WALL MOUNTED CABINET LOAD TEST:

Date Tested: 30-Jun-2017
Condition of Test Samples: Production
Number of Samples Tested: One (1)

DESCRIPTION OF SAMPLES:

MODEL NUMBER	DESCRIPTION OF SAMPLE
4722	Wall Cabinet

TEST PROCEDURE:

9.2.2 Test Method: A wall mounted cabinet shall be mounted as per manufacturer's instructions and is to have the standard number of shelves. Use shot or sand bags weighing 10 lbs. (4.535 kg.) each. Load the shelves per Section 7.0 including the bottom, each shelf, and top uniformly with 40 lbs. (18.14 kg) per square foot shelf area to a maximum of 200 lbs. (90.70 kg). Test to be performed with doors closed.

ACCEPTANCE CRITERIA:

9.2.3. Acceptance Level: With weights in place after a period of 24 hours, operate the doors through full travel to verify normal operation of the doors. Remove weights and operate doors to verify normal operation. Verify that there is no permanent deflection of the cabinet top, cabinet back, cabinet bottom, or shelves. After weights are removed, the cabinet shall show no permanent damage to the cabinet, cabinet bottom, or shelves.

RESULTS:

SHELF TYPE	STATIC LOAD	DESCRIPTION OF RESULTS
Cabinet Top	160 lbs.	Conforming
Cabinet Bottom	140 lbs.	Conforming
Shelves	106 lbs.	Conforming

The submitted sample met the acceptance criteria for the test described above. Refer to the following page for photograph.

Wall Mounted Cabinet Load Test

10.2 SEFA 8W-2016 – TABLE STATIC LOAD TEST:

Date Tested: 17-May-2017
Condition of Test Samples: Production
Number of Samples Tested: One (1)

DESCRIPTION OF SAMPLES

MODEL NUMBER	DESCRIPTION OF SAMPLE
6510	TABLE FRAME

10.2.2. Test Procedure:

Test Method: Verify that the table is level. Load the table top by using solid steel bars (per Section 3,1) stacked evenly and spaced. Load the table to the manufacturer's recommended live load. These evenly distributed loads should be no less than 300 lbs. (136.077 kg.) for mobile, 600 lbs. (272.155 kg.) for free standing and 2000 lbs. (907.184 kg.) for fixed. (Weight on the top is included in the total load.)

Free Standing Table Load: 600 lbs. (272.155 kg.)
Dimensions of Product: 59" W x 22" D x 35" H

10.2.3. Acceptance Level:

No structural breakage shall result from application of the load. With the full load, the apron rails shall not deflect more than 1/360 of the span of the table and not exceed 1/8" (3.175 mm). In the case of a table with a drawer, the deflection or the rail shall not interfere with the function of the drawer.

RESULTS:

STATIC LOAD	DEFLECTION (IN.)	DESCRIPTION OF RESULTS
600 lbs.	.071	Conforming

The submitted sample met the acceptance criteria for the test described above. Refer to the following page for photograph.

Table Static Load

10.3 SEFA 8W-2016 – TABLE RACKING TEST:

Date Tested: 23-May-2017
Condition of Test Samples: Production
Number of Samples Tested: One (1)

DESCRIPTION OF SAMPLES:

MODEL NUMBER	DESCRIPTION OF SAMPLE
6510	Table Frame

10.3.2 Test Procedure:

Test Method: Racking Angle: 45 degrees
Load: 250 lbs.
Time Under Test: 72 hours

10.3.3 Acceptance Level:

When returned to normal position, the operation of the table shall be normal, and there will be no permanent damage.

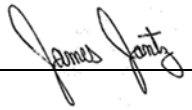
RESULTS:

The submitted sample met the acceptance criteria for the test described above. Refer to the following page for photograph.

Table Racking Test

SECTION 4

REVISIONS MADE TO TEST REPORT

DATE	REVISION DESCRIPTION	REVISED BY	REVISED BY
25-Jul-2017	Initial release.	James Jantz	

FULLERTON JOINT UNION HIGH SCHOOL DISTRICT
1051 W. Bastanchury Road
Fullerton, CA 92833
(714) 680-5622

SUBSTITUTION REQUEST FORM

#_____

DATE: 2-23-26
TO: Andy Kim

PROJECT: Sonora High School Science Classrooms Modernization

SPECIFIED ITEM:

Section	Page	Paragraph	Description
115313	2	2.01	Laboratory Fume Hood Manufacturers

The undersigned requests consideration of the following:
PROPOSED SUBSTITUTION: Fume hoods manufactured by ICI Scientific

Attached data includes product description, specifications, drawings, photographs, performance and test data adequate for evaluation of the request. Applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents which the proposed substitution will require for its proper installation.

The undersigned certifies that the following paragraphs, unless modified by attachments are correct:

1. The proposed substitution does not affect dimensions shown on drawings:
2. The undersigned will pay for changes to the building design, including engineering design, detailing, and construction costs caused by the requested substitution.
3. The proposed substitution will have no adverse effect on other trades, the construction schedule, or specified warranty requirements.
4. Maintenance and service parts will be locally available for the proposed substitution.
5. The proposed substitution is submitted within the time frames indicated in the Contract Documents.

The undersigned further states that the function, appearance, and quality of the proposed substitution are equivalent or superior to the specified item.

Submitted by: John Schmidt

Signature: John Schmidt

Firm: Laboratory by Design

Address: 20 Enterprise Court, Suite 3 Napa, CA 94558

Remarks: _____

Date: 2-23-26

Telephone: 707-252-8218 Fax: _____

(For Use By The Design Consultant)

___ Accepted ___ Accepted as noted

___ Not Accepted ___ Received too late

Reviewed By _____

Date: _____

LPA RESPONSE:
WE TAKE NO EXCEPTION TO THE SUBSTITUTION REQUEST.

-M. ABRICA 03/10/2026

ICI Scientific

Isolator Gen5 Fume Hood Substitution Request

Table of Contents

ICI Scientific Introduction

History - Since 1951

Institutional Casework Inc. (ICI Scientific) is uniquely positioned to serve your complete project needs from steel, stainless steel, or custom wood laboratory and science casework to equipment, fixtures, work surfaces and fumes hoods.

ICI is privately owned, ensuring a primary focus on quality. This focus enables us to build a strong connection with our customers, employees, distributors and suppliers.

Introducing ICI Scientific - specifically designed and positioned to meet the requirements of Tier One laboratory specifications. ICI Scientific brings your preliminary concept to life; assisting from design through installation in partnership with our world-wide distributor network; delivering post-sale service and support through the lifetime of our products.

ICI Scientific is your single source for a complete laboratory. With brands steeped in a rich history, ICI Scientific is uniquely positioned to provide the complete laboratory project. Being privately owned, we ensure our primary focus is on quality, without the distraction of fluctuating stocks. We are focused on building a strong connection with employees, dealers, distributors, customers and end users.

All levels of laboratories and learning environments are created at ICI through flexibility, function, innovation and design.

American Made

ICI's multiple manufacturing facilities comprise 450,000 sq. ft. with 250 associates; ICI Scientific is a global provider of American Made products.

Fume Hood Overview

Presenting the ISOLATOR Series

The ISOLATOR combines the newest innovations in fume hood design with accepted architectural practices to achieve the most unique approach to fume containment in the world. Many of our standard features cannot be found on other fume hoods. The ISOLATOR's most outstanding attribute is safety.

Safety from Fumes
ANSI/ASHRAE 110-2016, the current fume hood test, evaluates the containment of fume hoods under three conditions:

1. Zero movement (relatively static conditions)
2. Rapid sash movement
3. Perimeter containment around the airfoil, sash stop and side posts

Safety from Fire
One of the most feared accidents that can occur inside a fume hood is an uncontrolled fire. The ISOLATOR has a full metal superstructure and a steel top to afford an extra layer of protection against the collapse of the fume hood interior during a fire plus a tempered glass sash and viewpass that resists thermal cracking up to 250° Fahrenheit (higher than safety glass).

Safety from Sash Failure
A typical sash and counterweight system uses galvanized steel or stainless steel cables to connect the sash to the counterweight. If these cables fray, snap or pull loose from their connecting points, the elevated sash and counterweight could come crashing down. A fume hood sash may weight up to 150 lbs. The ISOLATOR sash system is chain driven, not cable drive. This counterbalancing system has been tested to 1,000,000 cycles without failure. It carries a lifetime guarantee.
Aside from these significant safety features, the ISOLATOR also is a very user-friendly safety device with the following features:
Fingertip sash operation - the rugged chain driven counter weight system has the smoothest operating sash in the industry
Viewpass system - a dual purpose panel that allows the same bypass function as the traditional louvered metal panel. Events inside the fume hood can be monitored all the way from the worktop to the roof via the smoked glass transparent panel
Aerodynamic sash handle - sash handle style that aids in the containment of fumes during rapid sash movement

How the ISOLATOR is Different

Metal Superstructure
The ISOLATOR liner and baffle system is attached to a galvanized steel pan structure to ensure the most stable, fire resistant and easy-to-service fume hood superstructure in the work. Other manufacturers of fume hoods use frames of L-angles to join liner panels together. In most of these framing systems, the liner itself becomes a key load-bearing element of the fume hood superstructure. Any fire or other stressful event inside the fume hood that weakens a framed liner system can lead to an actual implosion of the containment cavity with resulting disastrous consequences.
Since the basic design begins with full metal pans as a superstructure, the liner is truly a liner, not structural as in other hoods. This makes it feasible to change liners or liner types in the field in the case of a damaged liner or a significant change in use and it is much easier to relocate the fume hood should it become necessary.

"Knocked Down" (KD) Style Construction
The ISOLATOR's galvanized pan system is the heat of our "Knocked Down" assembly strategy. THe ISOLATOR is the only fume hood made in the United States whose standard models are all shippable "Knocked Down". This option not only affords more moving and storage options on cluttered job sites but a lower source cost than assembled units. Two trained installers can completely assemble a KD ISOLATOR within two hours.

The Viewpass
The viewpass is a revolutionary system utilizing a tempered glass panel to create a bypass. This replaces the older style louvered steel panel used by other manufacturers. Because there is no direct path between this bypass slot and the suspended ceiling cavity common in many labs, bypass air is taken from the lab under all sash positions, even if the hood top is soffeted into the hung ceiling.
For increased safety, this system also affords excellent visual monitoring of the entire containment cavity, a feature not standard on any other fume hood.

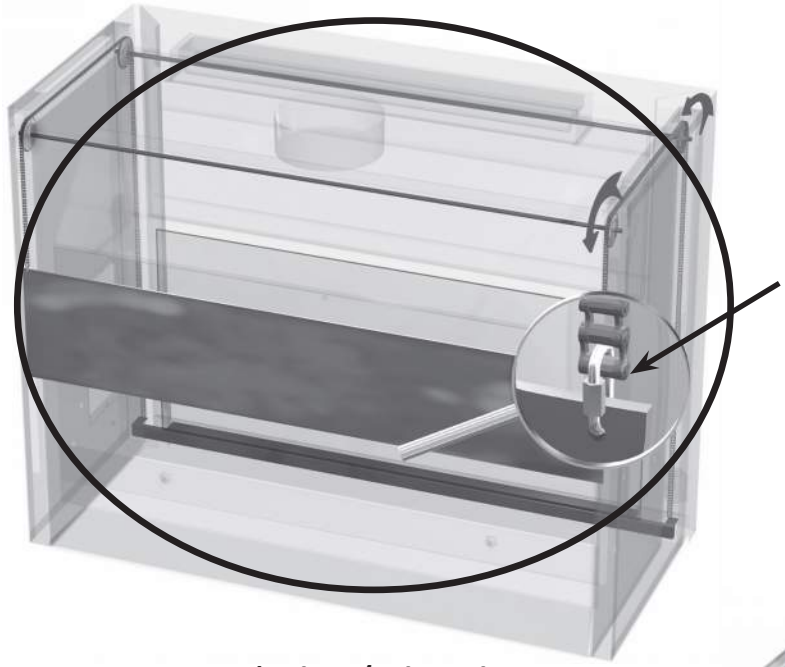
How the ISOLATOR is Different

ISOLATOR Sash/Counterweight System

The ISOLATOR's heavy duty gear/chain/bearing components, designed to be virtually indestructible, are integrated into our unique four wheel drive sash counterweight system - assuring you of a lifetime of reliable and safe performance. We guarantee it.*

The steel chain used in the ISOLATOR's counterweight system has bending flexibility as an inherent feature of the chain, plus only two directional changes occur with each chain's motion.

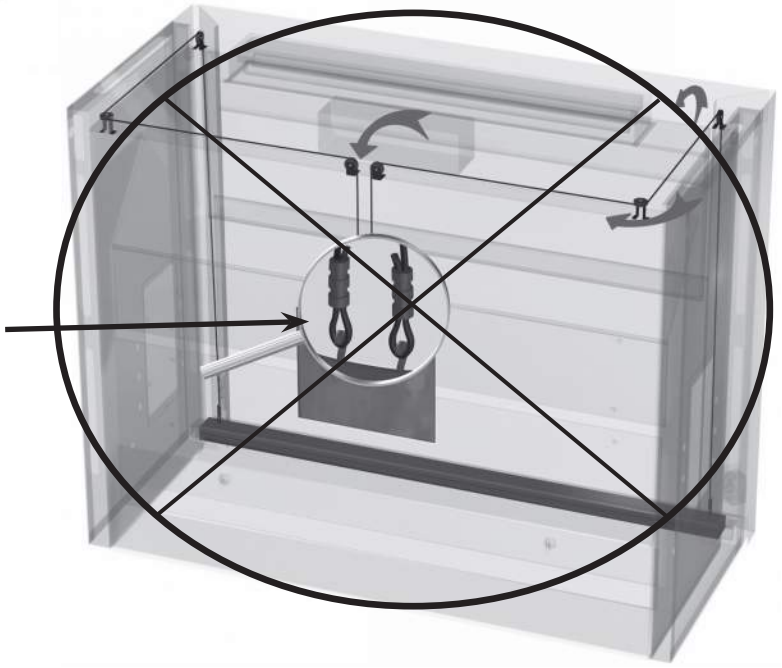
The ISOLATOR's unique system ensures ease of operation and non-binding performance for enhanced safety. Fume hood operators can be sure that quick sash closure and adjustment is always possible and always with fingertip control.



The ISOLATOR employs a positive attachment from the chain to both the sash handle and the counterweight

ISOLATOR's Chain/Axle Sash System

The other stress point most susceptible to breakage is the crimped attachment point of the cable to the counterweight



Typical Cable/Pulley Sash System

*Lifetime warranty covers the sash mechanism. Sash mechanism refers to the #35 case-hardened steel chain, sealed bearings, drive axles, sprockets and chain attachment points at both sash handle and counterweight.

F-100 Isolator Gen-5 ADA Bench Fume Hood - Frameless Vertical Sash

ISOLATOR Gen-5ADA Bench Fume Hood - This general purpose fume hood is designed to meet most laboratory Constant Air Volume (CAV) or Variable Air Volume (VAV) requirements and supplied with and automatic compensating upper by-pass. For VAV, use option MOD-0004 for a restricted by-pass position of observation glass. Designed to mount on a 31" deep counter top. The ISOLATOR Gen-5-ADA bench mounted fume hood is supplied with the following standard features in a handicapped accessible form:

Counter Balance Systems - Chain and sprocket system delivers the easiest and most reliable sash operation available with an exceptional product life-cycle ISOLATOR drive system provides economical and reliable operation; tested to over 1 million cycles with no failure.

Sash Design - 1/4" thick tempered safety glass is provided with an epoxy urethane coated steel handle. Optional laminated safety glass or polycarbonate available for special applications. Hood has a frameless vertical sash with a 42" exterior sightline.

Lower Airfoil - Aerodynamic flush sill design allows air to enter the fume hood even when the sash is closed ensuring efficient fume exhaust. The flip up safety trough cover allows electrical wiring or tubing into the fume hood while still permitting full closure of the sash.

Stainless Steel Type 304 Exhaust Collar - Round collar which allows for direct connection to typical exhaust ducts to reduce duct transition costs, minimize static pressure losses and exhaust noise levels.

Electrical - Two UL/CSA approved duplex receptacles provided for 120 volt service, one on each corner post. UL/CSA approved LED light fixture and switch provided. Explosion proof fixtures are available options.

Plumbing - Both corner posts are pre-punched to accept a maximum of one plumbing fitting per post. Factory pre-plumbing is available as well as plumbing fixtures from a variety of manufacturers to meet most plumbing needs.

Access Panels - Interior overlay style access panels provide convenient access and prevent accidental removal. Exterior side panels are also removable for ease of access to plumbing and electrical service fixtures.

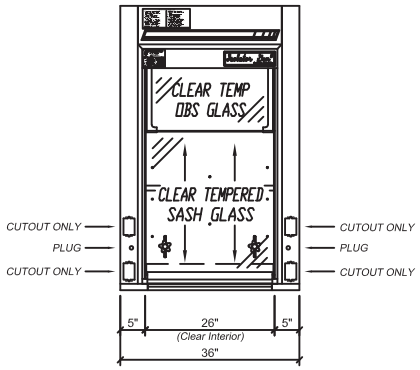
Standards - UL 1805 Classified and tested in accordance with ASHRAE 110. Test results available upon request.

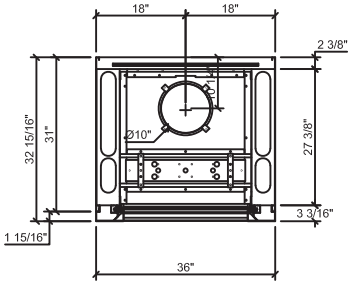
Rendering shown with optional features

Catalog Number	Width	Clear Interior Depth	Duct Diameter	28" Vertical Open @ 100 FPM	18" Vertical Open @ 100 FPM
F-100-36G5-ADA	36"	24"	1:10"	506 CFM @ .14" SP	325 CFM @ .06" SP
F-100-48G5-ADA	48"	24"	1:10"	739 CFM @ .29" SP	475 CFM @ .12" SP
F-100-60G5-ADA	60"	24"	1:12"	972 CFM @ .27" SP	625 CFM @ .11" SP
F-100-72G5-ADA	72"	24"	1:12"	1206 CFM @ .42" SP	775 CFM @ .17" SP
F-100-96G5-ADA	96"	24"	2:10"	1672 CFM @ .37" SP	1075 CFM @ .15" SP

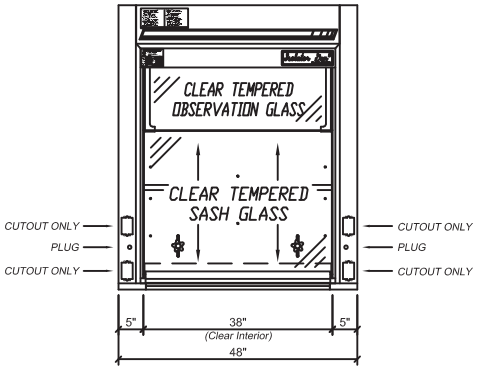
F-100 Gen-5 ADA Bench Fume Hood

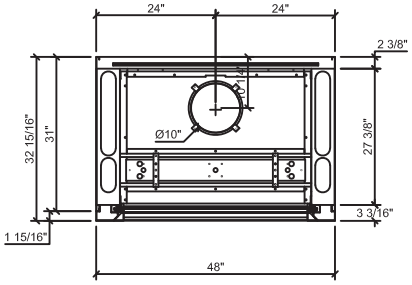
F-100-36G5-ADA - 36" Wide



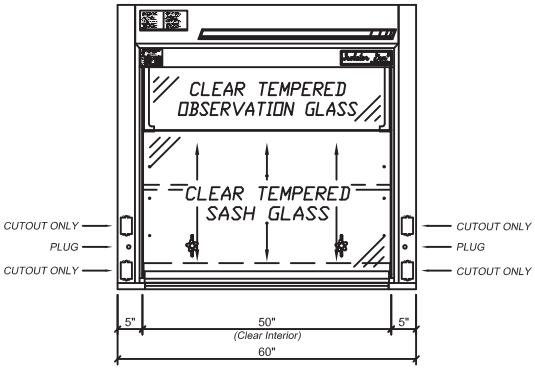


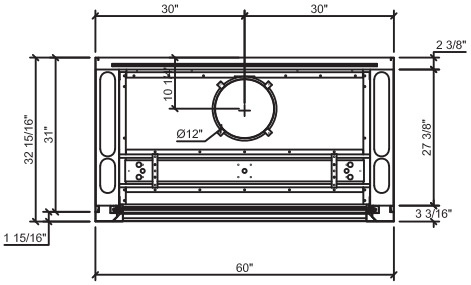
F-100-48G5-ADA - 48" Wide





F-100-60G5-ADA - 60" Wide





Proposed Substitute Manufacturer Specification
Options will be adjusted to match those in project specification

JAMESTOWN METAL PRODUCTS (JMP)
LABORATORY FUME HOODS
GEN 5 SERIES
REVISED August 2015

SECTION 11610.3

LABORATORY FUME HOODS
GEN 5 SERIES

PART 1 GENERAL

1.00 SUMMARY

A. Section Includes:
   1. Laboratory Fume Hoods
B. Related Sections:
   1. Section 12345 – Steel Laboratory Casework: Base units and work surfaces for fume hood/base unit assembly.
   2. Section 12346 – Flex Laboratory Furniture System.
   3. Section 15975 – Smart-Sash
C. Reference Standards:
   1. UL 1805 – Standard for Laboratory Fume Hoods and Cabinets
   2. ANSI/ASHRAE 110-1995 – Method of testing Performance of Laboratory Fume Hoods
   3. CSA Z316.5-04 – Fume Hoods and Associated Exhaust Systems
D. “American Made” – Laboratory Fume Hoods wholly manufactured and assembled in USA

1.01 FUME HOOD GENERAL DESIGN REQUIREMENTS

A. All fume hoods covered in this section are Isolator Series with a top and bottom airfoil and aerodynamically shaped fascia posts to minimize turbulence.
   1. CAV (Constant Air Volume) type: Design incorporates an automatic air bypass system so that the exhaust air volume is constant. Bypass is recessed behind plane of the sash and affords velocity tempering performance with face velocities not in excess of 3.8 times full-open face velocity.
   2. VAV (Variable Air Volume) type: Design uses a “restricted by-pass design. Maximum air is exhausted when the sash is open, minimum air is exhausted when the sash is closed. A minimum flow of 25 CFM/sq ft of surface area, as stated by NFPA 45, should be maintained to achieve optimum containment and satisfactory dilution when the sash is closed.

B. Fume hoods shall be designed for consistent and safe air flow through the hood face. Negative variations of face velocity shall not exceed 20% of the average face velocity at any designated measuring point as defined in this section.

C. Average illumination of work area: minimum 80 foot-candles. Work area shall be defined as the area inside the superstructure from side to side and from face of baffle to the inside face of the sash, and from the working surface to a height of 48 inches.

D. Fume hood shall be designed to minimize static pressure loss with stainless steel round duct collar configuration. Maximum average static pressure loss readings taken three diameters above the hood outlet from four points, 90 degrees apart, shall not exceed the following maximums:

Face Velocity at sash full open- CAV design - measured S.P.L. (W.G.)

75 F.P.M.	.30 inches
100 F.P.M.	.50 inches
125 F.P.M.	.80 inches
150 F.P.M.	1.16 inches

E. Fume hood shall maintain essentially constant exhaust volume at any baffle position for safety. Maximum variation in exhaust CFM, static pressure and average face velocity as a result of baffle adjustment shall not exceed 5% for any baffle position at the specified face velocity.

1.02 SUBMITTALS

A. Submit manufacturer's test data and installation instructions for each type of fume hood. Provide data indicating compliance with ANSI/ASHRAE Standard 110-1995.

B. Provide samples of the following:
   1. 6" x 6" section of the interior fume hood liner material.
   2. 12" x 12" section of countertops with dish formation.
   3. Color samples of manufacturer's finish.
   4. Hardware and accessories including sample sash handle and/or pulls, chains, axles, and sprockets.

C. Provide submittal drawings for fume hoods showing plans, elevations, sections and service run spaces. Details shall include notation of all specified items.
   1. Provide location and type of service fittings as related to the fume hood when required.
   2. Provide roughing-in drawings for mechanical and electrical services as related to the fume hood when required.
   3. Provide face opening, air volume and static pressure drop data.

1.03 FUME HOOD PERFORMANCE REQUIREMENTS – See APPENDIX A

A. Metal Finish Performance Requirements: Coatings on Fume Hood components have been tested in conformance with the full requirements of SEFA 8 M-2010 Recommended Practice. See Section 2.07 for test procedures, acceptance levels and results for each criteria listed below from SEFA 8 M-2010 Section 8:
   1. Chemical Spot Test – Section 8.1
   2. Hot Water Test – Section 8.2
   3. Finish Impact Test – Section 8.3
   4. Paint Adhesion on Steel – Section 8.4
   5. Paint Hardness on Steel – Section 8.5

PART 2 PRODUCTS

2.00 MANUFACTURER

A. "American Made" – Laboratory Fume Hoods and related equipment wholly manufactured and assembled in the USA by: ICI (Institutional Casework Inc.) Metal Products Division, 178 Blackstone Avenue, Jamestown, New York, 14701.

2.01 MATERIALS

A. Typical sheet steel used in the construction of fume hoods:
   1. Mild carbon, cold rolled and leveled unfinished steel, ASTM A 1008
   2. Type 304 or 316 stainless steel, #4 finish one side, ASTM A 666
   3. Mild carbon, cold rolled and hot dipped galvanized steel

B. Typical gauges:
   1. Stainless steel: 12, 14, 16, 18 and 20 GA
   2. Mild Steel: 18 GA
   3. Galvanized steel: 18 GA

C. Sash glass:
   1. ¼" Tempered Glass per ASTM C 1048 (standard)
   2. ¼" Laminated Glass per ASTM C 1172 (optional)

D. Sash tracks: Corrosion-resistant polyvinyl chloride (PVC).

E. Fastening devices:
   1. Interior surfaces: Nylon bolts, PVC fasteners, PVC-capped 410 stainless screws
   2. Exterior structural members: 410 stainless steel screws
   3. Exterior panel members: #8-32 zinc plated screws

F. Interior liners: The liner consists of all interior surfaces, including sides, top, back and baffles. See **APPENDIX B** for liner performance requirements.
   1. Standard: Fiberglass reinforced polyester material (poly-glass), 3/16" nominal thickness, white

2. Optional liner materials:
    a. Type 304 stainless steel, 16 GA, #4 finish
    b. Type 316 stainless steel, 16 GA, #4 finish
    c. PVC plastic sheet, 1/4” nom. thickness
    d. Phenolic, 1/4” nom. thickness
    e. Composition stone, 1/4” nom. thickness, light grey

2.02 FUME HOOD CONSTRUCTION – BENCH HOODS

A. Superstructure: Shall consist of 18 GA mild steel side pans, painted neutral color grey, maximum 4-3/4" thick, holding side and rear liner panels, and fastened together with pinions and screws so that the entire structure is secure and rigid. Any framing system not providing structural support is unacceptable. Front and both sides of the superstructure are aligned and precision fit, eliminating the need for exterior gaskets.

B. Airfoils:
1. Lower airfoil shall be constructed of ***(Specifier Option – choose one)***:
    a. 16 GA mild steel and painted (standard)
    b. 16 GA Type 304 stainless steel, #4 finish (optional)

   and be equipped with power cord/tube pass-through 3" square near each side post. These pass-throughs shall allow sash handle to seal against airfoil without running cords and tubes under the airfoil, but by simply resting cords and tubes into the pass-through cavity. It is also flush with the work surface and has an integral drip trough.
2. Upper airfoil ***(Specifier Option – choose one)***:
    a. 18 GA mild steel and painted (standard)
    b. 18 GA Type 304 stainless steel, #4 finish (optional)

C. Sash ***(Specifier Option – choose one)***:
1. Provide a frameless vertical sash containing a 1/4" (6 mm) tempered glass panel and a full width painted steel sash handle (stainless steel optional) connected to a steel rear-hung counterweight system insuring non-tilting, non-binding, and non-creeping sash performance. Rear-mounted counterweight shall be connected to a #35 case-hardened steel chain engaging a twin sprocket axle system with positive master link connection points both front and rear. Sash systems utilizing cables and pulleys are not acceptable. Painted steel parts in the sash are not acceptable. ***Note:*** Sash interlock system utilized on double sided pass-through hoods.
2. Provide a combination sash with horizontal sliding panels no wider than 18". Standard sash elements are tempered glass panels set into an aluminum track housed within the stainless steel sash frame giving either horizontal or vertical movement options to the end user. A steel rear-hung, counterweight system is used to insure non-tilting, non-binding, and non-creeping sash performance. Rear-mounted counterweight shall be connected to a #35 case-hardened steel chain engaging a twin sprocket axle system with positive master link connection points both front and rear. Sash systems utilizing cables and pulleys are not acceptable. Painted steel parts in the sash are

not acceptable. ***Note:*** Not available on double sided pass-through hoods.

3. Provide a framed vertical sash containing a standard tempered glass panel set into a stainless steel frame connected to a steel rear-hung counterweight system insuring non-tilting, non-binding, and non-creeping sash performance. Rear-mounted counterweight shall be connected to a #35 case-hardened steel chain engaging a twin sprocket axle system with positive master link connection points both front and rear. Sash systems utilizing cables and pulleys are not acceptable. Painted steel parts in the sash are not acceptable. ***Note:*** Sash interlock system utilized on double sided pass-through hoods.

D. Baffles: Control air vectors into and through the fume hood, and shall be fabricated of the same material as the liner. Provide three fixed baffles and one adjustable baffle at bottom.

E. Baffle attachment: Baffles are secured to the superstructure using non-metallic, corrosion resistant baffle stand-offs.

F. Bypass: Isolator Viewpass system consisting of a ¼" thick tempered glass panel allowing complete visual display of fume hood interior. ***(Specifier Option – choose one)***:
   1. Clear (standard)
   2. Smoked (optional)

G. Duct collars: Standard 10" or 12" round exhaust outlet collar(s), fabricated of 20 gauge Type 304 stainless steel. Coated steel collars are not acceptable.

H. Fascia posts ***(Specifier Option – choose one)***:
   1. 18 GA mild steel and painted (standard)
   2. 18 GA Type 304 #4 finish stainless steel (optional)

I. Exterior end panels ***(Specifier Option – choose one)***:
   1. 18 GA mild steel and painted (standard)
   2. 18 GA Type 304 #4 finish stainless steel (optional)
   3. No end panels (optional)

J. Interior clearance: All bench type fume hoods are designed to have an interior vertical clearance of not less than 47" in the front twelve inches of the hood depth. Internal dimensions may be affected by accessories or options.

K. Interior lighting: Standard configurations for fluorescent light fixtures are: 36" hood (1-24" fixture); 48" hood (1-36" fixture); 60" hood (1-48" fixture); 72" hood (1-48" fixture); 96" hood (2-36" fixtures). ***(Specifier Option – choose one)***:
   1. Standard non-hinged fluorescent light fixture configured for T-8 lamp tubes shall be provided and installed on the exterior of the fume hood roof. A tempered glass panel is provided and has a vapor-tight seal to isolate the fluorescent fixture from the hood interior. The largest possible double tube UL approved fixture is provided for each hood.
   2. Incandescent, explosion-proof 150 watt light.

L. Fluorescent Tubes or Incandescent Bulbs ***(Specifier Option – choose one)***:
   1. Provided by others (standard)
   2. Included with fixture (optional)

M. Service Fittings and Fixtures:
   1. All laboratory service fittings and fixtures shall be as manufactured by the Water Saver Fixture Company or an approved equal. Fixtures, including handles, shall be color coded to indicate the proper service. Color code requirements for indexing service fixtures shall be as follows:

Service	Index Color
Gas	Blue
Air	Orange
Vacuum	Yellow
Steam	Black
Cold Water	Green
Hot Water	Red
Deionized Water	White
Other Services	On Application

   2. Finish of Service Fixtures:
      a. Laboratory service fixtures (except fittings inside the fume hood) shall have ***(Specifier Option – choose one)***:
         1. A polished chrome finish with clear epoxy coating (standard)
         2. A satin chrome finish with clear epoxy coating (optional)
      b. Fittings inside the fume hood shall have an epoxy finish color- coded to match the fixture service index color.

N. Electrical services ***(Specifier Option – choose one)***:
   1. Specified electrical outlets and switches are shipped loose for field installation by the electrical contractor. All electrical receptacles are 3-wire, 20 amp duplex, 120/277VAC or as specified. Light switch shall be 3-wire polarized grounded, 15 amp, 125VAC or as specified. Face plates are stainless steel.
   2. Wiring harnesses shall be furnished for each specified fascia post mounted electrical device and field-installed.
   3. Specified electrical services are prewired to a junction box located on the roof of the fume hood for field connection by the electrical contractor. All electrical receptacles are 3-wire, 20-amp duplex, 120/277VAC or as specified. Light switch shall be 3-wire polarized grounded, 15 amp, 125VAC or as specified. Face plates are stainless steel.

O. Work surfaces ***(Specifier Option – choose one)***:
   1. Epoxy resin, 1-1/4" thick, molded top made in the form of a watertight pan, not less than 1/4" deep to contain spillage. Work surfaces are non-glaring finish and black, grey or white in color.

2. Type 304 stainless steel, 16 gauge, formed down, making a 1-1/4" high face, and dished to form a watertight containment not less than 1/4" deep to contain any spills within the fume hood.

NOTE: See **APPENDIX C** for work surface performance requirements.

P. Instruction Plate: Corrosion resistant or plastic plate attached to the fume hood exterior with condensed information covering recommended locations for apparatus and accessories, use of sash and recommended safe operating procedures.

2.03 FUME HOOD CONSTRUCTION – WALK-IN HOODS

Walk-in hoods shall employ the same materials and construction methods as standard bench hoods with the following exceptions:

A. Hood roof: Shall be fabricated from the same liner material as the rest of the containment cavity as standard. If additional containment for accidental fire is desired, an optional 18 GA galvanized steel roof with liner material identical to that used in the rest of the containment cavity mounted to the interior is available.

B. Sash ***(Specifier Option – choose one)***:

1. Provide two frameless vertical sashes, each containing a standard ¼" tempered glass panel and a full width painted steel sash handle (stainless steel optional) connected to a steel rear-hung counterweight system insuring non-tilting, non-binding, and non-creeping sash performance. Rear-mounted counterweight shall be connected to a #35 case- hardened steel chain engaging a twin sprocket axle system with positive master link connection points both front and rear. Sash systems utilizing cables and pulleys are not acceptable. Painted steel parts in the sash are not acceptable.
2. Provide two sashes; the upper being a combination sash with horizontal sliding panels no wider than 18" and the lower being a framed vertical sash. Sash elements in the combination sash are tempered glass panels set into an aluminum track housed within the stainless steel sash frame giving either horizontal or vertical movement options to the end user. Sash elements in the framed vertical sash are a standard ¼" tempered glass panel set into a stainless steel frame connected to a steel rear-hung counterweight system insuring non-tilting, non-binding, and non-creeping sash performance. Rear-mounted counterweight shall be connected to a #35 case-hardened steel chain engaging a twin sprocket axle system with positive master link connection points both front and rear. Sash systems utilizing cables and pulleys are not acceptable. Painted steel parts in the sash are not acceptable.
3. Provide a horizontal sliding sash consisting of a stainless steel top rail holding stainless steel framed glass panels and a stainless steel bottom track. Sash elements are standard tempered glass panels set into an aluminum track housed within the stainless steel rail. Painted steel parts in the sash are not acceptable.

4. Provide two framed vertical sashes, each containing a standard ¼" tempered glass panel set into a stainless steel frame connected to a steel rear-hung counterweight system insuring non-tilting, non-binding, and non-creeping sash performance. Rear-mounted counterweight shall be connected to a #35 case-hardened steel chain engaging a twin sprocket axle system with positive master link connection points both front and rear. Sash systems utilizing cables and pulleys are not acceptable. Painted steel parts in the sash are not acceptable.

C. Baffles: Control air vectors into and through the fume hood, and shall be fabricated of the same material as the liner. Provide four fixed baffles and two adjustable baffles at bench height and at floor.

D. Interior clearance: All walk-in type fume hoods are designed to have an interior vertical clearance of not less than 83" in the front twelve inches of the hood depth. Accessories or options may affect internal dimensions.

2.04 OPTIONAL FEATURES

A. Velocity alarm: Fume hoods shall be equipped with Jamestown-Tel fume hood velocity alarm to detect low hood face velocities. The units are surface-mounted on the hood's fascia panel. No control module, when mounted, shall be thicker than 1-1/2". The UL approved velocity alarm signals an unsafe operating condition when the fume hood face velocity falls below a preset amount. The alarm set-point calibration is performed by the user/owner once a proper face velocity has been set and measured. The alarm system consists of the following:
   1. LCD digital display that registers face velocities between 0 and 1000 FPM plus a safety reference display that actuates in low velocity conditions.
   2. Programmable alarm set point.
   3. Audible alarm of at least 80 dB.
   4. Flashing red warning light in synchronization with the audible alarm.
   5. Silencer button for the audible alarm; flashing red light will continue to flash.
   6. Optional 0-10VDC available to signal BAC.
   7. Alarm system is furnished with velocity detector, 110V/12VDC power supply, and detector mounting hardware. The system operation at 110V, 60 Hz power.

B. Smart sash: See Section 15975 for details.

2.05 PERCHLORIC ACID FUME HOODS

Perchloric Acid bench hoods shall employ the same materials and construction methods as standard bench hoods with the following exceptions:

A. Standard type 316 16 GA stainless steel liner and baffles with coving on all containment chamber corners for easy cleaning.

B. Integral type 316 16 GA stainless steel work surface with sloped trench and single drain.

C. Wash down system including perforated PVC wash down bar, water valve, and remote knob.

D. Incandescent, vapor proof, fume resistant and UL listed light fixture, installed in roof of hood; bulb replacement from interior.

2.06 RADIOISOTOPE FUME HOODS

Radioisotope bench hoods shall employ the same materials and construction methods as standard bench hoods with the following exceptions:

A. Standard type 304 16 GA stainless steel liner and baffles with coving on all containment chamber corners for easy cleaning.

B. Integral type 304 16 GA stainless steel work surface and cup sink (specify quantity and location), reinforced to carry up to 200 lb/sq.ft.; type 316 16GA stainless steel with square corners optional.

2.07 METAL FINISH (Painted Series)

A. Preparation: Metal shall be treated with a heated alkaline based acid solution, rinsed with water, and a coat of epoxy-link applied; immediately dried in heated ovens, then gradually cool prior to application of finish.

B. Application: Electro-statically apply epoxy powder coat of selected color and bake in controlled high temperature oven to assure a smooth, hard satin finish. Surfaces shall have a chemical resistant, high grade laboratory furniture quality finish of the following thicknesses:
   1. Exterior and interior surfaces exposed to view: 1.8 – 3 mils.
   2. Backs of cabinets and other surfaces not exposed to view: 1.8 mils minimum.

C. Chemical Spot Test :
   1. Test procedure: Place test panel on a flat surface, clean with soap and water and blot dry. Condition the test panel for 48 hours at 73°F ± 3°F and 50% ± 5% relative humidity. Panel will be subjected to chemical reagents according to SEFA 8 M-2010 Recommended Practice using one of the following two test methods:
      a. Method A – Test volatile chemicals by placing a cotton ball saturated with reagent in the mouth of a 1-oz. bottle and inverting the bottle on the surface of the panel.
      b. Method B – Test non-volatile chemicals by placing five drops of the reagent on the surface of the panel and covering with a 24 mm watch glass, convex side down.
      c. For both test methods, leave the reagents on the panel for a period of one hour. Wash off the panel with water, clean with detergent and naptha, and rinse with deionized water. Dry with a towel and evaluate after 24 hours at 73°F ± 3°F

and 50% ± 5% relative humidity using the following rating system.

2. Evaluation ratings:
    a. Level 0 – No detectable change.
    b. Level 1 – Slight change in color or gloss.
    c. Level 2 – Slight surface etching or severe staining.
    d. Level 3 – Pitting, cratering, swelling, or erosion of coating. Obvious and significant deterioration.
3. Acceptance level: No more than four (4) level 3 conditions
4. Test results: Two (2) level 3 conditions exist. See data below.

REAGENT	METHOD	RATING
Acetate, Amyl	A	0
Acetate, Ethyl	A	0
Acetic Acid, 98%	B	1
Acetone	A	0
Acid Dichromate, 5%	B	0
Alcohol, Butyl	A	0
Alcohol, Ethyl	A	0
Alcohol, Methyl	A	0
Ammonium Hydroxide, 28%	B	0
Benzene	A	0
Carbon Tetrachloride	A	0
Chloroform	A	0
Chromic Acid, 60%	B	2
Cresol	A	1
Dichlor Acetic Acid	A	2
Dimethylformanide	A	1
Dioxane	A	1
Ethyl Ether	A	0
Formaldehyde, 37%	A	0
Formic Acid, 90%	B	3
Furfural	A	2
Gasoline	A	0
Hydrochloric Acid, 37%	B	0
Hydrofluoric Acid, 48%	B	1
Hydrogen Peroxide, 28%	B	0
Iodine, Tincture of	B	2
Methyl Ethyl Ketone	A	1
Methylene Chloride	A	1
Mono Chlorobenzene	A	0
Naphthalene	A	0
Nitric Acid, 20%	B	1
Nitric Acid, 30%	B	1
Nitric Acid, 70%	B	3
Phenol, 90%	A	0
Phosphoric Acid, 85%	B	0
Silver Nitrate, Saturated	B	1
Sodium Hydroxide, 10%	B	0
Sodium Hydroxide, 20%	B	0
Sodium Hydroxide, 40%	B	0

Sodium Hydroxide, Flake	B	0
Sodium Sulfide, Saturated	B	0
Sulfuric Acid, 25%	B	0
Sulfuric Acid, 77%	B	0
Sulfuric Acid, 96%	B	0
Sulfuric Acid (77%) & Nitric Acid (70%), (equal parts)	B	2
Toluene	A	0
Trichloroethylene	A	0
Xylene	A	0
Zinc Chloride, Saturated	B	0

D. Hot Water Test

1. Test procedure: Hot water (100°C±3%) shall be allowed to trickle (with a steady stream and at a rate of not less than 6 ounces [177.44cc] per minute) on a finished surface, which shall be set at an angle of 45-degrees, for a period of five minutes.
2. Acceptance level: After cooling and wiping dry, the finish shall show no visible effects from the hot water.
3. Test results: The finish shows no visible effect due to the hot water.

E. Finish Impact Test:

1. Test procedure: Position the 18 GA CRS test panel with nominal paint thickness of 3 mils on a smooth concrete floor. A one-pound ball (approximately 2" in diameter) shall be dropped from a distance of 12" onto a flat horizontal surface.
2. Acceptance level: There shall be no visual evidence to the naked eye of cracks or checks in the finish due to impact.
3. Test results: There is no visual evidence of any cracks or checks due to impact.

F. Paint Adhesion on Steel:

1. Test procedure: This test is based on ASTM D3359-02 "Standard Test Methods for Measuring Adhesion by Tape Test 1 – Test Method B". Two sets of six parallel lines 2mm apart shall be cut with a razor blade to intersect at right angles thus forming a grid of 25 squares. The cuts shall be made just deep enough to go through the coating, but not into the substrate. Brush the grid area lightly with a soft brush, and then place a piece of tape over the grid. Rub the tape firmly with the eraser of a pencil to ensure good contact. Remove the tape by rapidly pulling it back upon itself as close to an angle of 180° as possible.
2. Acceptance level: A 4B rating or better (ninety-five percent or more of the grid area shall show finish intact.
3. Test results: 100% of the squares remained intact after the test.

G. Paint Hardness on Steel:

1. Test procedure: This test is based on ASTM D3363-01 "Standard Test Method for Film Hardness by Pencil Test". Clip a corner of the

sample at 45° exposing a raw metal edge. Place the sample on a raw metal base plate so that the exposed metal edge of the sample makes contact with the turned up side of the base plate. Remove approximately 6mm of wood from a 4H pencil, being careful to leave an undisturbed smooth cylinder of lead. Holding the pencil at an angle of 90° to an abrasive paper, rub the lead against the paper maintaining an exact angle of 90° section until a flat smooth and circular cross section is obtained. On the other end of the pencil remove approximately 13mm of wood from on half of the pencil. Install the pencil into a Sheen model 720N Pencil Scratch Hardness Tester. Follow the manufacturer's instructions for conducting the test.

2. Acceptance level: The paint finish shall withstand the abrasion of a 4H pencil without penetrating through to the substrate and completing a continuous circuit.
3. Test results: The 4H pencil did not penetrate the substrate during the test.

Note: manufacturer shall provide independent certified test report on chemical resistance of finish if requested.

2.08 QUALITY ASSURANCE

A. All laboratory fume hoods specified herein will be the product of one manufacturer and will be based on the specifications of the product line described in Part 2. All manufacturers other than those of the specified products will provide evidence of expertise in the manufacture of fume hoods and be willing to have their manufacturing facility scrutinized by the customer.

B. All manufacturers desiring approval for this project must maintain a fume hood test facility at their factory location. This facility must provide for variable exhaust and make-up air control. In addition, any facility that provides for fume hood make-up air by using floor-to-ceiling wall diffusers is unacceptable. All qualified test facilities must contain, as part of their permanent equipment, ANSI/ASHRAE 110-1995 testing hardware as specified in that standard. In addition, all data readings shall be computer-recorded and the raw data submitted in disc format.
    1. "American Made" – Laboratory Fume Hoods wholly manufactured and assembled in USA.

C. The manufacturer shall provide certification that fume hoods shall meet the performance requirements described under Appendix A "Fume Hood Performance Testing Requirements".
    1. "American Made" – Laboratory Fume Hoods wholly manufactured and assembled in USA.

D. The manufacturer shall warrant the sash counterweight system, excluding glass, against defects in materials and workmanship for the life of the fume hood. Any material or manufacturing defect in these components will be repaired without charge by the manufacturer.

1. “American Made” – Laboratory Fume Hoods wholly manufactured and assembled in USA.

E. The manufacturer shall, for a period of one (1) year from date of shipment, warrant that furnished products shall be free from defects in material and workmanship. The manufacturer shall also warrant the products to be as represented and will repair or replace any part, under normal use, if examination discloses it to have been defective within the warranty period.
   1. “American Made” – Laboratory Fume Hoods wholly manufactured and assembled in USA.

F. UL 1805 Specification: Fume hoods must be UL 1805 approved. This standard covers electrical and mechanical hazards, investigates the flammability of materials and measures the effectiveness of airflow characteristics. Proper labeling must be affixed to the face of each fume hood indicating classification to UL 1805. UL listings covering electrical components only or other listings that do not encompass all elements of UL 1805 are insufficient.

PART 3 EXECUTION

3.00 INSTALLATION - REFER TO INSTRUCTION AND INSTALLATION MANUAL

A. Install fume hoods and equipment in accordance with manufacturer's instructions.

B. Install equipment plumb, square, and straight with no distortion and securely anchored as required.

C. Secure work surfaces to casework and equipment components with material and procedures recommended by the manufacturer.

D. Accessory installation: Install accessories and fittings in accordance with manufacturer's recommendations.

3.01 OPTIONAL FIELD QUALITY CONTROL TESTING OF FUME HOODS

A. Have [all] [a representative number of one of each width of the] fume hoods static tested for three (3) minutes using ANSI/ASHRAE 110-1995. All hoods shall pass with an average rating of AI 0.05 or less.

B. Have [all] [a representative number of one of each width of the] fume hoods tested using SEFA 1.1 - 2002. All units tested shall pass using the specified criteria.

3.02 ADJUSTING

A. Repair (or remove and replace) defective work, as directed by Owner's Representative upon completion of installation.

B. Adjust sash and other moving or operating parts to ensure smooth, near-silent and accurate sash operation with one hand and with uniform contact of rubber bumpers. Ensure counterweights operate without interference.

C. Adjust fixtures and accessories to function smoothly.

3.03 CLEANING

A. Clean equipment, touch up as required.

3.04 PROTECTION OF FINISHED WORK

A. Take protective measures to prevent exposure of casework and equipment from exposure to other construction activity.

B. Advise contractor of procedures and precautions for protection of material, installed laboratory casework and fixtures from damage by work of other trades.

3.05 DELIVERY, STORAGE AND HANDLING

A. Schedule delivery of casework and equipment so that spaces are sufficiently complete that material can be installed immediately following delivery.

B. Protect finished surfaces from soiling or damage during handling and installation. Keep covered with polyethylene film or other protective coating.

C. Protect all work surfaces throughout construction period with 1/4" corrugated cardboard completely covering the top and securely taped to edges. Mark cardboard in large lettering "NO STANDING".

3.05 PROJECT CONDITIONS

A. Do not deliver or install equipment until the following conditions have been met:
   1. Windows and doors are installed and the building is secure and weather tight.

APPENDIX A – FUME HOOD PERFORMANCE TESTING REQUIREMENTS

A. <u>General:</u>
   1. One (1) hood of the same design as specified herein will be successfully tested as detailed below. Production of the hoods specified herein will not commence until the "Performance Test" has been successfully performed by the manufacturer. In general, the below detailed "Performance Test" will consist of the ANSI/ASHRAE 110-1995 test procedure using a five-minute tracer gas challenge at a rate of four (4) liters per minute. The PPM concentration outside the hood of a tracer

gas released inside the hood will be measured utilizing a MIRAN 203 Gas Analyzer, or equivalent.

B. Test Procedure:
   1. Tracer gas orifice and ejector as specified in ANSI/ASHRAE 110- 1995.
   2. Tracer gas is sulfur hexafluoride supplied from a cylinder capable of maintaining 30 PSI pressure at the test flow rate for at least five minutes. The test flow rate is four (4) liters per minute.
   3. Detector is a MIRAN 203 Infrared Spectrophotometer capable of indicating or recording concentrations of tracer gas in the range of 0.001 PPM, with an accuracy of ± 10% and a response time not to exceed ten (10) seconds to 90% indication of actual concentration.
   4. "Dummy" will be a manikin such as used in clothing display. The height of the manikin will be 67 inches with a shoulder height of 55" to 57", and otherwise represent normal proportions of the human body. Hairless dummies or torsos are unacceptable.
   5. The detector is calibrated with a known concentration of tracer gas within 24 hours preceding a test, using the methods furnished or specified by the detector manufacturer.

C. Test conditions:
   1. Hood is tested with ceiling-supplied make-up air in a test area where face velocity, temperature, and room air flow can be monitored and documented.

D. Hood Condition:
   1. The sash or sashes shall be located in the design position or positions.
   2. If the hood has an auxiliary air supply, the supply shall be in operation.

E. Quantitative Test Procedure:
   1. Turn on detector, allow time to reach equilibrium.
   2. Insert orifice in test diffuser to give (4) liter per minute release rate.
   3. Install diffuser to a central test position. This position is equidistant from the inside side walls, six inches behind the sash plane.
   4. Install manikin standing 3" from the plane of the sash.
   5. Turn on tracer gas block valve. Position the detector probe between the nose and lip of the manikin.
   6. Observe and record the detector readings automatically. Background readings are to be taken before each test and subtracted from the actual test readings. The tests are run for five (5) minutes. An average heading above 0.07 PPM constitutes unsatisfactory performance under the conditions that exist for that test.
   7. During the sixth and seventh minute of testing, the sash is closed completely. Then, at 420 seconds elapsed time, the sash is re-opened.
   8. Between 450 and 510 seconds elapsed time, the hood perimeter is tested at a distance of 1" outside the plane of the sash.
   9. During all these procedures, breathing zone gas concentration shall not exceed 0.05 PPM.

F. Qualitative Test Procedure:
   1. Excerpt from SEFA 1.1 2002 (formerly SAMA Standard LF10-1981): It is recommended that the user make provisions to have the following tests

performed on all laboratory fume hoods. These tests should be performed by qualified personnel to verify proper operation of the fume hoods before they are put to use. The tests of the fume hoods should be performed after the installation is complete, the building ventilation system has been balanced and all connections made. Any unsafe conditions disclosed by these tests should be corrected before using the hood.

7.1 Test Conditions

Verify that building make-up air system is in operation, the doors and windows are in normal operating position, and that all other hoods and exhaust devices are operating at design conditions.

7.2 Test Procedure

7.2.1 Equipment List

a. A properly calibrated hot-wire thermal anemometer.
b. A supply of 2 -minute smoke candles.
c. A bottle of titanium tetrachloride and supply of cotton swabs or other recognized device for producing smoke.

7.2.2 Room Conditions

Check room conditions in front of the fume hood using a thermal anemometer and a smoke source to verify that the velocity of cross drafts does not exceed 20 percent of the specified average fume hood face velocity. Any cross drafts that exceed these values shall be eliminated before proceeding with fume hood test.

Caution: Titanium Tetrachloride fumes are toxic and corrosive. Use sparingly; avoid inhalation and exposure to body, clothing and equipment that might be affected by corrosive fumes.

Note: It must be recognized that no fume hood can operate properly if excessive cross drafts are present.

7.2.3 Face Velocity

Determine specified average face velocity for fume hood being tested. Perform the following test to determine if fume hood velocities conform to specifications or to the designated fume hood class. With the sash(es) positioned, turn on the exhaust blower. The face velocity shall be determined by averaging the velocity readings taken at the open fume hood face. Note: If not in accordance with specified face velocity, refer to Appendix A (Troubleshooting Guide) of the complete SEFA document for aid in determining the cause of variation in air flow. If face velocity cannot be corrected to that specified, reclassify fume hood to conform to actual face velocity.

7.2.4 Sash Operation

Check operation by moving sash(es) through its (their) full travel. Sash operation shall be smooth and easy. Vertical rising sashes shall hold at any height without creeping up or down, unless designed otherwise.

7.2.5 Verification of Proper Air Flow and Patterns

7.2.5.1 Fume Hoods without Auxiliary Air

a. Turn fume hood exhaust blower on.
b. With sash(es) in full open position, check air flow into the fume hood using a cotton swab dipped in titanium tetrachloride or other smoke source. Note: On fume hoods with horizontal sliding sash(es), check air flow with sash(es) at various full open positions. A complete traverse of the fume hood face should verify that air flow is into the fume hood over the entire face area. A reverse flow of smoke indicates unsafe fume hood operation.
c. Move a lighted smoke candle throughout the fume hood work area, directing smoke across the work surface and against the side walls and baffle. Smoke should be contained within the fume hood and be rapidly exhausted. (Fume hoods with horizontal sliding sash(es) will show reverse flow and turbulence behind sash panel, but no outflow of smoke shall be evident.)

7.2.5.2 Fume Hoods with Auxiliary Air

a. Turn exhaust blower on and determine face velocity in accordance with 7.2.3. Note: Face velocity and exhaust volumes shall be determined with the auxiliary air blower off.
b. Calculate exhaust volume from face velocity data.
c. Turn on auxiliary air, verify that auxiliary air volume is as specified. Locate a straight section of the supply air duct and drill two holes of a size appropriate for the pilot tubes to be used, 90 degrees apart, on a plane through the duct, at the downstream end of the straight section. Measure the air velocity and calculate the air volume. Compare volumes determined with the specified volume of auxiliary air and with exhaust volume, to determine if proper ratio exists. Deviations of plus or minus five percent are acceptable. If deviations of more than five percent are noted, corrective measures should

be taken. Seal holes in duct with duct tape or suitable sealant.

d. With sash(es) in the open position, check air flow into the fume hood using a cotton swab dipped in titanium tetrachloride or other smoke source. A complete traverse of the fume hood face should verify that air flow is into the fume hood over the entire face area. A reverse flow of air indicates unsafe fume hood operation.
e. Move a lighted smoke candle throughout the fume hood work area, directing smoke across the work surface and against the side walls and baffle. Smoke should be contained within the fume hood and be rapidly exhausted. Fume hoods with horizontal sliding sash(es) will show reverse flow and turbulence behind sash panel, but no outflow of smoke shall be evident.

7.2.6 Evaluation of Low Air Flow Monitor

On fume hoods with low flow warning devices, verify that monitor functions properly and indicates unsafe conditions.

APPENDIX B – LINER PERFORMANCE REQUIREMENTS

	POLYGLASS	PVC	POLYPROPYLENE	EPOXY RESIN	304 SS	316 SS
HYDROCHLORIC ACID 35%	0	0	0	0	4	4
HYDROFLUORIC ACID	1	0	0	3	4	4
PHOSPHORIC ACID 80%	0	0	0	0	1	1
NITRIC ACID 35%	0	0	0	0	0	0
SULFURIC 70%	0	0	0	0	2	3
ACETIC ACID	1	0	0	0	1	1
SODIUM HYDROXIDE 20%	0	0	0	2	0	0
ACETONE	0	1	1	0	0	0
ETHANOL	0	0	0	0	0	0
METHANOL	0	0	0	0	0	0
MEK	0	1	1	0	0	0
GASOLINE	0	0	0	0	0	0
CARBON TETRACHLORIDE	0	0	1	0	0	0
FORMALIN 35%	0	1	0	0	0	0

XYLENE	1	1	1	0	0	0

0 = NO EFFECT 1 = EXCELLENT 2 = GOOD 3 = FAIR 4 = FAILURE

No effect: No detectable change in working surface material.

Excellent: Slight detectable change in color or gloss, but no change to the function or life of the working surface material.

Good: A clearly discernable change in color or gloss, but no significant impairment of working surface function or life.

Fair: Objectionable change in appearance due to surface discoloration or etch, possibly resulting in deterioration of function over a period of time.

Failure: Pitting, cratering or erosion of working surface material; with obvious and significant deterioration.

APPENDIX C – WORK SURFACE PERFORMANCE REQUIREMENTS

A. CHEMICAL RESISTANCE OF EPOXY RESIN WORKTOP (BLACK):

Reagent	**Results**
Acetate, Ethyl	Excellent
Acetic Acid, 5%	No Effect
Acetic Acid, Glacial	No Effect
Acetone	Excellent
Alcohol, Ethyl, 95%	No Effect
Alcohol, Methyl	No Effect
Ammonium Hydroxide, 10%	No Effect
Aniline	No Effect
Benzene	Excellent
Carbon Tetrachloride	No Effect
Chromic Acid, 40%	Good
Citric Acid, 1%	No Effect
Diethyl Ether	Excellent
Dimethylformanide	No Effect
Ethylene Dichloride	Excellent
Heptane	No Effect
Hydrochloric Acid, 10%	No Effect
Hydrochloric Acid, 37%	No Effect
Isooctane	No Effect
Kerosene	No Effect
Mineral Oil	No Effect
Nitric Acid, 40%	No Effect
Nitric Acid, 70%	No Effect
Oleic Acid	No Effect
Olive Oil	No Effect
Phenol Solution, 5%	Excellent

Soap Solution, 1%	No Effect
Sodium Carbonate Solution, 20%	No Effect
Sodium Hydroxide Solution, 60%	No Effect
Sodium Hypochlorite Solution, 4%	No Effect
Sulfuric Acid, 60%	Excellent
Sulfuric Acid, 96%	Failure
Toluene	No Effect
Transformer Oil	No Effect
Turpentine	No Effect

Test results above are for black material. Other colors of epoxy resin may have slightly different results.

END OF SECTION

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Product Comparison-Gen5
Chemical Exhaust Fume Hoods

Proposed Substitute

Feature	Isolator-Gen5	BMC	Kewaunee Supreme Air	Mott Pro Series
Made in “USA”	Yes	Yes	Yes	No
Sash Drive	Chain & Sprocket	Chain & Sprocket	Cable	Cable or Chain
Upper Airfoil	Powder Coated	Powder Coated	Powder Coated	Powder Coated
Lower Airfoil	Powder Coated	Powder Coated	Powder Coated	Powder Coated
Sash Glass	Tempered	Laminated	Laminated	Laminated
Sash Opening	28”	31”	28”	28-1/2”
Sash Track	PVC	PVC	PVC	PVC
View Panel	Tempered	N/A	N/A	N/A
Line of Sight	43-3/8”	30”	29-1/2”	28-1/2”
Combination Sash	Option	Option	Option	Option
Interior Liner	Polyresin	Polyresin	Phenolic	Polyresin

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Product Comparison-Gen5 Chemical Exhaust Fume Hoods

Feature	Isolator-Gen5	BMC	Kewaunee Supreme Air	Mott Pro Series
Non Metallic Interior	Standard	Standard	Standard	Standard
Access Panels	Overlay & Positive Lock	Gasketted	Gasketted	Gasketted
Frame Construction	Pan ends & Straps	C-channels	C-channels	C-channels
Post Profile	Flat w/Airfoil	Angled	Angled	Flat w/Airfoil
Duct Collar	Round	Rectangle	Round	Round
Duct Collar Material	Stainless Steel	???	Polyethylene	Stainless Steel
Finish	Epoxy Urethane Pwdr	Epoxy Powder	Epoxy Powder	Epoxy Powder
Depth	32-15/16”	33-7/8”	36”	32-5/8”
Interior Depth	24” or 30”	24”	25-1/2”	24”
Height	57-1/8”	54-1/4”	54”	54-1/4”
Widths available	Up to 96”	Up to 96”	Up to 96”	Up to 96”

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Product Comparison-Gen5
Chemical Exhaust Fume Hoods

Feature	Isolator-Gen5	BMC	Kewaunee Supreme Air	Mott Pro Series
Safety Monitor	Tel AFA 1000	Tel AFA 1000	Air Alert 600	Tel AFA 1000
Can be Knock-Down	Yes	?????	?????	Yes
Field Certification	Optional	Optional	Optional	??????
ASHRAE Certified	Yes	Yes	Yes	Yes
U.L. 1805 Listed	Yes	Yes	Only w/KemGlass or Stainless Steel liners not with standard Phenolic	Yes
Secondary Containment Trough	Yes	No	No	Optional
Source	ICI Spec's 11-21-11	Catalog 2006	Catalog 3/2012	7.0 P_Section


Isolator Gen

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Cleveland Clinic
NA3
Location: Cleveland, OH
Architect: Perspectus Architects
CM: Gilbane
Completed: 2023 $2.9M

Cleveland Metro Health Hospital
Location: Cleveland, OH
Architect: HGA
CM: Turner
Completed: 2023- $1.2M

Washburn Rural High School
Location: Topeka, KS
Architect: HTK Architects
Completed: 2022 $200,000

St Charles Community College
Location: Cottleville, MO
Architect: FGM Architects
Completed: 2022 $435,000

Cleveland Clinic
OR 70/71
Location: Cleveland, OH
Architect: Bostwick Partners
Completed: 2023- $250,000

University of California at Berkely
Location: Berkely, CA
Architect: UC Facilities
Completed: 2023 $330,000

Celgene
C2 Core
Location: Summit, NJ
Architect: Design Build
Lab Consultant: N/A
Completed: 2019- $484,000

Drexel University
CAT Lab
Location: Philadelphia, PA
Completed: 2019- $550,000

Cuyahoga Community College
Location: Highland Hills, OH
Architect: Stantec
Completed: 2019- $700,000

Johns Hopkins Croft Hall
Baltimore, MD
Architect: Design Collaborative
Completed: 2022 $350,000

Cleveland State
Learning Laboratories
Location: Cleveland, OH
Architect: Van Auken Aikins Arch.
Lab Consultant: Research Facilities Design
Completed: 2020- $1,250,000

IVC
Location: Northridge, CA
Architect: Cannon Design
Lab Consultant: Research Facilities Design
Completed: 2020 $645,774.00

Eastern Kentucky University

Location: Richmond, KY
Architect: OMNI
Completed: 2017- $1.8M

UT Austin

Austin, TX
Architect: Design Build
Completed: 2021 $450,000

Jardine Water Purification Plant

Location: Chicago, IL
Architect: Austin Company
Completed: 2021- $1,055,000

Blinn College Science Bldg

Location: Bryan, TX

Architect: Kirksey

Completed: 2017- $280,000

Missouri Western- Science & Math Building

Location: St. Joseph, MO

Architect: Ellison-Auxier Architects, Inc.

Completed: 2011- $971,683.00

Taylor University- Euler Science Complex

Location: Upland, IN

Architect: The Troyer Group

Completed: 2012- $396,316.00

Desert Community College

Location: Palm Desert, CA

Architect: Steinberg Architects

Lab Consultant: Jacobs Consultancy

Completed: 2012- $96,706.00

Suffolk County Community College

Life Sciences Building

Location: Brookhaven, NY

Architect: BBS Architecture/Engineering

Completed: 2014- $529,338.00

Project Listing

Rowan University Science Building

Location: Glassboro, NJ
Architect: Clarke Caton Hintz
Lab Consultant: Research Facilities Design
Completed: 2017- $600,000

Inland Empire Water

San Diego, CA

Architect: Austin Company

Completed: 2018 $760,000

University of California at Riverside

Geology & Physics Building

Location: Riverside, CA

Architect: WWCOT

Cupertino High School

Science Lab Renovation

Location: Cupertino, CA

Architect: QKA Architects

University of California at San Diego

Structural & Materials Engineering Building

Location: La Jolla, CA

Architect: Safdie Rabines Architects

Lab Consultant: Research Facilities Design

University of California at Riverside

Genomics Building

Location: Riverside, CA

Architect: RBB Architects

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Products

- Metal Casework with inset flush front construction for all applications
- Metal Casework with full overlay front construction for all applications
- Metal Casework with full overlay, wood-front construction for all applications
- Stainless Steel Casework for all applications including, Hospitals and Healthcare
- Stainless Steel Counter Tops for all applications
- Stainless Steel Custom Products: Blanket Warmers, Solution Warmers, and OR Nurses Stations
- Phenolic Resin Counter Tops, Casework and Shelving Systems
- Plastic Laminate Counter Tops and Shelving Systems
- Flexible Furniture Systems
- Premium Wood Casework for University, Research, Industrial and Pharmaceutical markets
- Wood Casework and Furniture for K-12 & Community College, Educational markets
- Wood Casework Manufactured from Red Oak, Maple, Steamed Beech, Bamboo or numerous exotic veneers
- Fume Hoods for Industrial, Laboratory, and University markets
- Fume Hoods for custom applications (Oversize, Floor-Mounted, Radioisotope, etc.)
- Fume Hoods for Science Teaching Classrooms: Elementary, High School & Community College markets

Services

- Consultation
- Planning
- Initial Layouts, Preliminaries, Submittals/Shop Drawings
- REVIT™ BIM 3D Modeling, AutoCAD™ and SolidWorks™
- Programming & Stage Scheduling
- Budget Planning
- Project Management
- Global Distribution: National and International Dealer Distributorships
- American Made
- 3-Year Guarantee
- Post-sale Service and Support through the Lifetime of ICI products
- Fume Hood Testing (As Manufactured, As Installed)
- Fume Hood Maintenance and Retrofits
- Factory Storage and Warehousing
- Installation and Warranty Service Work

Credentials & Certifications

Companies & Corporation Established	1943-2009 Jamestown Metal Products
	1951-2006 CampbellRhea
INSTITUTIONAL CASEWORK INC.	2006 ICIscientific
Product Specifications	Visit & Register: www.iciscientific.com
REVIT/BIM Images	Visit & Register: www.iciscientific.com
AutoCad Blocks	Visit & Register: www.iciscientific.com
	Visit & Register: www.iciscientific.com
Manufacturing facilities: Paris TN	600,000 sq. ft., 4 campuses
Union City TN	
Jamestown NY	
Quick Ship Program, Wood & Metal	Yes, "*INSTOCK*"; Visit & Register: iciscientific.com
Fume Hood compliance	ANSI/ASHRAE 110-1995
UL. Certified, Fume Hood	Yes 1805
UL. Certified, Flammable Storage Cabinets	Yes, Wood or Metal 1275
SEFA (Scientific Equipment & Furniture Association)	ICI Products Meet or Exceed SEFA Resistance & Performance Standards
AWI/Quality Certified Product	Yes, if Specified
FSC™ Chain Of Custody Certified	Yes, if Specified
LEED Contributor	Yes, if Specified
CARP (California Air Resources Board)	Phase 1, Yes;
	Phase 2, Yes
AIA/CES (American Institute of Architects, Continuing Education Provider)	Yes, Four Courses

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