Naval Facilities Engineering Command Mid-Atlantic
Norfolk, Virginia

Technical Specifications

Site 00001 – Former Drum Marshalling Area, OU 2 Groundwater

Naval Weapons Industrial Reserve Plant Bethpage, New York

Phase III - Groundwater Treatment System

ISSUED FOR BID

FEBRUARY 2026

MODIFIED JUNE 2026

Approved for public release: distribution is unlimited.

SECTION 08 71 00

DOOR HARDWARE
02/16, CHG 4: 02/22

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM E283	(2019) Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

ANSI/BHMA A156.1	(2021) Butts and Hinges
ANSI/BHMA A156.3	(2020) Exit Devices
ANSI/BHMA A156.4	(2013) Door Controls - Closers
ANSI/BHMA A156.5	(2020) Cylinder and Input Devices for Locks
ANSI/BHMA A156.6	(2021) Architectural Door Trim
ANSI/BHMA A156.7	(2016) Template Hinge Dimensions
ANSI/BHMA A156.8	(2021) Door Controls - Overhead Stops and Holders
ANSI/BHMA A156.13	(2022) Mortise Locks & Latches Series 1000
ANSI/BHMA A156.15	(2021) Release Devices Closer Holder, Electromagnetic and Electromechanical
ANSI/BHMA A156.16	(2023) Auxiliary Hardware
ANSI/BHMA A156.18	(2020) Materials and Finishes
ANSI/BHMA A156.19	(2013) Power Assist & Low Energy Power Operated Doors
ANSI/BHMA A156.21	(2019) Thresholds
ANSI/BHMA A156.22	(2021) Gasketing
ANSI/BHMA A156.23	(2010) Electromagnetic Locks
ANSI/BHMA A156.24	(2012) Delayed Egress Locking Systems

ANSI/BHMA A156.25	(2013) Electrified Locking Devices
ANSI/BHMA A156.26	(2012) Continuous Hinges
ANSI/BHMA A156.31	(2013) Electric Strikes and Frame Mounted Actuators
ANSI/BHMA A156.36	(2010) Auxiliary Locks

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2023; ERTA 4 2023) National Electrical Code
NFPA 72	(2022; ERTA 22-1) National Fire Alarm and Signaling Code
NFPA 80	(2022) Standard for Fire Doors and Other Opening Protectives
NFPA 101	(2021; TIA 21-1) Life Safety Code
NFPA 252	(2022) Standard Methods of Fire Tests of Door Assemblies

STEEL DOOR INSTITUTE (SDI/DOOR)

SDI/DOOR A250.8	(2023) Specifications for Standard Steel Doors and Frames

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

36 CFR 1191	Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines

UNDERWRITERS LABORATORIES (UL)

UL Bld Mat Dir	(updated continuously online) Building Materials Directory

1.2 SUBMITTALS

Government approval is required for submittals with a "G" classification. Submittals not having a "G" classification are for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Manufacturer's Detail Drawings; G

Verification of Existing Conditions; G

Hardware Schedule; G

Keying System; G

SD-03 Product Data

Hardware Items; G

SD-08 Manufacturer's Instructions

Installation

SD-10 Operation and Maintenance Data

Hardware Schedule Items, Data Package 1; G

SD-11 Closeout Submittals

Key Bitting

1.3 SHOP DRAWINGS

Submit manufacturer's detail drawings indicating all hardware assembly components and interface with adjacent construction. Indicate power components and wiring coordination for electrified hardware. Base shop drawings on verified field measurements and include verification of existing conditions.

1.4 PRODUCT DATA

Indicate fire-ratings at applicable components. Provide documentation of ABA/ADA accessibility compliance of applicable components, as required by 36 CFR 1191 Appendix D - Technical.

1.5 HARDWARE SCHEDULE

Provide Hardware Item List and Hardware Schedule containing the following information, and additional information as needed to identify the complete make up of each hardware set and its application to each opening:

1.5.1 Hardware Item List:

a. Hardware Type

b. Item Number

c. Quantity

d. Size(s)

e. Reference Publication / Type Number

f. Manufacturer's Name / Catalog Number

g. Key Control Symbols

h. UL Mark (If fire rated and listed)

i. BHMA Finish(es)

j. Remarks

1.5.2 Hardware Schedule

a. Hardware Set Number

b. Opening Number(s)

c. Opening Description (single/double leaf, hand, size, door/frame material)

d. Fire Rating

e. Sound Rating

f. Hardware Items

g. Quantity

h. Size

i. BHMA Finish

j. Remarks

In addition, submit hardware schedule data package 1 in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

1.6 KEY BITTING CHART REQUIREMENTS

1.6.1 Requirements

Submit key bitting charts to the Contracting Officer prior to completion of the work. Include:

a. Complete listing of all keys (e.g. AA1 and AA2).

b. Complete listing of all key cuts (AA1-123456, AA2-123458).

c. Tabulation showing which key fits which door.

d. Copy of floor plan showing doors and door numbers.

e. Listing of 20 percent more key cuts than are presently required in each master system.

1.7 QUALITY ASSURANCE

1.7.1 Hardware Manufacturers and Modifications

Provide, as far as feasible, locks, hinges, and closers of one lock, hinge, or closer manufacturer's make. Modify hardware as necessary to provide features indicated or specified.

1.7.2 Key Shop Drawings Coordination Meeting

Prior to the submission of the key shop drawing, the Contracting Officer, Contractor, Door Hardware Subcontractor, using Activity and Base Locksmith must meet to discuss and coordinate key requirements for the facility.

1.8 DELIVERY, STORAGE, AND HANDLING

Deliver hardware in original individual containers, complete with necessary appurtenances including fasteners and instructions. Mark each individual container with item number as shown on hardware schedule. Deliver permanent keys and removable cores to the Contracting Officer, either directly or by certified mail. Deliver construction master keys with the locks.

PART 2 PRODUCTS

2.1 TEMPLATE HARDWARE

Hardware applied to metal or to prefinished doors must be manufactured using a template. Provide templates to door and frame manufacturers in accordance with ANSI/BHMA A156.7 for template hinges. Coordinate hardware items to prevent interference with other hardware.

2.2 HARDWARE FOR FIRE DOORS AND EXIT DOORS

Provide all hardware necessary to meet the requirements of NFPA 72 for door alarms, NFPA 80 for fire doors, NFPA 101 for exit doors, NFPA 252 for fire tests of door assemblies, ABA/ADA accessibility requirements, and all other requirements indicated, even if such hardware is not specifically mentioned in paragraph HARDWARE SCHEDULE. Provide Underwriters Laboratories, Inc. labels for such hardware in accordance with UL Bld Mat Dir or equivalent labels in accordance with another testing laboratory approved in writing by the Contracting Officer.

2.3 HARDWARE ITEMS

Clearly and permanently mark with the manufacturer's name or trademark, hinges, pivots, locks, latches, exit devices, bolts and closers where the identifying mark is visible after the item is installed. For closers with covers, the name or trademark may be beneath the cover. Coordinate electrified door hardware components with corresponding components specified in Division 28 ELECTRONIC SECURITY SYSTEMS (ESS).

2.3.1 Hinges

Provide in accordance with ANSI/BHMA A156.1. Provide hinges that are 4-1/2 by 4-1/2 inch unless otherwise indicated. Construct loose pin hinges for interior doors and reverse-bevel exterior doors so that pins are non-removable when door is closed. Other anti-friction bearing hinges may be provided in lieu of ball bearing hinges.

2.3.2 Continuous Hinges

Where continuous hinges are required, provide in accordance with ANSI/BHMA A156.26.

2.3.3 Locks and Latches

a. At exterior locations provide locksets of full stainless steel type 302 or 304 construction including fronts, strike, escutcheons, knobs, bolts and all interior working parts. Marine Grade I, fully non-ferrous.

2.3.3.1 Mortise Locks and Latches

Provide in accordance with ANSI/BHMA A156.13, Series 1000, Operational Grade 1, Security Grade 2. Provide knobs and roses of mortise locks with screwless shanks and no exposed screws.

2.3.3.2 Auxiliary Locks

Provide in accordance with ANSI/BHMA A156.36, Grade 1.

2.3.3.3 Combination Locks

Heavy-duty, mechanical combination lockset with five push buttons, standard sized knobs, 3/4 inch deadlocking latch, 2-3/4 inch backset. Locks to operate by pressing two or more of the buttons in unison or individually in the proper sequence. Inside knob operates the latch. Provide a keyed cylinder on the interior to permit setting the combination. Provide a keyed removable core cylinder on the exterior to permit bypassing the combination.

2.3.4 Exit Devices

Provide in accordance with ANSI/BHMA A156.3, Grade 1. Provide adjustable strikes for rim type and vertical rod devices. Provide open back strikes for pairs of doors with mortise and vertical rod devices. Provide touch bars in lieu of conventional crossbars and arms.

2.3.5 Cylinders and Cores

Provide cylinders and cores for new locks, including locks provided under other sections of this specification. Provide cylinders and cores with six pin tumblers. Provide cylinders from the products of one manufacturer, and provide cores from the products of one manufacturer. Rim cylinders, mortise cylinders, and knobs of bored locksets have interchangeable cores which are removable by special control keys. Stamp each interchangeable core with a key control symbol in a concealed place on the core.

2.3.6 Push Button Mechanisms

Provide in accordance with ANSI/BHMA A156.5, Grade 1.

2.3.7 Electrified Hardware

Comply with the requirements of NFPA 70 for wiring of electrified hardware.

2.3.7.1 Electric Strikes and Frame Mounted Actuators

Provide in accordance with ANSI/BHMA A156.31, Grade 1. Provide electric strikes and actuators as required to meet operational requirements. Provide electric strikes that remain secure during power failure. Provide a separate power supply for electric strikes, other locking devices and ancillary parts. Provide strikes and actuators with a minimum opening force of 2300 pounds.

Provide facility interface devices that use direct current (dc) power to energize the solenoids. Provide electric strikes and actuators that incorporate end-of-line resistors to facilitate line supervision by the system. If not incorporated into the electric strike or local controller, provide metal oxide resistors (MOVs) to protect the controller from reverse

current surges.

2.3.7.1.1 Solenoid

Provide actuating solenoid for strikes and actuators that are rated for continuous duty, cannot dissipate more than 12 Watts and must operate on 12 or 24 Volts dc. Inrush current cannot exceed 1 ampere and the holding current cannot be greater than 500 milliamperes. Actuating solenoid must move from fully secure to fully open positions in less than 500 milliseconds.

2.3.7.1.2 Signal Switches

Provide strikes and actuators with signal switches to indicate to the system when the bolt is not engaged or the strike mechanism is unlocked. Signal switches must report a forced entry to the system.

2.3.7.1.3 Tamper Resistance

Provide strike guards that prevent tampering with the latch bolt of the locking hardware or the latch bolt keeper of the electric strike. Strike guards to bolt through the door using tamper resistant screws. Provide strike guards made of 1/8 inch thick brass and that are 11-1/14 inch high by 1-5/8 inch wide, with a minimum 5/32 inch wide offset.

2.3.7.1.4 Coordination

Provide electric strikes and actuators of a size, weight and profile compatible with each specified door frame. Field verify installation clearances prior to procurement.

2.3.7.1.5 Mounting Method

Provide electric strikes and actuators suitable for use with single and double doors, with mortise or rim type hardware specified, and for right or left hand mounting as specified. In double door installations, locate the lock in the active leaf and monitor the fixed leaf.

2.3.7.2 Electrified Mortise Locks

Provide in accordance with ANSI/BHMA A156.25, Grade 1. Provide electrified mortise locks that remain secure during power failure. Provide facility interface devices that use dc power to energize solenoids. Provide solenoids, resisters, and signal switches in accordance with paragraph ELECTRIC STRIKES AND FRAME MOUNTED ACTUATORS.

2.3.7.2.1 Power Transfer Hinges

Provide power transfer hinges with each electrified lock that route power and monitoring signals from the lockset to the door frame. Coordinate power transfer hinges with door frames.

2.3.7.3 Card Readers and Keypad Access Control Hardware

Coordinate access control hardware with corresponding devices and systems specified in Division 28 ELECTRONIC SECURITY SYSTEMS (ESS).

2.3.7.4 Release Devices

In accordance with ANSI/BHMA A156.15, Grade 1.

2.3.7.4.1 Release Devices

Provide wall mounted Electromagnetic release devices connected to fire and smoke detecting devices.

2.3.7.5 Power Assist and Low Energy Power Operated Doors

Provide in accordance with ANSI/BHMA A156.19, Grade 1.

2.3.7.6 Electromagnetic Locks

Provide in accordance with ANSI/BHMA A156.23, Grade 1. Provide electromagnetic locks that do not contain any moving parts and depend solely upon electromagnetism to secure a portal by generating at least 1200 pounds of holding force. The lock must interface with the local processors without external, internal or functional alteration of the local processor. The electromagnetic lock must incorporate an end of line resistor to facilitate line supervision by the system. Provide metal-oxide resistors (MOVs) to protect controllers from reverse current surges, if not incorporated into the electromagnetic lock or local controller.

2.3.7.6.1 Armature

Provide electromagnetic locks with internal circuitry to eliminate residual magnetism and inductive kickback. Provide atuating armature that operates on 12 or 24 Volts dc and cannot dissipate more than 12 Watts. Holding current must be less than 500 milliamperes. Actuating armature must take less than 300 milliseconds to change the status of the lock from fully secure to fully open or fully open to fully secure.

2.3.7.6.2 Tamper Resistance

Provide lock mechanism encased in hardened guard barriers to deter forced entry.

2.3.7.6.3 Mounting Method

Provide electromagnetic lock suitable for use with single and double door with mortise or rim type hardware and compatible with right or left hand mounting.

2.3.7.7 Delayed Egress Locking System

Provide in accordance with ANSI/BHMA A156.24, Grade 1.

2.3.8 Keying System

Provide a grand master keying system Provide construction interchangeable cores.

2.3.9 Lock Trim

Provide cast, forged, or heavy wrought construction and commercial plain design for lock trim.

2.3.9.1 Lever Handles

Provide lever handles where indicated in the Hardware Schedule. Provide in accordance with ANSI/BHMA A156.3 for mortise locks of lever handles for exit devices. Provide lever handle locks with a breakaway feature (such as a weakened spindle or a shear key) to prevent irreparable damage to the lock when force in excess of that specified in ANSI/BHMA A156.13 is applied to the lever handle. Provide lever handles return to within 1/2 inch of the door face.

2.3.10 Keys

Furnish one file key, one duplicate key, and one working key for each key change and for each master and grand master keying system. Furnish one additional working key for each lock of each keyed-alike group. Furnish 4 great grand master keys, 12 master keys, 15 construction master keys, and 4 control keys for removable cores. Stamp each key with appropriate key control symbol and "U.S. property - do not duplicate." Do not place room number on keys.

2.3.11 Door Bolts

Provide in accordance with ANSI/BHMA A156.16. Provide dustproof strikes for bottom bolts, except at doors having metal thresholds. Provide automatic latching flush bolts in accordance with ANSI/BHMA A156.3, Type 25.

2.3.12 Closers

Provide in accordance with ANSI/BHMA A156.4, Series C02000, Grade 1, with PT 4C. Provide with brackets, arms, mounting devices, fasteners, and other features necessary for the particular application. Size closers in accordance with manufacturer's printed recommendations, or provide multi-size closers, Sizes 1 through 6, and list sizes in the Hardware Schedule. Provide manufacturer's 10 year warranty.

2.3.12.1 Identification Marking

Engrave each closer with manufacturer's name or trademark, date of manufacture, and manufacturer's size designation in locations that will be visible after installation.

2.3.13 Overhead Holders

Provide in accordance with ANSI/BHMA A156.8.

2.3.14 Door Protection Plates

Provide in accordance with ANSI/BHMA A156.6.

2.3.14.1 Sizes of Armor Mop and Kick Plates

2 inch less than door width for single doors; 1 inch less than door width for pairs of doors. Provide 10 inch kick plates for flush doors . Provide a minimum 36 inch armor plates for flush doors and completely cover lower panels of panel doors, except UL listed armor plates on fire doors. Provide 10 inch mop plates.

2.3.15 Door Stops and Silencers

Provide in accordance with ANSI/BHMA A156.16. Silencers Type L03011. Provide three silencers for each single door, two for each pair.

2.3.16 Thresholds

Provide in accordance with ANSI/BHMA A156.21. Use J35100, with vinyl or silicone rubber insert in face of stop, for exterior doors opening out, unless specified otherwise.

2.3.17 Weatherstripping Gasketing

Provide in accordance with ANSI/BHMA A156.22. Provide the type and function designation where specified in paragraph HARDWARE SCHEDULE. Provide a set to include head and jamb seals, sweep strips, and, for pairs of doors, astragals. Air leakage of weatherstripped doors not to exceed 0.5 cubic feet per minute of air per square foot of door area when tested in accordance with ASTM E283. Provide weatherstripping with one of the following: Silicone rubber, or polyurethane inserts. Provide clear anodized aluminum.

2.3.17.1 Extruded Aluminum Retainers

Extruded aluminum retainers not less than 0.050 inch wall thickness with vinyl, neoprene, silicone rubber, or polyurethane inserts. Provide clear (natural) anodized aluminum.

2.3.17.2 Interlocking Type

Zinc or bronze not less than 0.018 inch thick.

2.3.17.3 Spring Tension Type

Spring bronze or stainless steel not less than 0.008 inch thick.

2.3.18 Lightproofing and Soundproofing Gasketing

Provide in accordance with ANSI/BHMA A156.22. Provide adjustable doorstops at heads,jambs and automatic door bottoms in accordance with the hardware set, of extruded aluminum, clear (natural) anodized, surface applied, with vinyl fin seals between plunger and housing. Provide doorstops with solid neoprene tube, silicone rubber, or closed cell sponge gasket. Provide door bottoms with adjustable operating rod and silicone rubber or closed cell sponge neoprene gasket. Provide doorstops that are mitered at corners. Provide type and function designation where specified in paragraph HARDWARE SETS.

2.3.19 Rain Drips

Provide in accordance with ANSI/BHMA A156.22. Provide extruded aluminum rain drips, not less than 0.08 inch thick, clear anodized finish. Provide the manufacturer's full range of color choices to the Contracting Officer for color selection. Provide rain drips with a 4 inch overlap on each side of each exterior door that is not protected by an awning, roof, eave or other horizontal projection. Set drips in sealant and fasten with stainless steel screws.

2.3.19.1 Door Rain Drips

Approximately 1-1/2 inch high by 5/8 inch projection. Align bottom with bottom edge of door.

2.3.19.2 Overhead Rain Drips

Approximately 1-1/2 inch high by 2-1/2 inch projection. Align bottom with door frame rabbet.

2.3.20 Auxiliary Hardware (Other than locks)

Provide in accordance with ANSI/BHMA A156.16, Grade 1.

2.3.21 Special Tools

Provide special tools, such as spanner and socket wrenches and dogging keys, as required to service and adjust hardware items.

2.4 FASTENERS

Provide fasteners of type, quality, size, and quantity appropriate to the specific application. Fastener finish to match hardware. Provide stainless steel or nonferrous metal fasteners in locations exposed to weather. Verify metals in contact with one another are compatible and will avoid galvanic corrosion when exposed to weather.

2.5 FINISHES

Provide in accordance with ANSI/BHMA A156.18. Provide hardware in BHMA 630 finish (satin stainless steel), unless specified otherwise. Provide items not manufactured in stainless steel in BHMA 626 finish (satin chromium plated) over brass or bronze, except aluminum paint finish for surface door closers, and except BHMA 652 finish (satin chromium plated) for steel hinges. Provide hinges for exterior doors in stainless steel with BHMA 630 finish or chromium plated brass or bronze with BHMA 626 finish. Furnish exit devices in BHMA 626 finish in lieu of BHMA 630 finish except where BHMA 630 is specified under paragraph HARDWARE SETS. Match exposed parts of concealed closers to lock and door trim. Match hardware finish for aluminum doors to the doors.

2.6 KEY CABINET AND CONTROL SYSTEM

Provide in accordance with ANSI/BHMA A156.5, Type required to yield a capacity (number of hooks) 50 percent greater than the number of key changes used for door locks.

PART 3 EXECUTION

3.1 INSTALLATION

Provide hardware in accordance with manufacturers' printed installation instructions. Fasten hardware to wood surfaces with full-threaded wood screws or sheet metal screws. Provide machine screws set in expansion shields for fastening hardware to solid concrete and masonry surfaces. Provide toggle bolts where required for fastening to hollow core construction. Provide through bolts where necessary for satisfactory installation.

3.1.1 Weatherstripping Installation

Provide full contact, weathertight seals that allow operation of doors without binding the weatherstripping.

3.1.1.1 Stop Applied Weatherstripping

Fasten in place with color matched sheet metal screws not more than 9 inch on center after doors and frames have been finish painted.

3.1.1.2 Interlocking Type Weatherstripping

Provide interlocking, self adjusting type on heads and jambs and flexible hook type at sills. Nail weatherstripping to door 1 inch on center and to heads and jambs at 4 inch on center.

3.1.1.3 Spring Tension Type Weatherstripping

Provide spring tension type on heads and jambs. Provide bronze nails with bronze. Provide stainless steel nails with stainless steel. Space nails not more than 1-1/2 inch on center.

3.1.2 Lightproofing and Soundproofing Installation

Provide as specified for stop applied weatherstripping.

3.1.3 Threshold Installation

Extend thresholds the full width of the opening and notch end for jamb stops. Set thresholds in a full bed of sealant and anchor to floor with cadmium-plated, countersunk, steel screws in expansion sleeves. For aluminum thresholds placed on top of concrete surfaces, coat the underside surfaces that are in contact with the concrete with fluid applied waterproofing as a separation measure prior to placement.

3.2 FIRE DOORS AND EXIT DOORS

Provide hardware in accordance with NFPA 72 for door alarms, NFPA 80 for fire doors, NFPA 101 for exit doors, and NFPA 252 for fire tests of door assemblies.

3.3 HARDWARE LOCATIONS

Provide in accordance with SDI/DOOR A250.8, unless indicated or specified otherwise.

a. Kick and Armor Plates: Push side of single-acting doors. Both sides of double-acting doors.

b. Mop Plates: Bottom flush with bottom of door.

3.4 KEY CABINET AND CONTROL SYSTEM

Locate where directed. Tag one set of file keys and one set of duplicate keys. Place other keys in appropriately marked envelopes, or tag each key. Provide complete instructions for setup and use of key control system. On tags and envelopes, indicate door and room numbers or master or grand master key.

3.5 FIELD QUALITY CONTROL

After installation, protect hardware from paint, stains, blemishes, and other damage until acceptance of work. Submit notice of testing 15 days before scheduled, so that testing can be witnessed by the Contracting Officer. Adjust hinges, locks, latches, bolts, holders, closers, and other items to operate properly. Demonstrate that permanent keys operate respective locks, and give keys to the Contracting Officer. Correct, repair, and finish, errors in cutting and fitting and damage to adjoining work.

3.6 HARDWARE SETS

The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality

A. Basis of Design Manufacturer's Abbreviations used in schedule:

1. Cores - BE - BEST
2. BA - BEA Inc
3. DO - Dorma
4. HA - Hager
5. KA - KABA-MAS
6. ME - Medeco
7. PE - Pemko
8. RO - Rockwood
9. SU - Securitron
10. VD - Von Duprin

Hardware Sets

Lockset Set No.1

Quantity	Product	Description	Finish
2 EA	Continuous Hinge	Continuous 6036-T6 Aluminum geared hinge. Extra Heavy Duty. Concealed leaf.	
2 EA	Closer	Heavy duty closer for push-side mounting with cast iron cylinder, heavy duty hold open arm, full cover and plates as required.	689
2 EA	Overhead Stop	Concealed, shock absorbing	630
2 EA	Rim Exit Device	Outside trim, grade 1	626
2 EA	Cylinder		
1 EA	Removeable mullion	for rim style exit device	
2 EA	Seals		
2 EA	Kick Plate	Push side	630
2 EA	Sweeps		
1 EA	Drip Guard	1 1/2" X 2 1/2" projection. Full width	627
1 EA	Threshold	6" wide aluminum, accessible	Mill finish

Lockset Set No.2

Quantity	Product	Description	Finish
2 EA	Continuous Hinge	Continuous 6036-T6 Aluminum geared hinge. Extra Heavy Duty. Concealed leaf.	
1 EA	Closer	Heavy duty closer for push-side mounting with cast iron cylinder, heavy duty hold open arm, full cover and plates as required.	689
2 EA	Overhead Stop	Concealed, shock absorbing, fixed leaf to include hold open	630
2 EA	Flush Bolt	Heavy Duty	
1 EA	Mechanical Lockset	Mortise Storeroom set	626
1EA	Cylinder		
2 EA	Seals		
2 EA	Kick Plate	Push side	630
2 EA	Sweeps		
1 EA	Drip Guard	1 1/2" X 2 1/2" projection. Full width	627
1 EA	Astragal	Aluminum gasketed	Mill finish
1 EA	Threshold	6" wide aluminum	Mill finish

Lockset Set No.3

Quantity	Product	Description	Finish
1 EA	Continuous Hinge	Continuous 6036-T6 Aluminum geared hinge. Extra Heavy Duty. Concealed leaf.	

1 EA	Closer	Heavy duty closer for push-side mounting with cast iron cylinder, heavy duty hold open arm, full cover and plates as required.	689
1 EA	Overhead Stop	Concealed, shock absorbing	630
1 EA	Rim Exit Device	Outside trim, grade 1	626
1 EA	Cylinder		
2 EA	Seals		
2 EA	Kick Plate	Push side	630
2 EA	Sweeps		
1 EA	Drip Guard	1 1/2" X 2 1/2" projection. Full width	627
1 EA	Threshold	6" wide aluminum, accessible	Mill finish

Lockset Set No.4

Quantity	Product	Description	Finish
2 EA	Continuous Hinge	Continuous 6036-T6 Aluminum geared hinge. Extra Heavy Duty. Concealed leaf.	
2 EA	Overhead Stop	Concealed, shock absorbing, include hold open	630
2 EA	Flush Bolt	Heavy Duty	
1 EA	Mechanical Lockset	Mortise Storeroom set	626
1EA	Cylinder		
2 EA	Kick Plate	Push side	630
1 EA	Astragal	steel	Match door

Lockset Set No.5

Quantity	Product	Description	Finish
1 EA	Continuous Hinge	Continuous 6036-T6 Aluminum geared hinge. Extra Heavy Duty. Concealed leaf.	
1 EA	Closer	Heavy duty closer for push-side mounting with cast iron cylinder, heavy duty hold open arm, full cover and plates as required.	689
1 EA	Overhead Stop	Concealed, shock absorbing, include hold open	630
1 EA	Mechanical Lockset	Mortise Storeroom set	626
1EA	Cylinder		
1 EA	Kick Plate	Push side	630
1 EA	Mop plate	Pull side	630

Lockset Set No.6

Quantity	Product	Description	Finish

1 EA	Continuous Hinge		
1 EA	Closer	Heavy duty closer for push-side mounting with cast iron cylinder, heavy duty hold open arm, full cover and plates as required.	689
1 EA	Overhead Stop	Concealed, shock absorbing, include hold open	630
1 EA	Mechanical Lockset	Mortise Classroom set	626
1EA	Cylinder		
1 EA	Kick Plate	Push side	630
1 EA	Mop plate	Pull side	630

Lockset Set No.7

Quantity	Product	Description	Finish
1 EA	Continuous Hinge	Continuous 6036-T6 Aluminum geared hinge. Extra Heavy Duty. Concealed leaf.	
1 EA	Closer	Heavy duty closer for push-side mounting with cast iron cylinder, heavy duty hold open arm, full cover and plates as required.	689
1 EA	Overhead Stop	Concealed, shock absorbing, include hold open	630
1 EA	Mechanical Lockset	Mortise Privacy set	626
1EA	Cylinder		
1 EA	Kick Plate	Push side	630
1 EA	Mop plate	Pull side	630

END OF SECTION

SECTION 43 21 13

RECOVERY WELL PUMPS

PART 1. GENERAL

1.1 SCOPE OF WORK

Furnish all labor, materials, equipment and incidentals required to install four Well Pumps as detailed in this section. Installation shall be complete and include, but not be limited to: pump controls, level switches, connectors, clamps, couplings, discharge hose, support cables, electrical cables, and appurtenances as shown on the Technical Drawings and referenced in the Technical Specifications.

1.2 RELATED SECTIONS

A. Section 01 01 00 Scope of Work

B. Section 01 33 00 Submittal Procedures

C. Section 01 78 00 Closeout Submittals

D. Section 01 78 23 Operation and Maintenance (O&M) Data

E. Section 41 10 02 Process Piping and Appurtenances

F. Section 26 00 00 Basic Electrical Materials and Methods

1.3 REFERENCES

A. The publications listed below form a part of this specification to the extent referenced.

HYDRAULIC INSTITUTE STANDARDS FOR CENTRIFUGAL, ROTARY, AND RECIPROCATING PUMPS (HI)

ANSI/HI 1.1-1.6 Centrifugal Pumps

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 240 316/316L Stainless Steel

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

(ISO)

ISO 9001 Quality Systems

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA MG1 Motors and Generators.

1.4 SUBMITTALS

A. The following shall be submitted in accordance with Section 01 33 00 Submittals:

1. Shop Drawings: Submit shop drawings for pumps including, dimensions, materials of construction, bills of materials, motor data, certified performance curves, parts lists, pumps mounting arrangement, and tie in connections.

2. Product Data: Submit product data describing equipment features, materials of fabrication, general dimensions, pump curves, and general operating parameters.

3. Factory Tests: Test reports in booklet form showing the results of factory tests performed.

4. Field Tests and Inspections: Test reports in booklet form showing results of the field tests performed to adjust each component following the installation of the system and the field tests performed to prove compliance with the specified performance criteria. Each test report shall indicate the final position of controls.

5. Submit the operation and maintenance (O&M) manual and required number of copies in accordance with Section 01 78 23.

1.5 DELIVERY AND STORAGE, AND HANDLING

A. All equipment shall be protected against damage during shipment.

B. All equipment shall be preassembled to the largest extent possible, compatible with transportation limitations and equipment protection considerations.

C. All equipment shall be properly protected so that no damage or deterioration will occur during a prolonged delay from the time of shipment until installation is completed and the units and equipment are ready for operation. Exposed iron or steel surfaces shall be properly protected to prevent rust and corrosion.

1.6 QUALIFICATIONS AND WARRANTY

A. Manufacturer Qualification

1. The Pumps shall be supplied by a reputable Manufacturer having at least ten
(10) years' experience in the design and fabrication of pumps for the treatment of groundwater and water.

B. Warranty

1. Manufacturer shall provide warranty in accordance with Section 01 78 00 of the specifications.

1.7 TOOLS AND SPARE PARTS

A. All tools required for normal operation and maintenance of each piece of equipment shall be furnished. Special tools recommended by the Manufacturer shall also be furnished. The tools shall be stored in a dedicated cabinet or tool box and labeled "Groundwater Extraction Well Pumps". An inventory log shall be maintained and stored with the tools. All items shall be suitably packed and protected for long periods of storage.

1.8 EQUAL PRODUCTS

A. The Contract Drawings and Technical Specifications are based on using Grundfos pumps. Should the Contractor propose to furnish equal equipment of a different configuration, the Contractor shall be responsible for all revisions necessary to incorporate the proposed pumps into the design, and submit the necessary revised Contract Drawings and Technical Specifications for review and approval by the COR.

PART 2. PRODUCTS

2.1 PUMPS

A. Provide the pumps shown below in the pump list. The proposed equipment is subject to verification of capacity per the field pump test as performed by the Contractor.

1. Recovery pumps and motors shall be preassembled as a single unit, submersible, shrouded, centrifugal, and of "Grundfos" make, or approved equivalent.

2. Built-in check valve with spring.

3. Check Valve Housing, Check Valve, Diffuser Chamber, Impeller, Suction Interconnector, Inlet Screen, Pump Shaft, Straps, Cable Guard, Priming Inducer: 304 SS

4. Check valve seat: PTFE

5. Impeller Seal Ring: PTFE

6. Coupling: 316 SS

7. Intermediate Bearings: PTFE

8. Pumps shall fit inside the well casing diameter as specified in the Contract Drawings (12" nominal).

9. Motors for P-8 shall have a 1.60 service factor and Motor for P-9 and P-10A shall have 1.15 service factor.

10. Motor for P-8 shall be suitable for 460V, 3 phase, 60Hz whereas motors for P-9 and P-10A shall be suitable for 460V, 3 phase, 60Hz power source.

11. Motors shall be furnished with a lifting eye and a power cable from the pump motor to the terminal box.

PUMPING SYSTEM LIST:

Pump ID	Manufacturer / Model	Connection Size	Operating Flow (gpm)	TDH (ft)	Motor (HP)
P-8 (for RW-8)	GRUNDFOS (MODEL 625S300-2AA)	6 inch	Design=450 Maximum=600	107 111	30
P-9 (for RW-9)	GRUNDFOS (MODEL 625S300-2AA)	6 inch	Design=450 Maximum=600	115 126	30
P-10A (for RW-10A)	GRUNDFOS (MODEL 625S400-2)	6 inch	Design=600 Maximum=700	145 159	40

2.2 MATERIALS FABRICATION

A. Pumps shall be fabricated from Stainless Steel material and chemically compatible with the groundwater contaminants. Impeller Seal Ring, Intermediate Bearings and Valve seat shall be PTFE (Teflon®).

B. The pump and applicable connections shall be rated for a minimum of 175 psi.

C. Each pump shall be supported by one 316 stainless steel support cable. Support cable shall be sized and connected in accordance with the pump manufacturer’s recommendations.

PART 3. EXECUTION

3.1 EXAMINATON

A. After becoming familiar with all details of the work, verify dimensions in the field, and advise the COR of any discrepancy before performing the work.

3.2 INSTALLATION

A. Installation of the pumps and all appurtenances shall be in accordance with the manufacturer’s recommendations.

B. The pump shall be inspected visually prior to installation.

C. Equipment installation shall be in accordance with the manufacturer's written instructions and in the presence of the Manufacturer’s representative.

D. Pumps discharge pipe, lifting cable and cables will extend thru a well cap located inside a valve pit. A level transducer will also be installed at each location and related control wire will be extended thru the well cap.

3.3 FIELD TESTS AND INSPECTIONS

A. Field tests shall not be conducted by the Contractor until such time that the entire installation is complete and ready for testing.

B. As part of the installation inspection, the Contractor shall operate the pumps and check for excessive noise, vibration or heating, and for discharge adequacy. The pumps shall be tested over the full range of flow conditions.

C. The pump and suction/discharge piping shall be inspected by the Contractor in the presence of the COR for leakage.

D. If the installation inspection reveals deficiencies, corrective measures shall be taken by the Contractor until the pumps satisfy the specified requirements.

3.4 MANUFACTURERS SERVICES

A. Installation, Adjustment, and Testing: Provide a manufacturer's representative who is experienced in the installation, adjustment, and operation of the equipment to supervise the installation, adjustment and testing of the equipment for a period of 5 working days (8 hours a day).

B. Conduct a video recorded training course for designated operating, maintenance and support staff members. The training period shall be a total of 4 hours of normal working time. Field training shall cover each item contained in the operating and maintenance manual.

END OF SECTION

SECTION 50 03 01

FLOATING DECANTER

PART 1. GENERAL

1.1 SCOPE OF WORK

Furnish all labor, equipment, materials, and incidentals to install one floating decanter system (FD-xx) for decanting the Backwash Waste Storage Tank T-xx contents. The system supplier shall provide materials and equipment which are as specified below, as shown on the design drawings, and are suitable for the service intended.

The unit shall be furnished and installed with equipment for mooring the decanter inside the tank from three cables and compression springs attached near the top lip of the open tank.

The decanter system shall be designed to cause minimal disturbance of the sludge blanket. Decanter shall discharge by gravity through a 4" flexible hose with flange connection, cam and groove fittings. Hose shall connect to the tank nozzle fitting inside the tank.

All equipment shall be Type 316L Stainless Steel.

1.2 RELATED SECTIONS

Section 01 01 00 Scope of Work

Section 01 33 00 Submittals Procedures

Section 01 78 00 Closeout Submittals

Section 01 78 23 Operation and Maintenance (O&M) Data

1.3 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

<u>AMERICAN IRON & STEEL INSTITUTE (AISI)</u>

AISI 1045 Steel

<u>AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)</u>

ASTM A 240 316/316L Stainless Steel

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 9001 Quality Systems

1.4 SUBMITTALS

The following shall be submitted in accordance with Section 01 33 00 Submittals:

Pre-construction submittal:

1. Product Data: Manufacturer's descriptive data and technical literature and engineering data sheets for the equipment. Product data shall include selected model number, rated flow capacity, dimensions, weights, accessories, and warranty coverage.

2. Shop Drawings, including:

   a. General arrangement drawings and manufacturer's data covering installation instructions, dimensions, weight, detailed specifications, materials of construction, parts, devices, and other information required to verifycompliance with these specifications.

   b. Proposed layout and anchorage requirements.

   c. Clearances for maintenance and operation.

3. Manufacturer's certificates, including the name and address of the production facility. Provide manufacturer’s certification in writing, that the equipment and materials of construction will meet or exceed minimum requirements as specified.

Operation and Maintenance Manual

1. Submit the operation and maintenance (O&M) manual and required number of copies in accordance with Section 01 78 23.

1.5 DELIVERY AND STORAGE

Protect all equipment, delivered, and designated for storage, from the weather, humidity and temperature variations, dirt and dust, and other contaminants.

1.6 EQUAL PRODUCTS

Should the Contractor propose to furnish an equivalent system of a different configuration, the Contractor shall be responsible for all revisions necessary to incorporate the proposed floating decanter into the design and submit the necessary revised Contract Drawings and Technical Specifications for review and approval.

1.7 QUALIFICATION AND WARRANTY

Manufacturer Qualification:

1. The decanter shall be supplied by a reputable Manufacturer having at least ten (10) years' experience.

Warranty

2. Manufacturer shall provide warranty in accordance with Section 01 78 00 of the specifications.

PART 2. PRODUCTS

2.1 MATERIALS AND EQUIPMENT

The floating decanter shall be compatible with installation on a rail system as identified in Drawing M-505."

The floating decanter and components shall be assembled, piped, and tested in the shop prior to shipment. Field assembly shall be minimized.

The manufacturer shall furnish all tools, materials, labor, and appurtenances necessary for the complete fabrication, testing and shipment of the floating decanter system.

The decanter and connecting hose shall be new and unused.

2.2 SYSTEM REQUIREMENTS

Service: The floating decanter shall be designed to remove decant water inside the Backwash Waste Storage Tank (T-xx) with the rise and fall of the water surface. The decant will discharge by gravity to sanitary sewer manhole. On and Off control of decant water will be provided by BFV-xx.

Maximum Flow rate: 220 gpm

2.3 EQUIPMENT DESCRIPTION

The floating decanter shall be constructed of 316 stainless steel. The decanter shall have a ring design that is filled with suitable material to allow the decanter to float on the water surface and support its own weight.

2.4 EQUIPMENT APPURTENANCES

Lifting Lugs: Individual equipment and or each field assembled part over 100 pounds in weight shall be provided with lifting lugs for ease of handling.

Equipment Identification Plate: A stainless steel identification plate shall be securely mounted on the floating decanter in a location that visible is at eye level. The plate shall bear the Manufacturer’s name, address, phone number, equipment model number (according to P&IDs), and serial number.

2.5 SPARE PARTS & TOOLS

Contractor shall provide one set of recommended spare parts for floating decanter and related accessories.

Contractor shall supply one set of any special tools required for assembly, disassembly, or for adjustment of the equipment supplied.

PART 3. EXECUTION

3.1 INSTALLATION

Verify all dimensions in the field and advise COR of any discrepancy before performing the work. All products shall be carefully inspected for defects in workmanship and material.

Prior to installation, the Contractor shall submit a lifting and installation plan for this decanter.

Installation shall be in accordance with manufacturer's printed instructions and in the presence of the manufacturer’s field representative.

The Contractor or installer shall provide certification from the manufacturer that the equipment has been properly installed.

3.2 FIELD TESTS

Functional Testing: Prior to startup, all equipment components shall be inspected by the Contractor for proper setting, connections, and satisfactory installation. Testing shall be coordinated with that of the Backwash Waste Storage Tank (T-xx).

Test Report: Contractor shall provide a test report that shall include as a minimum a description of the test, methodology used, data and time when test was performed and the results of the testing. All testing results shall be reported, including test results that failed to meet the requirements. Should test runs fail to meet the requirements, an explanation shall be provided with the rationale for failure of the test.

3.3 REMEDY

If the Installation, Inspection or Field Tests reveals deficiencies, corrective measures shall be taken until the System satisfies all of the specified requirements. Remedies shall be completed at no additional cost to the Owner.

3.4 MANUFACTURER SERVICES

Contractor shall provide equipment manufacturer's field representative during the installation, adjustment, and operation of the equipment specified. The representative shall supervise the installing, adjusting, and testing of equipment. The representative shall also conduct a field training course for the designated operating and maintenance staff members. Training shall be coordinated with the onsite Owner's Representative. The field instructions shall cover the items contained in the Operating and Maintenance Instructions, as well as demonstrations of routine maintenance operations. Prepare a video of the field training course for a permanent record for future training use.

END OF SECTION