SECTION 11 53 00 - LABORATORY EQUIPMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. Furnish and install all studio equipment as shown and specified. Divisions 23 and 26 shall be responsible for final connections of fixtures and accessories specified herein.

B. Equipment items specified in this section include the following:

Contractor Furnished Contractor Installed (CFCI)	*Equipment Number
Task Exhaust Units - Deck Mounted	**TE1**
Gas Cylinder Restraint System	**GR1**
Laboratory Refrigeration Units	**R4**
Safety Supply Cabinet	**SSC**
First Aid Kit	Inside SSC
Burn Kit	Inside SSC
Lab Coat Racks & Shelf	**CR**
Laboratory Spill Cart	**SC**
Spill Cabinet	**SCT**
MSDS Cabinet	**MS**
Laboratory Cart	**LC1**
Stainless Steel Floor Mounted Shelving	**SHx-(1-5)**
Laboratory Paper Towel Dispenser	**PTD**

C. Refer to Divisions 22, 23 and 26 and the mechanical and electrical drawings for related plumbing, mechanical and electrical work.

D. Equipment item locations are indicated in the lab casework plans by means of equipment numbers. The corresponding equipment for each specified equipment item are also included in this specification.

1.2 RELATED DOCUMENTS: The completion of the work described in this Section may require work in or coordination with other Sections of these specifications. The Contractor and the subcontractor will be responsible for identifying and including all related work in other Sections of these specifications and/or drawings necessary for a complete installation of the work described in this Section. These related sections include, but are not limited to the following:

A. Drawings and general provisions of Contract, including general and Supplementary Conditions and Division 1 Specifications, apply to this Section.

B. Division 11 53 13: Laboratory Fume Hoods.

C. Division 12 35 53: Laboratory Casework, Fixtures and Accessories.

D. Division 6 & 9: Blocking and backing in walls for anchorage of equipment.

E. Refer to Divisions 22, 23 and 26 and the mechanical and electrical drawings for related plumbing, mechanical and electrical work.

1.3 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the Products specified in this section with a minimum of five years' documented experience.

1.4 SUBMITTALS

A. Submit under provisions Division 1, General Requirements.

B. Product Data: Provide manufacturer's technical data, including equipment dimensions and construction, equipment capacities, physical dimensions, utility and service requirements and locations, point loads and factory finishes.

C. Manufacturer's Installation Instructions: Indicate special installation requirements.

D. Shop Drawings: Indicate equipment locations, large-scale plans, elevations, cross sections, details, plumbing and electrical rough-in and anchor placement dimensions and tolerances and clearances required.

E. Coordination Drawings: Equipment shall be fully coordinated with lab casework and other lab equipment. Prepare a coordination drawing showing locations of surrounding casework and equipment and required clearances between them. At all under-counter applications, verify that refrigeration units fit under the as-built counter height. At units that do not fit under the counter, provide replacement models that do fit in these applications.

1.5 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

1.6 QUALITY ASSURANCE

A. Installers: Installation of the equipment specified under this section shall be undertaken by the manufacturer's crew of installers, or a crew of installers who are approved in writing by the manufacturer. In either case, the installation of equipment specified under this section shall remain the responsibility of the manufacturer as a subcontractor to the General Contractor.

1.7 CLOSEOUT SUBMITTALS: OPERATION AND MAINTENANCE DATA

A. Submit information in bound manual form, typed or computer word processed, on 8-1/2"x11" paper.

B. Operation Data: Include description of equipment operation, adjustments and testing required.

C. Maintenance Data: Identify system maintenance requirements, servicing cycles and spare part sources.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, protect and handle products in such a manner as to minimize the risk of damage, decay, deterioration or loss from theft.

B. All products shall be delivered to the job site in manufacturer's original unopened containers, crates or protective wrappings with the manufacturer's name and address clearly labeled thereon.

C. Accept products on site and inspect on arrival for damage.

1.9 WARRANTY

A. Provide warranty under provisions of Division 1.

PART 2 - PRODUCTS

2.1 ACCEPTABLE PRODUCTS

A. Subject to compliance with these specifications, acceptable products include, but are not limited to, those items indicated in Section 2.2, under each individual product. Products by other manufacturers submitted as equals will be reviewed for conformance with the specifications.

2.2 LABORATORY EQUIPMENT

A. General Requirements

1. All material and equipment specified under this section shall be designed and constructed specifically for use in wet chemistry, serological and/or toxicological laboratory environments. Manufactured equipment units must meet or exceed applicable performance, reference and certification standards.
2. Dimensions, capacities and specific requirements are nominal, and may vary depending on the manufacturer.

B. Task Exhaust Unit: All task exhaust by Movex Inc., 5966 Keystone Dr., Bath, PA 18014, United States; Ph.: 610-440-0478; www. movexinc.com, or approved equal prior to bid.

Equipment Number:
TE1 = (75-100 CFM) – Articulating Ceiling Mounted Snorkel

TERFU-MT1650-100 (75 mm / 4"ø duct) without light and without user controlled damper, by Movex Inc. or approved equal prior to bid.

1. General: Provide and install units as shown on the drawings. Total reach of flexible arms shall be 59", with dimension of the 'A' starting section to the "10", arm section 'B' to be 30" and arm section 'C' to be 17.5". Diameter of sections to be 4". Provide ceiling brackets as required (**TE1**) for the task exhaust mounting height of 84" (88") AFF (Verify in field). Funnel head shall be movable around the work surface by means of triple-joint /

swivel-base design, and may be placed stationary at any location. Units shall **NOT** include a damper control mechanism. Provide and install units as shown on the drawings. Fixtures shall be ceiling mounted. Exact location of ceiling mount shall be located and coordinated by the laboratory equipment subcontractor in the shop drawings and coordinated to the reflected ceiling plans.

a. Equipment supplier shall be responsible for all interfacing steel above the ceiling for the support and anchorage of the task exhaust unit.

2. Materials: Arm pipes shall be manufactured of Anodized Aluminum (SS4104).

3. Exhaust System: Task exhaust units shall be ducted to the building exhaust system as indicated in the mechanical drawings or as recommended by the manufacturer. Extend duct, concealed above ceiling to the laboratory exhaust system as indicated in mechanical drawings. Laboratory equipment subcontractor shall provide a coordination drawing showing optimum ducting arrangements. Exhaust airflow at funnel shall be between 75 and 100 CFM.

4. Local Controls: Each unit shall NOT be provided with a damper to control exhaust rates individually and shall be constant volume flow.

5. Accessories: Provide each task exhaust unit with two hood units, funnel head of powder-coated aluminum. These hoods are to be easily interchanged by lab staff to suit their particular needs. Additionally, provide ceiling bracket and all other required mounting devices for a complete and operations installation. Hoods to be provided are:

   a. Round Metal Hood

   b. Acrylic Screen Hood

6. Task exhaust unit shall be seismically anchored as required by local codes.

7. Interfacing Steel: The manufacturer shall provide all interfacing steel for the proper support and anchorage of the task exhaust systems to the building structure above. Provide as part of shop drawings a coordination drawing showing all required blocking and interfacing steel, concealed in ceiling.

C. Gas Cylinder Dual Restraint System Units (Equipment Number **GR1**): “STRS” by Safe-T-Rack Systems, Inc., Rocklin, CA, www.safe-t-racksystems.com or approved equal.

1. 2”x2” steel tube assembly, all joints fully welded and ground smooth, primed and painted for exterior use.

2. System shall allow for the side-by-side storage of multiple pairs of gas cylinders placed front-to-back. Each gas cylinder shall be restrained within the steel tube frame with a flexible chain and hood assembly.

3. Steel tube assembly shall be securely anchored to the concrete floor or wall by means of anchor bolts or weld plates. All welds shall be cleaned, primed and painted to match surrounding finishes.

4. Size & Configuration: Size the **GR1** system for 9” diameter gas cylinders

D. Laboratory Refrigeration Units (See Table below for Equipment Number): Laboratory refrigerators, freezers and combination refrigerator / freezer models numbers noted below area all to be manual-defrost with the IntrLogic Microprocessor Control System based on Thermo Fisher Scientific models as manufactured by Revco Laboratory Products, Ashville, NC, 800-252-7100, 828-365-1254, trace.bates@thermofisher.com, or equivalent products by Puffer Hubbard Jewett.

1. Cabinet Construction: Foamed-in-place, CFC-free urethane insulation with acrylic-coated steel housing and lining. All materials and construction shall be designed to meet UL, NFPA and OSHA criteria for safety, performance and certification for laboratory use.
2. All units shall be provided as locking w/ keys. Locks shall be 5 pin locking system, heavy-duty cylinder type. Master key to Owner's requirements.
3. Refrigeration System: Heavy-duty industrial hermetically sealed and insulated compressor. Positive, forced-air circulation system designed to maintain uniform cabinet temperature throughout. Operating temperature shall be adjustable between temperatures scheduled below.
4. Capacity: As listed in manufacturer's literature for each refrigerator noted below. Provide refrigerators with stainless steel wire shelves suitable for general laboratory storage.
5. Electrical: 115 VAC. 60Hz plug-in cord, minimum 8' long. All connections shall comply with the local electrical codes: 208V, 1P with NEMA 6-15 plug for F3 Freezer.
6. Remote monitoring: Provide units noted below with a dry contact capable of typing into the building management system (BMS). Monitor temperature in range only, with adjustable high/low limit closing when limit is exceeded. Historical tracking is not required. Additionally, provide each unit noted below with a 6038 access port for insertion of Owner provided probe.
7. Refrigerator / Freezer Schedule:

Equip. Number	**Type** **Exterior Dimensions In inches**	**Model Number**	**Size Cubic Feet**	**Dry contact to tie to remote BMS**	**Access port** (in addition to the dry contact)	**Operating Range ºC**
R4	Lab Refrigerator (General Purpose) (Flammables)	Thermo Fisher Scientific / 20FREETSA	20	No	No	+1° to +12°

E. Safety Supply Cabinet (Equipment Number **SSC**):

1. Basis of Design: A&J Washroom. Products of Acudor or Bobrick are acceptable, provided they comply with features listed below, will be considered acceptable.
2. Model: Customized version of Uni-Door Medicine Cabinet
3. Features:
   a. Size: Inside box dimensions: 12"W x 18"H x 4"D
   b. Style: Fully recessed, with overlapping trim, door flush with trim, one adjustable shelf.
   c. Single flat door:
      1) Door material: Solid panel, 18 gauge stainless steel, #4 satin finish.
      2) Door Handle: Flush mounted paddle handle, finished to match door.
      3) Hinge: Concealed piano hinge, heavy duty stainless steel.
   d. Trim:
      1) Material and Finish: Same as door, arc welded and ground smooth.
   e. Signage: Provide self-adhesive signage in compliance with ANSI Z-535 on each door with the message "First Aid Station", the universal First Aid cross and heading

"Emergency" in the color "Safety Green and White", from Grainger, model number LFSD903VSP, www.grainger.com.

f. Box Interior Finish: Stainless steel sheet, satin finish

g. Provide 1/4" diameter holds inside box on 4 sides for mounting in laboratory casework.

h. Install one first aid kit and one burn kit in each safety supply cabinet.

i. Quantity of safety supply cabinets: At locations shown in the drawings.

j. Shelf: Provide 1 shelf, centered.

F. First Aid Kit (Inside Safety Supply Cabinet):

1. Manufacturer: Johnson & Johnson, or equivalent products of Grainger
2. Product: Small Industrial First Aid Kit
3. Product Number: 39N794
4. Supplier: Grainger, 800-356-0783, website: www.grainger.com
5. Size: 6-1/2"H x 9-1/2"W x 2-3/4"D, or as required to fit into the safety cabinet

G. Burn Kit (Inside Safety Supply Cabinet)

1. Manufacturer: WATERJEL Technologies, or equivalent products of Grainger
2. Product: Food Service Kit
3. Product Number: 9RTV3
4. Supplier: Grainger, 800-356-0783, website: www.grainger.com
5. Size: 10"H x 7-1/4"W x 3"D, or as required to fit into the safety cabinet

H. Lab Coat Racks & Shelf (Equipment Number **CR**): Wall mounted, adjustable elevation coat rack with clothing rod.

1. Manufacturer: Magnuson Group
2. Model: Architectural series WHO2-A
3. Finish:
   a. Shelf Tubes: Aluminum
   b. Brackets: Medium Gray
   c. Wall Mount: Medium Gray
   d. Hanger Rod: 1"Ø Charcoal Gray with Chrome Hooks
4. Provide each coat rack with (12) MG17PH hangars
5. Mounting Height: 48" AFF for accessible height, adjustable to 60" AFF

I. Laboratory Spill Cart (Equipment Number **SC**):

1. Supplier: Grainger, 800-356-0783, website: www.grainger.com
2. Model No.: 2NCP2, 22 gal wheeled cart, 39"H x 18"W, fully stocked
3. Quantity: Where shown on drawings

J. Spill Cabinet – Double Cabinet (Equipment Number **SCT**):

1. Supplier: Grainger, 800-356-0783, website: www.grainger.com
2. Model No.: 9EW11, fully stocked
3. Quantity: Where shown on drawings
4. Mounting type: Wall Mounted.

K. MSDS Cabinet (**MS**):

1. Supplier: Grainger, 800-356-0783, website: www.grainger.com
2. Hazard Information Center Cabinet with swing down shelf, Model No. 9PWE0, supplied with MSDS binders, flashlight & batteries.
3. Quantity: Where shown on drawings
4. Mounting type: Wall Mounted.

L. Laboratory Cart (Equipment Number **LC1**): Provide carts sold by Lakeside Manufacturing, Inc., 4900 West Electric Avenue, West Milwaukee, WI, 53219. Contact: Phone: (414) 902-6400, www.elakesideindustrial.com.

1. Model: #422
2. Type: 3 shelf, all stainless steel welded construction with rubber bumpers
3. Size: 19”w x 31”l x 33”
4. Shelf Clearance: 11-1/2”
5. Load Capacity: 500 pounds
6. Caster Size: 4” non-locking swivel
7. Assembly: Fully assembled and located per Owner
8. Quantity: **1 Total Cart**

M. Stainless Steel Floor Mounted Shelving [Equipment Number **SHx-(1-5)**]:

1. Manufacturer: Metro
2. Product: HD Super adjustable shelf unit.
3. Quantity: Where shown on lab plan drawings to maximize linear feet of shelves.
4. Material: Shelf – All 16-gauge stainless steel; Post – Stainless steel.
5. Shelf Size: Shelf depth to be 18”or 24” as noted on drawings. Shelf width to maximize linear feet of shelves available.
6. Post Size: 1-5/8” diameter.
7. Height: 72”
8. Accessories:
   a. Stainless steel direct mount wall brackets. Install after Owner has approved final installation.
   b. Stainless steel foot plates: Bolted to the floor. Install after Owner has approved final installation.
   c. Stainless steel shelf ledges: 1” high; install on all 4 sides.

9. Secure units to wall to prevent tipping once Owner has approved final installation.

N. Laboratory Paper Towel Dispenser (Equipment Number **PTD**):

1. Manufacturer: Bobrick Washroom Equipment, or equal products by America Specialties, or Bradley Corporation
2. Model: B-262, ClassicSeries®
3. Material: Stainless steel
4. Finish: Satin
5. Size: 10-3/4”w x 14”h x 4”d
6. Mounting Type: Wall Surface
7. Quantify: Where shown on drawings

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify equipment rough-in before proceeding with the work in this section.

B. Coordinate with other trades for the proper and correct installation of plumbing and electrical rough-in, structural backing for items attached to walls and ceilings and for rough opening dimensions required for the installation of products in this section.

C. Examine the areas and conditions where photo laboratory equipment is to be installed and notify the Architect of conditions detrimental to the proper and timely completion of the work.do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

3.2 INSTALLATION

A. Install in accordance with manufacturer’s instructions.

B. Install in accordance with standards required by authorities having jurisdiction.

C. Anchor equipment securely in place.

D. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

E. Touch-up minor damaged surfaces caused during installation. Replace damaged components as directed by Architect.

F. Equipment in this section shall be installed by the equipment subcontractor with all necessary fittings mounted for final connection by Divisions 23 and 26.

G. Fixtures and accessories supplied and/or installed as a portion of the work shall be installed in a precise manner in accordance with manufacturer’s directions. Where connections are required to

electrical lines, the manufacturer is to provide items required for connection and coordinate the final installation made by the other Contractors.

3.3 INSTALLATION OF OVERHEAD STUDIO RAIL & LIGHTING SYSTEMS

A. Field jointing: Where practical installer shall use continuous rails. Where field joints are used, the main rails shall be supported by a ceiling mount within 10” of the joint.

B. Fastenings: Main rails shall be supported by ceiling mounts at a minimum interval of one mount every two (2) feet and a ceiling mount within 10” of the joint.

C. Workmanship: Install the rail systems perfectly level, straight and true. Distorted rails will be rejected. All rail-ends shall be terminated with end caps and stops. All cabling shall be supported by adequate cable trolleys to prevent excessive cable-sag. System shall be installed so as to eliminate the striking or scraping of rail-ends on adjacent walls and/or casework and equipment. Background system shall be anchored to structure within wall and each end shall be supported by a minimum of two structural members.

3.4 CLEANING, ADJUSTING & PROTECTION

A. Repair or remove and replace defective work as directed upon completion of installation.

B. Clean shop finished surfaces, touch-up as required and remove or refinish damaged or soiled areas, as acceptable to Architect.

C. Protection: Advise Contractor of procedures and precautions of protection of materials and installed laboratory furniture form damage by work of other trades.

D. Adjust operating equipment to efficient operation for its intended use and as required by the manufacturer.

3.5 WARRANTY

A. Studio Lighting System Warranty: Contractor warrants to the Owner that the product is free from defects in material or workmanship for two years under normal use and service with the exclusion of lamps, flash tubes and other consumable components. Warranty shall become effective from the date of substantial completion and shall be in force for two years from that date.

3.6 DEMONSTRATION

A. Provide systems training and demonstration of all equipment operations and functions for a duration of at least eight (8) hours.

B. Refer to Commissioning Specification Section for training requirements for specific systems and equipment. Training of the Owner’s operation and maintenance personnel is required in cooperation with the Commissioning Consultant. A training agenda shall be prepared by the Contractor and approved by the Owner prior to training performance.

END OF SECTION 11 53 00