ADDENDUM NO. 1
TO
PROJECT MANUAL, TECHNICAL SPECIFICATIONS AND DRAWINGS
FOR
WATER TREATMENT PLANT ALUM SLUDGE DEWATERING FACILITY
FOR
THE CITY OF ROCK HILL, SOUTH CAROLINA

Bids Received until 10:00 AM, Local Time, January 25, 2024

ACKNOWLEDGE RECEIPT OF THIS ADDENDUM BY INSERTING ITS NUMBER IN THE PROPOSAL; FAILURE TO DO SO MAY SUBJECT BONA FIDE BIDDER TO DISQUALIFICATION. THIS ADDENDUM FORMS A PART OF THE PROJECT DOCUMENTS; IT MODIFIES THEM AS FOLLOWS:

PROJECT MANUAL

Section 00100 INSTRUCTIONS TO BIDDERS Paragraph 7. Page 2 of 14	**Add** the following paragraph **to** the end of this section: ***"The Rock Hill Water Treatment Plant is a controlled Site with restricted access. Site visits may be scheduled a minimum of 72 hours in advance with the Water Treatment Plant Superintendent. All visits must be scheduled from 9:00 A.M. to 3:00 P.M., Tuesday to Thursday. All personnel requesting a site visit must present valid picture identification, proof of affiliation with the organization they represent at the time of the visit and must be a current plan holder or must be accompanied by a current plan holder. The Plant Superintendent (Mr. Anthony Rivers) may be reached at 803-329-5502 or via email at anthony.rivers@cityofrockhill.com. An email is preferred."***
Section 00100 INSTRUCTIONS TO BIDDERS Paragraph 8. Page 3 of 14	**Modify** the paragraph of this section **to** read: *"Interpretation of Drawings and Specifications: If a bidder contemplating submitting a Bid is in doubt as to the true meaning of any part of the Drawings, Specifications, or other Contract Documents, or as to the scope of any part of the Work, it shall submit to the Engineer a written request for an interpretation thereof. All requests can be sent (via email) to Trey Riley at rar@wiedeman.com* ***or through the ePROCUREMENT PORTAL. Submission of questions to the Engineer is preferred****. The one submitting the request will be responsible for its prompt delivery in ample time for an interpretation to be issued before the bid opening date. Requests will be answered promptly and up to 72 hours before bid opening time* ***and posted on the Engineer's website at www.wiedeman.com and on the ePROCUREMENT PORTAL****. Interpretations of the Contract Documents will be made only by addendum, and a copy of that addendum will be available via the City's ePROCUREMENT PORTAL. A copy of the addendum will also be available to each bidder receiving a set of the Contract Documents on Duncan-Parnell's online bid room at: www.dpibidroom.com. No oral interpretations will be made to any bidder as to the meaning or intent of the Contract Documents or be effective to modify any of his/her provisions. The City will not be responsible for any other explanations or interpretation of the*

	Contract Documents."
Section 00100 INSTRUCTIONS TO BIDDERS Paragraph 11. Page 4 of 14	**Modify** the fourth paragraph of this section **to** read: *"The Bid Form must be submitted in one hard copy and one electronic copy on a thumb drive.* ***Additionally, a complete submission of the entire bid package must be submitted through the ePROCUREMENT PORTAL prior to the published date and time for the bid opening. A complete submission to the portal includes each of the items identified on the City of Rock Hill Bid Submittal Checklist and the completion of the vendor questionnaire in the portal.*** *The hard copy will be the official version of the bid."*
Section 00100 INSTRUCTIONS TO BIDDERS Paragraph 15. (c) Page 5 of 14	**Modify** the paragraph of this section **to** read: *"Base Bid Materials and Equipment: The bid form may contain materials and or equipment with a named manufacturer(s). The bidder shall provide a price for the named manufacturer's(s') materials and or equipment. Failure to do so may result in the bidder being deemed nonresponsive and thus its bid may be rejected. Where so indicated, the bidder may also write in other manufacturers' names and their respective prices. The Engineer and/or City shall determine the acceptability of such write-in manufacturer(s),* ***following the bid opening. This decision shall be final****. If a write-in is included in the Winning Bid, the Final Contract amount will be adjusted via change order. The "Base Bid" shall be determined by using the lowest price of the named manufacturer(s).***"***
Section 00100 INSTRUCTIONS TO BIDDERS Paragraph 17. Page 6 of 14	**Delete** the language following Paragraph (b) and **add** the following paragraph **after** Paragraph (b): ~~The Winning Bidder will be determined by the City and may include a combination of, or none of, the additions, deductions, or any alternates in addition to the Base Bid.~~ ***"(c) The Bid Form is divided into Sections of Work. Bidders must submit a bid for all sections of the work. It is the Owner's intention to proceed with all sections of the work identified on the bid form. However, the Owner reserves the right to remove Section III, Section IV, Section V and Section VI and any combination thereof for determining the Winning Bidder and for the award for the Work."***
Section 00100 INSTRUCTIONS TO BIDDERS Paragraph 43. 3. Page 14 of 14	**Modify** paragraph three of this section **to** read: ***"Deliver submittals in one sealed package to the location cited within the bid manual and through the ePROCUREMENT PORTAL. All submittals must be submitted before the submittal deadline cited within the bid manual.*** *Contractor must have attended and signed in at Pre-Bid meeting (if mandatory), and bids must be received prior to the specified date and time. Late bids will not be opened."*

SPECIFICATIONS

Section 00 01 10 **Page 3 of 6**	**Revise** the Table of Contents **as** follows: ➢ ***"DIVISION 11 RESERVED – Not Used***" ➢ ***"DIVISION 12 – FURNISHINGS"*** ○ "***12 35 53 Laboratory Casework***" ➢ "***DIVISION 13 RESERVED - Not Used"***
Section 12 35 53.13 **Add No. 1, Pages 1-14**	**Add** the specification section "12 35 53.13 Laboratory Casework" attached with this addenda.

SECTION 12 35 53

STEEL LABORATORY CASEWORK AND RELATED PRODUCTS

PART 1 DESCRIPTION OF WORK

1.1 SUMMARY AND SCOPE

A. Section Includes:
   1. Steel Laboratory Casework
   2. Wall shelving
   3. Laboratory Worksurfaces
   4. Laboratory Sinks
   5. Laboratory Service Fixtures

B. Related Divisions:
   1. Division 22: Plumbing

C. Related Publications:
   1. SEFA 3 - Scientific Equipment and Furniture Association
   2. SEFA 8 - Scientific Equipment and Furniture Association
   3. NFPA 30 - National Fire Protection Association
   4. NFPA-45 - National Fire Protection Association
   5. UL - Underwriters Laboratories
   6. ASTM D522 - Bending Test

1.2 QUALITY ASSURANCE

A. Manufacturer Qualifications:
   1. A minimum of ten (10) installations over the last five (5) years of comparable scope.
   2. SEFA member in Good Standing.

B. All laboratory equipment covered by the specification shall be the product of one manufacturer. To ensure single source responsibility, the steel laboratory furniture manufacturer shall also provide the epoxy resin worktop and the adjustable height wall shelving. The worktop and shelving shall be from the same location as the laboratory equipment.

C. Provide certification that furniture meets the performance requirements described in SEFA 8.

D. Provide independent test lab certification that furniture finish meets the performance requirements described in Section 2.6 of these specifications.

E. Warranty:
   1. The manufacturer shall warrant all products to be free of defects in material and workmanship for a period of two years. Epoxy resin must carry a 10-year warranty. The warranty period shall start at the date of completion of the project as a whole.

1.3 SUBMITTALS

A. Section 01 30 00 – Requirements for Submittals

B. Shop Drawings:
   1. Submit shop drawings for furniture assemblies showing plans, elevations, ends, cross-sections, service run spaces, location, and type of service fittings.
   2. Coordinate shop drawings with other work involved.
   3. Provide roughing-in drawings for mechanical and electrical services when required.
   4. Manufacturer's Data: Submit manufacturer's data and installation instructions for each type of casework.
   5. Samples for Initial Selection: Manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available for each type of material indicated.

C. Samples for Verification- Furnish the following:
   1. One sample of all materials shown or called for, of sufficient size to perform finish requirement tests.
   2. Sample of all mechanical service fittings, locks, door pulls, hinges, and interior hardware.
   3. Samples shall be provided at no cost to the Owner.
   4. The Owner will retain the above samples to ensure that material delivered to jobsite conforms in every respect to the samples submitted.

PART 2 — PRODUCTS

2.1 MANUFACTURERS

A. The design is based on steel casework manufactured by Kewaunee Scientific Corporation, Nycom, Inc.
   1. Comparable products by the following manufacturers also will be acceptable:
      a. Jamestown Metal Products
      b. AT Villa, Inc

2.2 CABINET MATERIAL:

A. Steel:
   Cabinet bodies, drawer bodies, shelves, drawer heads and door assemblies shall be fabricated from cold rolled steel.

2.3 DRAWER AND DOOR STYLE:

A. Inset – Square Edge
   1. Drawers and doors, when closed, shall be recessed to create an overall flush face with 1/8" reveals.
   2. The outer drawer and door head shall have a channel formation on all four sides to eliminate sharp raw edges of steel.
   3. The top front corners of the door shall be welded and ground smooth.

2.4 MATERIALS

A. General Requirements:
It is the intent of this specification to provide a high-quality steel cabinet specifically designed for the laboratory environment.

B. Steel:
1. Cold Rolled Steel:
Cold rolled sheet steel shall be prime grade 12, 14, 16, 18 and 20 gauge U.S. Standard; roller leveled, and shall be treated at the mill to be free of scale, ragged edges, deep scratches or other injurious effects.

C. Hardware and Trim:
1. Drawer and Door Pulls:
a. Drawer and door pulls shall offer a comfortable hand grip and be securely fastened to doors and drawers.
b. They shall be manufactured from 3/8" diameter stainless steel rod with brushed satin finish mounted on 4” centers.

2. Hinges:
a. Inset 5-Knuckle Hinges:
1) Inset style cabinets shall use 5-Knuckle hinges made of Type 304 stainless steel .089 thick, 2-1/2" high, with brushed satin finish, and shall be the institutional type with a five-knuckle bullet-type barrel.
2) Hinges shall be attached to both door and case with two screws through each leaf. Welding of hinges to door or case will not be accepted.
3) Doors under 36" in height shall be hung on one pair of hinges, and doors over 36" in height shall be hung on three hinges.

3. Drawer Slide:
a. Heavy duty, full extension, soft-close, self-closing, zinc plated, ball bearing slides, rated for 100-pound loads.

4. Catches – For steel casework with 5-knuckle hinges:
a. Positive Catch:
1) A two-piece heavy-duty cam action positive catch Main body of the catch shall be confined within an integral cabinet top or divider rail, while latching post shall be mounted on the hinge side of door. Polyethylene/plastic roller type catches are not acceptable.

5. Elbow Catches:
a. Elbow catches and strike plates shall be used on left hand doors of double door cases where locks are used, and are to be burnished cast aluminum, with bright brass finish.

6. Shelf Adjustment Clips:
a. Shelf adjustment clips shall be die formed, nickel-plated steel.

7. Leg Shoes:
a. Leg shoes shall be a pliable, black vinyl material and shall be provided on all table legs, unless otherwise specified, to conceal leveling device. Use of a leg shoe, which does not conceal leveling device, will not be acceptable.

8. Base Molding: Refer to construction drawings.

9. Label Holders:
   a. Label holders shall be self-adhesive type aluminum with satin finish and designed for 2-1/2" x 1-1/8" cards, unless otherwise specified.
   b. Label holders shall be installed for each drawer and cabinet. Double doors receive only one label holder per pair of doors.

10. Sink Supports:
    a. Sink supports shall be the hanger type, suspended from end panels of sink cabinet by four 1/4" dia. rods, threaded at bottom end and offset at top to hang from two full-depth reinforcements, welded to the top of end panels.

    b. Two 3/4" x 1-1/2" x 12-gauge channels shall be hung on the threaded rods to provide an adjustable sink cradle for supporting sinks.

11. Support Struts:
    a. Support struts shall consist of two 16-gauge channel uprights fastened top and bottom by two adjustable 12 gauge "U" shaped spreaders, each, 1-1/2" x length required, formed from galvanized steel.
    b. Struts shall be furnished to support drain troughs, and to support other heavy loads. Support struts can be furnished with hangers, to support mechanical service piping and drain lines.

2.5 CONSTRUCTION

A. Steel Cabinet Construction:
   1. General:
      a. The steel furniture shall be of modern design and shall be constructed in accordance with the best practices of the Scientific Laboratory Equipment Industry.
      b. All cabinet bodies shall be flush front construction with intersection of vertical and horizontal case members, such as end panels, top rails, bottoms and vertical posts in same plane without overlap. Exterior corners shall be spot welded with heavy back up reinforcements.
      c. Each cabinet shall be complete so that units can be relocated at any subsequent time without requiring field application of finished ends or other such parts.
      d. Case openings of Inset style cabinets shall be rabbeted on all four sides for both hinged and sliding doors to provide a dust resistant case.
      e. All cabinets shall have a cleanable smooth interior. Bottoms shall be formed down on sides and back to create easily cleanable corners with no burrs or sharp edges.
      f. Cabinets shall be designed using a standardized grid pattern to allow reconfiguration of doors and drawers.

   2. Steel Gauges:
      a. Gauges of steel used in construction of cases shall be 18 gauge, except as follows:
         1) Leveling bolt reinforcements 12 gauge.
         2) Top and intermediate front horizontal rails, apron rails, hinge reinforcements, and reinforcement gussets, 16 gauge.

3) Drawer assemblies, door assemblies, bottom, bottom back rail, toe space rail, and adjustable shelves, 20 gauge.

B. Base Cabinets:

1. End uprights shall be formed into not less than an L formation at top, bottom, back and a 3/4" wide front C formation. A pilaster shall be added to the inside front of the upright for cabinet and hinge reinforcement and shall be perforated for the support of drawer channels, intermediate rails, hinge screws, and shelf adjustment holes.

2. A 7/8" high top horizontal rail shall interlock with the flange at top of end panels for strength but shall be flush at face of unit. Top rails not flush with face of end uprights are not acceptable.

3. Intermediate rails shall be provided between doors and drawers but shall not be provided between drawers unless made necessary by locks in drawers. Intermediate rails shall be recessed behind doors and drawer fronts and designed so that security panels may be added as required.

4. Intermediate vertical uprights shall be furnished to enclose cupboards when used in a unit in combination with a half width bank of drawers.

5. Cabinet bottom shall be formed of one piece of steel, except in corner units, and shall be formed down on sides and back to create a square edge transition welded to cabinet end panels. Front edge shall include a C formation to form a 7/8" high bottom front rail and shall be flush with face of end uprights. Cabinet bottom front rails not flush with face of end uprights are not acceptable.

6. Toe space rail shall extend up and forward to engage bottom panel to form a smooth surfaced fully enclosed toe space, 3" deep x 4" high.

7. Back construction shall be one piece with integral channel formed for maximum strength and welded to back of top and bottom flanges of end uprights.

8. Each bottom corner of base cabinets shall have a 3/8"-16 leveling bolt, 2-1/2" long capable of supporting 500 lbs. Access to the leveling bolts shall be through plug buttons in the cabinet bottom. Access to leveling bolts through toe space or leveling bolts requiring special tools to adjust are not acceptable.

9. Adjustable shelves shall be formed down 3/4", returned back 7/8" and up 1/4" into a channel formation front and rear and formed down 3/4" at each end. Shelves over 42" long shall be further reinforced with a channel formation welded to underside of shelf. Shelves shall be adjustable on not more than 1" increments.

10. Steel Door assembly (two-piece) for solid panel swinging doors shall consist of an inner and outer door pan. Outer door pan shall be formed at all four sides. The corners on the pull side of the outer door pan shall be welded and ground smooth to prevent exposure of sharp edges of steel at these critical points. Inner door pan shall be flanged at all four sides with hinge reinforcements welded in place. The door assembly shall be 3/4" thick and contains sound deadening material. Door assemblies shall be painted prior to assembly and shall be punched

for attaching pulls. Inner pan formation of door shall be indented for in-field installation of locks when required.

11. Doors shall be readily removable and hinges easily replaceable. Hinges shall be applied to the cabinet and door with screws. Welding of hinges to either cabinet or door will not be acceptable.

C. Drawer Assemblies:

1. Drawer bodies shall be made in one-piece construction including the bottom, two sides, back and front. They shall be fully coved at interior bottom on all four sides for easy cleaning. The top front of the inner drawer body shall be offset to interlock with the channel formation in drawer head providing a 3/4" thick drawer head. Drawers may not have any slot cut outs for locks to work properly.

   Knee space panels, where shown or specified, shall be 20 gauge, finished same as casework cabinets, and easily removable for access to mechanical service areas.

D. Upper Cabinet Construction:

1. Upper cabinets shall have a completely finished interior same as exterior and shall be designed so that no mounting hardware is visible when installed.

2. End uprights shall be formed at front, bottom and back to provide maximum strength and rigidity. Front edge of end upright shall be 3/4” wide. A pilaster shall be added to the inside front of the upright for cabinet and hinge reinforcement and shall be perforated for hinge screws, and shelf adjustment holes.

3. Cabinet tops shall be formed with a 7/8" high C formation at the front edge and turned down at the back to engage a wall hanging rail.

4. Cabinet flush bottoms shall be formed with a 7/8" high C formation at the front edge.

5. Cabinet false bottoms shall be formed down on all four edges and shall be removable.

6. Cabinet backs shall be welded to the top, bottom and ends. Backs shall be perforated for shelf adjustment holes. Holes shall be enclosed by end uprights.

7. Adjustable shelves shall be formed down 3/4", returned back 7/8" and up 1/4" into a channel formation front and rear, formed down 3/4" at each end. Shelves over 42" long shall be further reinforced with a channel formation welded to underside of shelf. Shelves shall be adjustable on not more than 1" increments.

8. Glazed doors shall be 3/4" thick and consist of an inner and outer door pan welded together to form a single unit. Outer door pan shall be 18 gauge steel, formed into a channel or flanged shape at all four sides. It shall be pierced and formed to create a 3" wide frame with a beveled edge around the glass opening in the center of the door. Inner door pan shall be 18 gauge steel, flanged at all four sides, and pierced for a glass opening in center of the door. Glass shall be held in place by a rubber or vinyl gasket around the entire edge of the glass. Doors

shall be glazed with:

1) 1/8" float glass

9. Solid panel doors shall consist of an inner and outer door pan. Outer door pan shall be formed into a channel or flanged shape at all four sides. The corners on the pull side of the outer door pan shall be welded and ground smooth to prevent exposure of sharp edges of steel at these critical points. Inner door pan shall be flanged at all four sides with hinge reinforcements welded in place. The door assembly shall be 3/4" thick and contains sound deadening material.

10. Sliding doors shall be suspended from the top in a roll formed steel track fastened to the cabinet top and shall glide on nylon rollers. Track shall be so designed to prevent accidental removal of doors.

11. Swinging doors under 36" high shall be hung on one pair of hinges, doors over 36" high shall be hung on three hinges.

E. Wall Shelving:
1. Adjustable wall shelving assemblies consist of a pair of 11-gauge steel shelf brackets and a powder coated 16-gauge steel shelf, formed down 1” then returned back and up into a channel formation. Shelves of 12” depth and greater are further reinforced with a 20-gauge hat channel welded to the underside. The shelf bracket shall engage the inner slot of the double slotted vertical upright wall unit and shall be adjustable on 1” centers. Shelves shall be available in lengths of 6” increments to match the vertical upright spacing.

2. Vertical standards shall be 1-1/4” deep and manufactured with a double slotted face with slots on 1” centers.

2.6 PERFORMANCE REQUIREMENTS

A. Steel Casework Construction Performance:

1. Base cabinets shall be constructed to support at least a uniformly distributed load 200 pounds per square foot of cabinet top area, including working surface without objectionable distortion of interference with door and drawer operation.

2. Base cabinet leveling bolts shall support 500 pounds per corner, at 1-1/2" projection of the leveling bolt below the cabinet bottom.

3. Each adjustable and fixed shelf 4 feet or shorter in length shall support an evenly distributed load of 40 pounds per square foot up to a maximum of 200 pounds, with nominal temporary deflection, but without permanent set.

4. Full extension soft-close, self-closing ball bearing zinc plated drawer slide shall be rated for 100-pound loads.

5. Swinging doors on floor-mounted inset style casework shall support 200 pounds suspended at a point 12" from hinged side, with door swung through an arc of 160 degrees. Weight load

test shall allow only a temporary deflection, without permanent distortion or twist. Door shall operate freely after test and assume a flat plane in a closed position.

B. Steel Paint System Finish and Performance Specification:

1. Steel Paint System Finish:
   a. After Cold Rolled Steel and Textured Steel component parts have been completely welded together and before finishing, they shall be given a pre-paint treatment to provide excellent adhesion of the finish system to the steel and to aid in the prevention of corrosion. Physical and chemical cleaning of the steel shall be accomplished by washing with an alkaline cleaner, followed by a spray treatment with a complex metallic phosphate solution to provide a uniform fine grained crystalline phosphate surface that shall provide both an excellent bond for the finish and enhance the protection provided by the finish against humidity and corrosive chemicals.

   b. After the phosphate treatment, the steel shall be dried and all steel surfaces shall be coated with a chemical and corrosion-resistant, environmentally friendly, electrostatically applied powder coat finish. All components shall be individually painted, ensuring that no area is vulnerable to corrosion due to lack of paint coverage. The coating shall then be cured by baking at elevated temperatures to provide maximum properties of corrosion and wear resistance.

   c. The completed finish system in standard colors shall meet the performance test requirements specified under Section 2.6.B.2.

2. Performance Test Results (Chemical Spot Tests):
   a. Testing Procedure:
      1) Chemical spot tests for non-volatile chemicals shall be made by applying 5 drops of each reagent to the surface to be tested and covering with a 1-1/4" dia. watch glass, convex side down to confine the reagent. Spot tests of volatile chemicals shall be tested by placing a cotton ball saturated with reagent on the surface to be tested and covering with an inverted 2-ounce wide mouth bottle to retard evaporation. All spot tests shall be conducted in such a manner that the test surface is kept wet throughout the entire test period, and at a temperature of 77° ±3° F. For both methods, leave the reagents on the panel for a period of one hour. At the end of the test period, the reagents shall be flushed from the surface with water, and the surface scrubbed with a soft bristle brush under running water, rinsed and dried. Volatile solvent test areas shall be cleaned with a cotton swab soaked in the solvent used on the test area. Immediately prior to evaluation, 16 to 24 hours after the reagents are removed, the test surface shall be scrubbed with a damp paper towel and dried with paper towels.

   b. Test Evaluation: Evaluation shall be based on the following rating system.

      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.

After testing, panel shall show no more than three (3) Level 3 conditions.

c. Test Reagents

Test No.	Chemical Reagent	Test Method
1.	Acetate, Amyl	Cotton ball & bottle
2.	Acetate, Ethyl	Cotton ball & bottle
3.	Acetic Acid, 98%	Watch glass
4.	Acetone	Cotton ball & bottle
5.	Acid Dichromate, 5%	Watch glass
6.	Alcohol, Butyl	Cotton ball & bottle
7.	Alcohol, Ethyl	Cotton ball & bottle
8.	Alcohol, Methyl	Cotton ball & bottle
9.	Ammonium Hydroxide, 28%	Watch glass
10.	Benzene	Cotton ball & bottle
11.	Carbon Tetrachloride	Cotton ball & bottle
12.	Chloroform	Cotton ball & bottle
13.	Chromic Acid, 60%	Watch glass
14.	Cresol	Cotton ball & bottle
15.	Dichlor Acetic Acid	Cotton ball & bottle
16.	Dimethylformanide	Cotton ball & bottle
17.	Dioxane	Cotton ball & bottle
18.	Ethyl Ether	Cotton ball & bottle
19.	Formaldehyde, 37%	Cotton ball & bottle
20.	Formic Acid, 90%	Watch glass
21.	Furfural	Cotton ball & bottle
22.	Gasoline	Cotton ball & bottle
23.	Hydrochloric Acid, 37%	Watch glass
24.	Hydrofluoric Acid, 48%	Watch glass
25.	Hydrogen Peroxide, 3%	Watch glass
26.	Iodine, Tincture of	Watch glass
27.	Methyl Ethyl Ketone	Cotton ball & bottle
28.	Methylene Cloride	Cotton ball & bottle
29.	Mono Chlorobenzene	Cotton ball & bottle
30.	Naphthalene	Cotton ball & bottle
31.	Nitric Acid, 20%	Watch glass
32.	Nitric Acid, 30%	Watch glass
33.	Nitric Acid, 70%	Watch glass
34.	Phenol, 90%	Cotton ball & bottle
35.	Phosphoric Acid, 85%	Watch glass
36.	Silver Nitrate, Saturated	Watch glass
37.	Sodium Hydroxide, 10%	Watch glass
38.	Sodium Hydroxide, 20%	Watch glass
39.	Sodium Hydroxide, 40%	Watch glass
40.	Sodium Hydroxide, Flake	Watch glass
41.	Sodium Sulfide, Saturated	Watch glass
42.	Sulfuric Acid, 33%	Watch glass
43.	Sulfuric Acid, 77%	Watch glass
44.	Sulfuric Acid, 96%	Watch glass

45.	Sulfuric Acid, 77% and Nitric Acid, 70%, equal parts	Watch glass
46.	Toluene	Cotton ball & bottle
47.	Trichloroethylene	Cotton ball & bottle
48.	Xylene	Cotton ball & bottle
49.	Zinc Chloride, Saturated	Watch glass

* Where concentrations are indicated, percentages are by weight.

3. Performance Test Results (Heat Resistance):
   a. Hot water (190° F - 205° F) shall be allowed to trickle (with a steady stream at a rate not less than 6 ounces per minute) on the finished surface, which shall be set at an angle of 45° from horizontal, for a period of five minutes. After cooling and wiping dry, the finish shall show no visible effect from the hot water treatment.

4. Performance Test Results (Impact Resistance):
   a. A one-pound ball (approximately 2" diameter) shall be dropped from a distance of 12 inches onto the finished surface of steel panel supported underneath by a solid surface. There shall be no evidence of cracks or checks in the finish due to impact upon close visual examination.

5. Performance Test Results (Bending Test):
   a. An 18-gauge steel strip, finished as specified, when bent 180^{o} over a 1/2" diameter mandrel, shall show no peeling or flaking off of the finish.

6. Performance Test Results (Adhesion):
   a. Ninety or more squares of the test sample shall remain coated after the scratch adhesion test. Two sets of eleven parallel lines 1/16" apart shall be cut with a razor blade to intersect at right angle thus forming a grid of 100 squares. The cuts shall be made just deep enough to go through the coating, but not into the substrate. They shall then be brushed lightly with a soft brush. Examine under 100 foot-candles of illumination. Note: This test is based on ASTM D2197-68, "Standard Method of Test for Adhesion of Organic Coatings".

7. Performance Test Results (Hardness):
   a. The test sample shall have a hardness of 4-H using the pencil hardness test. Pencils, regardless of their brand are valued in this way: 8-H is the hardest, and next in order of diminishing hardness are 7-H, 6-H, 5-H, 4-H, 3-H, 2-H, F, HB, B (soft), 2-B, 3-B, 4-B, 5-B (which is the softest).

   b. The pencils shall be sharpened on emery paper to a wide sharp edge. Pencils of increasing hardness shall be pushed across the paint film in a chisel-like manner until one is found that will cut or scratch the film. The pencil used before that one, that is, the hardest pencil that will not rupture the film, is then used to express or designate the hardness.

2.7 WORKSURFACES

A. MATERIALS
   1. Epoxy Resin Tops:
      a. Epoxy Resin tops (Kewaunee Kemresin) shall consist of modified epoxy resin that has been especially compounded and cured to provide the optimum physical and chemical

resistance properties required of a heavy-duty laboratory table top. Tops and curbs shall be a uniform mixture throughout their full thickness and shall not depend upon a surface coating that is readily removed by chemical and/or physical abuse. Tops and curbs shall be non-glaring. Tops shall be 1" thick, exposed edges beveled top and bottom, and drip grooves provided on the underside at all exposed edges. 4" high curbs at the backs and ends of tops shall be 1" thick and bonded to the deck to form a square watertight joint. Sink cutouts shall be smooth and uniform without saw marks with the top edge beveled. The bottom edge of the sink opening shall be finished smooth with the edge broken to prevent sharpness. Corners of sink cutouts shall be radiused not less than 3/4".

b. Color = By Owner from full line of manufacturers standard colors.

c. Epoxy resin to be manufactured by same manufacturer as steel casework and shelving.

B. WORK TOP PERFORMANCE REQUIREMENTS:

1. Molded Epoxy Resin:

a. Physical Properties:

Flexural Strength (A.S.T.M. Method D790-90) =	15,000 PSI
Compressive Strength (A.S.T.M. MethodD695-90) =	30,000 PSI
Hardness, Rockwell E (A.S.T.M. Method D785-89) =	100
Water Absorption (A.S.T.M. Method D570-81)% by weight, 24 Hours =	0.04
% by weight, 7 Days =	0.05
% by weight, 2 Hour Boil =	0.04
Specific Gravity =	1.97
Tensile Strength =	8,500 PSI

b. Performance Test Results (Heat Resistance):

1) A high form porcelain crucible, size 0, 15 ml capacity, shall be heated over a Bunsen burner until the crucible bottom attains an incipient red heat. Immediately, the hot crucible shall be transferred to the top surface and allowed to cool to room temperature. Upon removal of the cooled crucible, there shall be no blisters, cracks or any breakdown of the top surface whatsoever.

c. Performance Test Results (Chemical Resistance):

1) Tops shall resist chemical attacks from normally used laboratory reagents. Weight change of top samples submerged in the reagents* listed in the next paragraph for a period of seven (7) days shall be less than one-tenth of one percent, except that the weight change for those reagents marked with ** shall be less than one percent. (Tests shall be performed in accordance with A.S.T.M. Method D543-67 at 77o F.).

*Where concentrations are indicated, percentages are by weight.

Acetic Acid, Glacial	Iso-Octane
Acetic Acid, 5%	Kerosene
Acetone	Methyl Alcohol
Ammonium Hydroxide, 28%	Mineral Oil
Ammonium Hydroxide, 10%	Methyl Ethyl Ketone
Aniline Oil	Nitric Acid, 70%**

Benzene	Nitric Acid, 40%
Carbon Tetrachloride	Nitric Acid, 10%
Chromic Acid, 40%**	Oleic Acid
Citric Acid, 10%	Olive Oil
Cottonseed Oil	Phenol, 5%
Dichromate Cleaning Solution**	Soap Solution, 1%
Diethyl Ether	Sodium Carbonate, 20%
Dimethyl Formamide	Sodium Carbonate, 2%
Distilled Water	Sodium Chloride, 10%
Detergent Solution, 1/4%	Sodium Hydroxide, 50%
Ethyl Acetate	Sodium Hydroxide, 10%
Ethyl Alcohol, 95%	Sodium Hydroxide, 1%
Ethyl Alcohol, 50%	Sodium Hypochlorite,5%
Ethylene Dichloride	Sulfuric Acid, 85%
Heptane	Sulfuric Acid, 30%
Hydrochloric Acid, 37%	Sulfuric Acid, 3%
Hydrochloric Acid, 10%	Toluene
Hydrogen Peroxide, 28%	Transformer Oil
Hydrogen Peroxide, 3%	Turpentine

NOTE: Dichromate cleaning solution is a formula from Lange's Handbook of Chemistry.

2.8 SINKS CUPSINKS, AND DRAINS

A. MATERIALS:

1. Molded Epoxy Resin Sinks:
   a. Sinks shall be molded of modified epoxy resin, carefully compounded with selected materials to provide maximum physical and chemical properties. Sinks shall be non-glaring with all inside corners coved and the bottom pitched to the drain outlet. Sinks shall possess a high resistance to mechanical and thermal shock.

   b. Sink style = Drop-In. Size = 24”L x 16”D x 15.5”H.

2.9 FITTINGS

A. MATERIALS:
1. Laboratory Service Fittings:
   a. Service fittings shall be laboratory grade, and water faucets and valve bodies shall be cast red brass alloy or bronze forgings, with a minimum content of 85%. All fittings shall be chromium plated unless specified otherwise.

2. Service Indexes:
   Fittings shall be identified with service indexes in the following color coding:

   Hot Water.....Red
   Cold Water.....Dark Green
   Gas .....Dark Blue

Air .....Orange
Vacuum.....Yellow
Distilled Water.White
Steam .....Black
Nitrogen .....Brown
Oxygen.....Light Green
Hydrogen .....Pink
Special Gases ...Light Blue

B. CONSTRUCTION:
1. Water Fittings:
   a. Water fittings shall be provided with a renewable unit containing all operating parts which are subject to wear. The renewable unit shall contain an integral volume control device and all faucets shall be capable of being readily converted from compression to self-closing, without disturbing the faucet body proper. Blade handles shall contain plastic screw-on type colored service index buttons.

   b. Hot/Cold Water Mixing Faucet = WaterSaver Model No. L424-8VB with vacuum breaker or equal.

2. Vacuum Breakers:
   a. Vacuum breakers where required shall be "Nidel", "Watts" or equal unless otherwise specified or identified to be an integral part of the water fixture assembly.

3. Aerator Outlets:
   a. Aerator type outlets shall be furnished for all gooseneck water faucets not furnished with serrated hose connectors.

4. Waste Lines: Waste lines shall be furnished by Plumbing Contractor.

5. Traps: Traps shall be furnished by Plumbing Contractor.

PART 3 — EXECUTION

3.1 SITE EXAMINATION

A. The Contractor shall assure all building conditions conducive to the installation of a finished goods product; all critical dimensions and conditions previously checked have been adhered to by all sub-contractors (general, mechanical, electrical, etc.) to assure a quality installation.

3.2 INSTALLATION

A. Preparation:
   1. Prior to beginning installation of casework, check and verify that no irregularities exist that would affect quality of execution of work specified.

B. Coordination:
   1. Coordinate the work of the Section with the schedule and other requirements of other work

being prepared in the area and the general construction work.

2. Provide off-site storage/warehousing for sequenced just-in-time deliveries at the jobsite to match General Contractor's scheduling.

C. Performance:
   1. Casework:
      a. Set casework components plumb, square, and straight with no distortion and securely anchor to building structure. Shim as required using concealed shims.
      b. Bolt continuous cabinets together with joints flush, tight and uniform, and with alignment of adjacent units within 1/16" tolerance.
      c. Secure wall cabinets to solid supporting wall material. Refer to Construction Drawings.
      d. Abut top edge surfaces in one true plane. Provide flush joints not to exceed 1/8".

   2. Worksurfaces:
      a. Where required due to field conditions, scribe to abutting surfaces.
      b. Only factory prepared field joints, located per approved shop drawings, shall be permitted. Secure the joints in the field, where practical, in the same manner as in the factory.
      c. Secure worksurfaces to casework and equipment components with materials and procedures recommended by the manufacturer.

D. Adjust and Clean:
   1. Repair or remove and replace defective work, as directed by Owner and Engineer upon completion of installation.
   2. Adjust doors, drawers and other moving or operating parts to function smoothly.
   3. Clean shop finished casework; touch up as required.
   4. Clean worksurfaces and leave them free of all grease and streaks.
   5. Casework to be left broom clean and orderly.

E. Protection:
   1. Provide reasonable protective measures to prevent casework and equipment from being exposed to other construction activity.
   2. Advise owner and/or his representative of procedures and precautions for protection of material, installed laboratory casework and fixtures from damage by work of other trades.

SPECIFICATIONS

Section 00 01 10 **Page 3 of 6**	**Revise** the Table of Contents **as** follows: ➢ ***"DIVISION 11 RESERVED – Not Used***" ➢ ***"DIVISION 12 – FURNISHINGS"*** ○ "***12 35 53 Laboratory Casework***" ➢ "***DIVISION 13 RESERVED - Not Used"***
Section 12 35 53.13 **Add No. 1, Pages 1-14**	**Add** the specification section "12 35 53.13 Laboratory Casework" attached with this addenda.