Jones & Henry Engineers, Ltd.

Village of Ada, Ohio
Water Treatment Plant Improvements
Contract No. 21

ADDENDUM 3

September 4, 2025

Planholders of the Village of Ada, Water Treatment Plant Improvement, Contract No. 21 project are hereby notified of the following amendments to the Contract Documents. This Addendum is hereby made a part of the Contract Documents.

WAGE RATES

Attached are the Davis Bacon Wage Rates that were indicated "To be Provided by Addendum" in Supplementary Conditions C-800, Exhibit 1.

SPECIFICATIONS

Section 01021, Section 4.01 List of Allowances, replace with attached

Section 01021, Section 4.02 Definition of Allowance, replace with attached

Section 11223, Section 4.02 Pre-filter Sodium Hypochlorite Metering Pump, replace with attached

Section 11223, Section 4.03 Post-Filter Sodium Hypochlorite Metering Pump, replace with attached

Section 11600, Section 2.03A Materials, replace with attached

Section 11600, Section 2.04C Casework Assembly, replace with attached

Section 11600, Section 2.09A & B Special Purpose Storage Cabinets, replace with attached

Section 11821, Section 4.01A Clarifier Mechanisms, replace with attached

Section 11821, Section 4.01B Clarifier Mechanisms, replace with attached

Attachments: Federal Wage Rates
Specification 01021
Specification 11223
Specification 11600
Specification 11821

RECEIPT OF THIS ADDENDUM MUST BE ACKNOWLEDGED ON PAGE C-410 - 1 OF THE BID.

"General Decision Number: OH20250066 08/08/2025

Superseded General Decision Number: OH20240066

State: Ohio

Construction Type: Building

Counties: Hardin and Paulding Counties in Ohio.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least $17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/03/2025
1	02/14/2025

2 07/11/2025
3 07/18/2025
4 08/08/2025

ASBE0045-004 07/01/2024

	Rates	Fringes
ASBESTOS WORKER/HEAT & FROST INSULATOR	$ 37.00	28.27

BROH0022-001 07/01/2017

PAULDING COUNTY

	Rates	Fringes
BRICK POINTER/CAULKER/CLEANER	$ 31.00	15.15

BROH0040-004 06/01/2024

HARDIN COUNTY

	Rates	Fringes
BRICK POINTER/CAULKER/CLEANER	$ 35.67	24.75

CARP0372-005 05/01/2024

	Rates	Fringes
SOFT FLOOR LAYER	$ 30.25	25.16

ELEC0008-003 05/27/2024

	Rates	Fringes
ELECTRICIAN	$ 48.40	4.5%+23.06

ENGI0018-024 05/01/2024

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Crane; Scraper	$ 44.14	16.41
Forklift	$ 42.98	16.41

IRON0055-013 07/01/2024

	Rates	Fringes
IRONWORKER, STRUCTURAL	$ 35.50	29.20

IRON0550-009 05/01/2025

	Rates	Fringes
IRONWORKER, ORNAMENTAL	$ 36.00	23.57

LABO0423-002 05/01/2021

	Rates	Fringes
LABORER		
Chain Link/Cyclone Fence		

Erection.....$ 28.73 11.80

LABO0500-004 05/01/2024

	Rates	Fringes
LABORER		
Mason Tender - Cement/Concrete	$ 32.35	16.42

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* PAIN0948-002 07/01/2025

	Rates	Fringes
GLAZIER	$ 36.50	25.06

PLUM0050-010 06/30/2025

	Rates	Fringes
PIPEFITTER (Excludes HVAC Pipe Installation)	$ 51.00	32.56
PLUMBER (HVAC Pipe Installation Only)	$ 51.00	32.56

ROOF0134-006 07/01/2021

	Rates	Fringes
ROOFER	$ 29.07	19.84

SHEE0033-017 07/01/2024

	Rates	Fringes
SHEET METAL WORKER (Excludes HVAC Duct and Unit Installation)	$ 39.58	35.15

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* UAVG-OH-0012 01/01/2019

	Rates	Fringes
BRICKLAYER: TILE FINISHER	$ 26.88	11.81
BRICKLAYER: TILE SETTER	$ 29.90	16.52

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* UAVG-OH-0013 01/01/2019

	Rates	Fringes
IRONWORKER, REINFORCING	$ 33.18	23.73

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* SUOH2012-068 08/29/2014

	Rates	Fringes
BRICKLAYER	$ 27.47	12.26
CARPENTER (Excluding Soft Floor Laying)	$ 21.09	9.08
CEMENT MASON/CONCRETE FINISHER	$ 23.47	10.07
DRYWALL FINISHER/TAPER	$ 18.57	3.12

DRYWALL HANGER AND METAL STUD INSTALLER.....$ 17.63 ** 5.64

LABORER: Common or General.....$ 21.67 8.30

LABORER: Landscape & Irrigation.....$ 10.39 ** 0.00

LABORER: Mason Tender - Brick...$ 22.74 8.60

LABORER: Pipelayer.....$ 18.37 4.79

OPERATOR: Backhoe/Excavator/Trackhoe.....$ 24.59 7.76

OPERATOR: Bobcat/Skid Steer/Skid Loader.....$ 20.00 3.26

OPERATOR: Bulldozer.....$ 23.50 7.51

OPERATOR: Loader.....$ 17.43 ** 2.72

OPERATOR: Paver (Asphalt, Aggregate, and Concrete).....$ 25.85 10.42

PAINTER (Brush and Roller).....$ 17.91 10.85

PLUMBER, Excludes HVAC Pipe Installation.....$ 29.57 17.20

SHEET METAL WORKER (HVAC Duct and HVAC Unit Installation Only).....$ 22.05 12.18

SPRINKLER FITTER (Fire Sprinklers).....$ 25.91 9.18

TRUCK DRIVER: Dump (All Types)...$ 17.97 4.14

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 ($17.75) or 13658 ($13.30). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other

health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this

classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations

Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION"

SECTION 01021
ALLOWANCES

PART 1 GENERAL

1.01 SCOPE

A. This Section includes the allowances which are to be furnished by the Contractor per Paragraph GC-13.02 of the General Conditions.

B. The Contractor shall include in the Contract Price all allowances stated in the Contract Documents. These allowances shall cover the net cost of the materials and equipment delivered and unloaded at the Site, and all applicable taxes.

C. The Contractor's handling costs on the Site, labor installation costs, overhead, profit and other expenses contemplated for the original allowance shall be included in the Contract Price and not in the allowance.

D. The Contractor shall cause the Work covered by these allowances to be performed for such amounts and by such persons as the Engineer may direct, but he will not be required to employ persons against whom he makes a reasonable objection.

E. If the cost, when determined, is more than or less than the allowance, the Contract Price shall be adjusted accordingly by Change Order.

1.02 SUBMITTALS

A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:

1. Shop Drawings for Review:

    a. Contractor shall prepare and submit proposals for the Owner to select the items included in allowance.

2. Information for the Record:

    a. Operation and maintenance manuals as may be required for items included in allowance.

    b. Invoices and delivery slips, for items provided under the allowance, shall be submitted to the resident project representative or Engineer.

1.03 PRODUCT HANDLING

A. The Contractor shall provide all labor, material and equipment to insure the safe delivery, handling and storage of goods until acceptance by Owner and Engineer.

1.04 GUARANTEE

A. Contractor shall provide manufacturer's warranties to the Owner for all goods provided.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.01 COORDINATION

A. Contractor shall advise Owner and Engineer of, and include in the schedule, the timing of the selection, Shop Drawing review and procurement of the goods or services required in the allowance.

B. Contractor shall be responsible for the coordination, of all allowance item(s) provided, with the remainder of the contract work.

3.02 ERECTION, INSTALLATION AND APPLICATION

A. Contractor shall assemble, install or apply all goods as may be required to complete the requirements of the allowance.

3.03 PROTECTION

A. Contractor shall examine all goods on delivery. All damaged or defective goods shall be returned to the manufacturer for replacement.

PART 4 SPECIAL PROVISIONS

4.01 LIST OF ALLOWANCES

		Allowance
A.	Control Panels, Programming and Systems Integration	$140,000.00
B.	Laboratory Equipment and Furniture	$20,000.00
C.	Camera System	$10,000
D.	General Contingency	$150,000

(Addendum 3, Issued 09/04/2025)

4.02 DEFINITION OF ALLOWANCE

A. Control Panels work under this allowance includes the purchasing of control panels, hardware and software not provided by individual vendors. Programming and Systems Integration work under this allowance includes: PLC modifications and HMI programming. This work will be performed by SSOE Group and invoices provided to the Contractor. **(Addendum 3, Issued 09/04/2025)**

1. The Systems Integrator will design and supply the following panels; to be installed by the Contractor:

a. Remote I/O Panel – RIO-6

b. Sodium Hypochlorite Control Panel

c. Ferric Chloride Control Panel

d. Phosphate Control Panel

2. The Systems Integrator will provide the additional scope:

a. Software upgrades and programming

b. Integration of new panels and I/O into existing PLC and Plant Control System.

c. New SCADA modifications

d. Commissioning and validation on supplied equipment and software

e. Training on supplied equipment and software. **(Addendum 2, Issued 8/22/2025)**

B. Laboratory Equipment and Furniture shall be selected by others and a list provided to the Contractor. This allowance includes tables, desks, chairs, file cabinets, laboratory equipment.

C. Camera System work under this allowance includes furnishing and installing cameras as shown on the Drawings. Camera installer will make all cable terminations. Contractor is responsible for conduit and wiring. This work will be performed by others and invoices provided to the Contractor.

D. This allowance shall be used as directed by the Owner to provide material and labor to enhance the work.

END OF SECTION

SECTION 11223
CHEMICAL PUMP SYSTEMS

PART 1 GENERAL

1.01 SCOPE

A. This Section includes furnishing and installing all materials, labor and supervision required for the chemical pump systems complete and ready for service as specified and as shown on the Drawings.

B. The pump systems shall include all drives, drive shafts, couplings, belts, drive shaft and belt guards, spray guards, motor slide bases, base plates, anchor bolts, and other appurtenances as specified or required for a complete installation.

C. All Work performed under this Section shall be in accordance with all approved trade practices and manufactures' recommendations.

D. If not specified, materials of construction shall be selected by the pump manufacturer. All materials used shall be entirely suitable for the chemical service and intended operating conditions. Materials that are not highly rated and recommended for the service shall not be used. The Engineer shall have final say as to what materials are acceptable.

E. Chemical pump system accessories are covered under Section 11224.

F. Additional product requirements are specified in Section 01350.

1.02 SUBMITTALS

A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:

1. Shop Drawings for Review:

   a. The Contractor shall indicate all variances from the requirements of the Contract Documents.

   b. Scaled dimensional drawings.

   c. Wiring schematics with termination point identification.

   d. Piping schematics.

   e. Materials of construction.

   f. Manufacturer's catalog data.

   g. General Arrangement Drawings.

   h. Motor information per Section 11050.

2. Information for the Record:

3. Operation and maintenance manual.

PART 2 PRODUCTS

2.01 RESERVED

2.02 RESERVD

2.03 RESERVED

2.04 PERISTALTIC PUMP

A. Peristaltic pump shall be a positive displacement, hose type pump as specified meeting the operating conditions specified in Part 4.

B. Each pumping unit shall be complete with an electric motor, speed reducer, coupling, coupling guard, base plate and other appurtenances specified in Part 4.

C. The pump shall have one rotating member with two sliding shoes mounted 180 degrees opposite each other inside of a pump housing. Between the pump housing and the shoes shall be a rubber hose. The pump housing shall contain a CP grade glycerin for lubricating the hose and shoe.

D. The pump shall operate by the shoes on the rotating member compressing a rubber hose between the shoe and the inner pump housing. The fluid being pumped shall be only in contact with the inside of the hose.

E. Pump components shall be constructed of the materials specified below:

1. Pump housing - Powder Coated Aluminum.
2. Housing cover - Clear Acrylic.
3. Shaft - Chrome Plated Steel.
4. Rotor shoes - Nylon.
5. Hose - Norprene or other material compatible with chemical being pumped. Hose life under specified service shall be a minimum 2,000 hours.

F. Pump housing inlet and discharge nozzle 1-inch in diameter and larger shall have 150 - feet ANSI flanges. Nozzles smaller than 1-inch in diameter shall have male pipe threads.

G. Shaft bearings shall be antifriction grease lubricated with AFBMA L10 life of 40,000 hours.

H. Drive motors shall be 1,800 rpm, TEFC induction type and shall comply with the applicable NEMA standards. Motors shall be Design B, Class F insulation, with a service factor of 1.15. Motors shall have thermal overload protection and be suitable for the power supply specified in Part 4. Motor sizing shall be adequate to meet with the running and starting torque requirements of the pump.

I. Speed reducers on pumps with discharges 1-inch and larger shall be of the helical/inline type with a NEMA C flange input for mating with the pump motor. Gear rating shall be a minimum of an AGMA Class II rating with a minimum efficiency of 97%.

J. Speed reducers on pumps with discharges less than 1-inch shall be of the helical/inline type specified in Paragraph I. or worm gear type. Worm gear type reducers shall have a cast iron housing and motor flanges; tapered rollerbearing on all output shaft; and steel shafting having a minimum tensile strength of 100,000 psi. Worms shall be integral with steel shafting having a minimum tensile strength of 125,000 psi and a minimum hardness of RC 52. Gears shall be 603 Dynally forged bronze. Oil seals shall be nitrile and the housing shall incorporate a gravity oil feed system. All reducers shall be warranted for two years from the time they are placed in service.

K. If required in Part 4, the pump manufacturer shall provide an inlet pulse damper suitable for eliminating negative pressure spikes in the pump's suction piping. The damper shall be constructed of materials compatible with the solution being pumped. Damper shall be sized by the pump manufacturer for the pump being furnished. Damper shall be suitable for horizontal or vertical mounting and not require initial charging or subsequent recharging.

L. All peristaltic pumps shall be furnished by one manufacturer.

2.05 DRUM PUMPS

A. Drum pumps shall be in accordance with the requirements described in the following paragraphs and in Part 4 of this Section.

B. Drum pump shall be designed for pumping either acids or caustics, be lightweight, and self-priming. All wetted parts shall be compatible with the liquids being pumped.

C. Drum pumps shall have seal-less construction.

D. Drum pumps shall have TEFC motors suitable for operation with a 120 volt, 60 Hz., single phase power supply.

PART 3 EXECUTION

3.01 INSTALLATION

A. Installation shall be complete and in accordance with the pump manufacturer's recommendations, Engineer's instructions, and Contract Drawings.

B. The pump drive belt, where applicable, shall be placed in the proper pulley position for the specified pumping rate.

C. Proper oil level shall be confirmed prior to starting.

D. Related piping and electrical items are covered under Section 15211 and Division 16 respectively.

3.02 INSPECTION, STARTUP, AND TRAINING

A. The Contractor shall furnish a qualified representative of the manufacturer to perform inspection, start-up, and training services. The manufacturer's representative shall be experienced in the installation, start-up, operation, and maintenance of the equipment.

B. The representative shall check the installation and supervise final adjustments and initial start-up of the equipment. The representative shall certify that the installation is correct and that the equipment is operating satisfactorily. This service shall be for a minimum period of one trip and one day.

C. Within two weeks of start-up, the manufacturer shall submit to the Engineer a written report (minimum four copies) covering the representative's inspection and start-up of the equipment. This report shall include the manufacturer's certification that the installation is correct and that the equipment is operating satisfactorily.

D. After the installation and operation of the equipment has been certified, the manufacturer's representative shall train the Owner's personnel for one, eight-hour day in the proper operation and maintenance of the equipment. The Owner may videotape the training.

E. In addition to the initial training, the manufacturer shall provide one, eight-hour day of training at the time requested by the Owner within the one-year maintenance and guarantee period. This service would be in addition to any warranty work.

PART 4 SPECIAL PROVISIONS

4.01 ENGINEERED SKID SYSTEMS

A. Each set of metering (peristaltic) pumps specified in the schedule as part of a manufacturer-supplied engineered skid system.

B. Single skid systems shall be provided when one or two pumps, respectively, are scheduled for each metering pump system. Each engineered skid system mounted on an FRP platform, as shown on the Drawings.

C. Engineered skid systems shall include a drip tray.

D. All mounting hardware, mounting brackets, and mounting foot/wall pads shall be constructed of stainless steel or FRP.

E. Provide accessories for the metering pump systems as specified and include: vented type true union ball valves; pressure relief valves; pulsation dampener; pressure gauge; check valve; and wye strainer.

F. Metering pumps shall require 115 VAC, receive control inputs of 4-20 mA for external speed control and a minimum of four discrete outputs.

4.02 PRE-FILTER SODIUM HYPOCHLORITE METERING PUMP

Number Required:	One-Pump System; Two pumps required – one online, one spare.
Type:	Peristaltic
Operation:	Continuous
Solution:	12% Liquid Sodium Hypochlorite
Solution Temperature:	Ambient
Suction Conditions:	5-feet suction lift
Discharge Conditions:	Filter Influent, 10 psi max
Design Flow:	0.72 gph
Expected Feedrate:	0.21 – 1.67 gph
Motor:	110VAC to 240VAC, 50/60 Hz
Spare parts	5 spare tube or pump head assemblies
Manufacturer and Model:	Blue-White Flex Pro M24S-SNEE Pump with CFPS-1AV-XABX skid or Watson Marlow Single Qdos Universal Metering Pump (Part 0M0.285R.GLA.) with Single Qdos Pod (Part WM.1235). **(Addendum 3, issued 9/4/2025)**

4.03 POST-FILTER SODIUM HYPOCHLORITE METERING PUMP

Number Required:	One-Pump System; Two pumps required – one online, one spare.
Type:	Peristaltic
Operation:	Continuous
Solution:	12% Liquid Sodium Hypochlorite
Solution Temperature:	Ambient
Suction Conditions:	5-feet suction lift
Discharge Conditions:	Filter effluent, 10 psi max
Design Flow:	0.72 gph
Expected Feedrate:	0.21 – 1.67 gph
Metering Pump Flow Range	0 – 6.76 gph
Motor:	96VAC to 250VAC, 50/60 Hz
Spare parts	5 spare tube assemblies
Manufacturer and Model:	Blue-White Flex Pro M24S-SNEE pump with CFPS-1AV-XABX skid or Watson Marlow Single Qdos Universal Metering Pump (Part 0M0.285R.GLA.) with Single Qdos Pod (Part WM.1235). **(Addendum 3, issued 9/4/2025)**

4.03 DRUM PUMPS

Number Required:	Two; one online, one spare
Type:	Seal-less polypropylene pump tube
Operation:	Intermittent
Solution:	12% Liquid Sodium Hypochlorite
Solution Temperature:	Ambient
Suction Conditions:	Flooded
Design Head Capacity:	10 gpm minimum
Motor Type:	120 Volt B36/B36SC
Material:	Hastalloy

Accessories:	6' PVC spiral hose 1", and hose connections, nozzle, hose clips, drum adapter PP.
Manufacturer and Model:	Lutz, Model B 36, 47-inch tube with accessories

END OF SECTION

SECTION 11600
LABORATORY FURNITURE AND EQUIPMENT

PART 1 GENERAL

1.01 SCOPE

A. This Section includes the furnishing of all laboratory apparatus and the furnishing and installation of the laboratory furniture and equipment.

B. All Work performed under this Section shall comply and be in accordance with all approved trade practices and manufacturers' recommendations.

C. Additional product requirements are specified in Section 01350.

1.02 SUBMITTALS

A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:

1. Shop Drawings for Review:

a. The Contractor shall indicate all variances from the requirements of the Contract Documents.

b. Descriptive literature, bulletins, or other data describing the laboratory furniture and equipment.

c. Complete list of equipment and appurtenances included, complete with manufacturer's name and model number.

d. Detail plans and elevations.

e. Sectional assembly drawings.

f. Materials of construction.

g. Schematic wiring and piping diagrams.

2. Operation and maintenance manual.

1.03 QUALITY ASSURANCE

A. Casework, work surfaces, laboratory fume hoods, equipment and accessories shall be manufactured or furnished by a single laboratory furniture company.

B. Manufacturer's qualifications shall include modern plant with proper tools, dies, fixtures and skilled workmen to produce high quality laboratory casework and equipment, and shall meet the following minimum requirements:

1. Five years or more experience in manufacture of laboratory casework and equipment of type specified.

2. Ten installations of equal or larger size and requirements.

C. Installer's qualifications shall be factory trained and/or certified by the manufacturer.

D. Cabinets shall be identified on drawings by manufacturer's catalog numbers. Unless otherwise modified on drawings or in specifications, catalog description constitutes specific requirements for each type of cabinet.

PART 2 PRODUCTS

2.01 CASEWORK PERFORMANCE DESIGN REQUIREMENTS

A. Flush inset construction shall provide surfaces of doors, drawers and panel faces shall align with cabinet fronts without overlap of case ends, top or bottom rails. Horizontal and vertical case shell members (panels, tops rails and bottoms) shall meet in the same plane without overlap.

B. Interior of case units shall be easily cleanable, flush interior. Base cabinets, 30-inch and wider, with double swinging doors shall provide full access to complete interior without center vertical post.

C. Self-supporting units shall be completely welded shell assembly without applied panels at ends, backs or bottoms, so that cases can be used interchangeably or as a single, stand-alone unit.

D. Case openings shall be rabbeted-like joints all four sides of case opening for hinged doors and two sides for sliding doors in order to provide dust resistant case.

E. Drawers shall be sized on a modular basis for interchangeability to meet varying storage needs, and designed to be easily removable in the field without use of special tools.

F. Doors shall be solid or glazed, double wall telescoping box steel construction, interior sound deadening, removable hinges standard.

G. Casework components have been tested in conformance with SEFA 8 M-2007 Recommended Practice and shall withstand the following maximum static load capacity, without damage to the component or to the casework operation, when properly leveled, supported and the load evenly distributed:

1.	Steel base units:	500 pounds per lineal foot
2.	Suspended units:	300 pounds
3.	Drawers in a cabinet:	150 pounds per drawer
4.	Utility tables (4 legged):	300 pounds
5.	Hanging wall cases:	300 pounds
6.	Shelves (base, wall, tall units)	40 pounds/square foot, up to 200 pounds

H. Coatings on Casework 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

2.02 WORK SURFACE PERFORMANCE REQUIREMENTS

A. Epoxy Work Surface Performance Requirements:

1. Test procedure shall apply five drops of each reagent to surface and cover with 25-millimeter watch glass, convex side down; test volatiles using one ounce bottle stuffed with saturated cotton. After one hour exposure flush surface, clean, rinse and wipe dry. Evaluate after 24 hours at 73 degrees F, and 50 degrees F at 5% relative humidity.
2. Change in surface finish and function shall be described by the following ratings:
   a. No Effect: No detectable change in surface material.
   b. Excellent: Slight detectable change in color or gloss, but no change to the function or life of the Work surface material.
   c. Good: Clearly discernible change in color or gloss, but no significant impairment of Work surface function or life.
   d. Fair: Objectionable change in appearance due to surface discoloration or etch, possibly resulting in deterioration of function over an extended period.
   e. Failure: Pitting, cratering or erosion of Work surface material; obvious and significant deterioration.
3. Test Results - Epoxy Resin Work Surface:

Reagent	Rating	Reagent	Rating
Hydrochloric Acid, 37%	Excellent	Benzene	Excellent
Sulfuric Acid, 33%	No Effect	Xylene	No Effect
Sulfuric Acid, 77%	No Effect	Toluene	Excellent
Sulfuric Acid, 96%	Failure	Gasoline	No Effect
Formic Acid, 90%	Excellent	Dichlor Acetic Acid	Good
Nitric Acid, 20%	Excellent	Di Methyl Formamide	Excellent
Nitric Acid, 30%	Excellent	Ethyl Acetate	No Effect
Nitric Acid, 70%	Good	Amyl Acetate	Excellent
Hydrofluoric Acid, 48%	Fair	Acetone	Excellent
Phosphoric Acid, 85%	No Effect	Chloroform	Excellent
Chromic Acid, 60%	Failure	Carbon Tetrachloride	No Effect

Reagent	Rating	Reagent	Rating
Acetic Acid, 98%	Excellent	Phenol	Excellent
3 and 8 Equal Parts	Excellent	Cresol	Excellent
Ammonium Hydroxide, 28%	No Effect	Formaldehyde	No Effect
Sodium Hydroxide, 10%	No Effect	Trichlorethylene	Excellent
Sodium Hydroxide, 20%	No Effect	Ethyl Ether	Excellent
Sodium Hydroxide, 40%	No Effect	Furfural	Good
Sodium Hydroxide Flake	No Effect	Methylene Chloride	Excellent
Sodium Sulfide	Excellent	Mono Chlor Benzene	Good
Zinc Chloride	No Effect	Dioxane	Excellent
Tincture of Iodine	Excellent	Methyl Ethyl Ketone	Excellent
Silver Nitrate	No Effect	Acid Dichromate	Fair
Methyl Alcohol	No Effect	Hydrogen Peroxide	No Effect
Ethyl Alcohol	No Effect	Naphthalene	Excellent
Butyl Alcohol	No Effect		

2.03 MATERIALS

A. Casework shall be as manufactured and assembled by Hamilton Laboratory Solutions, Kewawnee Scientific Corporation or equal. **(Addendum 3, issued 9/4/2025)**

B. Sheet steel used in the construction of cases shall be:

1. Mild carbon, cold rolled and leveled unfinished steel, ASTM A1008.
2. Stainless steel, #4 finish one side, ASTM A666.
3. Mild carbon, cold rolled and hot dipped galvanized steel.

C. Unless otherwise noted, the typical gauge of steel used in the construction of cases and related products shall be 18 GA. Exceptions listed below:

1. 11 GA – table leg stretcher and leg rail support brackets.
2. 12 GA – bottom corner gussets.
3. 14 GA – hinge reinforcements, suspension channels.
4. 16 GA -table cross rails, apron rails and end rails.
5. 20 GA – inner door panels, filler stiles, fixed back panels, drawer bodies.
6. 22 GA – removable back panels.

D. Glass for glazed swinging, sliding and frameless doors as follows:

1. 1/4-inch Clear Float Glass – standard for swinging and sliding doors.
2. 1/4-inch Tempered Glass per ASTM C1048 – standard for frameless doors.
3. 1/4-inch Laminated Glass per ASTM C1172 -optional.

2.04 CASEWORK ASSEMBLY

A. Base and Tall Cabinets (standard 22-inch nominal depth):

1. Minimum height, including corner gussets, leveler fully retracted:
    a. Base Standing 35.500-inch
    b. Base Sitting 28.250-inch
    c. Base ADA 31.853-inch
    d. Tall 83.750-inch
2. One-piece formed end panels and back with internal reinforcing front posts.
3. Front post fully closed with full height reinforcing upright.
4. Shelf adjustment holes in front and rear posts shall be aligned for level setting, adjustable to 1/2-inch increments.
5. Base cabinet drawer units provided without backs or bottoms; cupboard units provided with removable backs for service access.
6. Tall cabinet units provided with full formed backs, recessed 1/8-inch for mounting purposes.
7. One-piece bottom with formed front edge spot welded to front rail. Rabbeted as required for swinging doors and drawers; flush for sliding doors.
8. Top rail interlocks with and welded to end panels, flush with front of unit; reinforced for suspended units.
9. Formed steel base provides minimum 3.750-inch high by 3.000-inch deep toe-kick space; reinforcing corner gussets accommodate standard 1/2-13 UNC by 2.500-inch zinc plated leveling bolt, accessible through bottom panel on Base and Tall Cabinets where applied.

B. Wall Cabinets (standard 12-inch and 16-inch depth):

1. Standard heights include 18-inch, 24.5-inch, 30-inch, 36-inch, 42-inch and 48-inch.
2. One piece formed end panels and back with internal reinforcing front posts.
3. Front post fully closed with full height reinforcing upright.
4. Shelf adjustment holes in front and rear posts shall be aligned for level setting, adjustable to 1/2-inch increments.
5. One-piece formed back, recessed 3/4-inch for mounting purposes.
6. One-piece top with front edge formed into front rail.
7. One-piece bottom with front edge formed into front rail.
8. Note: All exposed seams on joints will be welded, ground and polished to an equivalent mill finish.

C. Drawers:

1. Drawer fronts shall be 5/8-inch thick, double wall construction, assembled with sound deadened material, top front corners fitted smooth.
2. Drawer bodies:
    a. Painted steel, 1-pc construction, bottom and sides coved and top edges formed. No sharp edges. **(Addendum 3, issued 9/4/2025)**
3. No tools required for removal.
4. Drawer suspension:
    a. Removable full extension, self-closing Accuride (or equivalent) slide.
5. Provide drawer with rubber bumpers. Friction centering devices are not acceptable.

D. Doors:

1. Solid panel doors shall be 5/8-inch thick, double wall, telescoping box steel construction with interior sound deadening, outer corners fitted smooth. Hinges with screws to internal 14-gauge reinforcement in case and door. Hinges shall be removable; welding of hinges not acceptable. Doors shall close against rubber bumpers.
2. Frame glazed doors shall be outer head to be one-piece construction with beaded edges. Inner head shall be one-piece construction also, telescoping, and secured with screws to outer head; removable for installation or replacement of glass. Provide vinyl glazing retainer to receive glass. In all other respects, framed glazed door construction and quality shall match solid panel doors.
3. Sliding doors – solid or framed glazed shall be designed for tilt-out removal. Doors shall ride on nylon tired sleeve bearing rollers in aluminum extended bottom hung track and shall close against rubber bumpers.
4. Unframed sliding glass doors shall be glass with edges ground set in extruded aluminum shoe with integral pull (top and bottom extruded aluminum track). Provide rubber bumpers at fully opened and closed door position.

E. Shelves:

1. Casework shelves shall be die formed steel, front and back edges formed down and back 1-inch; ends formed down 3/4-inch.
2. Reinforced shelves shall be over 36-inch long and 16-inch deep include hat channel reinforcement, full length of the shelf.
3. Pull out shelves shall be same suspension as specified for drawers.

F. Base molding shall be 4-inch high typical, to be furnished and installed by others.

G. Hardware:

1. Pulls shall be modern design, offering a comfortable hand grip, and be securely fastened to doors and drawers. Two pulls shall be required on all drawers 30-inch and longer.
2. Hinges shall be brushed stainless steel type, 5-knuckle, frictionless, not less than 2-inch long with fast pin and rounded ends. Hinges are attached to both door and case with three (3) screws through each leaf. Doors over 36-inch in height shall be hung using 3 hinges.
3. Door catches shall be adjustable nylon roller type, with strike.
4. Leveling devices shall be zinc plated 1/2-inch-13 UNC threaded bolt type.
5. Shelf clips shall be die formed steel, zinc plated, designed to provide shelf support and adjustment in 1/2-inch increments.
6. Label holders shall be applied (in the field) to doors and drawers where specifically requested in the specifications or on the equipment list, shall be self-adhesive type aluminum with satin finish and designed for 2-1/2-inch by 1-1/8-inch cards, unless otherwise specified.
7. Up-and-Down bolts shall be provided on hinged full height storage cases; they shall have a right-hand door provided with an active knob and up-and-down bolt assembly. Left hand door shall be provided with a dummy knob. Up-and-down bolts shall be concealed in the stiles of glazed doors and between pans of solid panel doors.

2.05 WORK SURFACES

A. Epoxy Resin shall be chemical and abrasion resistant, durable 1-inch thick cast material of epoxy resins and inert products, cast flat, with a uniform low-sheen black surface. Backsplash curb shall be the same material as the top, but provided separate for field installation. Provide where indicated on drawings or as required where tops abut wall surfaces and at reagent ledges. Include end curb where top abuts end wall as specified. Reagent ledges shall be the same material as the top. Ledge face shall permit installation of service fixtures and top shall be removable for access to service utilities.

2.06 TABLE FRAMES

A. Table frames shall be 4-1/2-inch high “C” channel front and back aprons, end rails and cross rails.

B. Table drawers shall provide front and back rails; drawer unit, hardware and suspension same as specified for base unit drawers.

C. Legs shall be 2-inch by 2-inch steel tube legs with welded 11 GA leg bracket. Attach legs with two bolts to front and back aprons and weld to end rails. Each leg shall have a leveling screw.

D. Leg Shoes shall be provided on all table legs to conceal leveling device, unless otherwise specified. Shoes shall be pliable, black vinyl material.

2.07 SINKS

A. Undermount sinks shall be molded from the same epoxy resin material as the work surfaces. All sinks shall be molded in one piece with corners coved and the bottom sloped to the outlet.

B. Provide sink supports, hanger brackets and other hardware accessories necessary for installation.

C. Sink size and orientation are as shown on the Drawings.

2.08 SERVICE FITTINGS

A. Laboratory Service Fittings – Service fittings shall be laboratory grade; water faucets and valve bodies shall be cast bronze with a minimum copper content of 85%. Fittings shall be chromium plated unless otherwise specified.

B. Water Fittings – Water fittings shall be provided with a removable and replaceable unit containing all parts subject to wear. Seat washers shall be held in place with a Monel screw containing a locking device. Four arm handles shall be black, acid resisting, nonmetallic LEXAN, unless otherwise indicated or specified. Handles shall be furnished with tamperproof and vandal resistant color coded service indexes. All water faucets shall be readily convertible from compression type to quick self-closing type, or to slow self-closing type, or vice versa, without disturbing body of faucet. All water faucets shall be supplied with vacuum breakers.

C. ––Hose Connector Ends – Serrated hose connectors shall be provided on all service fittings, either removable or integral, unless otherwise specified.

D. –Service Indexes – Fitting shall be identified with service indexes in the following color coding:

Hot Water	Red
Cold Water	Green

2.09 SPECIAL PURPOSE STORAGE CABINETS

A. Acid/Corrosive Storage Cabinets shall employ the same materials, hardware and construction methods as standard base and tall cabinets with the following exceptions:

1. Case:

   a. Double-walled 18 GA steel (back and sides), provides internal backing surface for corrosion resistant inner liner.

   b. Perforated at rear for use of venting apparatus; no penetration of liner at vent opening.

2. Liner shall be one-piece welded polypropylene, secured to case with nylon screws. Includes 1-inch lip along at door opening for spill containment.

3. Doors shall be polypropylene lined with louvers for ventilation; locks optional as defined by specifier.

4. Shelves shall be half-depth, 0.75-inch thick polypropylene with 1-inch high lip welded along front edge, adjustable (two levels).

5. Casters for mobile applications shall be swivel type; locking casters optional.

6. Labels “ACID” or “CORROSIVE” shall include decals onto the door. “ACID” appears as red lettering on blue background; “CORROSIVE” as black lettering on white background. **(Addendum 3, issued 9/4/2025)**

B. Flammable Storage Cabinets shall follow requirements covering cabinets intended to be used to provide a storage area for limited quantities of flammable and combustible liquids stored in containers in compliance with ANSI/NFPA 30. Construction and performance requirements for these cabinets are primarily based on ANSI/NFPA 30.

In addition, all standard cabinets shall be constructed, tested and listed in accordance with UL 1275 “Standards for Flammable Liquid Storage Cabinets”. All UL 1275 approved cabinets will bear a label from the manufacturer stating such, including the company name, model number, and cabinet capacity.

Flammable Storage Cabinets shall employ the same materials, hardware and construction methods as standard base and tall cabinets with the following exceptions:

1. Case:

   a. Double-walled 18 GA steel with 1-1/2-inch air space between panels on top, bottom, sides, back and door.

   b. Air spaces shall be filled with a 1-inch thick blanket of High-Temp Fiberglass.

   c. Perforated at rear for use of venting apparatus. Note: If cabinet is vented for whatever reason, it shall be vented outdoors in such a manner that will not compromise the specified performance of the cabinet, and be acceptable to the authority having jurisdiction over this matter. It the cabinet is not vented; the vent openings shall be sealed with plugs provided by the manufacturer.

   d. Bottom Floor Pan shall provide a 2-inch deep liquid tight pan to contain liquid spills and prevent leaks.

   e. Provisions for attaching grounding wire at the base of the cabinet on the outside, rear panel.

2. Doors:

   a. Provided with a three-point locking mechanism (Up- and-Down bolt type).

   b. Three-point slam latch optional.

   c. Self-closing mechanism and fusible link shall also be incorporated (optional with slam latch version only).

d. Door synchronizer shall be incorporated on double door units (optional with slam latch version only).

e. Provided with full length stainless steel piano hinge.

3. Mobile with four casters (2-locking), swivel-type. Vent holes factory plugged. Cabinets shall be ADA compliant for height, width and load capacity.

4. Labels: "FLAMMABLE – KEEP FIRE AWAY" shall include decals onto the door, appearing as red lettering on a bright yellow background. **(Addendum 3, issued 9/4/2025)**

2.10 METAL FINISH (PAINTED SERIES)

A. 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. Electrostatically 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 shall place test panel on a flat surface, clean with soap and water and blot dry. Condition the test panel for 48 hours at 73 degrees F plus/minus 3 degrees F and 50% plus/minus 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-ounce 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-millimeter 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 degrees F plus/minus 3 degrees F and 50% plus/minus 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	Reagent	Method	Rating
Acetate, Amyl	A	0	Iodine, Tincture of	B	2
Acetate, Ethyl	A	0	Methyl Ethyl Ketone	A	1
Acetic Acid, 98%	B	1	Methylene Chloride	A	1
Acetone	A	0	Mono Chlorobenzene	A	0
Acid Dichromate, 5%	B	0	Naphthalene	A	0
Alcohol, Butyl	A	0	Nitric Acid, 20%	B	1
Alcohol, Ethyl	A	0	Nitric Acid, 30%	B	1
Alcohol, Methyl	A	0	Nitric Acid, 70%	B	3
Ammonium Hydroxide, 28%	B	0	Phenol, 90%	A	0
Benzene	A	0	Phosphoric Acid, 85%	B	0
Carbon Tetrachloride	A	0	Silver Nitrate, Saturated	B	1
Chloroform	A	0	Sodium Hydroxide, 10%	B	0
Chromic Acid, 60%	B	2	Sodium Hydroxide, 20%	B	0
Cresol	A	1	Sodium Hydroxide, 40%	B	0
Dichlor Acetic Acid	A	2	Sodium Hydroxide, Flake	B	0
Dimethylformanide	A	1	Sodium Sulfide, Saturated	B	0
Dioxane	A	1	Sulfuric Acid, 25%	B	0
Ethyl Ether	A	0	Sulfuric Acid, 77%	B	0
Formaldehyde, 37%	A	0	Sulfuric Acid, 96%	B	0
Formic Acid, 90%	B	3	Sulfuric Acid (77%) and Nitric Acid (70%),(equal parts)	B	2
Furfural	A	2	Toluene	A	0
Gasoline	A	0	Trichloroethylene	A	0
Hydrochloric Acid, 37%	B	0	Xylene	A	0
Hydrofluoric Acid, 48%	B	1	Zinc Chloride, Saturated	B	0
Hydrogen Peroxide, 28%	B	0			

D. Hot Water Test

1. Hot water (100 degrees C plus/minus 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. After cooling and wiping dry, the finish shall show no visible effects from the hot water.

E. Finish Impact Test:

1. 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-inch in diameter) shall be dropped from a distance of 12-inch onto a flat horizontal surface.
2. There shall be no visual evidence to the naked eye of cracks or checks in the finish due to impact.

F. Paint Adhesion on Steel:

1. 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 2 millimeter 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 degrees as possible.
2. A 4B rating or better 95% or more of the grid area shall show finish intact.

G. Paint Hardness on Steel:

1. 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 degrees 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 6 millimeters of wood from a 4H pencil, being careful to leave an undisturbed smooth cylinder of lead. Holding the pencil at an angle of 90 degrees to an abrasive paper, rub the lead against the paper maintaining an exact angle of 90 degrees section until a flat smooth and circular cross section is obtained. On the other end of the pencil remove approximately 13 millimeters 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. The paint finish shall withstand the abrasion of a 4H pencil without penetrating through to the substrate and completing a continuous circuit.

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

PART 3 EXECUTION

3.01 INSTALLATION

A. Casework installation:

1. Set casework components plumb, square, and straight with no distortion and securely anchored to building structure. Shim as necessary using concealed shims.

2. Bolt continuous cabinets together with joints flush, tight and uniform, and with alignment of adjacent units within 1/16-inch tolerance.

3. Secure wall cabinets to solid supporting material, not to plaster, lath or gypsum board.

4. Abut top edge surfaces in one true plane. Provide flush joints not to exceed 1/8-inch between top units.

5. Remove and discard shipping clip and associated screws from top of shelf, (thin galvanized angle) install 4 shelf clips into integral standard and set shelf. Check for level and adjust clips as required.

B. Work surface installation:

1. Where required due to field conditions, scribe to abutting surfaces.

2. Only factory prepared field joints, located per approved shop drawings, shall be permitted. Secure joints in field, where practicable, in the same manner as in factory, with dowels, splines, adhesive or fasteners recommended by manufacturer.

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

4. Sink installation: Sinks which were not factory installed shall be set in chemical resistant sealing compound and secured and supported per manufacturer's recommendations.

5. Accessory installation: Install accessories and fittings in accordance with manufacturer's recommendations. Turn screws to seat flat; do not drive.

3.02 ADJUSTING

A. Repair or remove and replace defective work, as directed by Owner and Engineer upon completion of installation.

B. Adjust doors, drawers, hardware, fixtures and other moving or operating parts to function smoothly.

3.03 CLEANING

A. Clean shop finished casework, touch up as required.

B. Clean counter tops with diluted dishwashing liquid and water leaving tops free of all grease and streaks. Use no wax or oils.

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 when delivered.

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 label work surface with large lettering “NO STANDING”.

3.06 PROJECT CONDITIONS

A. Windows and doors shall be installed and the building is secure and weather tight prior to storage and installation of equipment.

PART 4 SPECIAL PROVISIONS

4.01 LABORATORY EQUIPMENT

4.02 LABORATORY EQUIPMENT LIST

A. Schedules – Are not guaranteed to be complete. All laboratory furniture and equipment shown on the Drawings or specified shall be furnished and installed by the Contractor whether or not listed in the furniture and equipment schedule.

Quantity	Item	Manufacturer	Model
1	Undercounter Refrigerator	Fisher Scientific	05LREET/FSA

4.03 LABORATORY FURNITURE LAYOUT AND SCHEDULE

A. The layout and model number of laboratory furniture is shown on the drawings and represent Fisher Hamilton products.

B. Elevation “A” (North Wall):

Item	Quantity	Cat. No.	Length
Peg Board	1	52L86100	30” x 30”
Base Cabinet for Sink	1	116S7320	42”
Base Cabinet	1	148S8320	48”

C. Elevation “B” (East Wall):

Item	Quantity	Cat. No.	Length
Under Counter Refrigerator Space	1		32 ½”
Base Cabinet	1	173S4320	24”

Item	Quantity	Cat. No.	Length
Base Cabinet	1	183S6320	36”
Flammable Liquid Storage Cabinet	1	148S6320	36”
Wall Cabinet	1	712S6330	36”
Wall Cabinet	1	724M2330	26”

D. Elevation “C” (South Wall):

Item	Quantity	Cat. No.	Length
Wall Cabinet	1	724M2330	26”
Wall Cabinet	4	712S6330	36”
Base Cabinet	3	173S4320	24”
Base Cabinet	1	148S6320	36”
Base Cabinet	1	148S8320	48”
Base Cabinet	1	183S6320	36”
Acid Storage Cabinet	1	148S6320	36”

E. Elevation “D” (West Wall):

Item	Quantity	Cat. No.	Length
Base Cabinet	1	183S6320	36”
Base Cabinet	1	173S4320	24”
Slab Balance Table	1	950S6850	35”

END OF SECTION

SECTION 11821
SOLIDS-CONTACT CLARIFIER MECHANISMS

PART 1 GENERAL

1.01 SCOPE

A. This Section includes the furnishing of all materials, equipment, labor, and supervision needed to install, test and adjust two solids contact softening unit equipment ready for service as specified, required, and as shown on the Drawings.

B. Each unit shall be installed in two existing softening basins. Each basin is 35-ft diameter with a 16-ft side wall and 15-ft side water depth.

C. Each clarifier mechanism shall include two rotating sludge scraper arms with blades; center assembly with drive unit and controls; an effectively separate reaction/flocculation zone and outer settling zone; effluent launders; anchor bolts or devices; and other appurtenances required by the equipment manufacturer's design for proper operation.

D. The existing bridge and walkway shall be utilized on each clarifier. Manufacturer shall perform site visit and bridge inspection prior to shop drawing submittal. Replacement of the bridge and walkway shall be included as alternative on the Bid Form.

E. It is the specific intent of this Section to limit the equipment furnished to a product of a major process equipment manufacturer that has substantial experience and expertise in similar size treatment installations and that will assume certain responsibilities with respect to the overall functional capability of the equipment provided. The existing clarifier equipment is Contraflo Type by General Filter Company. The replacement equipment shall be compatible with portions of the original equipment to remain in service.

F. Each clarifer shall be supplied by the same manufacturer. This specification and drawings are based on WesTech models SCX63 **(Addendum 2, Issued 8/22/2025)** (bottom center column feed) and SCD73 (side feed).

G. Other manufacturers must meet the requirements herein and on the drawings. Other acceptable manufacturers include ClearStream Environmental and Kusters Water. **(Addendum 2, Issued 8/22/2025)**

H. Additional product requirements are specified in Section 01350. **(Addendum 2, Issued 8/22/2025)**

1.02 SUBMITTALS

A. Submittals shall be in accordance with the requirements of Section 01300 and shall include:

1. Shop Drawings for Review:

a. The Contractor shall indicate all variances from the requirements of the Contract Documents.

b. Scaled dimensional drawings.

c. Wiring schematics with termination point identification.

d. Materials of construction.

e. Manufacturer's catalog data.

f. General Arrangement Drawings.

g. Motor information per 11050.

2. Information for the Record:

a. The Contractor shall submit a manufacturer's written one-year warranty covering workmanship and materials on the equipment when used as intended for this installation. The one-year period shall commence on the date of Substantial Completion. Under terms of this warranty, the Contractor shall furnish and install all replacement parts for any defective component at no cost to the Owner. The provisions of this warranty shall not be construed as relieving or reducing the obligations of the Contractor outlined elsewhere in these Specifications.

b. Any change to the Drawings required by the equipment provided shall be submitted for approval prior to field construction on the new basin and basin piping.

c. Manufacturer's guarantee.

3. Operation and maintenance manual.

1.03 GUARANTEE

A. The equipment supplier shall guarantee that with the proper operation and appropriate dosage rates of chemicals, the process unit provided will effectively soften the water influent to the plant.

B. As a condition of the guarantee, the equipment manufacturer shall agree to provide extended start-up services as necessary at no cost to the Owner until the unit can be demonstrated to perform as specified.

PART 2 PRODUCTS

2.01 GENERAL

A. The clarifier equipment shall be designed to soften well water treated with lime, soda ash, and ferric chloride. Average raw water characteristics expected are as follows:

Total Hardness:	650 mg/L as $CaCO_3$
Final Hardness (Design):	300 mg/L as $CaCO_3$

~~Final Clarifier Turbidity (Goal):~~	~~2 NTU or less~~ **(Addendum 2, Issued 8/22/2025)**

B. The equipment shall be designed to operate in basins having the following dimensions:

1. Tank diameter: 35-feet
2. Side water depth: 15-feet, Clarifier 1; 14.75-feet, Clarifier 2
3. Freeboard: 1-feet
4. Bottom floor slope: 12:1
5. Influent feed pipe diameter: 12-inch

C. Clarifier 1 shall be a side feed model WesTech Contraflo SCD73 or approved equal. Clarifier 2 shall be bottom feed model WesTech Contraflow SCX63 or approved equal. Specific dimensions and additional information on each clarifier is found in Part 4.

D. Clarifier manufacturer shall measure the existing dimensions and field verify locations of existing equipment and match existing equipment when possible.

2.02 EQUIPMENT DESIGN REQUIREMENTS

A. Equipment shall be designed to operate as a solids contact softener that provides chemical mixing and flocculation in the presence of previously formed precipitate, clarification by settling and automatic removal of excess sludge.

B. The unit's design shall effectively divide the basin into an inner mixing, flocculation and reaction zone; and an outer settling zone. The inner zone shall be equipped with mixing equipment designed to thoroughly mix the incoming water with chemicals and previously formed precipitate.

C. As a minimum, the equipment shall be capable of recirculating solids at a rate of six times the design flow rate. No external sludge pumping for recirculation will be allowed.

D. The reaction zone mixer shall be capable of re-suspending and continuously maintaining a minimum slurry concentration of 1% or more by weight.

E. All steel plates and structural members designated for submerged service shall have a minimum thickness of 1/4-inch. All steel used shall conform to the requirements of the Standard Specification for Structural Steel, ASTM A36. Welding shall conform to the standards of the American Welding Society.

F. The equipment design shall be such that the ASCI allowable stress is not exceeded for any structural steel member under normal operating condition nor is it exceeded by more than 60% when subject to a loading twice the running torque of the drive.

G. The structural design (stall) torque shall be at least two times the continuous normal running torque.

H. Allsubmerged or partially submerged steel components shall be Type 304 stainless steel. All motors and gear reducers shall be furnished with the manufacturer's standard finish.

I. Clarifier units shall be approved by the Ohio EPA for the use intended.

2.03 SIDE FEED CLARIFIER (CLARIFIER 1)

A. Scraper Drive: The center drive mechanism shall consist of concentric drive units and gearing for the mixing equipment and for the sludge collecting equipment. The sludge collecting equipment shall be driven by a steel turntable supported by a grease lubricated ball bearing having a minimum L10 life of 30 years when subjected to the following loadings; axial load equal to the weight of the entire rotating mechanism, radial load equal to the unbalanced separation force of the final drive gear which is a minimum of 50 percent of the tangential force at the pitch line of the final gear, and a moment load equal to an unbalanced force of 400 pounds at the end of one scraper arm. The ball races shall be hardened to Rockwell 60 C. The center mechanism shall be designed so that the bearing balls or the entire bearing can be replaced without removing the access walkway or drive platform.

B. A steel ring gear shall be provided on each turntable. Ring gear teeth of roller tooth design shall be pinned in place. Gearing having an input shaft speed of 100 rpm or less will not be required to bear an AGMA nameplate. All large slowly rotating gearing shall be designed on the basis of torque loads using conservative values for wear and beam strength.

C. Each turntable shall be equipped with a direct connected constant speed parallel helical gearmotor. Each drive unit shall be anchored to the drive platform. All drive units shall be suitable for outdoor service.

D. All gear reducers having an input speed greater than 100 rpm shall be AGMA rated with a service factor of at least 1.40.

E. The drive assembly for the rotating scraper shall be equipped with an indicating overload mechanism with two independently adjustable contacts. An "Alarm" contact shall be provided to operate an alarm device when the load reaches approximately 100 percent of the specified running torque. A "Stop" contact shall be provided to stop the motor at approximately 120 percent of the specified running torque. The "Alarm" contact setting shall not exceed the rated motor horsepower. The alarm devices operated by the contacts shall be furnished under the electrical section of the specifications.

F. The existing mixing equipment shall be reinstalled is a marine propeller driven by a directly connected gear reducer with independent propeller shaft bearings. The mixer drive shall be concentric with the scraper drive.

1. The existing variable speed mixer drive shall be utilized and consists of a parallel helical gear reducer and motor combined with an electronic variable frequency drive (VFD). The entire assembly shall flange mount to a torque tube housing the independent propeller shaft bearings.

G. Draft Tube: The mixing equipment shall be reinstalled in the rotating center draft tube extending to the bottom of the basin to ensure that precipitated solids are recirculated

from the floor of the basin. Units without this design feature will not be acceptable. Properly sized velocity control discharge ports shall be provided in the draft tube near the water surface under the cone so that flocculation occurs under the cone. The draft tube shall include an access door in line with the propeller for cleaning and maintenance of the impeller. The access doors shall be of the same material as the draft tube. **(Addendum 2, Issued 8/22/2025)**

H. Cone Section: The cone section shall effectively divide the treating basin into an inner flocculating reaction zone and an outer settling zone. The cone shall be fabricated from (3/16 inch) steel and have a slope of at least 50 degrees from the horizontal plane.

I. Sludge Rake Arms: Each unit shall be provided with two rotating scraper arms. The rotating arms shall be attached to and supported by the rotating draft tube, designed with adequate strength and rigidity to support and rotate the scraper arms under maximum load conditions with an adequate factor of safety and shall be reinforced at top and bottom for proper distribution of loads. Scraper arms shall be fabricated from steel members specially designed to keep the vertical and horizontal deflection within acceptable limits.

J. Fixed steel scraper blades shall be provided on the rotating arms to move settled sludge to the central sludge collection hopper. Blades shall be spaced on each arm so settled sludge is collected over the full area of the basin by each arm.

K. The scraper arms shall conform to the slope of the bottom of the basin.

L. Inlet Muffle Ring: A muffle ring assembly shall be provided to transfer raw water from a side inlet pipe connection to inlet ports in the rotating center draft tube. Guide rings shall be provided on the center tube to mate with the muffle ring. The muffle ring shall be a stationary fabricated steel channel arrangement supported by rods to the cone section and will have a plain end inlet pipe nozzle for connecting to the inlet pipe with a Dresser coupling.

M. Influent Pipe: A steel influent pipe shall be provided between the tank and draft tube. The pipe shall have a plain end with rigid coupling to connect to the wall pipe. Wall pipe and coupling are to be provided by the contractor. Pipe hangers shall be provided to support the influent pipe from the walkway or the tank wall as required.

N. Launders: Perimeter type launders are acceptable providing the horizontal travel of water does not exceed 10 feet at any point. All launder parts shall be free of winds, warps, local deformations, or unauthorized bends. Holes and other provisions for field connections shall be accurate and shop checked, so that proper fit will be provided when the units are assembled in the field.

O. The launder trough sections shall be fabricated by bending a single plate or by welding flat plates. If welding is used, the welds shall be continuous. All joints in the effluent launder troughs shall be watertight. Flow velocity in the launders and collection troughs shall not exceed 2 feet/second.

P. Fixed orifices shall be provided in each side of the launder troughs. They shall be designed to pass the design rate with approximately 3 inch head loss. The orifices shall

be spaced to provide uniform collection of the water from the surface area of the basin. All burrs or irregularities on cut edges shall be removed by grinding.

2.04 BOTTOM FEED CLARIFIER (CLARIFIER 2)

A. Scraper Drive: The center drive mechanism shall consist of concentric drive units and gearing for the mixing equipment and for the sludge collecting equipment. The sludge collecting equipment shall be driven by a steel turntable supported by a grease lubricated ball bearing having a minimum L10 life of 30 years when subjected to the following loadings; axial load equal to the weight of the entire rotating mechanism, radial load equal to the unbalanced separation force of the final drive gear which is a minimum of 50 percent of the tangential force at the pitch line of the final gear, and a moment load equal to an unbalanced force of 400 pounds at the end of one scraper arm. The ball races shall be hardened to Rockwell 60 C. The center mechanism shall be designed so that the bearing balls or the entire bearing can be replaced without removing the access walkway or drive platform.

B. A steel ring gear shall be provided on each turntable. Ring gear teeth of roller tooth design shall be pinned in place. Gearing having an input shaft speed of 100 rpm or less will not be required to bear an AGMA nameplate. All large slowly rotating gearing shall be designed on the basis of torque loads using conservative values for wear and beam strength.

C. Each turntable shall be equipped with a direct connected constant speed parallel helical gearmotor. Each drive unit shall be anchored to the drive platform. All drive units shall be suitable for outdoor service.

D. All gear reducers having an input speed greater than 100 rpm shall be AGMA rated with a service factor of at least 1.40.

E. The drive assembly for the rotating scraper shall be equipped with an indicating overload mechanism with two independently adjustable contacts. An "Alarm" contact shall be provided to operate an alarm device when the load reaches approximately 100 percent of the specified running torque. A "Stop" contact shall be provided to stop the motor at approximately 120 percent of the specified running torque. The "Alarm" contact setting shall not exceed the rated motor horsepower. The alarm devices operated by the contacts shall be furnished under the electrical section of the specifications.

F. The existing mixing equipment shall be reinstalled is a marine propeller driven by a directly connected gear reducer with independent propeller shaft bearings. The mixer drive shall be concentric with the scraper drive.

1. The existing variable speed mixer drive shall be utilized and consists of a parallel helical gear reducer and motor combined with an electronic variable frequency drive (VFD). The entire assembly shall flange mount to a torque tube housing the independent propeller shaft bearings.

G. Stationary Center Column/Draft Tube: A tubular steel column shall be provided to support loads of the center drive mechanism, sludge collecting equipment, access bridge, conical baffle wall, and the effluent launders. The column shall be designed to support all loads imposed thereon, including torque and eccentric loads from the rotating mechanisms. The center support shall be of proper height to permit level installation of the access walkway and to support the turntable above the water level.

1. The mixing equipment shall be reinstalled in the combination center column/draft tube extending to the bottom of the basin to ensure that precipitated solids are recirculated from the floor of the basin. Units without this design feature will not be acceptable. Properly sized velocity control discharge ports shall be provided in the draft tube near the water surface under the cone so that flocculation occurs under the cone.

H. ~~Center Cage: The center cage shall be of steel box truss construction. It shall be provided with connections for the two sludge rake arms. The cage top shall be bolted to the main gear which shall rotate the cage with the attached arms. The cage and rake arms shall be designed to withstand 150 percent of the design running torque of the drive without overstressing the members. Loading to develop the torque shall be considered as uniform loads applied to each arm individually.~~ **(Addendum 2, Issued 8/22/2025)**

I. Cone Section: The cone section shall effectively divide the treating basin into an inner flocculating reaction zone and an outer settling zone. The cone shall be fabricated from (3/16 inch) (1/4 inch) steel and have a slope of at least 50 degrees from the horizontal plane.

J. Sludge Rake Arms: Each unit shall be provided with two rotating scraper arms (of Maxi-member design). The rotating arms shall be attached to and supported by the rotating cone or central drive cage. Scraper arms shall be fabricated from steel members specially designed to keep the vertical and horizontal deflection within acceptable limits.

K. (Fixed steel scraper blades) (Blades with adjustable Type 304/304L stainless steel squeegees) shall be provided on the rotating arms to move settled sludge to the central sludge collection hopper. Blades shall be spaced on each arm so settled sludge is collected over the full area of the basin by each arm.

L. The scraper arms shall conform to the slope of the bottom of the basin.

M. Launders: Perimeter type launders are acceptable providing the horizontal travel of water does not exceed 10 feet at any point. All launder parts shall be free of winds, warps, local deformations, or unauthorized bends. Holes and other provisions for field connections shall be accurate and shop checked, so that proper fit will be provided when the units are assembled in the field.

N. The launder trough sections shall be fabricated by bending a single plate or by welding flat plates. If welding is used, the welds shall be continuous. All joints in the effluent launder troughs shall be watertight. Flow velocity in the launders and collection troughs shall not exceed 2 feet/second.

O. Fixed orifices shall be provided in each side of the launder troughs. They shall be designed to pass the design rate with approximately 3 inch head loss. The orifices shall be spaced to provide uniform collection of the water from the surface area of the basin. All burrs or irregularities on cut edges shall be removed by grinding.

2.05 ACHORS AND FASTENERS

A. Anchor Bolts: All anchor bolts shall be a minimum of 1/2 inch diameter and made of type 304 stainless steel. The equipment supplier shall furnish all anchor bolts, nuts, and washers required for the equipment.

B. Fasteners: All structural fasteners shall be a minimum of 1/2 inch diameter and made of type 304 stainless steel. The equipment supplier shall furnish all fasteners required for the assembly of the equipment.

2.06 ACCESS BRIDGES AND HANDRAILING

A. The clarifier supplier shall field measure the bridge and it's components prior to shop drawing submittals to ensure all connections to their mechanism are compatible with the existing bridge. The connections shall be designed by the clarifier manufacturer and all steel components necessary shall be supplied and installed. Manufacturer to verify the existing bridges will support the new internals.

PART 3 EXECUTION

3.01 INSTALLATION

A. Equipment shall be installed complete ready for service in accordance with the manufacturer's recommendations and Engineer's instructions.

3.02 LUBRICATION

A. Lubrication required for initial operation shall be furnished and applied in accordance with the manufacturer's recommendations.

3.03 INSPECTION, STARTUP, AND TRAINING

A. The Contractor shall furnish a qualified representative of the manufacturer to perform inspection, startup, and training services. The manufacturer's representative shall be experienced in the installation, startup, operation, and maintenance of the equipment.

B. The representative shall check the installation and supervise final adjustments and initial startup of the equipment. The representative shall certify that the installation is correct and that the equipment is operating satisfactorily. This service shall be for a minimum period of one trip and one day.

C. Within two weeks of startup, the manufacturer shall submit to the Engineer a written report (minimum 4 copies) covering the representative's inspection and startup of the

equipment. This report shall include the manufacturer's certification that the installation is correct and that the equipment is operating satisfactorily.

D. After the installation and operation of the equipment has been certified, the manufacturer's representative shall train the Owner's personnel for one, eight-hour day in the proper operation and maintenance of the equipment. The Owner may videotape the training.

E. In addition to the initial training, the manufacturer shall provide one, eight-hour day of training at the time requested by the Owner within the one-year maintenance and guarantee period. This service would be in addition to any warranty work.

PART 4 SPECIAL PROVISIONS

4.01 CLARIFIER MECHANISMS

A. Clarifier 1:

1. One mechanism shall be installed in an existing 35-feet – 0-inch diameter concrete treatment basin. Total side wall depth of the basin is 16-feet – 0-inches. The side water depth is 15-feet.

2. The unit to be installed in the new treatment basin shall have:

a.	Internal Mechanism Design (i.e., cone, draft tube, mixer):	1.0 mgd
b.	Maximum Recirculation Rate:	7,000 gpm
c.	Launder System Design:	2.0 mgd
d.	Detention time at 1 mgd:	160 minutes
e.	Scraper design torque:	7,000 ft-lbs
f.	Draft Tube Diameter:	46-inch minimum

(Addendum 3, issued 9/4/2025)

3. Headloss between the basin's water surface and water level at the outlet of the collector effluent launder shall not exceed 10-inches.

4. Flow into the new treatment basin shall be through a new 12-inch diameter pipe from the side of the center cone as shown on the Drawings. Contractor to coordinate elevation of side feed pipe.

5. Flow out of the treatment basin shall be via a collector effluent launder to a drop box as shown on the Drawings.

6. Clarifier mechanism shall be WesTech Contraflo SCD73

B. Clarifier 2:

1. One mechanism shall be installed in an existing 35-feet – 0-inch diameter concrete treatment basin. Total side wall depth of the basin is 16-feet – 0-inches. The side water depth is 14.75-feet.

2. The unit to be installed in the new treatment basin shall have:

a. Internal Mechanism Design (i.e., cone, draft tube, mixer): 1.0 mgd

b. Maximum Recirculation Rate: 7,000 gpm

c. Launder System Design: 2.0 mgd

d. Detention time at 1 mgd: 160 minutes

e. Scraper design torque: 7,000 ft-lbs

f. Draft tube diameter: 46-inch minimum
(Addendum 3, issued 9/4/2025)

3. Headloss between the basin's water surface and water level at the outlet of the collector effluent launder shall not exceed 10-inches.

4. Flow into the new treatment basin shall be through an existing 16-inch diameter pipe from the bottom of the center of the basin as shown on the Drawings.

5. Flow out of the treatment basin shall be via a collector effluent launder to a drop box as shown on the Drawings.

6. Clarifier mechanism shall be WesTech Contraflo SCX63

4.02 BRIDGE AND WALKWAY REPLACEMENTS (ALTERNATIVE BID ITEM 7A)

A. Clarifier 1 (Side feed, bridge supported) – in lieu of reusing the existing bridge and walkway; a new system shall be supplied and installed.

1. Support Bridge:

a. A steel support bridge spanning the treating basin shall be provided to support loads of the center drive mechanism, muffle ring, inlet piping, draft tube, sludge collecting equipment, access walkway, conical baffle wall, and the effluent launders. The bridge shall be designed to support all loads imposed thereon, including torque and eccentric loads from the rotating mechanisms. The bridge shall be of proper height to permit level installation of the access walkway and to support the turntable above the water level.

2. Walkway:

a. One 36 inch wide walkway with handrails shall be supported by the influent column and the tank wall at its outer ends, and shall be designed to safely withstand a live load of 50 pounds per square foot. Deflection shall not exceed L/360 when both the dead load and live load are applied. It shall consist of two trusses or beams with 1 1/4 inch x 3/16 inch aluminum grating between the beams. The walkway shall be diagonally braced against lateral movement, and provided with handrails 42 inches high, of double row 1 1/2 inch diameter horizontal aluminum pipe, and 1/4 inch x 4 inch high kickplates on both sides.

b. Stainless steel bearing plates, UHMWPE slide plates, and anchor bolts for the wall supports shall be provided by the equipment supplier and installed by the contractor. Bearing plate dimensions and anchor bolt diameter, length, quantity, and arrangement shall be per the equipment supplier. The contractor shall block out or otherwise modify the tank or support structure to accommodate walkway and supports, if required.

3. Center Drive Platform:

a. A center drive platform shall be provided which allows 24" clearance outside the center drive components. It shall consist of 1/4" aluminum checkered plate with necessary stiffeners and supports, resting on the center column, and provided with connections to the walkway. The entire platform shall be surrounded by handrails 42 inches high of double row 1 1/2 inch diameter horizontal aluminum pipe with 1/4 inch x 4 inch high kickplates.

B. Clarifier 2 (Bottom feed, column supported) – in lieu of reusing the existing bridge and walkway; a new system shall be supplied and installed.

1. Walkway:

a. One 36 inch wide walkway with handrails shall be supported by the influent column and the tank wall at its outer ends, and shall be designed to safely withstand a live load of 50 pounds per square foot. Deflection shall not exceed L/360 when both the dead load and live load are applied. It shall consist of two trusses or beams with 1 1/4 inch x 3/16 inch aluminum grating between the beams. The walkway shall be diagonally braced against lateral movement, and provided with handrails 42 inches high, of double row 1 1/2 inch diameter horizontal aluminum pipe, and 1/4 inch x 4 inch high kickplates on both sides.

b. Stainless steel bearing plates, UHMWPE slide plates, and anchor bolts for the wall supports shall be provided by the equipment supplier and installed by the contractor. Bearing plate dimensions and anchor bolt diameter, length, quantity, and arrangement shall be per the equipment supplier. The contractor shall block out or otherwise modify the tank or support structure to accommodate walkway and supports, if required.

2. Center Drive Platform:

a. A center drive platform shall be provided which allows 24" clearance outside the center drive components. It shall consist of 1/4" aluminum checkered plate with necessary stiffeners and supports, resting on the center column, and provided with connections to the walkway. The entire platform shall be surrounded by handrails 42 inches high of double row 1 1/2 inch diameter horizontal aluminum pipe with 1/4 inch x 4 inch high kickplates

END OF SECTION