

SECTION 12390

LABORATORY EXTRUDED ALUMINUM MANIFOLD

FULL DETAILED SPECIFICATION

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Laboratory Extruded Aluminum Manifold

MANIFLEX

13 Dec. 2004

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PART 1.00 - GENERAL

1.01 RELATED DOCUMENTS

Drawings and general provisions of contract including general and supplementary conditions and division specification sections apply to work in this section.

1.02 EXTENT OF WORK

- A. Work consists of furnishing, delivering, and installing laboratory extruded aluminum manifold where specified and as shown on Laboratory Layout Drawings, Detail Drawings, Legends and Schedules.
- B. Provide custom manufactured lengths of extruded aluminum manifolds. Drill and tap all locations for service fixtures and fittings as shown. Tap all service fixture locations to accept 3/8" NPT male shanks. Tap all supply ends of manifolds to accept 1/2" NTP mechanical fittings.
- C. It is intended that work supplied under this section shall be complete in every detail for the purpose required. Include minor materials not herein specifically mentioned, but which may be found necessary to complete or perfect any portion of work in accordance with requirements of this Specification.
- D. Co-operate with mechanical, electrical, and other trades for installation and connections.
- E. Drill holes and provide cut-outs in related equipment deemed necessary for installation of manifold shown on laboratory drawings and as required to permit passage of service lines pertaining for this Section of Work which penetrate laboratory furniture components.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. The supply and installation of the laboratory extruded aluminum manifold shall refer to the work required in the following related Sections:
 - 1. Section 06100 Rough Carpentry
 - 2. Section 06400 Architectural Woodwork
 - 3. Section 11610 Fume Hoods
 - 4. Section 15400 Plumbing
 - 5. Section 16100 Electrical

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1.04 QUALIFICATIONS OF MANUFACTURERS

- A. Work of this Section shall be fabricated by one manufacturer by skilled craftsmen in accordance with best industry practice in shop of a company specializing in the work specified.

1.05 DEVIATION FROM DRAWINGS AND SPECIFICATIONS

- A. It must be distinctly understood that such deviations shall be subject at all times to written approval two weeks prior to receipt of bid. If no written communication is received prior to receipt of bid and approval indicated in a bulletin, it is assumed that the bidder will be in total compliance with specifications and will be held responsible for default or delay regardless of any statement to the contrary in their written proposal.

1.06 BIDDING SAMPLE

- A. Bidding samples are required for comparison, and after the bid closing date, bidders shall provide a (2-foot) minimum sample comprising of a cross section of each intended use of the manifold, at no cost to the Owner. The samples shall be representative of the type of system upon which the bid is based, being typical of style, quality of work, type of finishes, and indicative of installation methods described in the specifications.
- B. Bidders shall provide the samples, ready for inspection, 15 working days after notification. Failure to meet this condition will disqualify the bid proposal.

1.06 STANDARD OF QUALITY

- A. The laboratory extruded aluminum manifold specified herein shall be based on Maniflex as distributed by **Scientifix, LLC 3000 Hadley Road South Plainfield, NJ 07080 Phone: 908-753-5656 Fax: 908-753-5604**. Bids shall be based on and meet or exceed the products and execution described.

1.07 ALTERNATIVES

- A. Alternate products shall meet the intent and design criteria shown on Drawings and specified herein.
- B. List of 5 projects completed in the last 5 years of comparable scope, including reference names and current phone and fax numbers.

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- C. Summary of manufacturing facilities, location and production capacity.
- D. Current delivery period.
- F. Shop drawing completion period for project being bid.
- G. Proof of financial ability to successfully complete this project.
- H. A copy of manufacturers independent testing reports.
- I. Submit copy of warranty and any extended warranty statements.

1.08 SUBMITTALS

- A. Shop Drawings shall be prepared and submitted for review by the laboratory casework and fume hood supplier. Complete shop drawings showing all items to be furnished under this Contract on AutoCAD, Version 14 or later.
- B. Shop drawings shall clearly indicate materials being supplied, lengths, service fixture locations, connections, attachments, reinforcing, and fastening provisions.
- C. Casework supplier is responsible for checking all dimensions of site which affect this work, and for necessary corrections to shop drawings which may arise from such site dimensions.
- D. Where dimensions are not available before fabrication is commenced, dimensions required shall be agreed upon between various trade sections or manufacturers concerned.
- E. Submission of shop drawings for review by the Consultant, shall bear the signature of the Manifold supplier's project manager, signifying that the drawings have been thoroughly checked and are complete as required for submission.
- F. Clearly indicate all details of laboratory furniture and fume hoods, including bench and construction sections, supply and termination points.
- G. Location for roughing-in of plumbing and electrical services.
- H. Co-ordinate elevations to each related room plan. Similar or repetitious elevations shall be repeated and included with each room plan for purposes of co-coordinating electrical wire mold, service drops, and access panels.
- I. On request, provide test reports by independent testing laboratories indicating results of pressure testing of each type of manifold supplied.

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1.09 WARRANTY

- A. Furnish a written warranty that work performed under this section to be and remain free from defects as to materials and workmanship for a period of (3) years from the date of acceptance.
- B. Alternative Manufacturer shall submit warranty statement with proposal.

PART 2.00 – PRODUCTS

2.01 BASIC MATERIALS:

- A. Alloy: 6000 Series Aluminum Alloy; 6063-T5 (Nonferrous Metal)

Physical Properties	English	Comments
Density	0.0975 lb/in ³	AA; Typical
Mechanical Properties		
Hardness, Brinell	60	AA; Typical; 500 g load; 10 mm ball
Hardness, Knoop	83	Converted from Brinell Hardness Value
Hardness, Vickers	70	Converted from Brinell Hardness Value
Ultimate Tensile Strength	27000 psi	AA; Typical
Tensile Yield Strength	21000 psi	AA; Typical
Elongation at Break	12 %	AA; Typical; 1/16 in. (1.6 mm) Thickness
Modulus of Elasticity	10000 ksi	AA; Typical; Average of tension and compression. Compression modulus is about 2% greater than tensile modulus.
Fatigue Strength	10000 psi	AA; 500,000,000 cycles completely reversed stress; RR Moore machine/specimen
Shear Modulus	3740 ksi	
Shear Strength	17000 psi	AA; Typical

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Processing Properties

Annealing Temperature	775 °F	hold at temperature for 2 to 3 hr; cool at 50 °F per hour from 775 to 500 °F
Solution Temperature	970 °F	
Aging Temperature	360 °F	hold at temperature for 1 hr
Aging Temperature	400 °F	hold at temperature for 1 hr

Material Notes:

Data points with the AA note have been provided by the Aluminum Association, Inc. and are NOT FOR DESIGN.

2.02 MANIFOLD CONSTRUCTION:

- A. Manifold assembly shall consist of single modular manifolds grouped/nested together with extruded nesting spacers and retaining clamps. All items are to be constructed of the same aluminum 6063-T5 alloy.
- B. Manifolds shall have a smooth easy to clean radius face.
- C. Manifolds with 90° channels will not be accepted.
- D. All exposed mechanical fittings shall be chrome plated and/or stainless steel.
- E. Service fixtures to be shipped loose for field installation.

2.03 INSTALLATION

- A. Install components of the manifold system, align and set level with leveling devices, in accordance with the casework shop drawings.
- B. At wall locations secure manifolds via the supplied mounting clamp to face of finished walls and partitions, by applying self-tapping screws through wall finish material into each concealed stud flange and/or wall blocking.
- C. Install components to effect a secure, neat and complete installation.
- D. Service fixture installation, connections, and testing to be performed by division 15000.

END OF SECTION