

INVITATION FOR BID #2806 SOLICITED BY NEW YORK STATE OFFICE OF GENERAL SERVICES FOR

PREVENTATIVE MAINTENANCE OF THE BAR, TRAVELING WATER AND WEDGE WIRE WATER SCREEN SYSTEMS AT THE

NYS OGS RIVERFRONT PUMPING STATION IN ALBANY, NY

ISSUE DATE: March 15, 2024

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1. Introduction

1.1 Overview

The New York State Office of General Services (OGS), Division of Real Estate, Utilities Management, operates the Riverfront Pumping Station and associated Cooling Water Intake System (CWIS) located at 1 Quay Street on the west shore of the Hudson River in Albany, NY. The purpose of this solicitation is to award a contract(s) to perform preventative checks and required annual maintenance for a period of five years to ensure safe and effective operations of the Riverfront Pumping Station Bar, Traveling Water and Wedge Wire Water Screen Systems. A large portion of the services herein may be subject to subcontracting needs.

1.2 Designated Contacts

In compliance with the Procurement Lobbying Law, Rebecca Beattie, Contract Management Specialist I, NYS Office of General Services, Division of Financial Administration has been designated as the Primary Contact for this procurement and may be reached by email or phone for all inquiries regarding this solicitation.

Rebecca Beattie, Contract Management Specialist I NYS Office of General Services Financial Administration – Agency Procurement Office 32nd Floor, Corning Tower Bldg., Empire State Plaza Albany, New York 12242

Phone: 1-518-474-0345 Email: Rebecca.Beattie@ogs.nv.gov

In the event the designated contact is not available, the alternate designated contacts are:

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For inquires related specifically to Minority and Women-Owned Business Enterprises (MWBE) provisions of this procurement solicitation, contact:

Joshua Quiles, Compliance Specialist II NYS Office of General Services Office of Business Diversity / MWBE/SDVOB 29th Floor, Corning Tower Bldg., Empire State Plaza

Albany, NY 12242

Phone: 1-518-408-0432

Email: OGS.sm.MWBE@ogs.ny.gov

For inquires related specifically to Service-Disabled Veteran-Owned Businesses (SDVOB) provisions of this procurement solicitation, contact:

NYS Office of General Services Division of Service-Disabled Veterans' Business Development 32nd Floor, Corning Tower Bldg., Empire State Plaza Albany, New York 12242

Phone: 1-518-474-2015

Email: veteransdevelopment@ogs.ny.gov

For inquiries related specifically to insurance requirements of this solicitation, contact:

NYS Office of General Services Bureau of Risk and Insurance Management 32nd Floor, Corning Tower Bldg., Empire State Plaza Albany, New York 12242 Phone: 1-518-473-0310

Email: oqs.sm.insrev@oqs.ny.gov

1.3 Key Events

The Table below outlines the schedule for important action dates.

OGS Issues Invitation for Bid (IFB) #2806	March 15, 2024
Mandatory Site Visit	April 2, 2024, at 1:00 PM EST
Deadline for Submission of Bidder Questions	April 12, 2024
OGS Issues Responses to Written Questions (estimated)	April 26, 2024
Bid Due Date	May 10, 2024, at 2:00 pm EST
Contract Start Date	Upon OSC Approval

1.4 Minimum Bidder Qualifications

Bidders are advised that the State's intent is to ensure that only responsive, responsible, qualified, and reliable Contractors enter into a contract to perform the work as defined in this document.

The following minimum requirement **must** be met by each Bidder:

A. Contractor must have been in business of maintaining, installing and/or inspecting bar, traveling water and wedge wire water screen systems, for at least two years.

This minimum qualification applies to the bidding Prime Contractor *if* that bidding Contractor is directly performing the maintenance as described in Section 2 - Scope of Work. If the work is being subcontracted, the Prime Contractor must gather from their proposed subcontractor(s) the required proof that the subcontractor(s) has the ability to perform the work. This proof must be submitted with the bid. Refer to Section 3 – Bid Submission.

The State of New York reserves the right to request any additional information pertaining to the Contractor's ability, qualifications, and procedures used to accomplish all work under this contract, as it deems necessary to ensure safe and satisfactory work.

1.5 Mandatory Site Visit

Bidders intending to submit a bid will be required to attend a site visit, which will include an informational meeting and a tour of the Riverfront Pumping Station located at 1 Quay Street, Albany, NY on the date and time indicated in Section 1.3 - Key Events. This is the only date and time available for inspection. Alternate dates for additional site inspections will not be available. Attendees will be required to sign in and provide basic company and contact information. This information will be used to verify attendance and to communicate any changes to the solicitation (addenda). Therefore, it is imperative that the provided information be legible and accurate. Failure to attend the mandatory site visit will result in rejection of the bid.

The Facilitator of the event will publicly announce the official start time of the site visit, which announcement shall be made no sooner than the time stated in Section 1.3 - Key Events. Prospective Bidders arriving after the official start time of the site visit will be precluded from attending the site visit, and therefore ineligible to submit a responsive bid.

Due to security restrictions, all Bidders are strongly encouraged to pre-register with Rebecca Beattie at Rebecca.Beattie@ogs.ny.gov at least at least 24 hours in advance of the site visit date and time as listed above in Section 1.3 - Key Events. It is recommended that attendees arrive at the building at least 30 minutes prior to scheduled time with photo identification.

In accordance with State Finance Law §139-j(3)(a)(3), this mandatory site visit is covered by the permissible subject matter authorization. A vendor is authorized to speak with representatives other than Designated Contact(s) for the sole purpose of the site visit (to arrange attendance, during the conduct of the visit and to pose questions regarding the site).

The site visit will provide an opportunity for Bidders to see first-hand the existing equipment, the tasks to be performed and the special needs of the facility. Questions during the site visit will be permitted. It is suggested that the Bidder note the question and ask at the end of the tour.

Verbal answers are <u>not</u> official answers. All questions asked during and after the tour must be submitted via email to the designated contact for this solicitation no later than the date and time indicated in Section 1.3 - Key Events. Official answers to all questions will be distributed in the form of an addendum posted to the OGS Bid Calendar. All attendees will be provided a link via email to obtain any and all addenda related to this solicitation. Only answers provided by addendum are considered official.

NOTE: If there are any questions Bidders would like addressed at the site visit, Bidders should submit them in writing as instructed in Section 3.1 – IFB Questions and Clarifications, to the designated contact prior to the date of the site visit. Questions during the site visit will be permitted, however, only questions submitted in writing and answered via addendum will be considered official.

1.6 Glossary of Terms

"Commissioner" shall mean the Commissioner of the New York State Office of General Services or duly authorized representative.

"Contractor" shall mean a successful bidder awarded a contract pursuant to this Solicitation.

"Invitation for Bid", "IFB", or "Solicitation" shall mean this document.

"Issuing Office" shall mean the New York State Office of General Services, Division of Financial Administration.

"Bidder" or "Offeror" shall mean any person, partnership, firm, corporation, or other authorized entity submitting a bid to the State pursuant to this Solicitation.

The "**State**" shall mean The People of the State of New York, which shall also mean the New York State Office of General Services.

"Facility Manager and/or their designee" is the OGS employee responsible for the day-to-day operation and safety of the buildings and grounds on which the work is being performed.

"OSC" shall mean the Office of the New York State Comptroller.

"OGS" shall mean the New York State Office of General Services.

"Subcontractor" shall mean an approved third-party Contractor hired by the Contractor to perform services pursuant to this Solicitation.

2. Scope of Work

2.1 General Scope

The OGS Cooling Water Intake System (CWIS) currently operates under State Pollutant Discharge Elimination System (SPDES) permit number NY 0104060, with a permit expiration date of July 31, 2024. The Biological Requirements section of the permit calls for OGS to submit a series of reports demonstrating how they will meet the requirements of 6NYCRR §704.5 and Clean Water Act §316(b).

The Contractor shall provide holistic, interval preventative maintenance to the equipment listed in Section 2.2 - Description of Major Components.

2.2 Description of Major Components

2.2.1 Bar and Traveling Water Screen Systems

- A. The Bar and Traveling Water Screen Systems were provided and installed by Atlas-SSI Inc.
 Louisiana.
- B. The OGS Bar and Traveling Water Screen Building warehouses the bar and fine mesh screens. These are two post systems measuring four feet wide by 39 feet long and hang vertically into both bays, filtering large debris and aquatic life to safety. Each traveling screen will consist of a continuous series of screen baskets fitted with a wire mesh screen deck. The ends of the baskets will be mounted on two endless strands of steel roller chain operating overhead sprockets and boot section guides.
- C. The mechanical Bar Screen model number BS-0443-1, serial number SO-3804 C/D, is an automated screen system that is installed as the first line of defense to prevent harm by diverting aquatic life back into the river. It is the preliminary level of filtration so the water may influent continually. The bar screen also protects other OGS assets, such as, the Empire State Plaza's Central Air-Conditioning Plant (CACP) from possible Hudson River debris damage.
- D. The mechanical Traveling Screen model number 2PV-0439-FX-NFS, serial number SO-3804 A/B, is an automated, finer mesh, secondary line of defense filtration screen that has intermittent movement to catch and remove smaller debris.

2.2.2 Shoreline Wedge Wire Water Screen System (WWWS) and Structure Rig

- A. The Wedge Wire Screen System was designed and provided by ISI Inc. California.
- B. This link provides specifications for the Wedge Wire Water Screen System installation: https://isi-screens.com/project/nys-office-of-general-services/
- C. The Wedge Wire Water Screen System consists of the entire screening structure and shoreline structure rig including but not limited to the catwalk, motors, electrical components, and all appurtenances for normal operation.
- D. The Wedge Wire Water Screen System, model number ISI T72-84EA-R, is a custom, industrial designed system used in demanding water body environments and is specifically for fish protection. This complicated system is required by several federal and state environmental mandates. The benefits of this durable and efficient screen system protect aquatic species and meets the goals of stringent environmental regulatory agencies, for example, the Clean Water Act §316(b). The Wedge Wire Water Screen System is approximately 50 feet in length and runs along the Hudson River shoreline. There are four

stainless-steel sections each with 0.75mm slotted openings and perforated cylinders that are six feet in diameter and seven feet long. They are automated, self-cleaning, rotate and ride on a steel track guides and hoisting systems to lift out of the Hudson River when they are not in use, specifically the winter months.

2.3 Preventative Maintenance / Schedule of Services

Preventative maintenance checks for the Bar, Traveling Water and Wedge Wire Water Screen Systems shall occur three times per contract year. The Contractor shall provide one visit in the Spring and two in the Fall, with full underwater diving inspections in Years 1 and 5. Refer to Section 2.3.6 – Annual Columbus Day Shutdown.

Underwater diving inspections will take place in the traveling screen forebays and shall extend via the tunnels westside into the pump station forebays or eastside toward the Hudson River to inspect the underwater concrete manifold caverns and all the appurtenant accessories that operate the Bar, Traveling Water and Wedge Wire Water Screen Systems.

2.3.1 Bar Screen System

Annual maintenance is required for the entirety of the bar screen system. All required services to be performed will include but are not limited to the following:

- A. Inspection & Maintenance
- B. Recommended Lubrication Schedule
- C. Coating Inspection and Repair

Refer to Attachment 2 – Operations and Maintenance Manual: Bar Screen for detailed requirements.

2.3.2 Traveling Water Screen System

Annual maintenance is required for the entirety of the traveling water screen system. All required services to be performed will include but are not limited to the following:

- A. Inspection & Maintenance
- B. Recommended Lubrication Schedule
- C. Coating Inspection and Repair

Refer to Attachment 3 – Operations and Maintenance Manual: Traveling Water Screen for detailed requirements.

2.3.3 Shoreline Wedge Wire Water Screen System

Annual maintenance is required for the entirety of the wedge wire water screen system. All required services to be performed will include but are not limited to the following:

- A. Inspection & Maintenance
- B. Recommended Lubrication Schedule
- C. Coating Inspection and Repair

Refer to Attachment 4 – OGS Technical Manual: Wedge Wire Water Screen, for detailed requirements.

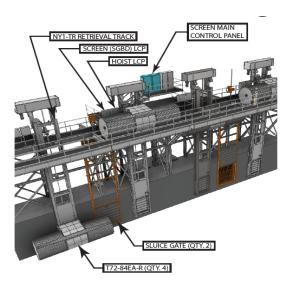
2.3.4 Equipment Summary

The shoreline Wedge Wire Water Screen System is inclusive of the surrounding appurtenant galvanized metal structure of the stainless steel that is set on top of the underwater river concrete vault. The quantity of four T72-84EA-R intake screens built for the NYS OGS project are self-cleaning, with the Wedge Wire cylinders forming a "T" shape off the central manifold. The screen surface is periodically cleaned by rotating the cylinder itself in both a forward and reverse direction. The rotation of each cylinder is driven by a 1 HP submersible drive unit, giving the screen a rotational speed of approximately 2 RPM. This rotation allows the exterior of the Wedge Wire to be cleaned by a fixed position external brush and the interior of the Wedge Wire to be cleaned by a rotating internal brush. Each T72-84EA-R can divert 16,345 GPM at 0.46 feet per second through-slot velocity.

Each screen's central manifold is mounted to a retrieval track that allows the T-Screen assembly to be raised and lowered with an electric hoist, controlled either by the hoist local control panel or a wireless pendant. Each retrieval track is equipped with isolation gates that are controlled with gate actuators. The gate actuators are controlled at the Local Control Panel for each screen with indicator lights for gate open, gate closed, and gate fault.

Two sluice gates independent of the four intake screens were built with a gate opening of 84" x 90" each. When in the open position, the sluice gates can withdraw 101.79 MGD/157.5 CFS at a velocity of 1.5 fps. The sluice gates are controlled locally using buttons on the actuator. By design, ISI intake screens require very little in the way of maintenance. Both the internal and external brushes can be adjusted to compensate for wear or replaced if necessary. The screen submersible drive units are sealed at the factory and are non-serviceable, except for anode replacement. The screen cleaning cycles are normally controlled automatically, dictated by time interval and water level differential between the river and the flow channels.

For both automatic control scenarios, settings are input by an operator at the Human Machine Interface (HMI - touchscreen.) Operational feedback for the screens can be seen at the HMI integrated in the main control panel. Contained within the main control panel are all necessary motor starters, relays, transformers, and PLC, etc., to operate all four screen systems. Each T-Screen can also be controlled manually, through either a wireless pendent or switches on the local control panel (LCP) that allow for forward and reverse rotation of the screen cylinders. Each T-Screen installation has two LCPs: the SGBD LCP for screen and gate operation and the Hoist LCP for hoist operation. Each LCP includes switches to allow for local, manual operation as well as feedback lights.



2.3.5 WWWS Maintenance Annual Procedures

The Contractor is required to check the following annually to verify the condition of the screens.

A yearly calibration is required for this system, inclusive of all devices, rotating and static, sluice gates, hoisting, drums, brushes, tracking guide rails, electrical drive assemblies, rings, wheel components, control systems, electrical components, feedback loops, Programmable Logic Controller (PLC), ensure holistic proper functioning of the system per design.

2.3.6 Annual Columbus Day Shutdown

The OGS Utilities Team will coordinate a mandatory annual plant wide physical shutdown on Columbus Day weekend in October. This is an opportunity to perform preventative maintenance and repairs for the RFPS screen systems. The maintenance and repairs can include, but are not limited to, subterranean vault pumping out of debris (OGS has history of this effort and can provide possible subcontractor contacts), and/or underwater diving, and/or video camera archiving of the forebays including the 48 inch by approximately 3,459 foot long pipeline from the RFPS to the ESP Plaza and further the protection of a variety of mission critical assets at the Empire State Plaza, the MVP Arena, the University Administration Building, and the NYS Education Building. When necessary, this includes craning out and removing hardware, inclusive of the Bar and Traveling Water Screen Systems, pumping out the forebays to remove Hudson River debris and inspecting all sluice gates operation, rotating chain clearances, as well as all components in the Bar and Traveling Water Screen Building leading out to the Hudson River shoreline.

Maintenance of all the shoreline equipment, rolling screen systems, brushes, motors and cleaning systems, the catwalk system, all electrical systems, controllers, programmable logic control (PLC) gear, toggle, jog and/or push-button switching panels, cabling and/or human machine interface (HMI), all sensors, level controls, that operate the Wedge Wire Water Screen System. Refer to Attachment 4 – OGS Technical Manual: Wedge Wire Water Screen, for electrical drawings.

Underwater diving and a confined space effort for inspection and remediation shall take place in the underground concrete forebay vaults, in and under the Bar and Traveling Water Screen Building as well as in and under the RFPS Building. Video inspection of the pipeline from the RFPS Building to the Empire State Plaza – CACP will occur during years one and five of the contract term. Refer to Section 2.6.2 – Pipeline and Forebay Video Inspection and Subterranean Integrity Checks for more information.

2.4 Service Requirements

- A. The maintenance for these systems to meet the goals of the Clean Water Act §316(b) compliant operation of the Traveling Water Screen Building components and WWWS System is the Contractor's responsibility.
- B. The Contractor shall provide certified marine craft, barge, crane and rigging staff with the abilities to clean debris from underneath the WWWS structure rig. OGS requires a cleanup under and adjacent to RFPS-WWWS rig including proper removal and disposal of debris to environmental compliancy up to six times during the lifetime of this contract. Contractor is required to supply maintenance findings reports to OGS within two weeks of each inspection.
- C. Contractor must respond to any OGS inquiry by phone or e-mail within 30 minutes.

- D. For immediate field response, the Contractor must have a place of business, warehousing, construction equipment and staff within two and a half hours of the OGS RFPS located at 1 Quay Street, Albany, NY.
- E. Prior to any work being performed Contractor must provide:
 - i. All required permits to perform the services described in this contract.
 - ii. The names of their safety representative and designated person-in-charge.
 - iii. Daily work plan to the Facility Manager;
 - iv. Job Hazard Analysis prior to work, if required by OGS.
 - v. Hazard Mitigation Plan prior to work, if required by OGS.
 - vi. Confined Space Entry Program prior to work, if required by OGS.
 - vii. Approved Dive Plan prior to any diving work, if required by OGS.
 - viii. All necessary rigging equipment (slings, shackles, come-along, chain falls, etc.).
 - ix. Topside and underwater burning equipment.
 - x. Secondary containment for any equipment containing oil.
 - xi. All underwater welding equipment, fittings, and tools.
 - xii. All personal protective and safety equipment (glasses, hard hats, tape, etc.).
 - xiii. Certified commercial divers for all underwater tasks.
 - xiv. A minimum of eight locks for any Lock out/Tag out requirements: and
 - xv. All other tools, labor, training, certifications, and supervision required by this contract.

2.4.1 Computerized Maintenance Management System (CMMS)

The Contractor shall utilize OGS' current CMMS software AiM, to verify and update a complete list of facility equipment categorized by system within the first two months of the start of the Contract, and shall be maintained throughout the Contract term.

The Contractor shall maintain the following information:

- i. Complete equipment list including manufacturer and model number.
- ii. Schematic drawings for the systems equipment showing changes, additions, or modifications to the original configuration.
- iii. Schematic drawings for the changes, additions, or modifications performed by the Contractor.
- iv. All maintenance performed including daily work orders, and preventative maintenance schedules.
- v. Regular written notations by the Contractor's onsite personnel, which shall specifically document changes in the condition of equipment as referenced to past operating reports.

2.5 Operations and Required Preventative Maintenance Staffing Requirements

Contractor shall perform all services diligently and effectively under the oversight and direction of OGS staff.

- A. Contractor is required to have a phasing plan and thorough coordination with OGS Facility Managers, Supervisors and OGS Utilities Team to ensure a continuity of essential operations.
- B. Contractor shall be responsible for all screen preventative checks and maintenance and shall be performed by experienced and competent staff.
- C. All outdoor\indoor crane services and rigging shall be performed by certified staff.
- D. OGS overhead indoor cranes in buildings are coordinated by Utilities Management for accreditation. If the contractor utilizes NYS equipment onsite connected to this bid, the vendorcontractor will officially document signing off the use of drawing off NYS resources, cranes and/or equipment to waive liability with NYS-OGS.
- E. Specific qualifications for preventative maintenance and/or facility operations include:
 - i. Contractor's onsite electricians must be of Journeymen level or above from an accredited apprenticeship.
 - ii. All technicians and electricians working on any voltage gear shall be OSHA 10 certified, including eight-hour arc flash training.
 - iii. All technicians and electricians working on any voltage gear of any voltage rating shall be trained up to National Fire Protection Association-70E, National Electric Code, municipal licensing and/or NYS accreditation.
- F. All Contractor's staff shall conduct themselves in a professional manner with OGS staff and the general public.
- G. All Contractor's staff shall comply with all rules and requirements of this contract.

2.5.1 Full Time Employees

The Contractor shall provide one full-time employee for each eight-hour shift per day. This arrangement of employees shall be available 24 hours a day, seven days a week, 365 days a year, and must have the ability to operate all equipment mentioned in Section 2 – Scope of Work as well as comprehend OGS provided specialized training. This 24/7/365 coverage includes weekends, holidays, vacations, and planned and un-planned days off. Scheduling is the responsibility of the vendor and must be planned closely with OGS-Utilities Manager to ensure a continuity of services by shift coverage at all times.

Provided full time employees shall be trained properly to operate the facility assets in a safe and efficient manner. Training shall be provided by the Contractor and/or OGS Utilities Team personnel.

The facility operator on shift is the stationary\operating engineer of OGS RFPS. The scope for these positions includes, but is not limited to, performing rounds and readings in the facility buildings, as well

as light preventative maintenance that is required to maintain daily operations. The scope is inclusive of shoreline wedge wire system, assets of the Traveling Screening Building, the equipment of the Electrical-Medium Voltage Switchgear Building and both floors' assets of the Pump and Motors Building.

For reference and guidance, example staffing positions and descriptions are provided below. These are not limitations or required staff titles, but merely a reference in order for Contractors to bid as accurately as possible.

A. Stationary Engineer

Operates, repairs, and maintains stationary mechanical and electrical equipment including boilers, generators, refrigeration, and turbines in buildings, plants or industrial facilities providing heat, hot water, ventilation, air conditioning, direct digital and analog control systems and electrical distribution. Ensures that equipment is operating safely and within established limits. Conducts monitoring and failure analysis of meters, gauges, and controls to determine the need for repair or replacement of parts. Performs preventative maintenance and documents completed procedures. Possess and maintain a valid, unrestricted New York State motor vehicle operator's license. Should possess United States Environmental Protection Agency Section 608 Technician Certification (Universal).

B. Electrician

Plan layout, install, and repair wiring, electrical fixtures, apparatus, and control equipment. Plan new or modified installations to minimize waste of materials, provide access for future maintenance, and avoid unsightly, hazardous, and unreliable wiring, consistent with specifications and State and local electrical codes. Prepare sketches showing location of wiring and equipment, or follow diagrams or blueprints, ensuring that concealed wiring is installed before completion of future walls, ceilings, and flooring. Measure, cut, bend, thread, assemble, and install electrical conduit, using tools, such as hacksaw, pipe-threader, and conduit bender. Pull wiring through conduit. Splice wires by stripping insulation from terminal leads, using knife or pliers, twisting or soldering wires together, and applying tape or terminal caps. Connect wiring to lighting fixtures and power equipment, using hand tools, Install control and distribution apparatus, such as switches, relays, and circuit-breaker panels, fastening in place with screws or bolts, using hand tools and power tools. Connect power cables to equipment, such as electric range or motor, and install grounding leads. Test continuity of circuit to ensure electrical compatibility and safety of components, using testing instruments, such as ohmmeter, battery and buzzer, and oscilloscope. Observe functioning of installed equipment or system to detect hazards and need for adjustments, relocation, or replacement. May repair faulty equipment or systems.

C. Plumber

Assemble, install, and repair pipes, fittings, and fixtures of heating, water, and drainage systems, according to specifications and plumbing codes. Study building plans and working drawings to determine work aids required and sequence of installations. Inspect structure to ascertain obstructions to be avoided to prevent weakening of structure resulting from installation of pipe. Locate and mark position of pipe and pipe connections and passage holes for pipes in walls and floors, using ruler, spirit level, and plumb bob. Cut openings in walls and floors to accommodate pipe and pipefittings, using hand tools and power tools. Cut and threads pipe, using pipe cutters, cutting torch, and pipe-threading machine. Bend pipe to required angle by use of pipe-bending machine or by placing pipe over block and bending it by hand. Assemble and install valves, pipefittings, and pipes composed of metals, such as iron, steel, brass, and lead, and nonmetals,

such as glass, vitrified clay, and plastic, using hand tools and power tools. Join pipes by use of screws, bolts, fittings, solder, plastic solvent, and caulks joints. Fill pipe system with water or air and read pressure gauges to determine whether system is leaking. Install and repair plumbing fixtures, such as sinks, commodes, bathtubs, water heaters, hot water tanks, garbage disposal units, dishwashers, and water softeners.

2.6 Additional Services

Additional services (any work other than the base scope services) shall only be performed when approved in writing by the OGS Facility Manager. The Additional Services quote must include an itemized list of materials, equipment, labor hours, labor rates, mark-ups, and a description of the work. The quote must not contradict the terms of the contract and must match the bid rates for additional services. Subcontractor work shall be reimbursed at actual cost with the mark-up thereon being limited to five percent (5%) of the actual cost to the Contractor. Additional Services must be invoiced separately and include the quote and an approved Authorization of Additional Services. Refer to Attachment 5 - Authorization and Receipt of Additional Services under Contract.

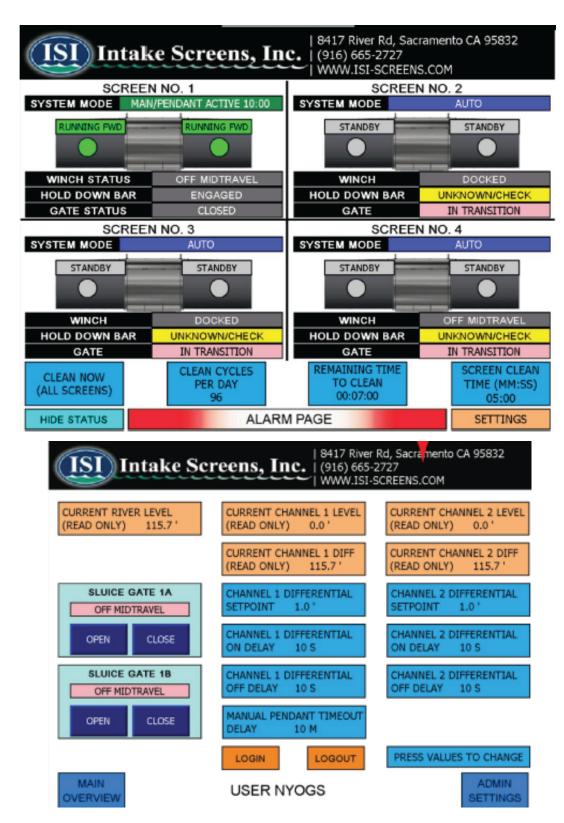
Some tasks to be performed under Additional Services are listed below. This is not a full comprehensive list of all Additional Services tasks and may include other duties as needed. When the Contractor identifies a needed task that would fall under Additional Services and not the base bid, the Contractor must create a quote based on the hourly rate and material markup per the Attachment 1 – Bid Proposal Form and submitted for OGS approval prior to any work being performed on that task.

2.6.1 Underground Concrete Vault, Pipeline and RFPS-WWWS Control System

Maintenance and a large truck vacuuming out of material and Hudson River debris must be performed of the underground concrete forebay vaults and tunnel to the forebays into the adjacent RFPS building annually, inclusive of proper environmental disposal and all permits if needed. The underground concrete structure needs thorough inspection and will require a confined space, underwater diving team. Refer to Section 2.6.3 – Bar and Traveling Water Screen Systems: Underwater Diving Inspection for more information.

Annual inspection of all sluice and bypass gates, the Limitorque valves, all instrumentation, including level controls, gauges, digitized control feedbacks, the logic control schemes, programmable controllers, human machine interface (HMI), electrical conduit, raceways, devices, wire cabling, alarm controls pages, control lights, a fully operational HMI, as intended (see below example images), and all other valves connected in the systems to ensure proper site operation aligning with manufacturer's specifications.

Contractor shall ensure screens are in working order and operations of the WWWS is calibrated and complaint as intended by design.



2.6.2 Pipeline and Forebay Video Inspection and Subterranean Integrity Checks

After the required annual water evacuation and pumping out of debris in all underground subterrain forebays starting in the Bar and Traveling Water Screen Systems Building extending underground into

the RFPS Motor Building, then extending up the 48-inch diameter pre-stressed concrete river water pipeline for approximately 3,459 foot long to the ESP - CACP, a robotic video system shall be used to crawl through and record the pipeline tunnel. All pumps will be secured, and the pipeline will be empty however, some low points may have residual water.

Video of the forebays under the Traveling Water Screen Building and underground tunnel to the RFPS Building will be required once during the contract term in 2025, occurring during the annual Columbus Day Weekend Shutdown. The Contractor shall digitize and compare the pipeline video to the historical content provided by OGS Utilities for anomalies of integrity issues in the pipeline, underground concrete caverns, forebays (if needed), manifold (if needed), access cover and all accessories connected to this system. Contractor shall provide an electronic report of these findings and notify OGS Utilities of any deficiencies. Repairs shall be completed immediately following OGS Facility Manager notification.

Due to the size of this scope, coordinating with OGS is paramount to secure one side of the forebays or other areas to ensure services are continuous in operation. At the discretion of the Facility Manager, several incremental shutdowns may be required to accomplish the entire integrity check and repairs, if required.

The following are important details and expectations for this Service:

- A. Contractor's staff shall be on site from Friday evening through Monday evening during the Columbus Day Weekend Shutdown.
- B. The Contractor is responsible for removal of all debris daily.
- C. The Contractor is responsible for pressure washing the chamber walls.
- D. All flange gasket and bolt sizes must be verified prior to mobilization.

Any proposed subcontractor performing the Services in this section are required to possess a minimum of two years of experience performing video inspection on similar projects.

2.6.3 Bar and Traveling Water Screen Systems: Underwater Diving Inspection

Underwater diving in the Bar and Traveling Water Screen Building Forebays will include:

- A. Inspect all intermediate "x" bracing.
- B. Inspect chain guides & post guides for wear.
- C. Inspect foot shaft.
- D. Inspect set collars on foot shaft.
- E. Inspect clearances between boot plate and basket rails.
- F. Inspect foot sprockets for wear.
- G. Inspect foot shaft brackets.
- H. Inspect extension shoes or angles.
- I. Inspect intermediate framework and boot section.
- J. Inspect boot plate.
- K. Inspect track and filler bars or boot castings.
- L. Inspect for debris buildup in boot section.

Any proposed subcontractor performing the Services in this section are required to possess a minimum of two years of experience performing underwater diving inspection on similar projects.

2.6.4 Shoreline Wedge Wire Screen System: Underwater Diving Inspection

Underwater diving is required in the concrete manifolds forebays in the Hudson River. Integrity checks of the concrete walls and mechanical gear is required to ensure they are working in proper order. Items to be inspected are:

- A. Sluice Gate Actuator Grease
- B. Sluice Gate Gear Housing Lubricant
- C. Sluice Gate Threaded Gate Stem Grease
- D. Sluice Gate Cycling
- E. Sluice Gate Seals
- F. Wedge Wire Water Screen External Brush
- G. Wedge Wire Water Screen Manifold Bulb Seal
- H. Wedge Wire Water Screen Roller Wheels
- I. Wedge Wire Water Screen Internal Brush
- J. Wedge Wire Water Screen Sacrificial Anode
- K. Wedge Wire Water Screen Hoist System Grease Wedge Wire Screen Drive Assembly
- L. Wedge Wire Water Screen Hoist Gear Box Oil

Any proposed subcontractor performing the Services in this section are required to possess a minimum of two years of experience performing underwater diving inspection on similar projects.

2.7 Warranties

Contractor warrants that the services acquired under this Contract will be provided in a professional and workmanlike manner in accordance with industry standards.

All materials and workmanship provided under this contract shall be warranted for a minimum of one year. Where Contractor, product manufacturer or service provider generally offers additional or more advantageous warranties, such additional or more advantageous warranty shall apply. All warranties contained in this Contract shall survive the termination of this Contract.

2.8 Prevailing Wage Rate Advisory Notice

DOL Article 8 - Prevailing Rate Case Number PRC #2024001604 has been assigned to the project.

To view the PDF file of your wage schedule, Article 8, click on: https://apps.labor.ny.gov/wpp/publicViewProject.do?method=showIt&id=1563021

Contractors are reminded that the payment of prevailing wages and supplements is a requirement of ALL contracts for public works. Contractors are reminded that Prevailing Wage Rates are subject to periodic adjustments. It is the Contractor's responsibility to ensure they are in compliance with current Prevailing Wage Rates throughout the term of the contract. Information indicating that prevailing wages are not being paid on a public works project will be forwarded to the New York State Department of Labor for

investigation. Willful violations of the prevailing wage provisions of the Labor Law may result in debarment from the bidding and award of public contracts. NOTE: ALL PUBLIC WORKS CONTRACTS, REGARDLESS OF DOLLAR VALUE, REQUIRE THE PAYMENT OF PREVAILING WAGES AND SUPPLEMENTS.

Contractors are required to supply each of their subcontractors with copies of the prevailing rate schedule and to obtain an affidavit acknowledging receipt and agreeing to pay required wages before entering into a subcontract. Contractors are responsible for assuring that their subcontractors pay prevailing wages and supplements. NOTE: CONTRACTORS ARE FURTHER REQUIRED TO POST THE PREVAILING WAGE RATES AT THE WORK SITE ON BULLETIN BOARDS PROVIDED BY THE FACILITY MANAGER AND INFORM EMPLOYEES OF THE POSTING. FACILITY MANAGERS WILL ENFORCE THIS PROVISION.

Contractors are advised that the Office of General Services may make random inquiries of employees of both prime and subcontractors as to the rate of wages being paid and may request certified copies of one or more weekly payrolls of a Contractor or any subcontractor to verify proper payment of wages. Any discrepancy found in information supplied will be reported to the Department of Labor for investigation.

2.9 Background Checks

Requirements of this clause apply to the Contractor performing on-site work for OGS. Background checks shall be performed at no additional cost to the State. The cost to the Contractor for performing requirements of this section shall be taken into consideration when the Bidder calculates its bid prices in response to this solicitation. Contractor shall not be entitled to charge separately, or otherwise be reimbursed, for any costs incurred in complying with this background check requirement.

For purposes of this clause, the following definitions apply:

On-Site: "On-site" refers to any State-owned or leased space open to the public or at which State business operations are conducted.

Suitability: "Suitability" refers to identifiable character traits and past conduct that are reasonably sufficient to indicate whether a given individual is likely to be able to perform the requirements of a contract at OGS on-site locations without undue risk to the interests of the State.

Suitability determination: A ``suitability determination" is a determination that there are reasonable grounds to believe that an individual will likely be able to perform the contract requirements on-site without undue risk to the interests of the State.

Applicability

Contractors shall perform background checks and make suitability determinations on Contractor employees before the individual employees can perform on-site contract services for the Office of General Services.

Contractor shall maintain a continuous list of background checks and suitability determinations noted above and shall provide this list to the Facility Manager prior to the contract commencement date. The list shall be updated and resubmitted to the Facility Manager as changes occur, continually keeping the Facility Manager updated.

The Commissioner of General Services, or her designee (the "Commissioner"), on a case-by-case basis, may, either temporarily or permanently, waive the requirements of this clause, in whole or in part, if they determine in writing that background checks and suitability determinations are not necessary at a specific location, or for a specific individual, in order to protect the State's interests.

Background Check

The Contractor is responsible for completing background checks and making suitability determinations on its employees prior to the employees beginning on-site work. Compliance with the requirement for performing a background check and making a suitability determination shall not be construed as providing a Contractor employee clearance to secured areas. Contractors are required to maintain records of background checks and suitability determinations for the term of the contract, and to make them available to the State when requested.

At a minimum, the background check and suitability determination must include an evaluation of:

- A. Verification that the individual is not listed on a national watched person database. The following link has information about data available https://www.treasury.gov/resource-center/sanctions/SDN-List/Pages/default.aspx. The following link has a PDF file of a list of SPECIALLY DESIGNATED NATIONALS AND BLOCKED PERSONS https://www.treasury.gov/ofac/downloads/sdnlist.pdf;
- B. Criminal History checks to be performed either by using a national database that contains criminal histories and supplement this search by checks of NYS Office of Court Administration ("NYSOCA") and comparable searches of states where the person has lived, worked, or attended school during the past five years; OR by obtaining the record of convictions from NYSOCA directly and from their equivalents from other states where the person might have lived, worked, or attended school during the last five years;
- C. DMV driving records:
- D. Social Security Number trace;
- E. Verification of U.S. citizenship or legal resident status; and
- F. Residence (past three years) (should be requested on employment application to compare against data from DMV license and other searches for verification);

Background Check Guidelines

In making a suitability determination, the contractor shall consider the following factors and evaluate them against the work to be performed, the performance location, and the degree of risk to the State:

- A. Any loyalty or terrorism issue;
- B. Patterns of conduct (e.g., alcohol/drug abuse, financial irresponsibility/major liabilities, dishonesty, unemployability for negligence or misconduct, criminal conduct);
- C. Dishonorable military discharge;
- D. Felony and misdemeanor offenses; and

E. Employment related misconduct involving dishonesty, criminal or violent behavior.

The Contractor shall evaluate any adverse information about an individual by considering the following factors before making a suitability determination:

- A. The nature, extent, and seriousness of the conduct;
- B. The circumstances surrounding the conduct;
- C. The frequency and recency of the conduct;
- D. The individual's age and maturity at the time of the conduct;
- E. The presence or absence of rehabilitation and other pertinent behavior changes;
- F. The potential for pressure, coercion, exploitation, or duress;
- G. The likelihood of continuation of the conduct;
- H. How, and if, the conduct bears upon potential job responsibilities; and
- I. The employee's employment history before and after the conduct.

Each suitability determination should be documented in a narrative. If negative items are mitigated by subsequent passage of time or completion of any relevant programs that are rehabilitative in nature, this rationale should be included in the narrative. A negative suitability determination must be supported by a finding that the adverse information has a direct bearing on the potential job duties or that it is deemed sufficiently serious to bar the employee from a State site.

Employee Removal

Whenever a Contractor becomes aware that any employee working at an on-site location under an OGS contract becomes an unacceptable risk to the State; the Contractor shall immediately remove that employee from the site, notify the Commissioner that such a removal has taken place, and replace them with a qualified substitute immediately. If the approval of the Commissioner was initially required for the removed employee, Commissioner approval is required for the replacement employee.

Commissioner Notification

Prior to commencement of on-site contract performance, the Contractor shall notify the Commissioner that the background checks and suitability determinations required by this clause have been completed for affected individuals.

2.10 OSHA (Occupational Safety & Health Administration) Training Requirements

OGS Facility Manager's Obligations

Prior to beginning contract work/work assignment, the OGS Facility Manager or Designee shall inform or make available the Contractor/Contractor's representative(s) of the known specific hazard(s) and

chemical(s) they may encounter while performing their contract obligations. For example; testing of materials may be performed, or previous reports may be available to inform on the location of Asbestos Containing Materials, lead or other environmental concerns if present, and any site-specific work practices that may be necessary to conduct work safely and in compliance with federal or state standards and OGS procedures such as those involving Lockout/Tagout and electrical procedures.

The Contractor/Contractor's Representative(s) shall also be provided with information about the use and provisions for Personal Protective Equipment required for the work. Contractor/Contractor's Representative shall provide a signed acknowledgement to the OGS Facility Manager or OGS Designee that they were provided with this information.

Contractor / Contract Employee Obligations

General Contract Obligations:

These requirements only apply to on-site work at a State property.

Prior to or upon first reporting to the work location for assignment, the Contractor/Contractor employee(s) and employees of subcontractors must present to the OGS Facility Manager or OGS Designee proof of completion of the OSHA required training for the following, topic areas including but not limited to:

- A. OSHA 10-hour training for work in construction or related assignments
- B. Hazard Communication,
- C. Personal Protective Equipment.

For environmental health and safety emergencies, an emergency contact must be provided for the Facility Manager or designee to contact prior to any work commencing. Any changes to this contact, including name and or contact information must be communicated to the OGS Designee immediately.

Specific Field-of-Work Requirements

In circumstances where specific OSHA or NYS Department of Labor (DOL) regulated work is required, the Contractor/Contract Employee(s) shall have all pertinent and up-to-date certifications beyond the "awareness" level as required by regulations for the specific work. On-site employee will be trained to do the work, supervised by higher knowledge/training, as required by OSHA/DOL regulations.

It is the Contractor's responsibility to provide the OGS Facility Manager or OGS Designee with all employee updates and/or renewals for the above general contract obligations and specific field of work requirements specified training.

The Contractor must coordinate with OGS to be informed of the site's Emergency Action Plan.

Note: Contractor's/Contractor's Employee(s) and employees of subcontractors' failure to provide such documentation to the OGS Facility Manager or OGS Designee upon or prior to employee reporting to their initial work assignment may result in OGS rejecting the employee(s) until that documentation is provided.

3. Bid Submission

3.1 IFB Questions and Clarifications

There will be an opportunity for submission of questions and/or requests for clarification. Questions and/or clarifications must be submitted via email to the Designated Contact:

Rebecca Beattie, Contract Management Specialist I NYS Office of General Services Financial Administration – Agency Procurement Office 32nd Floor, Corning Tower Bldg., Empire State Plaza Albany, New York 12242

Phone: 1-518-474-0345

E-mail: Rebecca.Beattie@ogs.ny.gov

All questions must cite the particular page, section, and paragraph number, where applicable. Please submit questions as early as possible following receipt of the IFB. The final deadline for submission of any questions/clarifications regarding this IFB is listed in Section 1.3 – Key Events. Questions received post after the deadline not be answered. **OGS** will addendum may an https://ogs.ny.gov/procurement/bid-opportunities with all questions and responses on or about the date listed in Section 1.3 – Key Events. Any additional addenda will be posted to the same location.

3.2 Bid Format and Content

In order for the State to evaluate bids fairly and completely, Bidders are strongly encouraged to follow the format set forth herein and should provide all of the information requested. All items requested in this Submission section should be provided and addressed as clearly as possible. Failure to conform to the stated requirements may necessitate rejection of the bid.

Note: OGS reserves the right to request any additional information deemed necessary to ensure that the Bidder is able to fulfill the requirements of the contract.

- A. <u>Cover Letter</u>: The cover letter should confirm that the Bidder understands all the terms and conditions contained in this IFB and will comply with all the provisions of this IFB. Further, that should the contract be awarded to your company, you would be prepared to begin services on the date indicated in Section 1.3 Key Events. The cover letter should also include the full contact information of the Bidders Representative that OGS shall contact regarding the bid. A Bidder representative authorized to make contractual obligations must sign the cover letter.
- B. <u>Proof of Minimum Qualifications</u>: Bidders must submit sufficient information to prove their ability, and/or the abilities of their proposed subcontractors, to meet the minimum qualifications as set forth in Section 1.4.
- C. <u>Experience & Operational Plan</u>: Bidders must describe their capabilities to provide the services required in this IFB by providing the following:
 - A description of Bidder's experience with Bar, Travel Water and Wedge Wire Water Screening Systems.
 - ii. Staffing plan, including the use of any subcontractors.
- D. <u>Pricing</u>: Bidders shall submit a completed Attachment 1 Bid Proposal Form. Each item must be complete with no lines omitted. Bidder shall not provide alternative pricing or deviate from the Bid Proposal Form. Alternative pricing methodologies will not be considered and may result in the rejection of the bid.

E. Administrative Submission:

- i. All required completed forms from IFB Appendix B.
- ii. **SDVOB.** This procurement includes SDVOB participation goals of which all Bidders must comply. Refer to Appendix F of this solicitation for specific details pertaining to this procurement opportunity. The directory of New York State Certified SDVOBs can be utilized to find SDVOB businesses to meet this requirement: https://online.ogs.ny.gov/SDVOB/search
- iii. Signed bid addenda (if any).
- iv. Important Notes:
 - a. Insurance Bidders are reminded of the insurance requirements as described in Appendix D. The selected Bidder will be required to provide all necessary documentation upon notification of selection.
 - b. MWBE & EEO Requirements Bidders are reminded of the requirements as described in Appendix E.
 - c. Vendor Responsibility Bidders are reminded of the requirement as described in Section 5.11 and are requested to complete the online questionnaire located on the OSC VendRep System website prior to bid submission. If the vendor has previously certified responsibility online, it shall ensure that the VRQ was recertified in the last six months.
 - d. Document Consistency An award will only be made to the entity which has submitted bid. All submitted documents must be consistent with official name of bidding entity, FEIN and NYS Vendor ID number.

3.3 Bid Preparation

All bids must be completed in ink or machine produced. Bids submitted handwritten in pencil will be disqualified.

3.4 Packaging of IFB Response

Please submit:

- A. One original of Attachment 1 Bid Proposal Form
- B. One original of the Cover Letter; Minimum Qualifications information; Experience and Operational Plan
- C. One original of the Administrative Submission

Please provide one digital record (Thumb Drive) containing the above submission items. If there are any differences between the paper submission and the electronic submission, the paper submission shall take precedence.

Originals contain a unique wet signature for each of the signed and notarized pages. Exact copies can be photocopied and do not require a unique wet signature.

All bid documents must be submitted by mail, hand delivery, overnight carrier or certified mail in a package showing the following information on the outside:

- A. Bidder's complete name and address
- B. Solicitation Number: IFB #2806

- C. Bid Due Date and Time: (as stated in Section 1.3 Key Events)
- D. Bid for: Preventative Maintenance of the Bar, Traveling Water and Wedge Wire Water Screen Systems at the NYS OGS Riverfront Pumping Station

Failure to complete all information on the bid envelope and/or packages may necessitate the premature opening of the bid and may compromise confidentiality.

3.5 Instructions for Bid Submission

Note that these instructions supersede the generic instructions posted on the OGS website bid calendar.

Only those Bidders who furnish all required information and meet the mandatory requirements will be considered.

<u>Submit all required bid documents to the NYS Office of General Services - Division of Financial Administration at the following address:</u>

NYS Office of General Services Financial Administration – Agency Procurement Office 32nd Floor, Corning Tower Bldg., Empire State Plaza Albany, New York 12242 Attn: Rebecca Beattie Bid# 2806

E-MAIL OR FAX BID SUBMISSIONS ARE NOT ACCEPTABLE AND WILL NOT BE CONSIDERED.

The State of New York will not be held liable for any cost incurred by the Bidder for work performed in the preparation and production of a bid or for any work performed prior to the formal execution and approval of a contract.

Bids must be received in the above office on or before 2:00 PM on the date indicated in Section 1.3 - Key Events. Bidders assume all risks for timely, properly submitted deliveries. Bidders mailing their bid must allow sufficient mail delivery time to ensure receipt of their bid at the specified location no later than the specified date and time.

The received time of bids will be determined by the clock at the above noted location.

Any Bid received at the designated location after the established time will be considered a Late Bid. A Late Bid may be rejected and disqualified from award. Notwithstanding the foregoing, a Late Bid may be accepted in the Commissioner's sole discretion where (i) no timely Bids meeting the requirements of the Solicitation are received, or (ii) the Bidder has demonstrated to the satisfaction of the Commissioner that the Late Bid was caused solely by factors outside the control of the Bidder. However, in no event will the Commissioner be under any obligation to accept a Late Bid.

The basis for any determination to accept a Late Bid shall be documented in the procurement record

Bids must remain open and valid for 120 days from the due date, unless the time for awarding the contract is extended by mutual consent of NYS OGS and the Bidder. A bid shall continue to remain an effective offer, firm and irrevocable, subsequent to such 120-day period until either tentative award of the contract(s) by Issuing Office is made or withdrawal of the bid in writing by Bidder. Tentative award of the contract(s) shall consist of written notice to that effect by the Issuing Office to the successful Bidder. This IFB remains the property of the State at all times, and all responses to this IFB, once delivered, become the property of the State.

Important Building Access Procedures for Delivered Bids:

Building Access procedures are in effect at the Corning Tower. Photo identification is required. All visitors must register for building access, for delivering bids. **Vendors are encouraged to pre-register by contacting the designated contact at 518-474-0345 at least 24 hours prior to arrival.** Pre-registered visitors are to report to the visitor desk located at the Concourse level of the Corning Tower. Upon presentation of appropriate photo identification, the visitor will be allowed access to the building.

Upon arrival at the visitor desk, visitors that have not pre-registered will be directed to a designated phone to call the OGS Finance Office. The Finance Office will then enter the visitor's information into the building access system. Access will not be allowed until the system has been updated. Visitors are encouraged to pre-register to ensure timely access to the building. Vendors who intend to deliver bids or conduct business with OGS should allow extra time to comply with these procedures. These procedures may change or be modified at any time.

Visitor parking information can be viewed at the following OGS web site:

https://empirestateplaza.ny.gov/parking

4. Administrative Information

4.1 Issuing Office

This IFB is being released by the New York State Office of General Services, Division of Financial Administration, on behalf of the OGS Division of Real Estate, Utilities Management Division.

4.2 Method of Award

OGS intends to award a contract(s) to the lowest responsive and responsible bidder(s) for each lot as detailed in Section 4.3 - Price. The lowest Bidder shall be determined by each Lot Grand Total Bid as represented on Attachment 1 – Bid Proposal Form.

Upon determination of the lowest responsive and responsible bid per lot, a contract(s) will be sent to the successful Bidder(s) for signature and shall be returned to the Issuing Office for all necessary State approvals. Upon final approval, a completely executed contract will be delivered to the Contractor(s).

The Grand Total bid amount of the successful Bidder(s) shall be used to establish the total contract value. The established total contract value shall not be exceeded.

4.3 Price

Bidders shall submit pricing using Attachment 1 - Bid Proposal Form. Any alterations, qualifiers, etc. will result in rejection.

The Contractor agrees that from the effective date of the contract until contract termination, the rates charged by the Contractor and paid for by NYS OGS will be equal to or lower than any rates provided by the Contractor to other customers for like services.

If the Bidder offers an early payment discount for payments made in less than 30 days after receipt of a proper invoice, please detail the discount by providing, in the appropriate place on the Attachment 1 – Bid Proposal Form, the percentage of discount and the specific number of days within which the payment must be made for the discount to apply. If Bidder offers multiple discounts, please provide the details for each discount offered (for example: 2%/15 days; 1%/20 days). A discount for early payment does not affect bid amounts nor is it considered in making awards, except that a discount may be considered in resolving tie bids.

This solicitation has been sub-divided into three separate Lots: Lot 1 – Base Bid for the Bar and Traveling Water Screen System, Lot 2 – Base Bid for the Wedge Wire Water Screen System and Lot 3 - Full-Time Employees.

Bidders may bid on one, more than one, or all lots as defined hereinafter on the Bid Proposal Form(s).

Lot 1 – Bar & Traveling Water Screen System:

Item 1 – Annual Base Bid shall include all preventative work outlined in Section 2 – Scope of Work, relating to the Bar and Traveling Screen systems, performed by the Contractor and/or sub-contractor throughout the year and some services during the annual Columbus Day weekend shutdown. This Lot 1 base bid shall also contain pricing for crane, rigging, and heavy hauling services to the Bar and Traveling Screen section removals, when needed, potentially performed twice during the five-year contract.

Items 1a through 1g shall include additional services for, but not limited to, Underground Concrete Vault, Pipeline and RFPS-WWWS Control System pumping and removal of debris performed during Columbus Day, Pipeline and Forebay Video Inspection and Subterranean Integrity Checks, robotic video performed twice during five-year contract, and Underwater Diving Inspection performed potentially once during the five-year contract.

Lot 2 - Wedge Wire Water Screen System:

Item 2 – Annual Base Bid shall include all preventative work outlined in Section 2 – Scope of Work, relating to the Wedge Wire Water Screen system, performed by the Contractor and/or sub-contractor throughout the year and some services during the annual Columbus Day weekend shutdown. This Lot 2 base bid also should contain pricing for crane, rigging, and heavy hauling services to remove debris from the WWWS System, when needed, potentially performed three times during the five-year contract.

Items 2a through 2f shall include additional services for, but not limited to, Shoreline Wedge Wire Screen System Underwater Diving Inspection performed potentially once during the five-year contract.

Lot 3 – Full-Time Employees:

Full-time employees 24 hours a day, seven days a week, 365 days a year, and must have the ability to operate all equipment mentioned in Section 2 – Scope of Work as well as comprehend OGS provided specialized training. This 24/7/365 coverage includes weekends, holidays, vacations, and planned and un-planned days off.

Bidder shall include an hourly labor rate and materials mark-up percentage for any additional work approved by the Facility Manager as specified in Section 2.6 - Additional Services. The total hours (a) and material cost (b) provided on Attachment 1 – Bid Proposal Form are estimates only. There is no quarantee that Additional Services will be used or needed for this contract.

4.4 Term of Contract

This contract will commence upon OSC approval and will be in effect for five years.

4.5 Price Adjustment (Escalation/De-escalation)

The Contractor is to submit a bid that will be fixed for one year only. On each anniversary date of the contract, the Contractor may be granted an increase or decrease in their bid, dependent upon fluctuations in the Consumer Price Index for All Items, (Northeast Urban), as published by the U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C. 20212. Visit their website at http://www.bls.gov/data/.

The 'base' month for determining adjustments will be the third month prior to the start date of the contract. The base month is fixed and will not be adjusted year to year. The adjustments will be based on the difference in the base month CPI for each applicable year and will become effective in the anniversary month. For example, if the contract is awarded in September 2024, the 'base' month will be June 2024. The contract allows for an adjustment after the first year, it would be based on the difference between the June 2025 CPI and the June 2024 CPI and become effective in September 2025.

The Consumer Price Index is published around the middle of each month for the prior month (i.e. the January figure is not published until mid-February). The Contractor has the sole responsibility to request,

in writing, a rate adjustment. This request must be received within three months of the base month. As long as the request is submitted and received within the required time frame, the adjustment will be processed using the base month Consumer Price Index. Once approved, the Contractor will be notified in writing. Contractor shall not submit revised invoices until such notification, at which point an invoice may be submitted for any retroactive difference owed.

Requests should be sent to Agency Procurement Office at either:

NYS Office of General Services	ogs.sm.agencyprocurementoffice@ogs.ny.gov
Financial Administration, Agency	
Procurement Office	
32 nd Floor, Corning Tower Building,	
Empire State Plaza	
Albany, New York 12242	

Should a Contractor fail to submit their request, within three months of the applicable base month date, Contractor shall be deemed to have waived their right to any increase in price, but the State shall not be barred from making the appropriate adjustment in the case of a decrease determined in accordance with the above methodology.

4.6 Method of Payment

Invoices will be processed in accordance with established procedures of the Office of General Services and the Office of the State Comptroller (OSC), and payments will be subject to the prompt payment provisions of Article XI-A of the New York State Finance Law.

Each company invoice must be itemized and include the following information: Name of NYS agency being billed; Contract ID number; Purchase Order number; Vendor name; Company FEIN; Vendor ID number; a unique invoice number; date(s) of service(s); a detailed description of services performed; and dollar amount requested in accordance with contract or PO rates.

Invoices without the above stated information will be returned to Contractor to be completed as required in the paragraph above. Payment will not be issued and will not be due and owing until a corrected invoice is received and approved by OGS.

All Invoices are to be submitted for payment to:

NYS Office of General Services C/O BSC / Accounts Payable 1220 Washington Ave., Bldg. 5, 5th Fl Albany, New York 12226

Or by email: Accountspayable@ogs.ny.gov

Also, a copy of the invoice and reports must be forwarded to:

NYS Office of General Services Division of Real Estate Empire State Plaza, Corning Tower, 39th Floor Albany, NY 12242 Or by email: oqs.sm.rpmpurchasingsupportservicesunit@oqs.ny.gov

4.7 Electronic Payment

Contractor shall provide complete and accurate billing invoices in order to receive payment. Billing invoices submitted must contain all information and supporting documentation required by the contract, the agency, and the State Comptroller. Payment for invoices submitted by the Contractor shall only be rendered electronically unless payment by paper check is expressly authorized by the Commissioner, in the Commissioner's sole discretion, due to extenuating circumstances. Such electronic payment shall be made in accordance with ordinary State procedures and practices. The Contractor shall comply with the State Comptroller's procedures to authorize electronic payments. Information is available at the following website: http://www.sfs.ny.gov/index.php/vendors, by e-mail at Helpdesk@sfs.ny.gov, or by phone at 518-457-7717. Contractor acknowledges that it will not receive payment on any invoices submitted under this Contract if it does not comply with the State Comptroller's electronic payment procedures, except where the Commissioner has expressly authorized payment by paper check as set forth above.

Please note that in conjunction with New York State's implementation of a new Statewide financial system, the Office of the State Comptroller requires all vendors doing business with New York State agencies to complete a substitute W-9 form. Vendors registering for electronic payment can complete the W-9 form when they register. Vendors already registered for electronic payment are requested to go to the above website and complete the Substitute W-9 form and submit following the instructions provided.

4.8 Past Practice

The failure to exercise any right hereunder in the past shall not operate as a waiver of such right. No breach of this Agreement shall be deemed waived unless such waiver shall be in writing and signed by the party claimed to have waived said right. No waiver of any breach of the Agreement at any time in the past shall constitute a waiver of subsequent breach.

4.9 Exceptions and Extraneous Terms

The Issuing Office will consider all requests to waive any solicitation requirement. The term "solicitation requirement" as used herein shall include any and all terms and conditions included in the solicitation documents. Bidders should be aware that failure to obtain a waiver of any bid requirement in advance of bid submission, and/or inclusion of extraneous terms in the form of exceptions, assumptions, qualifiers, ranges, modifications, etc. with bid submission, may result in rejection of Bidder's bid and disqualification from the bidding process.

Bidders wishing to obtain an exemption or waiver for any part of this solicitation must contact the Issuing Office in writing by the questions due date as identified in the Key Events section. The request must cite the specific section and requirement in question, and clearly identify any proposed alternative. Requests will be considered and responded to in writing, either with the answers to questions as identified in the Key Events section (if the response results in a change to the solicitation), or directly to the requesting vendor.

4.10 Dispute Resolution

It is the policy of the Office of General Services' Financial Administration to provide vendors with an opportunity to administratively resolve disputes, complaints or inquiries related to proposal solicitations, contract awards, and contract administration. OGS Financial Administration encourages vendors to seek resolution of disputes informally, through consultation with OGS Financial Administration staff, prior to

commencing a formal dispute process. All such matters will be accorded full, impartial and timely consideration. A copy of the OGS Financial Administration Dispute Resolution Procedures for Vendors may be obtained by contacting the designated contact person identified in the solicitation.

During the term of the contract, if either party notifies the other of a dispute or dissatisfaction, the other party will make a good faith effort to solve or settle dispute amicably, including meeting with the other party to diligently attempt to reach a satisfactory result. In the event of a dispute, the parties will continue to fulfill their obligations hereunder during the dispute resolution process. The parties agree to proceed in good faith to avoid disputes and resolve disputes that cannot be avoided at the lowest level possible. If party representatives are unable to resolve the dispute or reach a satisfactory result within twenty days of written notice of a dispute, the dispute will be referred to successive higher levels of each organization for final decision.

4.11 Prime Contractor Responsibilities

The State will contract only with the successful Bidder who is the Prime Contractor. The Issuing Office considers the Prime Contractor, the sole Contractor with regard to all provisions of the IFB, and the contract resulting from the IFB. The Prime Contractor will be fully responsible for the work being completed by their subcontractors. A foreman from the Prime Contractor must be on site overseeing the subcontractors' removal and install of all pumps and motors. No subcontract entered into by the Contractor shall relieve the Contractor of any liabilities or obligations in this IFB or the resultant contract. The Contractor accepts full responsibility for the actions of any employee or subcontractor(s) who carry out any of the provisions of any contract resulting from this IFB.

4.12 Examination of Contract Documents

- A. Each Bidder is under an affirmative duty to inform itself by personal examination of the specifications of the proposed work and by such other means as it may select, of the character, quality and extent of the work to be performed and the conditions under which the contract is to be executed.
- B. Each Bidder shall examine specifications and all other data or instruction pertaining to the work. No pleas of ignorance of conditions that may be encountered or of any other matter concerning the work to be performed in the execution of the contract will be accepted by the State as an excuse for any failure or omission on the part of the Bidder to fulfill every detail of all the requirements of the documents governing the work. The Bidder, if awarded the contract, will not be allowed any extra compensation by reason of any matter or thing concerning which such Bidder might have fully informed itself prior to bidding.
- C. Any Bidder in doubt as to the true meaning of any part of the specification or the proposed contract documents shall submit to Rebecca Beattie, Division of Financial Administration, 32nd Floor, Corning Tower Building, Empire State Plaza, Albany, New York 12242 e-mail: Rebecca.Beattie@ogs.ny.gov a written request for an interpretation thereof. If a major change is involved to which all Bidders must be informed, such request for interpretation shall be delivered, in writing, no later than the question due date listed in **Section 1.3- Key Events.** Any interpretation of the proposed documents will be made only by an addendum duly issued. A copy of such addendum will be e-mailed to Bidders who have registered Intent to Submit a Bid.
- D. Any addendum issued prior to the bid due date must be acknowledged by signature, dated and be submitted as part of the Administrative Bid. In awarding a contract, any addenda will become a part thereof.

E. Any verbal information obtained from, or statements made by, representatives of the Commissioner of General Services at the time of examination of the documents, pre-bid conference, or site visit shall not be construed as in any way amending contract documents. Only such corrections or addenda as are issued, in writing, to all Bidders shall become a part of the contract.

4.13 Rules of Construction

Words of the masculine and feminine genders shall be deemed and construed to include the neuter gender. Unless the context otherwise indicates, a singular word shall include the plural and vice versa, and words importing persons shall include corporations and associations, including public bodies, as well as natural persons. The terms "hereby," "hereof," "hereto," "herein," "hereunder," and any similar terms, as used in this IFB, refer to this IFB.

4.14 Use of all NYS Tools, Equipment, Lifting Gear-Liability Waiver

Contractor shall be permitted to use any available, State-owned, fixed and non-fixed tools, equipment and lifting gear ("State Equipment") in the performance of the Contract, provided the use of the State Equipment is within the scope of the services to be performed under the Contract.

Prior to the commencement of any work under this Contract, Contractor shall inspect the State Equipment at each location to determine if Contractor desires to use any available State Equipment. All State Equipment that will be used by Contractor shall be listed on Attachment 6 – State Tools and Equipment Use Request, attached to and made a part of this Contract. The parties may from time to time amend Attachment 6 – State Tools and Equipment Use Request, and the amendment shall be attached to this Contract and be made a part of this Contract as if it were an original part of this Contract. Contractor shall not be permitted to use any State Equipment that is not listed on Attachment 6 – State Tools and Equipment Use Request.

State Equipment is available for the use of the Contractor on an "as is/where is" basis, with no representations or warranties as to condition, fitness for use, or compliance with applicable laws, regulations, or requirements. Contractor acknowledges that it is familiar with how to use the State Equipment and is aware of the risks and dangers that may arise as a result of the use (and improper use) of the State Equipment, which may include, without limitation, tripping hazards, falls from a height, and objects falling from above, which are inherently dangerous and could result in, among other things and without limitation, cuts, scrapes, puncture wounds, or bruises; sprained joints; bruised or torn tendons, ligaments, and muscles; broken bones; spinal injuries; concussions or other brain injuries; and even death.

Contractor agrees that the State Equipment may only be used by Contractor's employees, agents or subcontractors who have been properly trained to use the equipment and, if applicable, have read the manufacturer's operations manuals and have been certified or accredited to appropriately operate the State Equipment.

Contractor shall routinely inspect the State Equipment and use each item of State Equipment only for its intended purposes and only if there are no defects or deficiencies noted. If Contractor believes that there is a need for repair, replacement, or maintenance of any of the State Equipment, Contractor shall not use the defective or deficient State Equipment, but Contractor shall notify OGS in accordance with the "Notices" section of any Contract resulting from this solicitation, and OGS shall then, in its sole discretion, determine if repair, replacement, or maintenance is required, and cause the same to be performed in a timely manner at the sole cost and expense of OGS; provided, however, that repairs, replacements, or

maintenance that are necessary due to the negligence or willful misconduct of Contractor, its employees, agents, or subcontractors shall be performed by OGS at Contractor's sole cost and expense.

Contractor assumes all risks of injury to itself, its employees, and its property arising out of the use of the State Equipment and hereby releases, indemnifies, and holds harmless the People of the State of New York, and its officers, employees, and agents ("Releasees"), with respect to any and all injury, disability, death, or loss or damage to person or property, whether arising from the negligence of the Releasees or otherwise, to the fullest extent permitted by law.

The State Equipment shall remain the property of OGS and may not be removed by the Contractor. At the expiration or earlier termination of this Contract, the State Equipment shall be returned to OGS in the same condition it was in at the commencement of the Contract, reasonable wear and tear excepted.

5. Contract Clauses and Requirements

5.1 Appendix A / Order of Precedence

Appendix A — Standard Clauses for New York State Contracts, dated June 2023, attached hereto, is hereby expressly made a part of this solicitation document as fully as if set forth at length herein. The agreement resulting from a successful award will include the following documents. Conflicts between these documents will be resolved in the following descending order of precedence:

- A. Appendix A (June 2023)
- B. Contract Service Agreement
- C. OGS Invitation for Bid Number 2806, including any Addenda
- D. Selected Contractor's Bid including Attachment 1 Bid Proposal Form

5.2 Procurement Lobbying Requirement

Pursuant to State Finance Law §139-j and §139-k, this Solicitation includes and imposes certain restrictions on communications between OGS and a Vendor during the procurement process. A Vendor is restricted from making contacts from the earliest posting, on a governmental entity's website, in a newspaper of general circulation, or in the procurement opportunities newsletter of intent to solicit offers/bids through final award and approval of the Procurement Contract by OGS and, if applicable, the Office of the State Comptroller ("Restricted Period") to other than designated staff unless it is a contact that is included among certain statutory exceptions set forth in State Finance Law §139-j(3)(a). Designated staff, as of the date hereof, is identified on the first page and in Section 1.2. OGS employees are also required to obtain certain information when contacted during the restricted period and make a determination of the responsibility of the Vendor pursuant to these two statutes. Certain findings of non-responsibility can result in rejection for contract award and in the event of two findings within a four-year period; the Vendor is debarred from obtaining governmental Procurement Contracts. Further information about these requirements can be found on the OGS website: http://www.ogs.ny.gov/acpl/

5.3 Tax and Finance Clause

TAX LAW § 5-A:

Section 5-a of the Tax Law, as amended, effective April 26, 2006, requires certain contractors awarded state contracts for commodities, services and technology valued at more than \$100,000 to certify to the Department of Taxation and Finance (DTF) that they are registered to collect New York State and local sales and compensating use taxes. The law applies to contracts where the total amount of such contractors' sales delivered into New York State are in excess of \$300,000 for the four quarterly periods immediately preceding the quarterly period in which the certification is made, and with respect to any affiliates and subcontractors whose sales delivered into New York State exceeded \$300,000 for the four quarterly periods immediately preceding the quarterly period in which the certification is made.

This law imposes upon certain contractors the obligation to certify whether or not the contractor, its affiliates, and its subcontractors are required to register to collect state sales and compensating use tax and contractors must certify to DTF that each affiliate and subcontractor exceeding such sales threshold is registered with DTF to collect New York State and local sales and compensating use taxes. The law prohibits the State Comptroller, or other approving agency, from approving a contract awarded to a contractor meeting the registration requirements but who is not so registered in accordance with the law.

Contractor certification forms and instructions for completing the forms are attached to this IFB. Form ST-220-TD must be filed with and returned directly to DTF. Unless the information upon which the ST-220-TD is based changes, this form only needs to be filed once with DTF. If the information changes for the contractor, its affiliate(s), or its subcontractor(s) a new Form ST-220-TD must be filed with DTF.

Form ST-220-CA must be filed with the bid and submitted to the procuring covered agency certifying that the contractor filed the ST-220-TD with DTF. Proposed contractors should complete and return the certification forms within two business days of request (if the forms are not completed and returned with bid submission). Failure to make either of these filings may render a Bidder non-responsive and non-responsible. Bidders shall take the necessary steps to provide properly certified forms within a timely manner to ensure compliance with the law.

Vendors may call DTF at **1-800-698-2909** for any and all questions relating to Section 5-a of the Tax Law and relating to a company's registration status with the DTF. For additional information and frequently asked questions, please refer to the DTF web site: https://www.tax.ny.gov

5.4 Freedom of Information Law / Trade Secrets

During the evaluation process, the content of each bid will be held in confidence and details of any bid will not be revealed (except as may be required under the Freedom of Information Law or other State law). The Freedom of Information Law provides for an exemption from disclosure for trade secrets or information the disclosure of which would cause injury to the competitive position of commercial enterprises. This exception would be effective both during and after the evaluation process. Should you feel your firm's bid contains any such trade secrets or other confidential or proprietary information, you must submit a request to except such information from disclosure. Such request must be in writing, must state the reasons why the information should be excepted from disclosure and must be provided at the time of submission of the subject information. This can be accomplished by completion of the applicable question on the contractor information page in Appendix B hereto. Requests for exemption of the entire contents of a bid from disclosure have generally not been found to be meritorious and are discouraged. Kindly limit any requests for exemption of information from disclosure to bona fide trade secrets or specific information, the disclosure of which would cause a substantial injury to the competitive position of your firm.

5.5 General Requirements

- A. The Bidder agrees to adhere to all State and Federal laws and regulations in connection with the contract.
- B. The Bidder agrees to notify OGS of any changes in the legal status or principal ownership of the firm, 45 days in advance of said change.
- C. The Bidder agrees that in any contract resulting from this IFB it shall be completely responsible for its work, including any damages or breakdowns caused by its failure to take appropriate action.
- D. The Bidder agrees that any contract resulting from this IFB may not be assigned, transferred, conveyed or the work subcontracted without the prior written consent of OGS.
- E. For reasons of safety and public policy, in any contract resulting from this IFB, the use of illegal drugs and/or alcoholic beverages by the Contractor or its personnel shall not be permitted while performing any phase of the work herein specified.
- F. For purposes of any contract resulting from this IFB, the State will not be liable for any expense incurred by the Contractor for any parking fees or as a consequence of any traffic infraction or parking violations attributable to employees of the Contractor.
- G. OGS interpretation of specifications shall be final and binding upon the Contractor.
- H. The Commissioner of OGS will make no allowance or concession to the Bidder for any alleged misunderstanding because of quantity, quality, character, location or other conditions.
- I. Should it appear that there is a real or apparent discrepancy between different sections of specifications concerning the nature, quality or extent of work to be furnished, it shall be assumed that the Bidder has based its bid on the more expensive option. Final decision will rest with OGS.

- J. INSPECTION For purposes of any contract resulting from this IFB the quality of service is subject to inspection and may be made at any reasonable time by the State of New York. Should it be found that quality of services being performed is not satisfactory and that the requirements of the specifications are not being met, OGS may terminate the contract and employ another Contractor to fulfill the requirements of the contract. The existing Contractor shall be liable to the State of New York for costs incurred on account thereof.
- K. STOP WORK ORDER OGS reserves the right to stop the work covered by this IFB and any contract(s) resulting there from at any time that it is deemed the Contractor is unable or incapable of performing the work to the State's satisfaction. In the event of such stopping, OGS shall have the right to arrange for the completion of the work in such manner as it may deem advisable and if the cost thereof exceeds the amount of the bid, the Contractor shall be liable to the State of New York for any such costs on account thereof. In the event that OGS issues a stop work order for the work as provided herein, the Contractor shall have ten working days to respond thereto before any such stop work order shall become effective. Provided, however, that if an emergency situation exists, as reasonably determined by OGS, then the stop work order shall be effective immediately.
- L. OGS reserves the right to reject and bar from the facility any employee hired by the Contractor.

5.6 Subcontractors

The State will contract only with the successful Bidder who is the Prime Contractor. The Issuing Office considers the Prime Contractor, the sole Contractor with regard to all provisions of the solicitation and the contract resulting from the solicitation. When bidding, any known / planned use of subcontractors must be disclosed in detail with bid submission. If subcontractors are to be used for base scope services, it shall be understood that the bid price includes the cost of the subcontractor, and no additional markups will be allowed. If subcontractors are to be used for Additional Services, they will be subject to the Additional Services clause, and associated markup provision herein.

No subcontract entered into by the Contractor shall relieve the Contractor of any liabilities or obligations in this IFB or the resultant contract. The Contractor accepts full responsibility for the actions of any employee or subcontractor/subcontractor's employee(s) who carry out any of the provisions of any contract resulting from this IFB.

The Contractor's use of subcontractors shall not diminish the Contractor's obligations to complete the work in accordance with the contract. The Contractor shall coordinate and control the work of the subcontractors.

The Contractor shall be responsible for informing the subcontractors of all terms, conditions, and requirements of the contract documents.

During the term of the Contract, before any part of the contract shall be sublet, the Contractor shall submit to the Director of Utilities Management or their designee, Governor Nelson A. Rockefeller Empire State Plaza, 39th Floor, Albany, New York 12242, in writing, the name of each proposed subcontractor and obtain written consent to such subcontractor. The names shall be submitted in ample time to permit acceptance or rejection of each proposed subcontractor without causing delay in the work of this contract. The Contractor shall promptly furnish such information as the Director of Utilities Management may require concerning the proposed subcontractor's ability and qualifications.

In the event that subcontractors must be used during the term of this contract for Additional Services work, the following guidelines shall apply.

A. The Contractor shall procure goods and services using commercially reasonable and prudent practices to obtain the most favorable price and terms. The Contractor will make his/her best efforts and shall document same to obtain written bids from at least three responsible service providers before selecting the best price and terms. Prior OGS approval is required for all Additional Services. The following conditions apply to competitive bidding for subcontracted additional services:

- i. Each bid will be solicited in a form and manner conducive to uniformity in all bids. The Contractor will maintain documentation of the solicitation and results.
- ii. If the Contractor desires to accept other than the lowest Bidder, or where competitive bids are not possible, adequate justification must be provided to the State for required prior approval.
- iii. The OGS shall be free to accept or reject any bid/subcontract submitted for State's approval, and Contractor shall provide OGS with copies of all documentation OGS may request in relation to such approval rights.

5.7 Procurement Rights

The State of New York reserves the right to:

- A. Reject any and all bids received in response to this Solicitation.
- B. Disqualify a Bidder from receiving the award if the Bidder, or anyone in the Bidder's employ, has previously failed to perform satisfactorily in connection with public bidding or contracts.
- C. Correct Bidders' mathematical errors and waive or modify other minor irregularities in bids received, after prior notification to the Bidder.
- D. Adjust any Bidder's expected costs of the bid price based on a determination of the evaluation committee that the selection of the said Bidder will cause the State to incur additional costs.
- E. Utilize any and all ideas submitted in the bids received.
- F. Negotiate with Bidders responding to this Solicitation within the Solicitation requirements to serve the best interests of the State.
- G. Begin contract negotiations with another bidding Contractor(s) in order to serve the best interests of the State of New York should the State of New York be unsuccessful in negotiating a contract with the selected Contractor within 21 days of selection notification.
- H. Waive any non-material requirement not met by all Bidders.
- I. Not make an award from this Solicitation.
- J. Make an award under this Solicitation in whole or in part.
- K. Make multiple contract awards pursuant to the Solicitation.
- L. Have any service completed via separate competitive bid or other means, as determined to be in the best interest of the State.
- M. Seek clarifications of bids.
- N. Disqualify any Bidder whose conduct and/or bid fails to conform to the requirements of the IFB.
- O. Prior to the bid opening, amend the IFB specifications to correct errors or oversights, or to supply additional information, as it becomes available.
- P. Waive any requirements that are not material.
- Q. If two or more bids are found to be substantially equivalent, the Commissioner of OGS, at their sole discretion, will determine award using the pre-established process. For best value procurements, cost will be the determining factor.

Note: The State is not liable for any cost incurred by a Bidder in the preparation and production of a bid or for any work performed prior to the issuance of a contract.

5.8 Extent of Services

OGS reserves the right to re-negotiate at its discretion, to reduce the amount of services provided under any contract resulting from this solicitation. This reduction in services shall be effectuated by written amendment to the contract and subject to approval by the Office of the State Comptroller.

5.9 Debriefings

Pursuant to Section 163(9)(c) of the State Finance Law, any unsuccessful Bidder may request a debriefing regarding the reasons that the Bid submitted by the Bidder was not selected for award. Requests for a debriefing must be made within 15 calendar days of notification by OGS that the Bid submitted by the Bidder was not selected for award. Requests should be submitted in writing to a designated contact identified in the Solicitation.

5.10 Termination

A. Termination

The Office of General Services may, upon 30 days' notice, terminate the contract resulting from this IFB in the event of the awarded Bidder's failure to comply with any of the bid's requirements unless the awarded Bidder obtained a waiver of the requirement.

In addition, OGS may also terminate any contract resulting from this IFB upon ten days written notice if the Contractor makes any arrangement for the assignment for the benefit of creditors.

Furthermore, OGS shall have the right, in its sole discretion, at any time to terminate a contract resulting from this IFB, or any unit portion thereof, with or without cause, by giving 30 days written notice of termination to the Contractor.

B. Procurement Lobbying Termination

The Office of General Services reserves the right to terminate this Agreement in the event it is found that the certification filed by the Contractor in accordance with New York State Finance Law §139-k was intentionally false or intentionally incomplete. Upon such finding, the Office of General Services may exercise its termination right by providing written notification to the Contractor in accordance with the written notification terms of this Agreement.

C. Effect of Termination

Any termination by OGS under this Section shall in no event constitute or be deemed a breach of any contract resulting from this IFB and no liability shall be incurred by or arise against the Office of General Services, its agents and employees therefore for lost profits or any other damages.

5.11 NYS Vendor Responsibility

OGS conducts a review of prospective contractors ("Bidders") to provide reasonable assurances that the Bidder is responsive and responsible. A For-Profit Business Entity Questionnaire (hereinafter "Questionnaire") is used for non-construction contracts and is designed to provide information to assess a Bidder's responsibility to conduct business in New York based upon financial and organizational capacity, legal authority, business integrity, and past performance history. By submitting a bid, Bidder agrees to fully and accurately complete the Questionnaire. The Bidder acknowledges that the State's execution of the Contract will be contingent upon the State's determination that the Bidder is responsible, and that the State will be relying upon the Bidder's responses to the Questionnaire when making its responsibility determination.

OGS recommends each Bidder file the required Questionnaire online via the New York State VendRep System. To enroll in and use the VendRep System, please refer to the VendRep System Instructions and User Support for Vendors available at the Office of the State Comptroller's (OSC) website,

<u>https://www.osc.state.ny.us/vendrep/index.htm</u> or to enroll, go directly to the VendRep System online at https://www.osc.state.ny.us/vendrep/info vrsystem.htm.

OSC provides direct support for the VendRep System through user assistance, documents, online help, contact Desk help desk. The OSC Help information located and http://www.osc.state.ny.us/portal/contactbuss.htm. Bidder's opting to complete the paper questionnaire access this form and associated definitions the OSC can via website at: http://www.osc.state.ny.us/vendrep/forms vendor.htm.

In order to assist the State in determining the responsibility of the Bidder prior to Contract Award, the Bidder must complete and certify (or recertify) the Questionnaire no more than six months prior to the bid due date. A Bidder's Questionnaire cannot be viewed by OGS until the Bidder has certified the Questionnaire. It is recommended that all Bidders become familiar with all of the requirements of the Questionnaire in advance of the bid opening to provide sufficient time to complete the Questionnaire.

The Bidder agrees that if it is awarded a Contract the following shall apply:

The Contractor shall at all times during the Contract term remain responsible. The Contractor agrees, if requested by the Commissioner of OGS or her designee, to present evidence of its continuing legal authority to do business in New York State, integrity, experience, ability, prior performance, and organizational and financial capacity.

The Commissioner of OGS or her designee, in her sole discretion, reserves the right to suspend any or all activities under this Contract, at any time, when she discovers information that calls into question the responsibility of the Contractor. In the event of such suspension, the Contractor will be given written notice outlining the particulars of such suspension. Upon issuance of such notice, the Contractor must comply with the terms of the suspension order. Contract activity may resume at such time as the Commissioner of OGS or her designee issues a written notice authorizing a resumption of performance under the Contract.

Upon written notice to the Contractor, and a reasonable opportunity to be heard with appropriate OGS officials or staff, the Contract may be terminated by the Commissioner of OGS or her designee at the Contractor's expense where the Contractor is determined by the Commissioner of OGS or her designee to be non-responsible. In such event, the Commissioner of OGS or her designee may complete the contractual requirements in any manner she may deem advisable and pursue available legal or equitable remedies for breach.

In no case shall such termination of the Contract by the State be deemed a breach thereof, nor shall the State be liable for any damages for lost profits or otherwise, which may be sustained by the Contractor as a result of such termination.

5.12 New York State Vendor File Registration

Prior to being awarded a contract pursuant to this Solicitation, the Bidder(s) must be registered in the New York State Vendor File (Vendor File) administered by the Office of the State Comptroller (OSC). This is a central registry for all vendors who do business with New York State Agencies and the registration must be initiated by a State Agency. Following the initial registration, unique New York State ten-digit vendor identification numbers will be assigned to your company for usage on all future transactions with New York State. Additionally, the Vendor File enables vendors to use the Vendor Self-Service application to manage all vendor information in one central location for all transactions related to the State of New York. If Bidder is already registered in the New York State Vendor File, list the ten-digit vendor ID number on the Contractor Information page included in Appendix B of this solicitation.

If the Bidder is not currently registered in the Vendor File and is recommended for award, OGS shall request completion of OSC Substitute W-9 Form. A fillable form with instructions can be found at the link below. The Office of General Services will initiate the vendor registration process for all Bidders recommended for Contract Award. Once the process is initiated, registrants will receive an email from OSC that includes the unique ten-digit vendor identification number assigned to the company and

instructions on how to enroll in the online Vendor Self-Service application. For more information on the vendor file please visit the following website: www.osc.state.ny.us/vendors/index.htm. Form to be completed: www.osc.state.ny.us/vendors/forms/ac3237s fe.pdf.

5.13 Ethics Compliance

All Bidders/Contractors and their employees must comply with the requirements of §§73 and 74 of the Public Officers Law, other state codes, rules, regulations, and executive orders establishing ethical standards for the conduct of business with New York State. In signing any contract resulting from this IFB, the Contractor certifies full compliance with those provisions for any present or future dealings, transactions, sales, contracts, services, offers, relations, etc., involving New York State and/or its employees. Failure to comply with those provisions may result in disqualification from the bidding process, termination of contract, and/or other civil or criminal proceedings as required by law.

5.14 Indemnification

The Contractor shall assume all risks of liability for its performance, or that of any of its officers, employees, subcontractors or agents, of any contract resulting from this solicitation and shall be solely responsible and liable for all liabilities, losses, damages, costs or expenses, including attorney's fees, arising from any claim, action or proceeding relating to or in any way connected with the performance of this Agreement and covenants and agrees to indemnify and hold harmless the State of New York, its agents, officers and employees, from any and all claims, suits, causes of action and losses of whatever kind and nature, arising out of or in connection with its performance of any contract resulting from this solicitation, including negligence, active or passive or improper conduct of the Contractor, its officers, agents, subcontractors or employees, or the failure by the Contractor, its officers, agents, subcontractors or employees to perform any obligations or commitments to the State or third parties arising out of or resulting from any contract resulting from this solicitation. Such indemnity shall not be limited to the insurance coverage herein prescribed.

5.15 Force Majeure

Neither party hereto will be liable for losses, defaults, or damages under any contract resulting from this solicitation which result from delays in performing, or inability to perform, all or any of the obligations or responsibilities imposed upon it pursuant to the terms and conditions of this solicitation, due to or because of acts of God, the public enemy, acts of government, earthquakes, floods, strikes, civil strife, fire or any other cause beyond the reasonable control of the party that was so delayed in performing or so unable to perform provided that such party was not negligent and shall have used reasonable efforts to avoid and overcome such cause. Such party will resume full performance of such obligations and responsibilities promptly upon removal of any such cause.

5.16 Encouraging Use of New York State Businesses in Contract Performance

New York State businesses have a substantial presence in State contracts and strongly contribute to the economies of the state and the nation. In recognition of the economic activity and leadership such businesses offer, Contractors are strongly encouraged and expected to consider New York State businesses in the fulfillment of the requirements of this agreement. Such partnering may be as subcontractors, suppliers, protégés or other supporting roles.

Bidders need to be aware that all authorized users of this contract will be strongly encouraged, to the maximum extent practical and consistent with legal requirements, to use responsible and responsive New York State businesses in purchasing commodities that are of equal quality and functionality and in utilizing services and technology. Furthermore, Bidders are reminded that they must continue to utilize small, minority and women-owned businesses, consistent with current State law.

Utilizing New York State businesses in State contracts will help create more private sector jobs, rebuild New York's infrastructure, and maximize economic activity to the mutual benefit of the contractor and its New York State business partners. New York State businesses will promote the contractor's optimal performance under the contract, thereby fully benefiting the public sector programs that are supported by associated procurements.

Public procurements can drive and improve the State's economic engine through promotion of the use of New York businesses by its contractors. The State therefore expects Bidders to provide maximum assistance to New York businesses in their use of the contract. The potential participation by all kinds of New York businesses will deliver great value to the State and its taxpayers.

5.17 Sexual Harassment Prevention

Pursuant to N.Y. State Finance Law § 139-I, every bid made on or after January 1, 2019 to the State or any public department or agency thereof, where competitive bidding is required by statute, rule or regulation, for work or services performed or to be performed or goods sold or to be sold, and where otherwise required by such public department or agency, shall contain a certification that the Bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of N.Y. State Labor Law § 201-g.

N.Y. State Labor Law § 201-g provides requirements for such policy and training and directs the Department of Labor, in consultation with the Division of Human Rights, to create and publish a model sexual harassment prevention guidance document, sexual harassment prevention policy and sexual harassment prevention training program that employers may utilize to meet the requirements of N.Y. State Labor Law § 201-g. The model sexual harassment prevention policy, model sexual harassment training materials, and further guidance for employers, can be found online at the following URL: https://www.ny.gov/combating-sexual-harassment-workplace/employers.

Pursuant to N.Y. State Finance Law § 139-I, any bid by a corporate Bidder containing the certification required above shall be deemed to have been authorized by the board of directors of such Bidder, and such authorization shall be deemed to include the signing and submission of such bid and the inclusion therein of such statement as the act and deed of the Bidder.

If the Bidder cannot make the required certification, such Bidder shall so state and shall furnish with the bid a signed statement that sets forth in detail the reasons that the Bidder cannot make the certification. After review and consideration of such statement, OGS may reject the bid or may decide that there are sufficient reasons to accept the bid without such certification.

The certification required above can be found on Appendix B – NYS Required Certifications, which Bidder must submit with its bid.

5.18 Contractors Compensatory Liability

In the event that the Contractor fails to complete any of the specified services within the timeframe required, OGS reserves the right to have such work completed either by another contractor or with inhouse staff. In any such event, the Contractor shall be liable to reimburse OGS for all costs incurred to complete the work. OGS further reserves the right to collect such reimbursement from any outstanding payments due to the Contractor.

APPENDIX A

STANDARD CLAUSES FOR NEW YORK STATE CONTRACTS

PLEASE RETAIN THIS DOCUMENT FOR FUTURE REFERENCE.

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STANDARD CLAUSES FOR NYS CONTRACTS

The parties to the attached contract, license, lease, amendment or other agreement of any kind (hereinafter, "the contract" or "this contract") agree to be bound by the following clauses which are hereby made a part of the contract (the word "Contractor" herein refers to any party other than the State, whether a contractor, licenser, licensee, lessor, lessee or any other party):

- **1. EXECUTORY CLAUSE.** In accordance with Section 41 of the State Finance Law, the State shall have no liability under this contract to the Contractor or to anyone else beyond funds appropriated and available for this contract.
- 2. NON-ASSIGNMENT CLAUSE. In accordance with Section 138 of the State Finance Law, this contract may not be assigned by the Contractor or its right, title or interest therein assigned, transferred, conveyed, sublet or otherwise disposed of without the State's previous written consent, and attempts to do so are null and void. Notwithstanding the foregoing, such prior written consent of an assignment of a contract let pursuant to Article XI of the State Finance Law may be waived at the discretion of the contracting agency and with the concurrence of the State Comptroller where the original contract was subject to the State Comptroller's approval, where the assignment is due to a reorganization, merger or consolidation of the Contractor's business entity or enterprise. The State retains its right to approve an assignment and to require that any Contractor demonstrate its responsibility to do business with the State. The Contractor may, however, assign its right to receive payments without the State's prior written consent unless this contract concerns Certificates of Participation pursuant to Article 5-A of the State Finance Law.
- 3. **COMPTROLLER'S APPROVAL.** In accordance with Section 112 of the State Finance Law, if this contract exceeds \$50,000 (or \$75,000 for State University of New York or City University of New York contracts for goods, services, construction and printing, and \$150,000 for State University Health Care Facilities) or if this is an amendment for any amount to a contract which, as so amended, exceeds said statutory amount, or if, by this contract, the State agrees to give something other than money when the value or reasonably estimated value of such consideration exceeds \$25,000, it shall not be valid, effective or binding upon the State until it has been approved by the State Comptroller and filed in his office. Comptroller's approval of contracts let by the Office of General Services, either for itself or its customer agencies by the Office of General Services Business Services Center, is required when such contracts exceed \$85,000. Comptroller's approval of contracts established as centralized contracts through the Office of General Services is required when such contracts exceed \$125,000, and when a purchase order or other procurement transaction issued under such centralized contract exceeds \$200,000.

- **4.** <u>WORKERS'</u> <u>COMPENSATION</u> <u>BENEFITS</u>. In accordance with Section 142 of the State Finance Law, this contract shall be void and of no force and effect unless the Contractor shall provide and maintain coverage during the life of this contract for the benefit of such employees as are required to be covered by the provisions of the Workers' Compensation Law.
- 5. NON-DISCRIMINATION REQUIREMENTS. To the extent required by Article 15 of the Executive Law (also known as the Human Rights Law) and all other State and Federal statutory and constitutional non-discrimination provisions, the Contractor will not discriminate against any employee or applicant for employment, nor subject any individual to harassment, because of age, race, creed, color, national origin, citizenship or immigration status, sexual orientation, gender identity or expression, military status, sex, disability, predisposing genetic characteristics, familial status, marital status, or domestic violence victim status or because the individual has opposed any practices forbidden under the Human Rights Law or has filed a complaint, testified, or assisted in any proceeding under the Human Rights Law. Furthermore, in accordance with Section 220-e of the Labor Law, if this is a contract for the construction, alteration or repair of any public building or public work or for the manufacture, sale or distribution of materials, equipment or supplies, and to the extent that this contract shall be performed within the State of New York, Contractor agrees that neither it nor its subcontractors shall, by reason of race, creed, color, disability, sex, or national origin: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this contract. If this is a building service contract as defined in Section 230 of the Labor Law, then, in accordance with Section 239 thereof, Contractor agrees that neither it nor its subcontractors shall by reason of race, creed, color, national origin, age, sex or disability: (a) discriminate in hiring against any New York State citizen who is qualified and available to perform the work; or (b) discriminate against or intimidate any employee hired for the performance of work under this contract. Contractor is subject to fines of \$50.00 per person per day for any violation of Section 220-e or Section 239 as well as possible termination of this contract and forfeiture of all moneys due hereunder for a second or subsequent violation.
- **6.** WAGE AND HOURS PROVISIONS. If this is a public work contract covered by Article 8 of the Labor Law or a building service contract covered by Article 9 thereof, neither Contractor's employees nor the employees of its subcontractors may be required or permitted to work more than the number of hours or days stated in said statutes, except as otherwise provided in the Labor Law and as set forth in prevailing wage and supplement schedules issued by the State Labor Department. Furthermore, Contractor and its subcontractors must pay at least the prevailing wage rate and pay or provide the prevailing supplements, including the premium rates for overtime pay, as determined by the State Labor Department in

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accordance with the Labor Law. Additionally, effective April 28, 2008, if this is a public work contract covered by Article 8 of the Labor Law, the Contractor understands and agrees that the filing of payrolls in a manner consistent with Subdivision 3-a of Section 220 of the Labor Law shall be a condition precedent to payment by the State of any State approved sums due and owing for work done upon the project.

- **7. NON-COLLUSIVE BIDDING CERTIFICATION.** In accordance with Section 139-d of the State Finance Law, if this contract was awarded based upon the submission of bids, Contractor affirms, under penalty of perjury, that its bid was arrived at independently and without collusion aimed at restricting competition. Contractor further affirms that, at the time Contractor submitted its bid, an authorized and responsible person executed and delivered to the State a non-collusive bidding certification on Contractor's behalf.
- 8. INTERNATIONAL BOYCOTT PROHIBITION. accordance with Section 220-f of the Labor Law and Section 139-h of the State Finance Law, if this contract exceeds \$5,000, the Contractor agrees, as a material condition of the contract, that neither the Contractor nor any substantially owned or affiliated person, firm, partnership or corporation has participated, is participating, or shall participate in an international boycott in violation of the federal Export Administration Act of 1979 (50 USC App. Sections 2401 et seq.) or regulations thereunder. If such Contractor, or any of the aforesaid affiliates of Contractor, is convicted or is otherwise found to have violated said laws or regulations upon the final determination of the United States Commerce Department or any other appropriate agency of the United States subsequent to the contract's execution, such contract, amendment or modification thereto shall be rendered forfeit and void. The Contractor shall so notify the State Comptroller within five (5) business days of such conviction, determination or disposition of appeal (2 NYCRR § 105.4).
- 9. SET-OFF RIGHTS. The State shall have all of its common law, equitable and statutory rights of set-off. These rights shall include, but not be limited to, the State's option to withhold for the purposes of set-off any moneys due to the Contractor under this contract up to any amounts due and owing to the State with regard to this contract, any other contract with any State department or agency, including any contract for a term commencing prior to the term of this contract, plus any amounts due and owing to the State for any other reason including, without limitation, tax delinquencies, fee delinquencies or monetary penalties relative thereto. The State shall exercise its set-off rights in accordance with normal State practices including, in cases of set-off pursuant to an audit, the finalization of such audit by the State agency, its representatives, or the State Comptroller.
- **10. RECORDS.** The Contractor shall establish and maintain complete and accurate books, records, documents, accounts and other evidence directly pertinent to performance under this contract (hereinafter, collectively, the "Records"). The Records

must be kept for the balance of the calendar year in which they were made and for six (6) additional years thereafter. The State Comptroller, the Attorney General and any other person or entity authorized to conduct an examination, as well as the agency or agencies involved in this contract, shall have access to the Records during normal business hours at an office of the Contractor within the State of New York or, if no such office is available, at a mutually agreeable and reasonable venue within the State, for the term specified above for the purposes of inspection, auditing and copying. The State shall take reasonable steps to protect from public disclosure any of the Records which are exempt from disclosure under Section 87 of the Public Officers Law (the "Statute") provided that: (i) the Contractor shall timely inform an appropriate State official, in writing, that said records should not be disclosed; and (ii) said records shall be sufficiently identified; and (iii) designation of said records as exempt under the Statute is reasonable. Nothing contained herein shall diminish, or in any way adversely affect, the State's right to discovery in any pending or future litigation.

- 11. IDENTIFYING INFORMATION AND PRIVACY NOTIFICATION. (a) Identification Number(s). Every invoice or New York State Claim for Payment submitted to a New York State agency by a payee, for payment for the sale of goods or services or for transactions (e.g., leases, easements, licenses, etc.) related to real or personal property must include the payee's identification number. The number is any or all of the following: (i) the payee's Federal employer identification number, (ii) the payee's Federal social security number, and/or (iii) the payee's Vendor Identification Number assigned by the Statewide Financial System. Failure to include such number or numbers may delay payment. Where the payee does not have such number or numbers, the payee, on its invoice or Claim for Payment, must give the reason or reasons why the payee does not have such number or numbers.
- (b) Privacy Notification. (1) The authority to request the above personal information from a seller of goods or services or a lessor of real or personal property, and the authority to maintain such information, is found in Section 5 of the State Tax Law. Disclosure of this information by the seller or lessor to the State is mandatory. The principal purpose for which the information is collected is to enable the State to identify individuals, businesses and others who have been delinquent in filing tax returns or may have understated their tax liabilities and to generally identify persons affected by the taxes administered by the Commissioner of Taxation and Finance. The information will be used for tax administration purposes and for any other purpose authorized by law. (2) The personal information is requested by the purchasing unit of the agency contracting to purchase the goods or services or lease the real or personal property covered by this contract or lease. The information is maintained in the Statewide Financial System by the Vendor Management Unit within the Bureau of State Expenditures, Office of the State Comptroller, 110 State Street, Albany, New York 12236.

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- 12. EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITIES AND WOMEN. In accordance with Section 312 of the Executive Law and 5 NYCRR Part 143, if this (i) a written agreement or purchase order instrument, providing for a total expenditure in excess of \$25,000.00, whereby a contracting agency is committed to expend or does expend funds in return for labor, services, supplies, equipment, materials or any combination of the foregoing, to be performed for, or rendered or furnished to the contracting agency; or (ii) a written agreement in excess of \$100,000.00 whereby a contracting agency is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon; or (iii) a written agreement in excess of \$100,000.00 whereby the owner of a State assisted housing project is committed to expend or does expend funds for the acquisition, construction, demolition, replacement, major repair or renovation of real property and improvements thereon for such project, then the following shall apply and by signing this agreement the Contractor certifies and affirms that it is Contractor's equal employment opportunity policy that:
- (a) The Contractor will not discriminate against employees or applicants for employment because of race, creed, color, national origin, sex, age, disability or marital status, shall make and document its conscientious and active efforts to employ and utilize minority group members and women in its work force on State contracts and will undertake or continue existing programs of affirmative action to ensure that minority group members and women are afforded equal employment opportunities without discrimination. Affirmative action shall mean recruitment, employment, job assignment, promotion, upgradings, demotion, transfer, layoff, or termination and rates of pay or other forms of compensation;
- (b) at the request of the contracting agency, the Contractor shall request each employment agency, labor union, or authorized representative of workers with which it has a collective bargaining or other agreement or understanding, to furnish a written statement that such employment agency, labor union or representative will not discriminate on the basis of race, creed, color, national origin, sex, age, disability or marital status and that such union or representative will affirmatively cooperate in the implementation of the Contractor's obligations herein; and
- (c) the Contractor shall state, in all solicitations or advertisements for employees, that, in the performance of the State contract, all qualified applicants will be afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability or marital status.

Contractor will include the provisions of "(a), (b) and (c)" above, in every subcontract over \$25,000.00 for the construction, demolition, replacement, major repair, renovation, planning or design of real property and improvements thereon (the "Work") except where the Work is for the beneficial use of the Contractor. Section 312 does not

- apply to: (i) work, goods or services unrelated to this contract; or (ii) employment outside New York State. The State shall consider compliance by a contractor or subcontractor with the requirements of any federal law concerning equal employment opportunity which effectuates the purpose of this clause. The contracting agency shall determine whether the imposition of the requirements of the provisions hereof duplicate or conflict with any such federal law and if such duplication or conflict exists, the contracting agency shall waive the applicability of Section 312 to the extent of such duplication or conflict. Contractor will comply with all duly promulgated and lawful rules and regulations of the Department of Economic Development's Division of Minority and Women's Business Development pertaining hereto.
- **13.** <u>CONFLICTING TERMS</u>. In the event of a conflict between the terms of the contract (including any and all attachments thereto and amendments thereof) and the terms of this Appendix A, the terms of this Appendix A shall control.
- **14. GOVERNING LAW.** This contract shall be governed by the laws of the State of New York except where the Federal supremacy clause requires otherwise.
- **15. LATE PAYMENT.** Timeliness of payment and any interest to be paid to Contractor for late payment shall be governed by Article 11-A of the State Finance Law to the extent required by law.
- **16.** <u>NO ARBITRATION</u>. Disputes involving this contract, including the breach or alleged breach thereof, may not be submitted to binding arbitration (except where statutorily authorized), but must, instead, be heard in a court of competent jurisdiction of the State of New York.
- 17. SERVICE OF PROCESS. In addition to the methods of service allowed by the State Civil Practice Law & Rules ("CPLR"), Contractor hereby consents to service of process upon it by registered or certified mail, return receipt requested. Service hereunder shall be complete upon Contractor's actual receipt of process or upon the State's receipt of the return thereof by the United States Postal Service as refused or undeliverable. Contractor must promptly notify the State, in writing, of each and every change of address to which service of process can be made. Service by the State to the last known address shall be sufficient. Contractor will have thirty (30) calendar days after service hereunder is complete in which to respond.
- **18. PROHIBITION ON PURCHASE OF TROPICAL HARDWOODS.** The Contractor certifies and warrants that all wood products to be used under this contract award will be in accordance with, but not limited to, the specifications and provisions of Section 165 of the State Finance Law, (Use of Tropical Hardwoods) which prohibits purchase and use of tropical hardwoods, unless specifically exempted, by the State or any governmental agency or political subdivision or public benefit corporation. Qualification for an exemption under this

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law will be the responsibility of the contractor to establish to meet with the approval of the State.

In addition, when any portion of this contract involving the use of woods, whether supply or installation, is to be performed by any subcontractor, the prime Contractor will indicate and certify in the submitted bid proposal that the subcontractor has been informed and is in compliance with specifications and provisions regarding use of tropical hardwoods as detailed in § 165 State Finance Law. Any such use must meet with the approval of the State; otherwise, the bid may not be considered responsive. Under bidder certifications, proof of qualification for exemption will be the responsibility of the Contractor to meet with the approval of the State.

- 19. MACBRIDE FAIR EMPLOYMENT PRINCIPLES. In accordance with the MacBride Fair Employment Principles (Chapter 807 of the Laws of 1992), the Contractor hereby stipulates that the Contractor either (a) has no business operations in Northern Ireland, or (b) shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles (as described in Section 165 of the New York State Finance Law), and shall permit independent monitoring of compliance with such principles.
- **20.** OMNIBUS PROCUREMENT ACT OF 1992. It is the policy of New York State to maximize opportunities for the participation of New York State business enterprises, including minority- and women-owned business enterprises as bidders, subcontractors and suppliers on its procurement contracts.

Information on the availability of New York State subcontractors and suppliers is available from:

NYS Department of Economic Development Division for Small Business and Technology Development 625 Broadway

Albany, New York 12245 Telephone: 518-292-5100

A directory of certified minority- and women-owned business enterprises is available from:

NYS Department of Economic Development Division of Minority and Women's Business Development 633 Third Avenue 33rd Floor New York, NY 10017

New York, NY 10017 646-846-7364

email: mwbebusinessdev@esd.nv.gov

 $\underline{\underline{https://ny.newnycontracts.com/FrontEnd/searchcertifieddir}}$

ectory.asp

The Omnibus Procurement Act of 1992 (Chapter 844 of the Laws of 1992, codified in State Finance Law § 139-i and Public Authorities Law § 2879(3)(n)–(p)) requires that by signing this bid proposal or contract, as applicable, Contractors certify that whenever the total bid amount is greater than \$1 million:

- (a) The Contractor has made reasonable efforts to encourage the participation of New York State Business Enterprises as suppliers and subcontractors, including certified minority- and women-owned business enterprises, on this project, and has retained the documentation of these efforts to be provided upon request to the State;
- (b) The Contractor has complied with the Federal Equal Opportunity Act of 1972 (P.L. 92-261), as amended;
- (c) The Contractor agrees to make reasonable efforts to provide notification to New York State residents of employment opportunities on this project through listing any such positions with the Job Service Division of the New York State Department of Labor, or providing such notification in such manner as is consistent with existing collective bargaining contracts or agreements. The Contractor agrees to document these efforts and to provide said documentation to the State upon request; and
- (d) The Contractor acknowledges notice that the State may seek to obtain offset credits from foreign countries as a result of this contract and agrees to cooperate with the State in these efforts.

21. RECIPROCITY AND SANCTIONS PROVISIONS. Bidders are hereby notified that if their principal place of

Bidders are hereby notified that if their principal place of business is located in a country, nation, province, state or political subdivision that penalizes New York State vendors, and if the goods or services they offer will be substantially produced or performed outside New York State, the Omnibus Procurement Act 1994 and 2000 amendments (Chapter 684 and Chapter 383, respectively, codified in State Finance Law § 165(6) and Public Authorities Law § 2879(5)) require that they be denied contracts which they would otherwise obtain. NOTE: As of May 2023, the list of discriminatory jurisdictions subject to this provision includes the states of South Carolina, Alaska, West Virginia, Wyoming, Louisiana and Hawaii.

- 22. <u>COMPLIANCE WITH BREACH NOTIFICATION</u>
 <u>AND DATA SECURITY LAWS</u>. Contractor shall comply with the provisions of the New York State Information Security Breach and Notification Act (General Business Law §§ 899-aa and 899-bb and State Technology Law § 208).
- 23. COMPLIANCE WITH **CONSULTANT** DISCLOSURE LAW. If this is a contract for consulting services, defined for purposes of this requirement to include analysis, evaluation, research, training, data processing, computer programming, engineering, environmental, health, and mental health services, accounting, auditing, paralegal, legal or similar services, then, in accordance with Section 163 (4)(g) of the State Finance Law (as amended by Chapter 10 of the Laws of 2006), the Contractor shall timely, accurately and properly comply with the requirement to submit an annual employment report for the contract to the agency that awarded the contract, the Department of Civil Service and the State Comptroller.

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24. PROCUREMENT LOBBYING. To the extent this agreement is a "procurement contract" as defined by State Finance Law §§ 139-j and 139-k, by signing this agreement the contractor certifies and affirms that all disclosures made in accordance with State Finance Law §§ 139-j and 139-k are complete, true and accurate. In the event such certification is found to be intentionally false or intentionally incomplete, the State may terminate the agreement by providing written notification to the Contractor in accordance with the terms of the agreement.

25. <u>CERTIFICATION OF REGISTRATION TO COLLECT SALES AND COMPENSATING USE TAX BY CERTAIN STATE CONTRACTORS, AFFILIATES AND SUBCONTRACTORS.</u>

To the extent this agreement is a contract as defined by Tax Law § 5-a, if the contractor fails to make the certification required by Tax Law § 5-a or if during the term of the contract, the Department of Taxation and Finance or the covered agency, as defined by Tax Law § 5-a, discovers that the certification, made under penalty of perjury, is false, then such failure to file or false certification shall be a material breach of this contract and this contract may be terminated, by providing written notification to the Contractor in accordance with the terms of the agreement, if the covered agency determines that such action is in the best interest of the State.

26. IRAN DIVESTMENT ACT. By entering into this Agreement, Contractor certifies in accordance with State Finance Law § 165-a that it is not on the "Entities Determined to be Non-Responsive Bidders/Offerers pursuant to the New York State Iran Divestment Act of 2012" ("Prohibited Entities List") posted at: https://ogs.ny.gov/iran-divestment-act-2012

Contractor further certifies that it will not utilize on this Contract any subcontractor that is identified on the Prohibited Entities List. Contractor agrees that should it seek to renew or extend this Contract, it must provide the same certification at the time the Contract is renewed or extended. Contractor also agrees that any proposed Assignee of this Contract will be required to certify that it is not on the Prohibited Entities List before the contract assignment will be approved by the State.

During the term of the Contract, should the state agency receive information that a person (as defined in State Finance Law § 165-a) is in violation of the above-referenced certifications, the state agency will review such information and offer the person an opportunity to respond. If the person fails to demonstrate that it has ceased its engagement in the investment activity which is in violation of the Act within 90 days after the determination of such violation, then the state agency shall take such action as may be appropriate and provided for by law, rule, or contract, including, but not limited to, imposing sanctions, seeking compliance, recovering damages, or declaring the Contractor in default.

The state agency reserves the right to reject any bid, request for assignment, renewal or extension for an entity that appears on the Prohibited Entities List prior to the award, assignment, renewal or extension of a contract, and to pursue a responsibility review with respect to any entity that is awarded a contract and appears on the Prohibited Entities list after contract award.

27. ADMISSIBILITY OF REPRODUCTION OF CONTRACT. Notwithstanding the best evidence rule or any other legal principle or rule of evidence to the contrary, the Contractor acknowledges and agrees that it waives any and all objections to the admissibility into evidence at any court proceeding or to the use at any examination before trial of an electronic reproduction of this contract, in the form approved by the State Comptroller, if such approval was required, regardless of whether the original of said contract is in existence.

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Solicitation

Appendix B – Required Forms

Required Forms – Table of Contents

The fol	llowing required forms are to be submitted with the proposer's proposal. The forms
	Contractor Information Page
	Corporate Acknowledgement (must be notarized)
	Offerer's Affirmation of Understanding of and Agreement pursuant to New York State Finance Law §139-j (3) and §139-j (6) (b)
	Offerer Disclosure of Prior Non-Responsibility Determinations
	Offerer's Certification of Compliance with State Finance Law §139-k(5)
	NYS Required Certifications Nondiscrimination In Employment In Northern Ireland Macbride Fair Employment Principles Non-Collusive Bidding Certification Diesel Emission Reduction Act Executive Order No 177 Certification State Finance Law § 139-I Certification Small Business Certification
	Certification Under Executive Order No. 16- Prohibiting State Agencies and Authorities from Contracting with Businesses Conducting Business in Russia
	ST-220 -TD Taxation & Finance Contractor Certification (Submitted directly to Taxation & Finance)
	ST-220 -CA Taxation and Finance Covered Agency Certification
	EEO 100- Equal Employment Opportunity Staffing Plan
	SDVOB Utilization Plan

Contractor Information

Solicitation Number

Offerer affirms that it understands and agrees to comply with the procedures of the Government Entity relative to permissible contacts as required by New York State Finance Law §139-j (3) and §139-j (6) (b).

Authorized Signature				Date		
			·			
Print Name		Title	e			
Company Name						
Federal ID Number		NYS Vendor ID Number				
Address						
City	State		Zip		County	
Telephone Number	Ext	Toll	Free Telephor	ne		Ext
Fax Number		Toll	Free Fax Num	nber		
Email of Designated Contact						

Please identify if any of the following apply:

New York State Small Business as defined in Executive Law Section 310(20) and as detailed in the "New York State Required Certifications" included in Appendix B herein.	Yes	No
New York State Certified Minority Owned Business	Yes	No
New York State Certified Woman Owned Business	Yes	No
New York State Certified Service-Disabled Veteran-Owned Business	Yes	No
Do you understand and is your firm capable of meeting the insurance requirements to enter into a contract with New York State?	Yes	No
Will New York State Businesses be used in the performance of this contract?	Yes	No
If yes, identify New York State Business(es) that will be used; (Attach identifying information).		
Does your proposal meet all the requirements of this solicitation?	Yes	No

Is your firm making a claim that any portions of its bid should be exempt from release under the Freedom of Information Law, as they constitute trade secrets, or information the disclosure of which would cause a substantial injury to your firm's competitive position? (Please review the clause entitled "Freedom of Information Law / Trade Secrets" of this Solicitation before answering).	Yes	No
If "Yes", please identify the specific portions of your bid for which you are claiming this exemption, and the reasons for such claimed exemption. Attach additional sheets, if necessary		

INDIVIDUAL, CORPORATION, PARTNERSHIP, OR LLC ACKNOWLEDGMENT
STATE OF }
: SS .:
COUNTY OF }
On the day of in the year 20, before me personally appeared
, known to me to be the person who executed the
foregoing instrument, who, being duly sworn by me did depose and say that _he resides at
County of,
State of; and further that:
[Check One]
(If an individual): _he executed the foregoing instrument in his/her name and on his/her own behalf.
(If a corporation):he is the of
, the corporation described in said instrument; that, by authority of the Board of Directors of said
corporation,he is authorized to execute the foregoing instrument on behalf of the corporation for
purposes set forth therein; and that, pursuant to that authority,he executed the foregoing instrument in the name of and on behalf of said corporation as the act and deed of said corporation.
(If a partnership):he is the of,
the partnership described in said instrument; that, by the terms of said partnership,he is authorized
to execute the foregoing instrument on behalf of the partnership for purposes set forth therein; and that,
pursuant to that authority,he executed the foregoing instrument in the name of and on behalf of said
partnership as the act and deed of said partnership.
(If a limited liability company):he is a duly authorized member of,
LLC, the limited liability company described in said instrument; thathe is authorized to execute the
foregoing instrument on behalf of the limited liability company for purposes set forth therein; and that,
pursuant to that authority,he executed the foregoing instrument in the name of and on behalf of said limited liability company as the act and deed of said limited liability company.
miniou nability company as the act and acce of cala immou nability company.
Notary Public
Registration No
State of:

Offerer's Affirmation of Understanding of and Agreement pursuant to New York State Finance Law §139-j (3) and §139-j (6) (b)

New York State Finance Law §139-j(6)(b) provides that:

Every Governmental Entity shall seek written affirmations from all Offerers as to the Offerer's understanding of and agreement to comply with the Governmental Entity's procedures relating to permissible contacts during a Governmental Procurement pursuant to subdivision three of this section.

Offerer affirms that it understands and agrees to comply with the procedures of the Government Entity relative to permissible contacts as required by New York State Finance Law §139-j (3) and §139-j (6) (b).				
Authorized Signature		Date		
Print Name Title				
,				
Company Name				
Address				
City	State	Zip		

Offerer Disclosure of Prior Non-Responsibility Determinations

Background:

New York State Finance Law §139-k(2) obligates a Governmental Entity to obtain specific information regarding prior non-responsibility determinations with respect to State Finance Law §139-j. This information must be collected in addition to the information that is separately obtained pursuant to State Finance Law §163(9). In accordance with State Finance Law §139-k, an Offerer must be asked to disclose whether there has been a finding of non-responsibility made within the previous four (4) years by any Governmental Entity due to: (a) a violation of State Finance Law §139-j or (b) the intentional provision of false or incomplete information to a Governmental Entity. The terms "Offerer" and "Governmental Entity" are defined in State Finance Law § 139-k(1). State Finance Law §139-j sets forth detailed requirements about the restrictions on Contacts during the procurement process. A violation of State Finance Law

§139-j includes, but is not limited to, an impermissible Contact during the restricted period (for example, contacting a person or entity other than the designated contact person, when such contact does not fall within one of the exemptions).

As part of its responsibility determination, State Finance Law §139-k(3) mandates consideration of whether an Offerer fails to timely disclose accurate or complete information regarding the above non-responsibility determination. In accordance with law, no Procurement Contract shall be awarded to any Offerer that fails to timely disclose accurate or complete information under this section, unless a finding is made that the award of the Procurement Contract to the Offerer is necessary to protect public property or public health safety, and that the Offerer is the only source capable of supplying the required Article of Procurement within the necessary timeframe. See State Finance Law §§139-j (10)(b) and 139-k(3).

Instructions:

A Governmental Entity must include a disclosure request regarding prior non-responsibility determinations in accordance with State Finance Law §139-k in its solicitation of proposals or bid documents or specifications or contract documents, as applicable, for procurement contracts. The attached form is to be completed and submitted by the individual or entity seeking to enter into a Procurement Contract. It shall be submitted to the Governmental Entity conducting the Governmental Procurement.

Offerer Disclosure of Prior Non-Responsibility Determinations

Name	Name of Individual or Entity Seeking to Enter into the Procurement Contract						
Addres	Address						
riddioi							
City		State	Zip				
Persor	n Submitting this Form	Title	Date	Contract Procu	rement Number		
1.	Has any Governmental Entity made a find regarding the individual or entity seeking to Contract in the previous four years?	o enter into the Procure	ement	No	Yes		
	ves, please answer questions 2-4 before			please go to question 5.			
2.	Was the basis for the finding of non-respo State Finance Law §139-j	nsibility due to a violation	on of	No	Yes		
3.	Was the basis for the finding of non-responsibility due to the intentional provision of false or incomplete information to a Governmental Entity?						
4.	If you answered yes to any of the above questions, please provide details regarding the finding of non-responsibility below.						
	Governmental Entity		Date of Fi	nding of Non-responsibility			
L	Basis of Finding of Non-Responsibility (Ac	ld additional pages as ı	necessary)			
5.	Has any Governmental Entity or other go or withheld a Procurement Contract with entity due to the intentional provision of fa	the above-named indiv	dual or	No	Yes		
6.	6. If yes, please provide details below.						
	Governmental Entity Date of Termination or Withholding of Contract						
L	Basis of Termination or Withholding (Add additional pages as necessary)						
Offerer certifies that all information provided to the Governmental Entity with respect to State Finance Law §139-k is complete, true and accurate.							
By:	By: Date: Signature						

Offerer's Certification of Compliance with State Finance Law §139-k(5)

New York State Finance Law §139-k(5) requires that every Procurement Contract award subject to the provisions of State Finance Law §§139-k or 139-j shall contain a certification by the Offerer that all information provided to the Office of General Services with respect to State Finance Law §139-k is complete, true and accurate.

Offerer Certification:					
I certify that all information provided to the Office of General Services with respect to State Finance Law §139-k is complete, true and accurate.					
Authorized Signature		Date			
Print Name	Print Name Title				
·					
Company Name					
Address					
City	State	Zip			

Procurement Lobbying Termination

The Office of General Services reserves the right to terminate this contract in the event it is found that the certification filed by the Offerer in accordance with New York State Finance Law §139-k was intentionally false or intentionally incomplete. Upon such finding, the Office of General Services may exercise its termination right by providing written notification to the Offerer in accordance with the written notification terms of this contract.

NYS REQUIRED CERTIFICATIONS

Nondiscrimination In Employment In Northern Ireland Macbride Fair Employment Principles

In accordance with Section 165 of the State Finance Law, the bidder, by submission of this bid, certifies that it or any individual or legal entity in which the bidder holds a 10% or greater ownership interest, or any individual or legal entity that holds a 10% or greater ownership interest in the bidder, either (answer yes or no to one or both of the following, as applicable):

- 1. have business operations in Northern Ireland No Yes , and if yes:
- 2. shall take lawful steps in good faith to conduct any business operations in Northern Ireland in accordance with the MacBride Fair Employment Principles relating to nondiscrimination in employment and freedom of workplace opportunity regarding such operations in Northern Ireland, and shall permit independent monitoring of compliance with such principles.

No Yes

Non-Collusive Bidding Certification

In accordance with Section 139-d of the State Finance Law, by submitting its bid each bidder and each person signing on behalf of any other bidder certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of his or her knowledge and belief:

- 1. The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or with any competitor.
- 2. Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor.
- 3. No attempt has been made or will be made by the bidder to induce any other person, partnership or corporation to submit or not to submit a bid for the purpose of restricting competition.

In the event that the Bidder is unable to certify as stated above, the Bidder shall provide a signed statement which sets forth in detail the reasons why the Bidder is unable to furnish the certificate as required in accordance with State Finance Law § 139-d(1)(b).

Diesel Emission Reduction Act

Pursuant to N.Y. Environmental Conservation Law § 19-0323 (the "Law") it is a requirement that heavy duty diesel vehicles in excess of 8,500 pounds use the best available retrofit technology ("BART") and ultralow sulfur diesel fuel ("ULSD"). The requirement of the Law applies to all vehicles owned, operated by or on behalf of, or leased by State agencies and State or regional public authorities. It also requires that such vehicles owned, operated by or on behalf of, or leased by State agencies and State or regional public authorities with more than half of its governing body appointed by the Governor utilize BART.

The Law may be applicable to vehicles used by contract vendors "on behalf of" State agencies and public authorities and require certain reports from contract vendors. All heavy duty diesel vehicles must have BART by the deadline provided in the Law. The Law also provides a list of exempted vehicles. Regulations

set forth in 6 NYCRR Parts 248 and 249 provide further guidance. The Bidder hereby certifies and warrants that all heavy duty vehicles, as defined in the Law, to be used under this contract, will comply with the specifications and provisions of the Law, and 6 NYCRR Parts 248 and 249.

Executive Order No. 177 Certification

The New York State Human Rights Law, Article 15 of the Executive Law, prohibits discrimination and harassment based on age, race, creed, color, national origin, sex, pregnancy or pregnancy-related conditions, sexual orientation, gender identity, disability, marital status, familial status, domestic violence victim status, prior arrest or conviction record, military status or predisposing genetic characteristics.

The Human Rights Law may also require reasonable accommodation for persons with disabilities and pregnancy-related conditions. A reasonable accommodation is an adjustment to a job or work environment that enables a person with a disability to perform the essential functions of a job in a reasonable manner. The Human Rights Law may also require reasonable accommodation in employment on the basis of Sabbath observance or religious practices.

Generally, the Human Rights Law applies to:

- all employers of four or more people, employment agencies, labor organizations and apprenticeship training programs in all instances of discrimination or harassment;
- employers with fewer than four employees in all cases involving sexual harassment; and,
- any employer of domestic workers in cases involving sexual harassment or harassment based on gender, race, religion or national origin.

In accordance with Executive Order No. 177, the Bidder hereby certifies that it does not have institutional policies or practices that fail to address the harassment and discrimination of individuals on the basis of their age, race, creed, color, national origin, sex, sexual orientation, gender identity, disability, marital status, military status, or other protected status under the Human Rights Law.

Executive Order No. 177 and this certification do not affect institutional policies or practices that are protected by existing law, including but not limited to the First Amendment of the United States Constitution. Article 1, Section 3 of the New York State Constitution, and Section 296(11) of the New York State Human Rights Law.

State Finance Law § 139-I Certification

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that the bidder has and has implemented a written policy addressing sexual harassment prevention in the workplace and provides annual sexual harassment prevention training to all of its employees. Such policy shall, at a minimum, meet the requirements of section two hundred one-g of the labor law.

If the bidder cannot make the foregoing certification, such bidder shall so state and shall furnish with the bid a signed statement that sets forth in detail the reasons that the bidder cannot make the certification.

Small Business Certifications

State Finance Law § 163(1)(j) (Authorizes Award of Quantitative Factor Credit for Small Business **Status in Evaluation for Best Value Contracts)**

For purposes of New York State Finance Law § 163(1)(j), the contractor certifies that it:

IS NOT a Small Business as de	efined in New York Sta	te Executive Law § 310(20).		
IS a Small Business as defined in New York State Executive Law § 310(20).				
Small Business" is defined under New York State Executive Law § 310(20) as a business that: A. has a significant business presence in New York demonstrated through one of the following: 1. pays taxes in New York State, or 2. purchases New York State products or materials, or 3. has any payroll in New York State B. is independently owned and operated; C. is not dominant in its field; and, D. employs less than 300 persons.				
State Finance Law § 163(6) (Authorizes Small Business Concerns) For purposes of New York State Finance I	•			
IS NOT a Small Business Conc Law § 160(8).	cern or Small Business	as defined in New York State Finance		
IS a Small Business Concern of \$160(8).	or Small Business as de	efined in New York State Finance Law		
"Small Business Concern" or "Small Business that: A. is resident in New York State; B. is independently owned and op C. is not dominant in its field; and D. employs 100 or less persons. By signing you certify your express autother entity and full knowledge and accomplete, true	perated; thority to sign on beh ceptance of this Certif	alf of yourself, your company, or		
Authorized Signature		Date		
Print Name		Title		
Company Name				
D/B/A – Doing Business As (if applicable)				
Address				
City	State	Zip		

Certification Under Executive Order No. 16- Prohibiting State Agencies and Authorities from Contracting with Businesses Conducting Business in Russia

The Executive Order remains in effect while sanctions imposed by the federal government are in effect. Accordingly, vendors who may be excluded from award because of current business operations in Russia are nevertheless encouraged to respond to solicitations to preserve their contracting opportunities in case the sanctions are lifted during a solicitation or even after award in the case of some solicitations.

As defined in Executive Order No. 16, an "entity conducting business operations in Russia" means an institution or company, wherever located, conducting any commercial activity in Russia or transacting business with the Russian Government or with commercial entities headquartered in Russia or with their principal place of business in Russia in the form of contracting, sales, purchasing, investment, or any business partnership.

Is Vendor an entity conducting business operations in Russia, as defined above? Please answer by checking one of the following boxes:

- 1. No, Vendor does not conduct business operations in Russia within the meaning of Executive Order No. 16.
- 2.a. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16 but has taken steps to wind down business operations in Russia or is in the process of winding down business operations in Russia. (Please provide a detailed description of the wind down process and a schedule for completion.)
- 2.b. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16 but only to the extent necessary to provide vital health and safety services within Russia or to comply with federal law, regulations, executive orders, or directives. (Please provide a detailed description of the services being provided orthe relevant laws, regulations, etc.)
- 3. Yes, Vendor conducts business operations in Russia within the meaning of Executive Order No. 16.

The undersigned certifies under penalties of perjury that they are knowledgeable about the Vendor's business and operations and that the answer provided herein is true to the best of their knowledge and belief.

Authorized Signature	Date				
Print Name		Title			
Company Name					
Address					
City	State	Zip			

NYS Department of Taxation and Finance - FORMS

CONTRACTOR CERTIFICATION (ST-220-TD 12/11)
CONTRACTOR CERTIFICATION TO COVERED AGENCY
(ST-220-CA 12/11)



Department of Taxation and Finance

Contractor Certification

(Pursuant to Tax Law Section 5-a, as amended, effective April 26, 2006)

ST-220-

For information, consult Publication 223, Questions and Answers Concerning Tax Law Section 5-a (see Need help? below).

City	State	ZIP code
City	State	ZIP code
Contractor's sales tax ID number (if different from contractor's EIN)	Contractor's telephone number ()
Contract number or description		Covered agency telephone number ()
City	State	ZIP code
tract (but not including renewals) me	ore than \$100,000?	
	City Contractor's sales tax ID number (Contract number or description City	City State Contractor's sales tax ID number (if different from contractor's EIN) Contract number or description

General information

Tax Law section 5-a, as amended, effective April 26, 2006, requires certain contractors awarded certain state contracts valued at more than \$100,000 to certify to the Tax Department that they are registered to collect New York State and local sales and compensating use taxes, if they made sales delivered by any means to locations within New York State of tangible personal property or taxable services having a cumulative value in excess of \$300,000, measured over a specified period. In addition, contractors must certify to the Tax Department that each affiliate and subcontractor exceeding such sales threshold during a specified period is registered to collect New York State and local sales and compensating use taxes. Contractors must also file Form ST-220-CA, Contractor Certification to Covered Agency, certifying to the procuring state entity that they filed Form ST-220-TD with the Tax Department and that the information contained on Form ST-220-TD is correct and complete as of the date they file Form ST-220-CA.

All sections must be completed including all fields on the top of this page, all sections on page 2, Schedule A on page 3, if applicable, and Individual, Corporation, Partnership, or LLC Acknowledgement on page 4. If you do not complete these areas, the form will be returned to you for completion.

For more detailed information regarding this form and Tax Law section 5-a, see Publication 223, Questions and Answers Concerning Tax Law Section 5-a, (as amended, effective April 26, 2006). See Need help? for more information on how to obtain this publication.

Note: Form ST-220-TD must be signed by a person authorized to make the certification on behalf of the contractor, and the acknowledgement on page 4 of this form must be completed before a notary public.

Mail completed form to:

NYS TAX DEPARTMENT DATA ENTRY SECTION WAHARRIMAN CAMPUS ALBANY NY 12227-0826

Privacy notification

New York State Law requires all government agencies that maintain a system of records to provide notification of the legal authority for any request, the principal purpose(s) for which the information is to be collected, and where it will be maintained. To view this information, visit our Web site, or, if you do not have Internet access, call and request Publication 54, *Privacy Notification*. See *Need help?* for the Web address and telephone number.

Need help?



Visit our Web site at www.tax.ny.gov

- get information and manage your taxes online
- · check for new online services and features

Telephone assistance

Sales Tax Information Center: (518) 485-2889

To order forms and publications: (518) 457-5431

Text Telephone (TTY) Hotline (for persons with hearing and speech disabilities using a TTY): (518) 485-5082

Persons with disabilities: In compliance with the Americans with Disabilities Act, we will ensure that our lobbies, offices, meeting rooms, and other facilities are accessible to persons with disabilities. If you have questions about special accommodations for persons with disabilities, call the information center.

Sworn to this____day of ______ , 20 ____

•
To the best of the contractor's knowledge, the contractor has one or more subcontractors having made sales delivered by any means to locations within New York State of tangible personal property or taxable services having a cumulative value in excess of \$300,000 during the four sales tax quarters which immediately precede the sales tax quarter in which this certification is made, and each subcontractor exceeding the \$300,000 cumulative sales threshold during such quarters is registered to collect New York State and local sales and compensating use taxes with the Commissioner of Taxation and Finance pursuant to Tax Law sections 1134 and 1253. The contractor has listed each subcontractor exceeding the \$300,000 cumulative sales threshold during such quarters on Schedule A of this certification.

☐ To the best of the contractor's knowledge, the contractor has one or more subcontractors, and each subcontractor has not made sales delivered by any means to locations within New York State of tangible personal property or taxable services having a cumulative value in excess of \$300,000 during the four sales tax quarters which immediately precede the sales tax quarter in which this certification is made.

(sign before a notary public)	

Schedule A – Listing of each entity (contractor, affiliate, or subcontractor) exceeding \$300,000 cumulative sales threshold

List the contractor, or affiliate, or subcontractor in Schedule A only if such entity exceeded the \$300,000 cumulative sales threshold during the specified sales tax guarters. See directions below. For more information, see Publication 223.

A Relationship to contractor	B Name	C Address	D Federal ID number	E Sales tax ID number	F Registration in progress
Contractor					

- Column A Enter **C** in column A if the contractor; **A** if an affiliate of the contractor; or **S** if a subcontractor.
- Column B Name If the entity is a corporation or limited liability company, enter the exact legal name as registered with the NY Department of State, if applicable. If the entity is a partnership or sole proprietor, enter the name of the partnership and each partner's given name, or the given name(s) of the owner(s), as applicable. If the entity has a different DBA (doing business as) name, enter that name as well.
- Column C Address Enter the street address of the entity's principal place of business. Do not enter a PO box.
- Column D ID number Enter the federal employer identification number (EIN) assigned to the entity. If the entity is an individual, enter the social security number of that person.
- Column E Sales tax ID number Enter only if different from federal EIN in column D.
- Column F If applicable, enter an X if the entity has submitted Form DTF-17 to the Tax Department but has not received its certificate of authority as of the date of this certification.

Registration No. _____

Individual, Corporation, Partnership, or LLC Acknowledgment

individual, corporation, rathership, or the Acknowledgment
STATE OF } : SS.:
COUNTY OF }
On the day of in the year 20 , before me personally appeared ,
known to me to be the person who executed the foregoing instrument, who, being duly sworn by me did depose and say that
_ he resides at ,
Town of ,
County of,
State of; and further that:
(Mark an X in the appropriate box and complete the accompanying statement.)
☐ (If an individual): _he executed the foregoing instrument in his/her name and on his/her own behalf.
☐ (If a corporation): _he is the
of, the corporation described in said instrument; that, by authority of the Board of Directors of said corporation, _he is authorized to execute the foregoing instrument on behalf of the corporation for purposes set forth therein; and that, pursuant to that authority, _he executed the foregoing instrument in the name of and on behalf of said corporation as the act and deed of said corporation.
☐ (If a partnership): _he is a
of, the partnership described in said instrument; that, by the terms of said partnership, _he is authorized to execute the foregoing instrument on behalf of the partnership for purposes set forth therein; and that, pursuant to that authority, _he executed the foregoing instrument in the name of and on behalf of said partnership as the act and deed of said partnership.
☐ (If a limited liability company): _he is a duly authorized member of
LLC, the limited liability company described in said instrument; that _he is authorized to execute the foregoing instrument on behalf of the limited liability company for purposes set forth therein; and that, pursuant to that authority, _he executed the foregoing instrument in the name of and on behalf of said limited liability company as the act and deed of said limited liability company.
Notary Public



New York State Department of Taxation and Finance

Contractor Certification to Covered Agency

(Pursuant to Section 5-a of the Tax Law, as amended, effective April 26, 2006)

ST-220-CA

(12/11)

For information, consult Publication 223, Questions and Answers Concerning Tax Law Section 5-a (see Need Help? on back).

Contractor name					For covered agency use only	
Contractor's principal place of business	City	State	ZIP code	Contract number or description		
Contractor's mailing address (if different th	Estimated contract value over the full term of contract (but not					
Contractor's federal employer identification	on number (EIN)	Contractor's sal	es tax ID number (if different fr	including renewals)		
Contractor's telephone number	Covered agend	sy name			Ψ	
Covered agency address					Covered agency telephone number	
,		-	der penalty of perjury		(title)	
The contractor has filed Form S contractor's knowledge, the infor		•			th this contract and, to the best o	
The contractor has previously file	ed Form ST-220	-TD with the Tax	Department in connect		ert contract number or description)	
and, to the best of the contractor as of the current date, and thus	•	•	-	ly filed Form ST	. ,	
Sworn to this day of	, 20					
(sign before a no.	tary public)			(tit	le)	

Instructions

General information

Tax Law section 5-a was amended, effective April 26, 2006. On or after that date, in all cases where a contract is subject to Tax Law section 5-a, a contractor must file (1) Form ST-220-CA, Contractor Certification to Covered Agency, with a covered agency, and (2) Form ST-220-TD with the Tax Department before a contract may take effect. The circumstances when a contract is subject to section 5-a are listed in Publication 223, Q&A 3. See Need help? for more information on how to obtain this publication. In addition, a contractor must file a new Form ST-220-CA with a covered agency before an existing contract with such agency may be renewed.

Note: Form ST-220-CA must be signed by a person authorized to make the certification on behalf of the contractor, and the acknowledgement on page 2 of this form must be completed before a notary public.

When to complete this form

As set forth in Publication 223, a contract is subject to section 5-a, and you must make the required certification(s), if:

- i. The procuring entity is a *covered agency* within the meaning of the statute (see Publication 223, Q&A 5);
- ii. The contractor is a contractor within the meaning of the statute (see Publication 223, Q&A 6); and
- iii. The contract is a contract within the meaning of the statute. This is the case when it (a) has a value in excess of \$100,000 and (b) is a contract for commodities or services, as such terms are defined for purposes of the statute (see Publication 223, Q&A 8 and 9).

Furthermore, the procuring entity must have begun the solicitation to purchase on or after January 1, 2005, and the resulting contract must have been awarded, amended, extended, renewed, or assigned *on or after April 26, 2006* (the effective date of the section 5-a amendments).

	Individual, Corporation, Partnership, or LLC Acknowledgment
	TTE OF } : SS.: UNTY OF }
On i	the day of in the year 20, before me personally appeared,
kno _h	e resides at, , of,
	unty of
	te of; and further that:
-	rk an X in the appropriate box and complete the accompanying statement.] (If an individual): _he executed the foregoing instrument in his/her name and on his/her own behalf.
	(If a corporation): _he is the
	of, the corporation described in said instrument; that, by authority of the Board of Directors of said corporation, _he is authorized to execute the foregoing instrument on behalf of the corporation for purposes set forth therein; and that, pursuant to that authority, _he executed the foregoing instrument in the name of and on behalf of said corporation as the act and deed of said corporation.
	(If a partnership): _he is a
	of, the partnership described in said instrument; that, by the terms of said partnership, _he is authorized to execute the foregoing instrument on behalf of the partnership for purposes set forth therein; and that, pursuant to that authority, _he executed the foregoing instrument in the name of and on behalf of said partnership as the act and deed of said partnership.
	(If a limited liability company): _he is a duly authorized member of, LLC, the limited liability company described in said instrument; that _he is authorized to execute the foregoing instrument on behalf of the limited liability company for purposes set forth therein; and that, pursuant to that authority, _he executed the foregoing instrument in the name of and on behalf of said limited liability company as the act and deed of said limited

Privacy notification

Notary Public

Registration No.

liability company.

The Commissioner of Taxation and Finance may collect and maintain personal information pursuant to the New York State Tax Law, including but not limited to, sections 5-a, 171, 171-a, 287, 308, 429, 475, 505, 697, 1096, 1142, and 1415 of that Law; and may require disclosure of social security numbers pursuant to 42 USC 405(c)(2)(C)(i).

This information will be used to determine and administer tax liabilities and, when authorized by law, for certain tax offset and exchange of tax information programs as well as for any other lawful purpose.

Information concerning quarterly wages paid to employees is provided to certain state agencies for purposes of fraud prevention, support enforcement, evaluation of the effectiveness of certain employment and training programs and other purposes authorized by law.

Failure to provide the required information may subject you to civil or criminal penalties, or both, under the Tax Law.

This information is maintained by the Manager of Document Management, NYS Tax Department, W A Harriman Campus, Albany NY 12227; telephone (518) 457-5181.

Need help?



Visit our Web site at www.tax.ny.gov

- get information and manage your taxes online
- · check for new online services and features

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Telephone assistance

Sales Tax Information Center: (518) 485-2889

To order forms and publications: (518) 457-5431

Text Telephone (TTY) Hotline (for persons with hearing and speech disabilities using a TTY): (518) 485-5082

Persons with disabilities: In compliance with the Americans with Disabilities Act, we will ensure that our lobbies, offices, meeting rooms, and other facilities are accessible to persons with disabilities. If you have questions about special accommodations for persons with disabilities, call the information center.



EQUAL EMPLOYMENT OPPORTUNITY STAFFING PLAN

General instructions: Contact the Designated Contact(s) for the solicitation if you have any questions. **All Offerors** must complete an EEO Staffing Plan (EEO 100) and submit it as part of the bid or proposal package. Where the work force to be utilized in the performance of the State contract can be separated out from the contractor's total work force, the Offeror shall complete this form only for the anticipated work force to be utilized on the State contract. Where the work force to be utilized in the performance of the State contract cannot be separated out from the contractor's total work force, the Offeror shall complete this form for the contractor's total work force. Subcontractors awarded a subcontract over \$25,000 for the construction, demolition, replacement, major repair, renovation, planning or design of real property and improvements thereon (the "Work") except where the Work is for the beneficial use of the Contractor must complete this form upon request of OGS.

Instructions for completing:

- 1. Enter the Solicitation Number that this report applies to along with the name and address of the Offeror.
- 2. Check off the appropriate box to indicate if the Offeror completing the report is the contractor or a subcontractor.
- 3. Check off the appropriate box to indicate if the work force being reported is just for the contract or the Offerors' total work force.
- 4. Enter the total work force by EEO job category.
- 5. Break down the total work force by gender and enter under the heading "Work force by Gender."
- 6. Break down the total work force by race/ethnic background and enter under the heading "Work force by Race/Ethnic Identification." Enter the name, title, phone number and email address for the person completing the form. Sign and date the form in the designated boxes.

RACE/ETHNIC IDENTIFICATION

Race/ethnic designations as used by the Equal Employment Opportunity Commission do not denote scientific definitions of anthropological origins. For the purposes of this report, an employee may be included in the group to which he or she appears to belong, identifies with, or is regarded in the community as belonging. However, no person should be counted in more than one race/ethnic group. The race/ethnic categories for this survey are:

WHITE - (Not of Hispanic origin) All persons having origins in any of the original peoples of Europe, North Africa, or the Middle East.

BLACK - A person, not of Hispanic origin, who has origins in any of the black racial groups of the original peoples of Africa.

HISPANIC - A person of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin, regardless of race.

ASIAN & PACIFIC - A person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands. **ISLANDER**

AMERICAN INDIAN - A person having origins in any of the original peoples of North America, and who maintains cultural identification through tribal OR ALASKAN affiliation or community recognition.

NATIVE (Not of Hispanic Origin)



Office of Minority and Women-Owned Businesses & Community Relations

EQUAL EMPLOYMENT OPPORTUNITY STAFFING PLAN

SUBMIT WITH BID OR	PROPO	SAL or	within a re	easonal	ole time t	thereaft	er as re	queste	by OG	S, but p	rior to	Contrac	t Award.					
Solicitation No.: Reporting Entity: Contractor									Repo	t includ	udes Contractor's							
					Contractor's work force to be utilized on this contract													
Subcontractor Contractor/Subcontractor's Name:										- □ c	ontracto	r's total	work forc	e				
					∟ ⊔ sı	ubcontra	actor's w	ork force	to be u	tilized o	n this co	ntract						
Contractor/Subcontra					│ □ Si	ubcontra	actor's to	tal work	force									
FEIN:																		
Enter the total number of	of employ	ees for	each class	ification	:													
			force by				Pac	Work fo		ution								
EEO Job Category	Total	Total	Sender Total			Rac		ce/Ethnic Identifica		ation		American						
	Work Force	Male (M)	Female (F)	Wł (M)	nite (F)	Bla (M)	ick (F)	Hisp (M)	anic (F)	As (M)	Asian Indian o (M) (F) Alaskan Na			Veteran (M) (F)		(M)	(F)	
Executive/Senior level Officials & Managers												(IVI)						
First/Mid-level officials & Managers																		
Professionals																		
Technicians																		
Sales Workers																		
Administrative Support Workers																		
Craft Workers																		
Operatives																		
Laborers and Helpers																		
Service Workers																		
Totals																		
PREPARED BY (Signature):							TELEPHONE NO.:									DATE:		
							EMAIL ADDRESS:											
NAME AND TITLE OF PREPARER (Print or Type):										<u> </u>								



Division of Service-Disabled
Veterans' Business Development

NYS Office of General Services
Financial Administration – Agency Procurement Office
Corning Tower, 32nd Floor, ESP
Albany, New York 12242

SDVOB UTILIZATION PLAN											
INSTRUCTIONS: This Utilization Plan must contain a detailed description of the supplies and/or services to be provided by each NYS Certified Service-Disabled Veteran-Owned Business (SDVOB) under the contract. By submission of this Plan, the Bidder/Contractor commits to making good faith efforts in the utilization of SDVOB subcontractors and suppliers as required by the SDVOB goals contained in the Solicitation/Contract. Making false representations or providing information that shows a lack of good faith as part of, or in conjunction with, the submission of a Utilization Plan is prohibited by law and may result in penalties including, but not limited to, termination of a contract for cause, loss of eligibility to submit future bids, and/or withholding of payments. Firms that do not perform commercially useful functions may not be counted toward SDVOB utilization. Attach additional sheets if necessary.											
BIDDER/CONTRACTOR INFORMATION SDVOB Goals In Contract											
Bidder/Contractor Name: NYS Vendor ID: %											
Bidder/Contractor Address (Street, City, State and Z	ip Code):										
Bidder/Contractor Telephone Number:			Con	tract Wo	ork Loc	cation/Re	gion:				
Contract Description/Title:											
CONTRACTOR INFORMATION											
Prepared by (Signature):	Name and Ti	tle of Pi	eparer:			Teleph	one Number	:	Date:		
Email Address:	1				'						
If unable to meet the SDVOB goals set for on the SDVOB Waiver Form.	th in the solic	itation	/contrac	t, bidd	ler/coi	ntractor	must sub	mit a	reques	t for waiver	
SDVOB Subcontractor/Supplier Name:											
Please identify the person you contacted:	•	Fede	al Identific	cation N	No.:		Telephone	No.:			
Address:		Email Address:									
Detailed description of work to be provided by sub	contractor/supp	olier:									
Dollar Value of subcontracts/supplies/services (W perform): \$ or%	hen \$ value car	not be	estimated	, provid	le the e	estimated	% of contra	ct work	k the SD	VOB will	
SDVOB Subcontractor/Supplier Name:											
Please identify the person you contacted:	_	Fede	al Identific	cation N	No.:		Telephone	No.:			
Address:		Email	Address:								
Detailed Description of work to be provided by sub	ocontractor/supp	olier:									
Dollar Value of subcontracts/supplies/services (W perform): \$ or%	hen \$ value car	not be	estimated	, provid	le the e	estimated	% of contra	ct work	k the SD	VOB will	
FOR OGS USE ONLY											
OGS Authorized Signature:									of Deficiency		
NAME (Please Print): SDVOB %/\$ Date Received: Date Processed:								essed:			
Comments:											
NYS CERTIFIED SDVOB SUBCONTRACTOR/SUPPLIER INFORMATION: The directory of New York State Certified SDVOBs can be viewed at: https://online.ogs.ny.gov/SDVOB/search Note: All listed Subcontractors/Suppliers will be contacted and verified by OGS.											

ADDITIONAL SHEET

Bidder/Contractor Name:		Contract/Solicitation #
SDVOB Subcontractor/Supplier Name:		
Please identify the person you contacted:	Federal Identification No.:	Telephone No.:
Address:	Email Address:	
Detailed Description of work to be provided by subcontractor/su	ipplier:	
Dollar Value of subcontracts/supplies/services (When \$ value c perform): \$ or%	annot be estimated, provide the estin	nated % of contract work the SDVOB will
SDVOB Subcontractor/Supplier Name:		
Please identify the person you contacted:	Federal Identification No.:	Telephone No.:
Address:	Email Address:	
Detailed Description of work to be provided by subcontractor/su	ipplier:	
Dollar Value of subcontracts/supplies/services (When \$ value c perform): \$ or%	annot be estimated, provide the estin	nated % of contract work the SDVOB will
SDVOB Subcontractor/Supplier Name:		
Please identify the person you contacted:	Federal Identification No.:	Telephone No.:
Address:	Email Address:	-
Detailed Description of work to be provided by subcontractor/su	ipplier:	
Dollar Value of subcontracts/supplies/services (When \$ value c perform): \$or%	annot be estimated, provide the estin	nated % of contract work the SDVOB will
SDVOB Subcontractor/Supplier Name:		
Please identify the person you contacted:	Federal Identification No.:	Telephone No.:
Address:	Email Address:	
Detailed Description of work to be provided by subcontractor/su	ipplier:	
Dollar Value of subcontracts/supplies/services (When \$ value c perform)): \$ or%	annot be estimated, provide the estin	nated % of contract work the SDVOB will
SDVOB Subcontractor/Supplier Name:		
Please identify the person you contacted:	Federal Identification No.:	Telephone No.:
Address:	Email Address:	
Detailed Description of work to be provided by subcontractor/su	ipplier:	
Dollar Value of subcontracts/supplies/services (When \$ value c perform): \$ or%	annot be estimated, provide the estin	nated % of contract work the SDVOB will

Appendix C

Sample Contract

Solicitation No. 2806

STATE OF NEW YORK OFFICE OF GENERAL SERVICES

AGREEMENT FOR

PREVENTATIVE MAINTENANCE OF THE BAR, TRAVELING WATER AND WEDGE WIRE WATER SCREEN SYSTEMS

AT THE NYS OGS RIVERFRONT PUMPING STATION IN ALBANY, NY

WITH

(CONTRACTOR)

CONTRACT	#OGS01	-C00	XXXX	-114	10000		

THIS AGREEMENT, made this _____ day of _____, 2023 by and between the People of the State of New York, acting by and through the Commissioner of General Services, whose office is in the Corning Tower Building, at the Governor Nelson A. Rockefeller Empire State Plaza, Albany, New York 12242 (hereinafter "Commissioner", "OGS" or "State"), and (Company Name), (hereinafter "Contractor"), with an office at ______.

WITNESSETH:

WHEREAS, the OGS is responsible for the preventative maintenance of the bar, traveling water and wedge wire water screening systems at the NYS OGS Riverfront Pumping Station located at 1 Quay Street, Albany, NY and in fulfilling its responsibility deems it necessary to obtain preventative maintenance of these systems therefore, and

WHEREAS, OGS has determined after having solicited bids from bidders willing to supply these services, that the Contractor submitted the bid affording the State the best price for such services and that the Contractor possesses the necessary capacity, experience and expertise for provision of preventative maintenance of the bar, traveling water and wedge wire water screening systems, and that Contractor is ready, willing and able to perform such services on the terms hereinafter set forth.

NOW THEREFORE, in consideration of the mutual covenants herein contained, the parties do hereby agree as follows:

1. CONSIDERATION

OGS shall pay the Contractor for all preventative maintenance fees and other fees and expenses in accordance with the amounts and rates put forth in the Contractor's bid attached hereto as

Appendix "C", which Appendix C is hereby incorporated by reference and made a part hereof as fully as if set forth as length herein. This contract will be established with a not to exceed value of \$

Services performed beyond this amount will not be compensated.

2. TERM

This Agreement shall commence upon OSC approval and will be in effect for five years unless sooner terminated as herein specified.

3. SERVICES

The Contractor agrees to perform this Agreement and to furnish the services, labor and materials required in connection therewith in accordance with all the specifications, conditions, covenants and representations contained in the Invitation for Bids No. 2806, which is annexed as Appendix "B" hereto, and the Contractor's bid, annexed as Appendix "C" hereto, except as such Appendices B and C have been revised by the terms hereof. Appendix B is hereby incorporated by reference and made a part hereof with the same force and effect as if set forth at length herein.

4. TERMINATION

This Agreement may be terminated in accordance with the termination provisions set forth in the solicitation attached hereto as Appendix B hereof.

5. RECORDS

The Contractor will maintain accurate records and accounts of services performed and monies expended under this Agreement. Such records will be maintained for six years following the close of the State fiscal year to which they pertain and will be made available to representatives of OGS or the New York State Comptroller, as may be necessary for auditing purposes, upon request.

6. TAXES

The Contractor will be responsible for all applicable Federal, State and Local taxes and all FICA contributions.

7. INDEPENDENT CONTRACTOR

It is understood and agreed that the legal status of the Contractor, its subcontractors, agents, officers and employees is that of an independent contractor and in no manner shall they be deemed employees or agents of the State of New York and, therefore, are not entitled to any of the benefits associated with such employment or designation.

8. APPENDIX A

Appendix A, Standard Clauses for New York State Contracts, attached hereto, is hereby expressly made a part of this Agreement as fully as if set forth at length herein.

9. ASSIGNMENT

Contractor agrees that it will not assign this Agreement, or any interest therein without the prior written consent of the Commissioner of General Services.

10. LAW

This Agreement shall be governed by the laws of the State of New York.

11. CONDITIONS PRECEDENT

This Agreement shall not be deemed executed, valid or binding unless and until approved in writing by the Attorney General and the State Comptroller.

12. ENTIRE AGREEMENT

This Agreement constitutes the entire Agreement between the parties hereto and no statement, promise, condition, understanding, inducement or representation, oral or written, expressed or implied, which is not contained herein shall be binding or valid and this Agreement shall not be changed, modified or altered in any manner except by an instrument in writing executed by both parties hereto.

13. EXECUTORY CLAUSE

This Agreement shall be deemed executory only to the extent of money available to the State for performance of the terms hereof and no liability on account thereof shall be incurred by the State of New York beyond moneys available for purposes thereof.

14. INCONSISTENCIES

In the event of any discrepancy, disagreement or ambiguity between this contract agreement and Appendix B "Solicitation" and/or Appendix C "Bid", or between any Appendices, the documents shall be given preference in the following order to interpret and to resolve such discrepancy, disagreement or ambiguity:

- 1. Appendix A
- 2. This Contract Agreement
- 3. Appendix B IFB #2806 including Addenda
- 4. Appendix C Contractor's Bid

The parties understand and agree that any and all deviations or exceptions taken by Contractor to the State's Invitation to Bid are hereby withdrawn except only to the extent that such exceptions or deviations have been explicitly incorporated into this contract agreement.

15. FORCE MAJEURE

Neither party hereto will be liable for losses, defaults, or damages under this Agreement which result from delays in performing, or inability to perform, all or any of the obligations or responsibilities imposed upon it pursuant to the terms and conditions of this Agreement, due to or because of acts of God, the public enemy, acts of government, earthquakes, floods, strikes, civil strife, fire or any other cause beyond the reasonable control of the party that was so delayed in performing or so unable to perform provided that such party was not negligent and shall have used reasonable efforts to avoid and overcome such cause. Such party will resume full performance of such obligations and responsibilities promptly upon removal of any such cause.

16. ASSIGNMENT BY STATE

The State agrees not to assign this Agreement without prior notice to and reasonable consent of the Contractor provided, however, that this Agreement may be assigned without such consent to another agency or subdivision of the State pursuant to a governmental reorganization or assignment of functions under which the pertinent functions of OGS as an agency are transferred to a successor agency or subdivision of the State.

17. NOTICES

All notices, demands, designations, certificates, requests, offers, consents, approvals and other instruments given pursuant to this Agreement shall be in writing and shall be validly given when mailed by registered or certified mail, overnight carrier or hand delivered, (i) if to the State, addressed to the State at its address set forth above, and (ii) if to Contractor, addressed to Contractor at its address set forth above. The parties may from time to time, specify any address in the United States as its address for purpose of notices under this Agreement by giving 15 days written notice to the other party. The parties agree to mutually designate individuals as their respective representatives for the purposes of this Agreement.

18. CAPTIONS

The captions contained in this Agreement are intended for convenience and reference purposes only and shall in no way be deemed to define or limit any provision thereof.

19. **SEVERABILITY**

In the event that any one or more of the provisions of this Agreement shall for any reason be declared unenforceable under the laws or regulations in force, such provision will not have any effect on the validity of the remainder of this Agreement, which shall then be construed as if such unenforceable provision had never been written or was never contained in this Agreement.

20. INFORMATION SECURITY BREACH

In accordance with the Information and Security Breach Notification Act (ISBNA) (Chapter 442 of the Laws of 2005, as amended by Chapter 491 of the Laws of 2005), a Contractor with OGS shall be responsible for all applicable provisions of the ISBNA and the following terms herein with respect to any private information (as defined in the ISBNA) received by or on behalf of OGS under this Agreement.

- Contractor shall supply OGS with a copy of its notification policy, which shall be modified
 to be in compliance with this provision, as well as OGS's notification policy.
- Contractor must encrypt any database fields and backup tapes that contain private data elements, as set forth in the ISBNA.
- Contractor must ensure that private data elements are encrypted in transit to / from their systems.
- In general, contractor must ensure that private data elements are not displayed to users on computer screens or in printed reports; however, specific users who are authorized to

view the private data elements and who have been properly authenticated may view/receive such data.

- Contractor must monitor for breaches of security to any of its systems that store or process private data owned by OGS.
- Contractor shall take all steps as set forth in ISBNA to ensure private information shall not be released without authorization from OGS.
- In the event a security breach occurs as defined by ISBNA Contractor shall immediately notify OGS and commence an investigation in cooperation with OGS to determine the scope of the breach.
- Contractor shall also take immediate and necessary steps needed to restore the information security system to prevent further breaches.
- Contractor shall immediately notify OGS following the discovery that OGS's system security has been breached.
- Unless the Contractor is otherwise instructed, Contractor is to first seek consultation and
 receive authorization from OGS prior to notifying the individuals whose personal identity
 information was compromised by the breach of security, the New York State Chief
 Information Security Office, the Department of State Division of Consumer Protection, the
 Attorney General's Office or any consuming reporting agencies of a breach of the
 information security system or concerning any determination to delay notification for law
 enforcement investigations.
- Contractor shall be responsible for providing all notices required by the ISBNA and for all
 costs associated with providing said notices.
- This policy and procedure shall not impair the ability of the Attorney General to bring an
 action against the Contractor to enforce all provisions of the ISBNA or limit the Contractor's
 liability for any violations of the ISBNA.

21. CONTRACTOR RESPONSIBILITY

The Contractor shall at all times during the Contract term remain responsible. The Contractor agrees, if requested by the Commissioner of OGS or her designee, to present evidence of its continuing legal authority to do business in New York State, integrity, experience, ability, prior performance, and organizational and financial capacity.

The Commissioner of OGS or her designee, in his or her sole discretion, reserves the right to suspend any or all activities under this Contract, at any time, when he or she discovers information that calls into question the responsibility of the Contractor. In the event of such suspension, the Contractor will be given written notice outlining the particulars of such suspension. Upon issuance of such notice, the Contractor must comply with the terms of the suspension order. Contract activity may resume at such time as the Commissioner of OGS or her designee issues a written notice authorizing a resumption of performance under the Contract.

Upon written notice to the Contractor, and a reasonable opportunity to be heard with appropriate OGS officials or staff, the Contract may be terminated by the Commissioner of OGS or her

designee at the Contractor's expense where the Contractor is determined by the Commissioner of OGS or her designee to be non-responsible. In such event, the Commissioner of OGS or her designee may complete the contractual requirements in any manner he or she may deem advisable and pursue available legal or equitable remedies for breach.

In no case shall such termination of the Contract by the State be deemed a breach thereof, nor shall the State be liable for any damages for lost profits or otherwise, which may be sustained by the Contractor as a result of such termination.



CONTRACT NO. OGS01-C00XXXX-1140000

IN WITNESS WHEREOF , the parties he and year first above written.	reto have executed this Agreement as of the day
	Agency Certification "In addition to the acceptance of this Contract, I also certify that original copies of this signature page will be attached to all other exact copies of this contract."
(Company Name)	THE PEOPLE OF THE STATE OF NEW YORK
By:	By:
Name: Title:	Name: Title:
Federal I.D. No.: Date:	Date:
APPROVED AS TO FORM	APPROVED
Attorney General	State Comptroller
STATE OF)) ss.:	·
COUNTY OF)	
	20, before me, the undersigned, personally appeared wn to me or proved to me on the basis of satisfactory
<u> </u>	is (are) subscribed to the within instrument and the same in his/her/their capacity(ies), and that by individual(s), or the person upon behalf of which the

Notary Public

Sample Contract Appendix A

STANDARD CLAUSES FOR NEW YORK STATE CONTRACTS

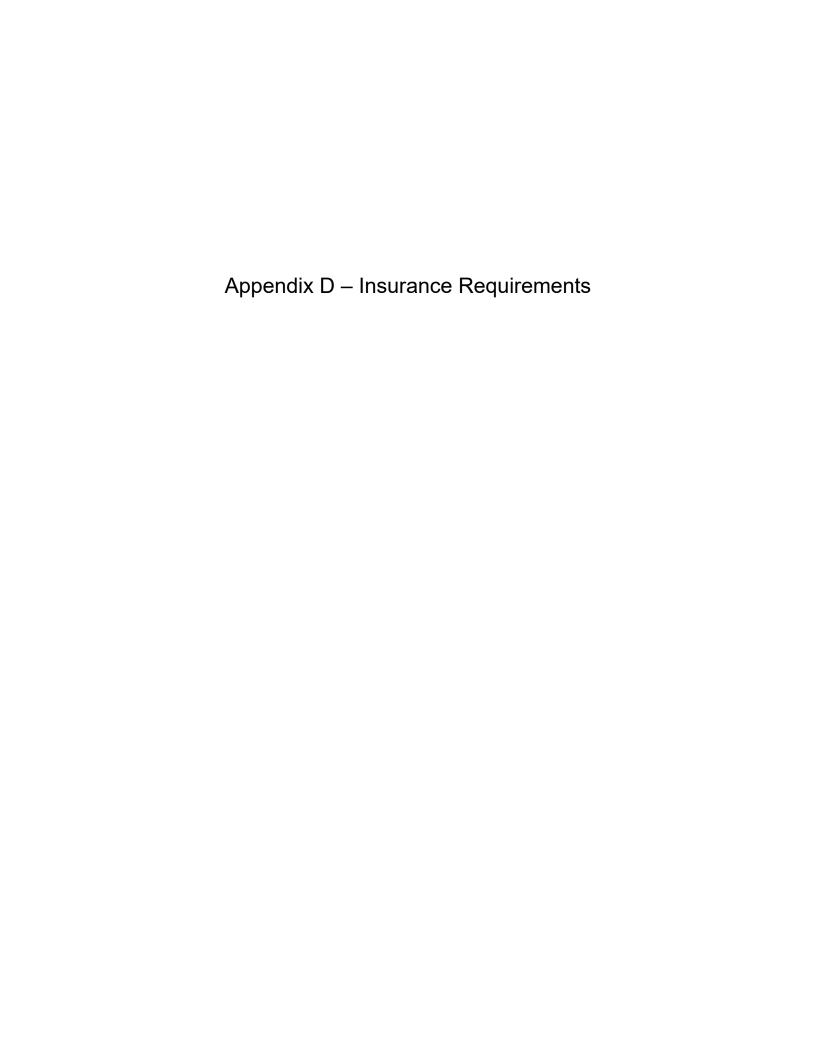
[Text not included at this time because it is included elsewhere in the solicitation. Will be added when contract is finalized]

Sample Contract Appendix B



Sample Contract Appendix C





Insurance Requirements

The Bidder shall be required to procure, at its sole cost and expense, all insurance required by this Attachment.

The Bidder shall be required to provide proof of compliance with the requirements of this Attachment, as follows:

- Proof of all insurance required by Section B below shall be provided in accordance with the provisions hereof;
- After award, the Contractor shall be required to provide proof of all insurance after renewal or upon request according to the timelines set forth in Section A.13 below.

Contractors shall be required to procure, at their sole cost and expense, and shall maintain in force at all times during the term of any Contract resulting from this Solicitation, policies of insurance as required by this Attachment. All insurance required by this Attachment shall be written by companies that have an A.M. Best Company rating of "A-," Class "VII" or better. In addition, companies writing insurance intended to comply with the requirements of this Attachment should be licensed or authorized by the New York State Department of Financial Services to issue insurance in the State of New York. OGS may, in its sole discretion, accept policies of insurance written by a non-authorized carrier or carriers when certificates and/or other policy documents are accompanied by a completed Excess Lines Association of New York (ELANY) affidavit or other documents demonstrating the company's strong financial rating. If, during the term of a policy, the carrier's A.M. Best rating falls below "A-," Class "VII," the insurance must be replaced, on or before the renewal date of the policy, with insurance that meets the requirements above.

Bidders and Contractors shall deliver to OGS evidence of the insurance required by this Solicitation and any Contract resulting from this Solicitation in a form satisfactory to OGS. Policies must be written in accordance with the requirements of the paragraphs below, as applicable. While acceptance of insurance documentation shall not be unreasonably withheld, conditioned or delayed, acceptance and/or approval by OGS does not, and shall not be construed to, relieve Bidders or Contractors of any obligations, responsibilities or liabilities under this Solicitation or any Contract resulting from this Solicitation.

The Contractor shall not take any action, or omit to take any action that would suspend or invalidate any of the required coverages during the term of the Contract.

- **A. General Conditions Applicable to Insurance**. All policies of insurance required by this Solicitation or any Contract resulting from this Solicitation shall comply with the following requirements:
 - 1. Coverage Types and Policy Limits. The types of coverage and policy limits required from Bidders and Contractors are specified in Paragraph B *Insurance Requirements* below.

- **2. Policy Forms**. Except as otherwise specifically provided herein, or agreed to in the Contract resulting from this Solicitation, all policies of insurance required by this Attachment shall be written on an occurrence basis.
- 3. Certificates of Insurance/Notices. Bidders and Contractors shall provide OGS with a Certificate or Certificates of Insurance, in a form satisfactory to OGS as detailed below, and pursuant to the timelines set forth in Section B below. Certificates shall name The New York State Office of General Services, Agency Procurement Office, 32nd Floor, Corning Tower, Empire State Plaza, Albany, New York 12242 as the certificate holder.

Certificates of Insurance shall:

- Be in the form acceptable to OGS and in accordance with the New York State Insurance Law (e.g., an ACORD certificate);
- Disclose any deductible, self-insured retention, aggregate limit or exclusion to the policy that materially changes the coverage required by this Solicitation or any Contract resulting from this Solicitation;
- Be signed by an authorized representative of the referenced insurance carriers; and
- Contain the following language in the Description of Operations / Locations / Vehicles section of the Certificate or on a submitted endorsement: Additional insured protection afforded is on a primary and non-contributory basis. A waiver of subrogation is granted in favor of the additional insureds.

Only original documents (certificates of insurance and any endorsements and other attachments) or electronic versions of the same that can be directly traced back to the insurer, agent or broker via e-mail distribution or similar means will be accepted.

OGS generally requires Contractors to submit only certificates of insurance and additional insured endorsements, although OGS reserves the right to request other proof of insurance. Contractors should refrain from submitting entire insurance policies, unless specifically requested by OGS. If an entire insurance policy is submitted but not requested, OGS shall not be obligated to review and shall not be chargeable with knowledge of its contents. In addition, submission of an entire insurance policy not requested by OGS does not constitute proof of compliance with the insurance requirements and does not discharge Contractors from submitting the requested insurance documentation.

- 4. Primary Coverage. All liability insurance policies shall provide that the required coverage shall be primary and non-contributory to other insurance available to the People of the State of New York, the New York State Office of General Services, and their officers, agents, and employees. Any other insurance maintained by the People of the State of New York, the New York State Office of General Services, and their officers, agents, and employees shall be excess of and shall not contribute with the Bidder/Contractor's insurance.
- 5. **Breach for Lack of Proof of Coverage.** The failure to comply with the requirements of this Attachment at any time during the term of the Contract shall be considered a breach of the terms of the Contract and shall allow the People of the State of New York, the New

York State Office of General Services, and their officers, agents, and employees to avail themselves of all remedies available under the Contract or at law or in equity.

- 6. Self-Insured Retention/Deductibles. Certificates of Insurance must indicate the applicable deductibles/self-insured retentions for each listed policy. Deductibles or self-insured retentions above \$100,000.00 are subject to approval from OGS. Such approval shall not be unreasonably withheld, conditioned or delayed. Bidders and Contractors shall be solely responsible for all claim expenses and loss payments within the deductibles or self-insured retentions. If the Bidder/Contractor is providing the required insurance through self-insurance, evidence of the financial capacity to support the self-insurance program along with a description of that program, including, but not limited to, information regarding the use of a third-party administrator shall be provided upon request.
- 7. Subcontractors. Prior to the commencement of any work by a Subcontractor, the Contractor shall require such Subcontractor to procure policies of insurance as required by this Attachment and maintain the same in force during the term of any work performed by that Subcontractor. An Additional Insured Endorsement CG 20 38 04 13 (or the equivalent) evidencing such coverage shall be provided to the Contractor prior to the commencement of any work by a subcontractor and pursuant to the timelines set forth in Section A.13. below, as applicable. For subcontractors that are self-insured, the subcontractor shall be obligated to defend and indemnify the above-named additional insureds with respect to Commercial General Liability and Business Automobile Liability, in the same manner that the subcontractor would have been required to pursuant to this section had the subcontractor obtained such insurance policies.
- 8. Waiver of Subrogation. For all liability policies and the workers' compensation insurance required below, the Bidder/Contractor shall cause to be included in its policies insuring against loss, damage or destruction by fire or other insured casualty a waiver of the insurer's right of subrogation against The People of the State of New York, the New York State Office of General Services, and their officers, agents, and employees, or, if such waiver is unobtainable (i) an express agreement that such policy shall not be invalidated if the Contractor waives or has waived before the casualty, the right of recovery against The People of the State of New York, the New York State Office of General Services, and their officers, agents, and employees or (ii) any other form of permission for the release of The People of the State of New York, the New York State Office of General Services, and their officers, agents, and employees. A Waiver of Subrogation Endorsement shall be provided upon request. A blanket Waiver of Subrogation Endorsement evidencing such coverage is also acceptable.
- 9. Additional Insured. The Contractor shall cause to be included in each of the liability policies and the Protection and Indemnity coverage required below for on-going and completed operations naming as additional insured (via ISO form CG 20 10 04 13 or CG 20 38 04 13 and CG 20 37 04 13 and form CA 20 48 10 13, or a form or forms that provide equivalent coverage): The People of the State of New York, the New York State Office of General Services, and their officers, agents, and employees. An Additional Insured Endorsement evidencing such coverage shall be provided to OGS pursuant to the timelines set forth in Section B below. A blanket Additional Insured Endorsement evidencing such coverage is also acceptable. For Contractors who are self-insured, the Contractor shall be

obligated to defend and indemnify the above-named additional insureds with respect to Commercial General Liability and Business Automobile Liability, in the same manner that the Contractor would have been required to pursuant to this Attachment had the Contractor obtained such insurance policies.

- 10. Excess/Umbrella Liability Policies. Required insurance coverage limits may be provided through a combination of primary and excess/umbrella liability policies. If coverage limits are provided through excess/umbrella liability policies, then a Schedule of underlying insurance listing policy information for all underlying insurance policies (insurer, policy number, policy term, coverage and limits of insurance), including proof that the excess/umbrella insurance follows form must be provided upon request.
- 11. Notice of Cancellation or Non-Renewal. Policies shall be written so as to include the requirements for notice of cancellation or non-renewal in accordance with the New York State Insurance Law. Within five (5) business days of receipt of any notice of cancellation or non-renewal of insurance, the Contractor shall provide OGS with a copy of any such notice received from an insurer together with proof of replacement coverage that complies with the insurance requirements of this Solicitation and any Contract resulting from this Solicitation.
- 12. Policy Renewal/Expiration Upon policy renewal/expiration, evidence of renewal or replacement of coverage that complies with the insurance requirements set forth in this Solicitation and any Contract resulting from this Solicitation shall be delivered to OGS. If, at any time during the term of any Contract resulting from this Solicitation, the coverage provisions and limits of the policies required herein do not meet the provisions and limits set forth in this Solicitation or any Contract resulting from this Solicitation, or proof thereof is not provided to OGS, the Contractor shall immediately cease work. The Contractor shall not resume work until authorized to do so by OGS.
- 13. Deadlines for Providing Insurance Documents after Renewal or Upon Request. As set forth herein, certain insurance documents must be provided to the OGS Agency Procurement Office contact identified in the Contract Award Notice after renewal or upon request. This requirement means that the Contractor shall provide the applicable insurance document to OGS as soon as possible but in no event later than the following time periods:
 - For certificates of insurance: 5 business days
 - For information on self-insurance or self-retention programs: 15 calendar days
 - For other requested documentation evidencing coverage: 15 calendar days
 - For additional insured and waiver of subrogation endorsements: 30 calendar days

Notwithstanding the foregoing, if the Contractor shall have promptly requested the insurance documents from its broker or insurer and shall have thereafter diligently taken all steps necessary to obtain such documents from its insurer and submit them to OGS, OGS shall extend the time period for a reasonable period under the circumstances, but in no event shall the extension exceed 30 calendar days.

B. Insurance Requirements

Bidders and Contractors shall obtain and maintain in full force and effect, throughout the term of any Contract resulting from this Solicitation, at their own expense, the following insurance with

limits not less than those described below and as required by the terms of any Contract resulting from this Solicitation, or as required by law, whichever is greater:

Insurance Typ	Proof of Coverage is Due	
Commercial General Liability	\$5,000,000 each occurrence	Upon notification of
General Aggregate	\$6,000,000	tentative award and
Products – Completed Operations Aggregate	\$6,000,000	updated in accordance with Contract
Personal and Advertising Injury	\$1,000,000	
Medical Expenses Limit	\$5,000	
Business Automobile Liability Insurance \$1,000,000 each accident		
Professional Liability Insurance \$1,000,000 each clair		
Protection & Indemnity Insurance	\$1,000,000 each claim	
Ocean Marine Hull	Total Value of Watercraft and Equipment	
Workers' Compensation		
Disability Benefits		

1. Commercial General Liability Insurance: Such liability shall be written on the current edition of ISO occurrence form CG 00 01, or a substitute form providing equivalent coverage.

Policy shall include bodily injury, property damage and broad form contractual liability coverage.

- General Aggregate
- Products Completed Operations Aggregate
- Personal and Advertising Injury
- Each Occurrence

Coverage shall include, but not be limited to, the following:

- Premises liability arising from operations;
- Independent contractors;
- Blanket contractual liability, including tort liability of another assumed in a contract;
- Defense and/or indemnification obligations, including obligations assumed under the Contract;
- Cross liability for additional insureds; and
- Products/completed operations for a term of no less than one (1) year, commencing upon acceptance of the work, as required by the Contract.
- 2. Business Automobile Liability Insurance: Such insurance shall cover liability arising out of automobiles used in connection with performance under the Contract, including owned, leased, hired and non-owned automobiles bearing or, under the circumstances under which they are being used, required by the Motor Vehicles Laws of the State of New York to bear, license plates.

In the event that the Contractor does not own, lease or hire any automobiles used in connection with performance under the Contract, the Contractor does not need to obtain Business Automobile Liability Insurance, but must attest to the fact that the Contractor does not own, lease or hire any automobiles used in connection with performance under the Contract on a form provided by OGS. If, however, during the term of the Contract, the Contractor acquires, leases or hires any automobiles that will be used in connection with performance under the Contract, the Contractor must obtain Business Automobile Liability Insurance that meets all of the requirements of this section and provide proof of such coverage to OGS in accordance with the insurance requirements of any Contract resulting from this Solicitation.

- **3. Professional Liability:** Such insurance shall cover professional occupation job titles and/or professional services related to the Contract's scope of work.
 - Such insurance shall apply to professional errors, acts, or omissions arising out of the scope of services.
 - Such insurance shall cover broad areas, including but not limited to inspection services and reporting.
 - If coverage is written on a claims-made policy, the Contractor warrants that any applicable retroactive date precedes the start of work; and that continuous coverage will be maintained, or an extended discovery period exercised, throughout the performance of the services and for a period of not less than three years from the time work under this Contract is completed. Written proof of this extended reporting period must be provided to OGS prior to the policy's expiration or cancellation.
 - The policy shall cover professional misconduct or lack of ordinary skill for those positions defined in the Scope of Services of this contract.
- **4. Protection & Indemnity:** Anytime the activity involves work on or near a shoreline, navigable water Protection and Indemnity (P&I) coverage must insure, but is not limited to, vessel owners and operators against liability resulting from bodily injury or illness to crew members, divers, and visitors on the vessel. Divers could sustain injuries from decompression illness, nitrogen narcosis, barotrauma and underwater accidents. Although claims by divers can be considerable, they will be infrequent.
- **5. Ocean Marine Hull:** Anytime the activity involves work on or near a shoreline, navigable water (i.e. work in adjoining areas customarily used in the loading, unloading, repairing or building of a vessel) or the work is connected to water-related activities coverage is required. Ocean Marine Hull coverage shall be provided for the total value of the watercraft or equipment.

6. Workers' Compensation Insurance and Disability Benefits Requirements

Sections 57 and 220 of the New York State Workers' Compensation Law require the heads of all municipal and state entities to ensure that businesses applying for contracts have appropriate workers' compensation and disability benefits insurance coverage. These requirements apply to both original contracts and renewals. Failure to provide proper proof of such coverage or a legal exemption will result in a rejection of a Bid or any contract renewal. A Bidder will not be awarded a Contract unless proof of workers'

compensation and disability insurance is provided to OGS. Proof of workers' compensation and disability benefits coverage, or proof of exemption must be submitted to OGS at the time of notification of tentative award, policy renewal, contract renewal and upon request. Proof of compliance must be submitted on one of the following forms designated by the New York State Workers' Compensation Board. An ACORD form is not acceptable proof of New York State workers' compensation or disability benefits insurance coverage.

If the contract involves work on or near a shoreline, or navigable waters (i.e. work in adjoining areas customarily used in the loading, unloading, repairing, or building of a vessel), a U.S. Longshore and Harbor Workers' Compensation Act and/or Jones Acts policy as applicable must be provided. Any waiver of this requirement must be approved by the Agency and will only be granted in unique or unusual circumstances.

Proof of Compliance with Workers' Compensation Coverage Requirements:

- Form CE-200, Certificate of Attestation for New York Entities With No Employees and Certain Out of State Entities, That New York State Workers' Compensation and/or Disability Benefits Insurance Coverage is Not Required, which is available on the Workers' Compensation Board's website (www.businessexpress.ny.gov);
- Form C-105.2 (9/15), Certificate of Workers' Compensation Insurance, sent to OGS by the Contractor's insurance carrier upon request, or if coverage is provided by the New York State Insurance Fund, they will provide Form U-26.3 to OGS upon request from the Contractor; or
- Form SI-12, Certificate of Workers' Compensation Self-Insurance, available from the New York State Workers' Compensation Board's Self-Insurance Office, or
- Form GSI-105.2, Certificate of Participation in Workers' Compensation Group Self-Insurance, available from the Contractor's Group Self-Insurance Administrator.

Proof of Compliance with Disability Benefits Coverage Requirements:

- Form CE-200, Certificate of Attestation for New York Entities With No Employees and Certain Out of State Entities, That New York State Workers' Compensation and/or Disability Benefits Insurance Coverage is Not Required, which is available on the Workers' Compensation Board's website (www.businessexpress.ny.gov);
- Form DB-120.1, Certificate of Disability Benefits Insurance, sent to OGS by the Contractor's insurance carrier upon request; or
- Form DB-155, Certificate of Disability Benefits Self-Insurance, available from the New York State Workers' Compensation Board's Self-Insurance Office.

An instruction manual clarifying the New York State Workers' Compensation Law requirements is available for download at the New York State Workers' Compensation Board's website, http://www.wcb.ny.gov/content/main/Employers/requirements-businesses-applying-government-permits-licenses-contracts.pdf.

Contractor acknowledges that failure to obtain and/or keep in effect any or all required insurance on behalf of OGS constitutes a material breach of contract and subjects it to liability for damages, indemnification and all other legal remedies available to OGS. Contractor's failure to obtain and/or keep in effect any or all required insurance shall

also provide the basis for OGS' immediate termination of any contract resulting from this Solicitation, subject only to a five (5) business day cure period. Any termination by OGS under this section shall in no event constitute or be deemed a breach of any contract resulting from this Solicitation and no liability shall be incurred by or arise against the Office of General Services, its agents and employees therefore for lost profits or any other damages.

Appendix E – M/WBE and EEO Requirements

CONTRACTOR REQUIREMENTS AND PROCEDURES FOR PARTICIPATION BY NEW YORK STATE CERTIFIED MINORITY- AND WOMEN-OWNED BUSINESS ENTERPRISES AND EQUAL EMPLOYMENT OPPORTUNITIES FOR MINORITY GROUP MEMBERS AND WOMEN

I. New York State Law

Pursuant to New York State Executive Law Article 15-A and Parts 140-145 of Title 5 of the New York Codes, Rules and Regulations ("NYCRR"), the New York State Office of General Services ("OGS") is required to promote opportunities for the maximum feasible participation of New York State-certified Minority- and Women-Owned Business Enterprises ("MWBEs") and the employment of minority group members and women in the performance of OGS contracts.

II. General Provisions

- A. OGS is required to implement the provisions of New York State Executive Law Article 15-A and 5 NYCRR Parts 140-145 ("MWBE Regulations") for all State contracts as defined therein, with a value (1) in excess of \$25,000 for labor, services, equipment, materials, or any combination of the foregoing or (2) in excess of \$100,000 for real property renovations and construction.
- B. The Contractor agrees, in addition to any other nondiscrimination provision of the Contract and at no additional cost to OGS, to fully comply and cooperate with OGS in the implementation of New York State Executive Law Article 15-A and the regulations promulgated thereunder. These requirements include equal employment opportunities for minority group members and women ("EEO") and contracting opportunities for MWBEs. Contractor's demonstration of "good faith efforts" pursuant to 5 NYCRR § 142.8 shall be a part of these requirements. These provisions shall be deemed supplementary to, and not in lieu of, the nondiscrimination provisions required by New York State Executive Law Article 15 (the "Human Rights Law") or other applicable federal, State, or local laws.
- C. Failure to comply with all of the requirements herein may result in a finding of non-responsiveness, a finding of non-responsibility, breach of contract, withholding of funds, suspension or termination of the Contract, and/or such other actions or enforcement proceedings as allowed by the Contract and applicable law.

III. Equal Employment Opportunity (EEO)

- A. The provisions of Article 15-A of the Executive Law and the rules and regulations promulgated thereunder pertaining to equal employment opportunities for minority group members and women shall apply to all Contractors, and any subcontractors, awarded a subcontract over \$25,000 for labor, services, including legal, financial and other professional services, travel, supplies, equipment, materials, or any combination of the foregoing, to be performed for, or rendered or furnished to, the contracting State agency (the "Work") except where the Work is for the beneficial use of the Contractor.
 - 1. Contractor and subcontractors shall undertake or continue existing EEO programs to ensure that minority group members and women are afforded equal employment opportunities without discrimination because of race, creed, color, national origin, sex, age, disability, or marital status. For these purposes, EEO shall apply in the areas of recruitment, employment, job assignment, promotion, upgrading, demotion, transfer, layoff or termination, and rates of pay or other forms of

compensation. This requirement does not apply to: (i) the performance of work or the provision of services or any other activity that is unrelated, separate, or distinct from the Contract; or (ii) employment outside New York State.

2. By entering into this Contract, Contractor certifies that the text set forth in clause 12 of Appendix A, attached hereto and made a part hereof, is Contractor's equal employment opportunity policy. In addition, Contractor agrees to comply with the Non-Discrimination Requirements set forth in clause 5 of Appendix A.

B. Form EEO 100 – Staffing Plan

To ensure compliance with this section, the Contractor agrees to submit, or has submitted with the Bid, a staffing plan on Form EEO 100 to OGS to document the composition of the proposed workforce to be utilized in the performance of the Contract by the specified categories listed, including ethnic background, gender, and federal occupational categories.

- C. Form EEO 101 Workforce Utilization Reporting Form (Commodities and Services) ("Form EEO-101-Commodities and Services")
 - 1. The Contractor shall submit, and shall require each of its subcontractors to submit, a Form EEO-101-Commodities and Services to OGS to report the actual workforce utilized in the performance of the Contract by the specified categories listed including ethnic background, gender, and Federal occupational categories. The Form EEO-101-Commodities and Services must be submitted electronically to OGS at EEO_CentCon@ogs.ny.gov on a quarterly basis during the term of the Contract by the 10th day of April, July, October, and January.
 - 2. Separate forms shall be completed by Contractor and all subcontractors.
 - 3. In limited instances, the Contractor or subcontractor may not be able to separate out the workforce utilized in the performance of the Contract from its total workforce. When a separation can be made, the Contractor or subcontractor shall submit the Form EEO-101-Commodities and Services and indicate that the information provided relates to the actual workforce utilized on the Contract. When the workforce to be utilized on the Contract cannot be separated out from the Contractor's or subcontractor's total workforce, the Contractor or subcontractor shall submit the Form EEO-101-Commodities and Services and indicate that the information provided is the Contractor's or subcontractor's total workforce during the subject time frame, not limited to work specifically performed under the Contract.
- D. Contractor shall comply with the provisions of the Human Rights Law and all other State and federal statutory and constitutional non-discrimination provisions. Contractor and subcontractors shall not discriminate against any employee or applicant for employment because of race, creed (religion), color, sex, national origin, sexual orientation, military status, age, disability, predisposing genetic characteristic, marital status, or domestic violence victim status, and shall also follow the requirements of the Human Rights Law with regard to non-discrimination on the basis of prior criminal and conviction and prior arrest.

IV. Contract Goals

A. For purposes of this procurement, OGS conducted a comprehensive search and determined that the Contract does not offer sufficient opportunities to set goals for participation by MWBEs as

subcontractors, service providers, or suppliers to Contractor. Contractor is, however, encouraged to make every good faith effort to promote and assist the participation of MWBEs on this Contract for the provision of services and materials. The directory of New York State Certified MWBEs can be viewed at: https://ny.newnycontracts.com/FrontEnd/SearchCertifiedDirectory.asp?XID=1559&TN=ny Additionally, following Contract execution, Contractor is encouraged to contact the Division of Minority and Women's Business Development ((518) 292-5250; (212) 803-2414; or (716) 846-8200) to discuss additional methods of maximizing participation by MWBEs on the Contract.

B. Good Faith Efforts

Pursuant to 5 NYCRR § 142.8, evidence of good faith efforts shall include, but not be limited to, the following:

- 1. A list of the general circulation, trade, and MWBE-oriented publications and dates of publications in which the Contractor solicited the participation of certified MWBEs as subcontractors/suppliers, copies of such solicitations, and any responses thereto.
- 2.A list of the certified MWBEs appearing in the Empire State Development ("ESD") MWBE directory that were solicited for this Contract. Provide proof of dates or copies of the solicitations and copies of the responses made by the certified MWBEs. Describe specific reasons that responding certified MWBEs were not selected.
- 3. Descriptions of the Contract documents/plans/specifications made available to certified MWBEs by the Contractor when soliciting their participation and steps taken to structure the scope of work for the purpose of subcontracting with, or obtaining supplies from, certified MWBEs.
- 4. A description of the negotiations between the Contractor and certified MWBEs for the purposes of complying with the MWBE goals of this Contract.
- 5. Dates of any pre-bid, pre-award, or other meetings attended by Contractor, if any, scheduled by OGS with certified MWBEs whom OGS determined were capable of fulfilling the MWBE goals set in the Contract.
- 6. Other information deemed relevant to the request.

V. Fraud

Any suspicion of fraud, waste, or abuse involving the contracting or certification of MWBEs shall be immediately reported to ESD's Division of Minority and Women's Business Development at (855) 373-4692.

ALL FORMS ARE AVAILABLE AT: https://ogs.ny.gov/mwbe/forms

Appendix F SDVOB Requirements

PARTICIPATION OPPORTUNITIES FOR NEW YORK STATE CERTIFIED SERVICE-DISABLED VETERAN OWNED BUSINESSES

Article 3 of the New York State Veterans' Services Law provides for more meaningful participation in public procurement by certified Service-Disabled Veteran-Owned Businesses ("SDVOB"), thereby further integrating such businesses into New York State's economy. OGS recognizes the need to promote the employment of service-disabled veterans and to ensure that certified service-disabled veteran-owned businesses have opportunities for maximum feasible participation in the performance of OGS contracts.

In recognition of the service and sacrifices made by service-disabled veterans and in recognition of their economic activity in doing business in New York State, Bidders are expected to consider SDVOBs in the fulfillment of the requirements of the Contract. Such participation may be as subcontractors or suppliers, as protégés, or in other partnering or supporting roles.

I. Contract Goals

- A. OGS hereby establishes an overall goal of 6% for SDVOB participation, based on the current availability of qualified SDVOBs. For purposes of providing meaningful participation by SDVOBs, the Bidder/Contractor should reference the directory of New York State Certified SDVOBs found at: https://ogs.ny.gov/veterans/. Questions regarding compliance with SDVOB participation goals should be directed to the OGS Designated Contacts. Additionally, following Contract execution, Contractor is encouraged to contact the Office of General Services' Division of Service-Disabled Veterans' Business Development at 518-474-2015 or <a href="mailto:veterans-vetera
- B. Contractor must document "good faith efforts" to provide meaningful participation by SDVOBs as subcontractors or suppliers in the performance of the Contract (see clause IV below).

II. SDVOB Utilization Plan

- A. In accordance with 9 NYCRR § 252.2(i), Bidders are required to submit a completed SDVOB Utilization Plan on Form SDVOB 100 with their bid.
- B. The Utilization Plan shall list the SDVOBs that the Bidder intends to use to perform the Contract, a description of the work that the Bidder intends the SDVOB to perform to meet the goals on the Contract, the estimated dollar amounts to be paid to an SDVOB, or, if not known, an estimate of the percentage of Contract work the SDVOB will perform. By signing the Utilization Plan, the Bidder acknowledges that making false representations or providing information that shows a lack of good faith as part of, or in conjunction with, the submission of a Utilization Plan is prohibited by law and may result in penalties including, but not limited to, termination of a contract for cause, loss of eligibility to submit future bids, and/or withholding of payments. Any modifications or changes to the agreed participation by SDVOBs after the Contract award and during the term of the Contract must be reported on a revised SDVOB Utilization Plan and submitted to OGS.
- C. OGS will review the submitted SDVOB Utilization Plan and advise the Bidder/Contractor of OGS acceptance or issue a notice of deficiency within 20 days of receipt.

- D. If a notice of deficiency is issued, Bidder/Contractor agrees that it shall respond to the notice of deficiency, within seven business days of receipt, by submitting to OGS a written remedy in response to the notice of deficiency. If the written remedy that is submitted is not timely or is found by OGS to be inadequate, OGS shall notify the Bidder/Contractor and direct the Bidder/Contractor to submit, within five business days of notification by OGS, a request for a partial or total waiver of SDVOB participation goals on SDVOB 200. Failure to file the waiver form in a timely manner may be grounds for disqualification of the bid or proposal.
- E. OGS may disqualify a Bidder's bid or proposal as being non-responsive under the following circumstances:
 - (a) If a Bidder fails to submit an SDVOB Utilization Plan;
 - (b) If a Bidder fails to submit a written remedy to a notice of deficiency;
 - (c) If a Bidder fails to submit a request for waiver; or
 - (d) If OGS determines that the Bidder has failed to document good faith efforts.
- F. If awarded a Contract, Contractor certifies that it will follow the submitted SDVOB Utilization Plan for the performance of SDVOBs on the Contract pursuant to the prescribed SDVOB contract goals set forth above.
- G. Contractor further agrees that a failure to use SDVOBs as agreed in the Utilization Plan shall constitute a material breach of the terms of the Contract. Upon the occurrence of such a material breach, OGS shall be entitled to any remedy provided herein, including but not limited to, a finding of Contractor non-responsibility.

III. Request for Waiver

- A. Prior to submission of a request for a partial or total waiver, Bidder/Contractor shall speak to the Designated Contacts at OGS for guidance.
- B. In accordance with 9 NYCRR § 252.2(m), a Bidder/Contractor that is able to document good faith efforts to meet the goal requirements, as set forth in clause IV below, may submit a request for a partial or total waiver on Form SDVOB 200, accompanied by supporting documentation. A Bidder may submit the request for waiver at the same time it submits its SDVOB Utilization Plan. If a request for waiver is submitted with the SDVOB Utilization Plan and is not accepted by OGS at that time, the provisions of clauses II (C), (D) & (E) will apply. If the documentation included with the Bidder's/Contractor's waiver request is complete, OGS shall evaluate the request and issue a written notice of acceptance or denial within 20 days of receipt.
- C. Contractor shall attempt to utilize, in good faith, the SDVOBs identified within its SDVOB Utilization Plan, during the performance of the Contract. Requests for a partial or total waiver of established goal requirements made subsequent to Contract award may be made at any time during the term of the Contract to OGS but must be made no later than prior to the submission of a request for final payment on the Contract.
- D. If OGS, upon review of the SDVOB Utilization Plan and Monthly SDVOB Compliance Report (SDVOB 101) determines that Contractor is failing or refusing to comply with the contract goals and no waiver has been issued in regard to such non-compliance, OGS may issue a notice of deficiency to the Contractor. The Contractor must respond to the notice of deficiency within seven business days of receipt. Such response may include a request for partial or total waiver of SDVOB contract goals.

Waiver requests should be sent to the primary designated contact as stipulated on the front cover of this solicitation and within the body of the solicitation itself.

IV. Required Good Faith Efforts

In accordance with 9 NYCRR § 252.2(n), Contractors must document their good faith efforts toward utilizing SDVOBs on the Contract. Evidence of required good faith efforts shall include, but not be limited to, the following:

- (1) Copies of solicitations to SDVOBs and any responses thereto.
- (2) Explanation of the specific reasons each SDVOB that responded to Bidders/Contractors' solicitation was not selected.
- (3) Dates of any pre-bid, pre-award or other meetings attended by Contractor, if any, scheduled by OGS with certified SDVOBs whom OGS determined were capable of fulfilling the SDVOB goals set in the Contract.
- (4) Information describing the specific steps undertaken to reasonably structure the Contract scope of work for the purpose of subcontracting with, or obtaining supplies from, certified SDVOBs.
- (5) Other information deemed relevant to the waiver request.

V. Monthly SDVOB Contractor Compliance Report

In accordance with 9 NYCRR § 252.2(q), Contractor is required to report Monthly SDVOB Contractor Compliance to OGS during the term of the Contract for the preceding month's activity, documenting progress made towards achieving the Contract SDVOB goals. This information must be submitted using form SDVOB 101 available at https://ogs.ny.gov/veterans/ and should be completed by the Contractor and submitted to OGS, by the 10th day of each month during the term of the Contract, for the preceding month's activity to:

NYS Office of General Services Financial Administration – Agency Procurement Office Corning Tower, 32nd Floor, ESP Albany, New York 12242

Please include the contract number and primary designated contact name with this report.

VI. Breach of Contract and Damages

In accordance with 9 NYCRR § 252.2(s), any Contractor found to have willfully and intentionally failed to comply with the SDVOB participation goals set forth in the Contract, shall be found to have breached the contract and Contractor shall pay damages as set forth therein.

ALL FORMS ARE AVAILABLE AT: https://ogs.ny.gov/veterans/

Attachment 1 – Bid Proposal Form

Invitation for Bid (IFB) #2806

Preventative Maintenance of the Bar, Traveling Water and Wedge Wire Water Screen Systems

At the NYS OGS Riverfront Pumping Station In Albany, NY

Notice to Bidders

OGS has sub-divided this solicitation total into three separate Lots: Lot 1 – Base Bid for the Bar and Traveling Water Screen System, Lot 2 – Base Bid for the Wedge Wire Water Screen System and Lot 3 - Full-Time Employee.

Bidders may bid on one, more than one, or all lots as defined hereinafter on the Bid Proposal Form(s).

Preventative Maintenance of the Bar, Traveling Water and Wedge Wire Screen Systems

Grand Total Bid Amount is not a guarantee of payment. Frequencies are for estimation purposes only. Contractor shall be paid only for actual services rendered.

Lot 1 - Bar & Traveling Water Screen S	ystem	Lot 1 Annual Subtotal
Item 1. Base Bid	All preventative work outlined in Section 2 - Scope of Work, relating to the Bar and Traveling Screen systems, performed by the Contractor and/or sub-contractor throughout the year and some services during the annual Columbus Day weekend shutdown. This Lot 1 also should contain pricing for crane, rigging, and heavy hauling services to the Bar and Traveling Screen section removals, when needed, potentially performed twice during the five-year contract.	\$
Additional Services - Includes, but is n	ot limited to:	
Underground Concrete Vault, Pipeline a	nd RFPS-WWWS Control System pumping and removal of debris (performed during Columbus Day)
Pipeline and Forebay Video Inspection a	and Subterranean Integrity Checks, robotic video (performed twice o	during five-year contract)
Underwater Diving Inspection (performe	d potentially once during the five-year contract)	
Any other out of scope maintenance/rep	airs that may arise	
Item 1a. Regular Hourly Rate	Hourly Rate: \$x 320 estimated	\$
Rem ra. Regular Flourity Rate	hours = \$per year	"
Item 1b. OT - Time and a Half Rate	Time and a half Rate: \$ x 80 estimated hours = \$ per year	\$
Item 1c. OT - Double Time Rate	Double Time Rate: \$ x 80 estimated hours = \$ per year	\$
Item 1d. Diving Inspection Rate	Underwater Diving Inspection (performed potentially once during the five-year contract)	\$

Item 1e. Video Inspection Rate	Pipeline and Forebay Video Inspection and Subterranean Integrity Checks, robotic video (performed twice during five-year contract)	\$
Item 1f. Material Markup	Estimated Material Cost: \$20,000 PLUS mark-up of% (e.g., 5% x \$20,000 = \$1,000 + \$20,000 = \$21,000)	\$
Item 1g. Equipment Rental Markup	Estimated Equipment Rental Cost: \$40,000 PLUS mark-up of% (e.g., 5% x \$40,000 = \$2,000 + \$40,000 = \$42,000)	\$
		Lot 1 Grand Total
	(Lot 1 Annual Subtotal) + (Item 1a - Item 1g)	\$

Lot 2 - Wedge Wire Water Screen Sys	tem	Lot 2 – Base Bid Annual Subtotal		
Item 2. Base Bid	All preventative work outlined in Section 2 - Scope of Work, relating to the Wedge Wire Water Screen system, performed by the Contractor and/or sub-contractor throughout the year and some services during the annual Columbus Day weekend shutdown. This Lot 2 also should contain pricing for crane, rigging, and heavy hauling services to remove debris from the WWWS System, when needed, potentially performed three times during the five-year contract.	\$		
Additional Services – Includes, but is not limited to:				
Shoreline Wedge Wire Screen System	Underwater Diving Inspection (performed potentially once during th	e five-year contract)		
Any other out of scope maintenance/rep				
Normal Control of the	Hourly Rate: \$ x 320 estimated	•		
Item 2a. Regular Hourly Rate	hours = \$per year	\$		
Item 2b. OT - Time and a Half Rate	Time and a half Rate: \$ x 80 estimated hours = \$ per year	\$		

Item 2c. OT - Double Time Rate	Double Time Rate: \$ x 80 estimated hours = \$ per year	\$
Item 2d. Diving Inspection Rate	Shoreline Wedge Wire Screen System Underwater Diving Inspection (performed potentially once during the five-year contract)	\$
Item 2e. Material Markup	Estimated Material Cost: \$20,000 PLUS mark-up of% (e.g., 5% x \$20,000 = \$1,000 + \$20,000 = \$21,000)	\$
Item 2f. Equipment Rental Markup	Estimated Equipment Rental Cost: \$40,000 PLUS mark-up of% (e.g., 5% x \$40,000 = \$2,000 + \$40,000 = \$42,000)	\$

	Lot 2 Grand Total
(Lot 2 Base Bid Annual Subtotal) + (Item 2a - Item 2f)	\$

Full-Time Employees, Annually As described in Section 2.5.1 – Full Time Employees \$	Lot 3 - Full Time Employees		Lot 3 Grand Total
	Full-Time Employees, Annually	As described in Section 2.5.1 – Full Time Employees	\$

NYOGS RIVER PUMPING STATION OPERATIONS & MAINTENANCE MANUAL FOR FRONT CLEAN/REAR RETURN 4'-0" X 42'-3 3/4" MECHANICAL BAR SCREEN

MODEL #: BS-0443-I SERIAL #: SO-3804 C/D



Atlas- Atlas-SSI, Inc. P.O. Box 760 / 215 Highway 19 Slaughter, LA 70777

> <u>MANUFACTURED FOR:</u> <u>D.A. Collins Construction Co., Inc.</u> <u>Wilton, NY</u>

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1.0 INTRODUCTION

This manual has been prepared to assist in the installation, operation and maintenance of your Atlas-SSI, Inc. Mechanical Bar Screen. It does not purport to cover all details for variations in the equipment or its installation, nor to provide for every possible contingency to be met in connection with installation, operation or maintenance of the Mechanical Bar Screen.

Quality material has been used in the manufacture of this equipment. With careful, proper maintenance and servicing it will conform to your requirements and provide years of reliable operation. It is therefore of great importance that maintenance personnel are properly trained. We are not responsible for damage which is a result of non-compliance with this manual.

Should any questions arise about these instructions, the equipment, or its installation, additional information may be obtained by contacting us at:

Atlas-SSI, Inc. 215 Hwy. 19 P.O. Box 760 Slaughter, LA 70777

Phone (225) 654-3900 Fax (225) 654-3966 E-mail: sales@atlas-ssi.com

READ THESE DIRECTIONS CAREFULLY BEFORE INSTALLING AND OPERATING THE SCREEN.

2.0 DESCRIPTION OF OPERATION

Mechanical Bar Screens are automatically cleaned screening devices that are used to remove floating or suspended debris from a channel of water. Mechanical Bar Screens are usually used at surface water intakes to protect pumping or other downstream equipment from objectionable debris.

Mechanical Bar Screens consist of a series of toothed rakes welded to the rake body tubing which is attached to two matched strands of roller chain. The chain operates in a vertical path over head and foot sprockets, carrying the rakes down into the water, around the foot sprockets, and back up over the head sprockets. As raw water passes through the bar racks, debris is collected on the upstream face of the flat bars that form the racks. As the rakes ascend, the debris is cleaned from the front of the racks. As the rakes continue traveling over the head sprockets and begin descending, the debris is discharged on the downstream side of the racks. To ensure adequate debris removal and to prevent debris "carry over" to the downstream side of the channel; an idler assembly and chain guide track are used to locate the discharge point directly over the debris receptacle or trough.

The path of the chain and bar rake assemblies is guided within a track that also forms a skeleton-like frame to support the screen structure. A labyrinth seal between the screen frame structure and channel wall prevents debris from passing around the screen.

Mechanical Bar Screens are usually not operated until a specified differential head loss or time lapse has occurred. Some applications may be operated more frequently, even continuously, based on specific design or application requirements.

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3.0	ATLA	S-SSI,	INC.
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LIABILITY STATEMENT

NOTE

ATLAS-SSI, INC. DOES NOT ACCEPT LIABILITY FOR ANY CORRECTIVE OR OTHER WORK, OR EXPENDITURES OF ANY KIND THAT HAVE NOT BEEN AUTHORIZED BY ATLAS-SSI, INC. IN WRITING PRIOR TO THE COMMENCEMENT OF SUCH WORK, OR PRIOR TO COMMITTING TO SUCH EXPENDITURES, WITHOUT EXCEPTION.

4.0 GENERAL SAFETY PRECAUTIONS

Atlas-SSI, Inc. Mechanical Bar Screens are designed for safe operation within the limits of their rated capacity. They have been designed with protective guards and housings to prevent operator contact with rotating machinery.

If maintenance or inspection of a screen must be performed with the chain guards, housing, etc. removed, the inspection should be done by authorized and trained personnel, and special precautions must be taken to prevent access by unauthorized personnel.

FAILURE TO EXERCISE CAUTION AND COMPLY WITH SAFETY RULES MAY RESULT IN SERIOUS PERSONAL INJURY AND WILL VOID ATLAS-SSI'S RESPONSIBILITY. ALSO, FAILURE TO EXERCISE CAUTION MAY RESULT IN EQUIPMENT AND PROPERTY DAMAGE AND COULD VOID ATLAS-SSI'S WARRANTY.

The following guidelines for safe operation and maintenance must be followed:

• Screen operation should be limited to trained personnel. All operators and maintenance personnel should thoroughly read and understand this manual and be instructed in the location and operation of all stopping devices.

Avoid Accidents! All equipment must be "Locked Out" electrically & mechanically before any maintenance or work of any kind can be performed.

- After electrically "Locking Out" the screen, if bar rake removal is required, the rake attachment chain <u>must</u> be secured **before** rake removal and kept secured during maintenance procedures, to prevent any rotation of the machine.
- Never remove overload or safety devices from screen.
- Practice good housekeeping. Keep areas around the screen clear of obstructions; locate and seal any water leaks.

See following page for General Safety Precautions continued.

GENERAL SAFETY PRECAUTIONS CONT'D

 V 	Vear safety	harness with	100% tie-off wh	en working arou	nd an open screen well.
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• Do not operate equipment with visually damaged sprockets or chain, or loose fasteners. Repair damaged or malfunctioning equipment before continuing operation.

WE ASSUME	NO RESP	ONSIBILI	TY FOR	ACCIDENTS	INCURRED	BY	ANY
PERSONNEL	NOT IN T	HE EMPL	OY OF A	ATLAS-SSI.			

Contact Atlas-SSI, Inc. if there are any questions about recommended safety procedures.

5.0 GENERAL INFORMATION & SITE PREPARATION

5.1 Damaged Shipments

Thoroughly inspect this equipment before accepting shipment from the transportation company.

If any of the items identified in the Bill of Lading or Packing Slip are damaged, or the quantity is incorrect, an appropriate notation must be made on the freight bill and immediately reported to Atlas-SSI, Inc. to insure proper substantiation for claims and adjustments.

If any concealed loss or damage is discovered, notify your freight agent, and Atlas-SSI, Inc. at once and request an on-site inspection.

5.2 Handling Recommendations

When handling this equipment, care should be taken to avoid supporting or lifting in a manner that would place excessive stress on parts that are not designed to support the weight of the load. This equipment should be moved only when lifting devices are of sufficient capacity to handle the weight and size of the load.

Please refer to the Data Sheet included on page 30 of this manual and the General Arrangement for a guide to the approximate screen weight and component configuration.

IMPROPER LIFTING OR HANDLING OF THE MECHANICAL BAR SCREEN AND ITS COMPONENTS MAY RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE, AND MAY VOID THE EQUIPMENT WARRANTY.

Contact Atlas-SSI, Inc. for additional handling recommendations.

5.3 Preparation of Site

Before the actual erection of the equipment is begun, a thorough inspection of the site is necessary.

Atlas-SSI, Inc. assumes no responsibility for site preparation.

It is recommended that the site be cleared of all excess material to allow for free and easy movement by the erectors and equipment they are utilizing.

All foundation anchor bolts, wall guides, and other steelwork embedded in concrete must be checked for cleanliness, accuracy of location and alignment. Steelwork or anchor bolts that are incorrectly located must be correctly positioned by the party or parties responsible before erection of the equipment proceeds.

5.4 Preparation of Screen Well

Before installation and erection of the screen, it is necessary to inspect the condition of the screen well. The bottom must be level and free of debris. Wall guides must be vertically true and parallel, and in line with each other.

The width and depth of the well must conform to the dimensions on general arrangement drawing. Screens installed in poorly constructed wells may suffer serious damage, and premature wear.

6.0 STORAGE OF MATERIAL

6.1 Storage Prior to Assembly/Erection

If possible, store the Mechanical Bar Screen and its components in a warehouse or similar type enclosure to protect them from contamination by foreign materials.

If indoor storage is not possible, observe the following guidelines for outdoor storage:

- 1. Frame Sections, rake assemblies and other structural components should be blocked off the ground in a manner to prevent distortion of structural members, and to avoid accumulation of rainwater and/or snow. If possible, cover with tarpaulin.
- 2. Electric motors, reducers, electrical controls, shaft assemblies, chain and other machinery components should be blocked off the ground and covered to prevent contact with foreign material.

NOTE: OUTDOOR STORAGE OF THESE COMPONENTS IS NOT RECOMMENDED.

- 3. All screen components should be checked upon arrival at jobsite for chips or cracks in the surface coating. These areas should be touched up with field paint prior to storage. Protective coating, which may have been marred in handling, should be re-coated.
- 4. Some painted surfaces may be affected by sunlight. To prevent potential problems, all painted material should be covered to protect the coating from sunlight.
- 5. Periodic checks should be made of the stored material to check for possible rusting of unpainted surfaces, especially where extended or long-term storage will be required.

6.2 Storage After Assembly and Erection

When the equipment has been installed in the intake chamber, prior to plant operation, care must be taken to assure that the units are not submerged in stagnant water for long periods.

SEVERE CORROSION OF MATERIALS, INCLUDING STAINLESS STEELS MAY RESULT FROM PROLONGED SUBMERSIONS IN STAGNANT WATER.

The screens should be operated periodically to rotate chain and rakes from the submerged conditions and to reduce the possibility of sanding or silting of the foot sprocket machinery in the bottom frame section.

The following procedures are recommended to preserve the screens until they can be placed in normal operation:

- 1. All rake chain rollers must be fully greased as soon as possible. (Unless chain does not require lubrication.)
- 2. Head shaft take-up bearings must be lubricated.
- 3. Shear pin device shearing surfaces must be lubricated (sprocket and hub faces). Remove shear pin and rotate by hand to lubricate completely.
- 4. Speed reducers must be filled to the proper level with the correct oil. (See lubrication plate on the reducer.) Until power is available, the shear pins should be removed so the couplings between the motors and reducers can be rotated manually. Drive units should be rotated once every 2 to 3 weeks.
- 5. Grease all take-up capstan bearings and screws.
- 6. Lubricate drive chains with motor oil.

When power is available, the screens should be rotated at least one complete revolution each week until they are placed in normal operation.

Before the screens are placed in normal operation, all bearings, rollers, etc., should be re-greased. The reducer units must be drained, flushed, and re-filled with the correct oil to the proper level.

NOTE: See Recommended Lubrication Schedule page 28 for proper lubrication recommendations

7.0 MECHANICAL BAR SCREEN ASSEMBLY

7.1 Shop Assembled Screens

Some Atlas-SSI, Inc. Mechanical Bar Screens are shop assembled and shipped as complete units. If your screens have been pre-assembled at the factory, the installer can skim over the sections of this manual describing screen assembly.

IT IS RECOMMENDED THAT THE INSTALLATION AND MAINTENANCE PERSONNEL BECOME FAMILIAR WITH THE ASSEMBLY PROCEDURES TO FACILITATE TROUBLESHOOTING, AND SCREEN DISASSEMBLY, IF EVER REQUIRED.

7.2 Field Assembly

Whenever it becomes necessary to ship a Mechanical Bar Screen disassembled, or "knocked down", all components of the knocked down sections should be located and identified before proceeding with assembly.

The Mechanical Bar Screen is assembled in the sequence indicated in this manual and on the general arrangement drawing. A knocked down screen, and most screens with sprocket centers greater than 35 feet, are often assembled in sections, with each succeeding frame section bolted together while suspended over the screen well. This procedure is described in the following sections of this manual.

However, the installer may choose to assemble the screens on the ground in one piece. If this procedure is followed, it will be necessary to block up the screens so that the frame is adequately supported throughout its entire length. It is recommended that Atlas-SSI, Inc. be contacted for additional information if this procedure will be used to install screens with sprocket centers greater than 35 feet.

7.3 Assembly of Screen

USE CAUTION WHEN LIFTING AND HANDLING VARIOUS SECTIONS TO AVOID DISTORTING ANY MEMBERS. PAY PARTICULAR ATTENTION TO THE HANDLING OF THE BAR RACKS AS SLINGS AND ROPES SLUNG AROUND THEM MAY DEFORM THE RACKS BY BENDING THE BARS.

Refer any questions that arise during the assembly of this screen directly to Atlas-SSI, Inc.

7.4 Boot Section Assembly

Boot sections are usually shipped assembled with the foot sprocket assembly in place. All dimensions should be field checked to assure alignment was not disturbed in shipment.

The side panels must be parallel to each other. The inner dead plate and dead plate attachment angles can now be installed, the cross members can be bolted to the lower boot side panels, and finally bolting the ends of the curved plates to each other by means of a splice plate welded to one of those plates.

Assuming that it is not possible to install the racks after the frame is set in place, then the upper boot should now be assembled to the lower boot by bolting the chain guides (that protrude from one section) and splice plates to the side panels. Also, splice plates should be fastened (leave bolts loose) to the top of the upper boot side panels at this time (to be prepared to bolt to the next frame section).

The lowest bar rack should then be installed in the assembled boot section. The racks have numbers welded on them that correspond to numbers welded on the main frame sections to help facilitate assembly of sections in the same order as during factory assembly.

Before lowering the boot section, in some installations, it may be necessary to assemble enough of the rake attachment chain into the boot to project above the upper boot section. The ends of the chain would need to be temporarily fastened until the next section was attached. Additional chain would then be similarly assembled in succeeding sections. It would be advisable to use this procedure whenever it would be difficult to assemble the chain in the installed frame sections, such as a Mechanical Bar Screen with large sprocket centers and no means of dewatering the well.

Place the assembled boot section over the screen well so that the front of the frame faces the direction of the flow. The flanges should be aligned over the wall guides and slowly lowered until the splice plates are located above the operating floor level by about two feet. Block the boot section at this elevation.

It may be necessary to apply grease to the wall guides or side frame flanges to facilitate the lowering of the screen into the well.

7.5 Intermediate Section Assembly

The intermediate sections are usually constructed in sections approximately ten feet long. However, the length of the uppermost, or upper, intermediate section may vary, from six to fifteen feet. If not, factory assembled, the intermediate section(s) should now be assembled.

The intermediate section should be positioned over the boot section and bolted in place using splice plates. Cross bracing between frame sections (when supplied) should now be bolted in place. Remember to assemble the frame sections in proper order by matching corresponding numbers welded on the side panels. Next bolt the corresponding bar racks into place. (The bottom of the racks bolt to the frame section immediately below the frame section being attached now.) Repeat this procedure until the upper intermediate section is bolted in place and the entire screen frame assembly can be lowered until the boot section rests on the well bottom.

In the case of the upper intermediate, a dead plate will be installed rather than the bar racks. Assembly is done in the same manner as the bar racks; by bolting the upper and lower ends to cross angles in the frame that have matching hole patterns. Some Mechanical Bar Screens may have dead plates in place of bar racks in intermediate sections below the upper intermediate. These would be assembled in the same manner as above.

7.6 Head Section Assembly

The structural portion of the head section is factory assembled prior to shipment. If not already in place, it is now necessary to install the head shaft assembly.

The set collars must be slid on the shaft first. Next slide the flanged bearings (flanges face toward outside) on the shaft. These bearings support the dead plate that wraps around the head shaft and directs the debris into the debris trough. Next, the head sprockets should be mounted to the head shaft and the shaft positioned between the head section side frames. The take-up bearings, with take-up screws and capstans in place, are now installed onto each end of the shaft and located over the bearing guide ways. The driven sprocket can now be mounted on the driven end of the shaft using the proper key.

Install the idler sprocket assembly and debris deflector between the rear post side panels. (The idler shaft must be slid through the side panels as it has bushed flange bearings that bolt to the outside of the side panels). With the head section assembled, the head section can be positioned over the upper intermediate section and securely bolted in place. Bolt the adjustable head section dead plate to the flanged bearings on the head shaft and to the upper intermediate dead plate.

NOTE: The connection to the upper intermediate dead plate must either be left loose enough to allow the wrapper dead plate to slide or be loosened each time the head shaft position is to be adjusted. The entire screen assembly can now be lifted by the lifting lugs located on the top of the screen head section.

7.7 Frame Adjustment

With the screen frame assembled, and the boot section resting on the well bottom, the frame should be checked for vertical alignment and the frame dimensions verified against the general arrangement drawing.

A plumb line should be used to ensure that each head sprocket is properly aligned with the boot chain guide assembly below it. Alignment should be within 1/8".

Shimming beneath the boot section side panel frame at the corners can level the boot section.

<u>WARNING</u> - Do not shim under the curved boot plate. This will distort the boot plate and cause the screen to jam.

All shims must be welded to the frame to prevent them from slipping out of place. The head shaft should be checked to ensure that it is parallel with the foot shaft. Adjustments may be made using the take-up capstans.

7.8 Rake Attachment Chain Installation

The rake attachment chain is shipped in coiled segments approximately ten feet long. Each segment is classified as right or left hand. This designation identifies on which side of the screen that the chain will be installed to ensure that the head of the chain pins is to the outside, providing proper access to the lubrication fittings (when applicable). It also identifies that the attachment angle is oriented so that the leg of the angle points upward. (See General Arrangement Drawing.)

NOTE: THE CHAIN SHOULD BE INSTALLED WITH THE HEAD SHAFT TAKE-UP BEARINGS IN THEIR LOWEST POSITION.

Prior to installing the chain, it will be necessary to identify and segregate the chain into separate left and right-hand segments.

The chain can then be installed by threading a pair of chain segments over the head sprockets and rotating the sprockets until the end of the chain segments are in a convenient position to add another section. The process is continued until all segments are installed and the ends coupled.

NOTE: Mark outside of chain for rake attachment locations to simplify rake installation.

THE CHAIN SHOULD BE KEPT TAUT DURING INSTALLATION BY ATTACHING A BLOCK AND TACKLE TO THE LEAD LINK.

Some chain has parts that have been heat treated to increase wear resistance. If it is necessary to drive a pin, or other chain component, a block of hard wood should be placed on the pin prior to hammering.

The rake attachment chain joints should be greased initially and about every several hundred hours of operation. See Recommended Lubrication Schedule page 28. (This does not apply to non-lubricated chain. See the Mechanical Bar Screen Data Sheet for the type of chain used on your screen.) The grease fills the cavities between the roller and bushings, between the roller and sidebar, and between the pin and bushing, so that sand, dirt, or other abrasive materials cannot get into these spaces and cause premature wear. The proper grease to accomplish this function must be heavy enough so that it will not wash out, and waterproof so it will not dissolve. See Recommended Lubrication Schedule page 28.

7.9 Bar Rake Installation

Prior to installing the rakes to the chain, both strands of chain should be blocked or anchored, or the head shaft snubbed so that the rakes cannot roll free over the head sprockets.

Determine the number of chain links. Mount the first rake and rotate the screen one half (1/2) of the total number of chain links. Block chain and install second rake, the screen should be rotated one fourth (1/4) of the total number of chain links. Block chain and install third rake, the screen should be rotated one half (1/2) of the total number of chain link, block chain and install fourth rake. Continue this procedure until all rakes are mounted. Always rotate the newly mounted rakes to keep the weight evenly distributed.

NOTE: The rake attachment chain should always be secured when mounting the rakes. (Note: secure as above by blocking or anchoring the chain; or the head shaft should be snubbed so that the rakes cannot roll free over the head sprockets.)

Rakes are mounted to the chain as shown on the General Arrangement drawing. Rakes are bolted to the chain using hex head cap screws and Nylock hex nuts.

After an initial run-in period of at least one hour, the rake attachment screws should be re-tightened.

7.10 Chain Tension Adjustment

Initial Chain Adjustment (New Chain)

Before adjusting the carrier chain tension, the head sprockets should be positioned with the sprocket tooth located directly over the centerline of the head shaft. The head shaft should be set in the proper position as shown on the General Arrangement by simultaneously turning the take up capstans (clockwise). Then, the head shaft should be leveled to within 1/32" per foot (3mm per meter) of length using a carpenter's level.

The capstans should be turned the same amount on both sides, so the head shaft is level at all times.

Then, the chain tension should be adjusted by simultaneously turning the take up capstans (clockwise) in equal amounts until the rake attachment chain is tight. The capstans should then be loosened 1-1/2 revolutions to obtain proper running freedom in the machine. (This should give approximately 4" movement of the chain off vertical when checked at the center of the free hanging side of the chain).

Chain Adjustment (Maintenance)

Chain tension and wear should be inspected on a regular basis, monthly or quarterly inspections are recommended depending on screen operation. The following items should be checked at each inspection.

The chain should be lubricated during each inspection (when applicable).

The joints of the chain should be inspected on a regular basis for wear. When the chain joints show 3/16" to 1/4" (5mm to 6mm) play, the chain should be replaced at this time.

The rake attachment chain sidebars should be inspected for corrosion, wear and or damage. Damaged links should be replaced immediately, and the same number of links should be replaced on the opposite side.

The chain tension should be checked by examining the horizontal movement on the downstream side of the screen. If the horizontal movement is more than 4" (100mm) the chain should be tightened.

Another indicator of improper chain tension is the bar rakes, as the back edges of the bar rakes will show scraping. If the bar rake teeth show signs of scraping or dragging caused by the rake passing through the boot section, or the rakes don't move smoothly, the chain should be tightened.

Chain tension should be adjusted as stated above. Any other questions concerning chain wear or tension adjustment should be addressed to Atlas-SSI, Inc.

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7.12 Splash Housing Assembly

Splash housing and rear housing can be assembled to head section as shown in the general arrangement drawing.

7.13 Drive Unit Assembly

Attach the Drive Machinery Platform to the head section frame – reference the general arrangement drawing for orientation. The motor/reducer unit should come mounted to the Drive Machinery Platform. If not, the unit should be mounted to the motor/reducer mounts, located on the top of the Platform.

The drive sprocket and the shear pin device are now ready to be mounted. First slide the set collar onto the low-speed shaft; do not tighten the set screws at this time. Now install the drive sprocket as shown in Figure 11. The shear pin device should now be positioned on the shaft and the key installed. Approximately 1/4" of shaft should extend out of the shear pin device. Tighten the set screws in both the shear pin device and the set collar.

The speed reducer is shipped without oil. Fill the reducer with the correct amount of the proper lubricant. Reference the manufacture's manual in the appendix of the manual. Do not over fill the reducer with oil.

Make all necessary electrical connections to the motor. Only a qualified electrician should do this.

The drive chain tension should NEVER be adjusted by moving the capstans. The drive chain tension must be checked whenever the basket chain is adjusted. The tension on the idler sprocket (if applicable) should be relieved prior to running the machine in reverse.

Check the drive and driven sprocket alignment and assemble the drive chain as shown on the general arrangement drawing. Chain tension can be adjusted by using the idler sprocket chain tensioner and or by adding or subtracting links. There should be 1 to 2 inches of sag in the unloaded span of the drive chain. Drive chain tension must be checked whenever rake attachment chain is adjusted.

Lubricate drive chain and install chain guard.

Insert a test shear pin (see **Shear Pin** section, page 24) in the shear pin hub device.

CAUTION: REVIEW THE INSTALLATION AND MAINTENANCE CHECKLIST, PAGE 25. MAKE SURE ALL PERSONNEL ARE CLEAR OF THE MACHINERY, <u>BEFORE</u> JOGGING THE MOTOR OR OPERATING THE SCREEN.

Jog the screen for one complete revolution to assure the absence of any binding. If no binding occurs remove the test pin from the shear pin device and install the normal drive pin. If the mechanical bar screen does not operate smoothly during the test run, review the Installation and Maintenance Checklist and/or consult Atlas-SSI, Inc.

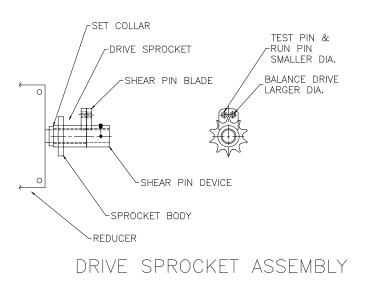


Figure 11

8.0 SHEAR PIN

The shear pin hub device is furnished with three (3) different types of shear pins, the test pin, the normal drive pin, and the balanced drive pin.

1. Test Pin (Color Coded Orange)

The test pin is to be used for testing and adjusting only. This pin is inserted in the smaller of the two holes in the shear pin hub device and is designed to shear at a proper load to prevent serious damage to the screen should anything unusual happen during testing or adjusting. It is important that the necked down section of the pin be lined up with the shearing faces of the driving and driven hubs of the shear pin device.

2. Normal Drive Pin (Color Coded White)

The normal drive pin is the smaller of the two solid pins provided. This pin is inserted in the smaller of the two holes in the shear pin hub device. This pin should be used for normal operations and is rated to shear at approximately 75% of the NEMA rated stalling torque of the motor.

3. Balanced Drive Pin (Color Coded Red)

The balanced drive pin is the larger of the two solid pins provided and is installed in the larger of the two holes in the shear pin hub device. This pin is designed to shear at slightly higher than the NEMA rated stalling torque of the motor and should only be used in emergencies when the normal drive pin has sheared due to excessive head loss.

The two different diameter holes in the shear pin device are off set to prevent insertion of the normal drive and the balanced drive shear pins at the same time.

BECAUSE THE BALANCED DRIVE SHEAR PIN IS SIZED AT THE MAXIMUM TORQUE THE MOTOR CAN WITHSTAND WITHOUT DAMAGE, A STEEL BOLT OR ANY OTHER METHOD OF BOLTING OUT THE SHEAR PIN HUB DEVICE SHOULD NOT BE USED, SINCE SERIOUS DAMAGE TO THE SCREEN PARTS COULD RESULT.

Note: Color coding identified is **optional** and only provided upon customer's request. Pins can be identified by physical characteristics if color coding is absent.

9.0 INSTALLATION & MAINTENANCE CHECKLIST

The following check points MUST be reviewed before initial Mechanical Bar Screen operation:

- 1. Chain tension must be equal in both strands of rake attachment chain. If your unit is equipped with a spring suspension system, follow the instructions on page 20 for proper chain adjustment.
- 2. Rake attachment chain direction of travel should be confirmed.
- 3. Rake chain joints must be properly lubricated. (If required.)
- 4. Head shaft must be level within 1/32" per foot of length. If necessary, remove one rake to check.
- 5. Head shaft and foot shaft must be plumb.
- 6. Head shaft take-up bearings must be lubricated.
- 7. Reducer must be filled to proper oil level. Check breather plug for clogging.
- 8. Motor must rotate in proper direction. Remove shear pins before checking.
- 9. Check coupling for proper alignment.
- 10. Drive chain must be properly lubricated.
- 11. Drive and driven sprocket alignment should be checked.
- 12. A properly sized shear pin must be installed.
- 13. All set collars should be tightened.
- 14. All keys should be checked to insure they are properly positioned.

10.0 INSPECTION AND MAINTENANCE

10.1 General

Periodic inspection and maintenance of the screen is required to keep your Atlas-SSI, Inc. Mechanical Bar Screen operating at maximum efficiency.

A scheduled routine maintenance program is the best insurance against costly down time due to mechanical failure.

The installation portion of this manual should be referred to when attempting maintenance procedures.

10.2 Bar Rakes

Periodically check bar rake attachment bolts to ensure that they are properly tightened. The loss of a rake may cause severe damage to the screen.

Bar rakes that have been bent or damaged should be replaced, and the cause of the damage should be investigated.

Bar rakes should be periodically inspected for wear indicating improper chain tension or misalignment. If wear is evident, chain tension should be checked.

10.3 Bar Rake Attachment Chain

When disconnecting chain, always make sure that both strands of chain are blocked or anchored so that they cannot roll free over the head sprockets. If replacement of one or more links is required, replacement of the link(s) on the opposite strand of chain is also required. Do not replace links on one chain and not the other.

Chain tension should be checked frequently.

Several links of the chain should be removed and inspected for wear on an annual basis.

10.4 Take-up Bearings

Head shaft take-up bearings, dead plate support bearings, and idler shaft bearings should be lubricated with a waterproof grease on a weekly basis. The bearings should always be greased prior to adjusting chain tension.

The head shaft should pass completely through the length of the bearing. It should be inspected regularly to ensure that the shaft has not shifted laterally.

10.5 Debris Trough

The debris discharge plate should be periodically checked for debris accumulations and washed out, if necessary.

10.6 Trash Racks

The bar racks should receive a visual top side inspection every two (2) months to check for damaged or bent bars and debris or marine growth trapped between the bars.

The bar racks should receive a complete annual inspection the full length of the bars either by dewatering the intake well or utilizing trained commercial divers. Check for damaged or bent bars and any debris or marine growth trapped between the bars.

If there is excessive debris clogging or an accumulation of marine growth beyond the reach of the bar rake teeth, manual cleaning will be required. Debris can be dislodged by manually scraping it away or by high pressure water blast.

10.7 Drive Sprocket and Shear Pin Hub

The faces between the shear pin drive sprocket and shear pin hub should be lubricated annually to prevent surfaces from rusting together.

10.8 Drive Chain

Drive chain tension should be checked on a weekly basis or whenever rake chain is adjusted. Tension can be adjusted by adding or subtracting links so that there is 1 to 2 inches of sag in the unloaded span.

WARNING: THE DRIVE CHAIN TENSION SHOULD NEVER BE ADJUSTED BY MOVING THE CAPSTANS.

10.9 Speed Reducer

See the reducer manufacturer's bulletin for maintenance and lubrication information.

10.10 Coupling

See the coupling manufacturer's bulletin for maintenance and lubrication information.

10.11 Motor

See the motor manufacturer's bulletin for maintenance and lubrication information.

10.12 Take-up Screw

The threads of the take-up screws, and the take-up thrust bearings should be lubricated on a monthly basis, or whenever the chain tension is adjusted.

10.13 Splash Housings

Promptly repair splash housings whenever a leak is evident.

10.14 Surface Coating

This section is not applicable – This Mechanical Bar Screen is constructed of 316 SS.

11.0 APPENDIX A: RECOMMENDED LUBRICATION SCHEDULE

		D .	
HOOT	Shaff	Bearing	J
ı oot	Smart	Dearing	•

Lubricant: Water

How frequently: Continuously

Method: Self-lubricated. Immersed in water.

Remarks: None

Head Shaft Bearing

Lubricant: Texaco Starplex 2 or equal.

How frequently: 100 Hours for Bronze bushing, 150 Hours for Thordon bushing, 200 Hours for Roller bearings,

or 30 Days minimum.

Method: Alemite fitting.

Remarks: While greasing, verify that housing is

accepting grease.

Drive Sprocket

Lubricant: Texaco Starplex 2 or equal.

How frequently: Monthly

Method: Alemite fitting.

Remarks: Frequency of operation of screen will

determine how often greasing will be

required.

Shear-Pin Hub Device

(Blade Faces)

Lubricant: Texaco Starplex 2 or equal.

How frequently: Semi-Annually. Method: Best way.

Remarks: This is to prevent these surfaces from

rusting together.

Speed Reducer

Lubricant: See manufacturers bulletin (Sect. 17.0.)

How frequently: See manufacturers bulletin (Sect. 17.0.)
Method: See manufacturers bulletin (Sect. 17.0.)
Remarks: The oil level in the speed reducer should

always be checked before running.

Drive Chain

Lubricant: Open gear lubricant

How frequently: 100 Hours operation or 30 Days.

Method: Spray on.

Remarks: Chain should be cleaned yearly to prevent a buildup of the lubricant.

Idler Sprocket

Lubricant: Texaco Starplex 2 or equal. How frequently: 100 Hours operation or 30 Days.

Method: Alemite fitting

Remarks: None

Take-up Capstans

Lubricant: Texaco Starplex 2 or equal.

How frequently: Monthly

Method: Alemite fitting

Remarks: None

Rake Attachment Chain (If applicable)

Lubricant: Texaco Starplex 2 or equal.

How frequently: Every 100 operating hours for C.S

roundparts,

150 Hours for 17-4PH SS roundparts,

200 Hours for 17-4PH SS w/Nitronic 60,

or every 30 Days minimum.

Method: Alemite fitting.

Remarks: The primary function of the grease is to

fill the cavities between the pins, rollers, and bushing, so that sand, dirt, and other corrosive materials cannot fill these

spaces and cause premature wear.

12.0 APPENDIX B: MECHANICAL BAR SCREEN DATA SHEET

FLORIDA POWER & LIGHT CO. RIVIERA BEACH GENERATING STATION MODEL # BS-838-I SERIAL # SO-670

Materials:

Shafts: Head/Idler/Foot Carbon Steel, C-1018

Framework: ASTM A36 Carbon Steel – Epoxy Coated Chain and Rollers: 304SS Sidebars & Attachment Spacer,

17-4 PHss Pins & Rollers, Nitronic 60 Bushings Non-Lubricated

(9" Pitch)

Bar Racks FB - 3/8" x 3", A36

Bar Rake:

Number/Dimensions: (30) 4'-0"

Materials:

Frame: L - 4" x 3" x 3/8", A36 Teeth: FB - 3/4" x 9", UHMW

Gear Reducer:

Manufacturer: Nord

Type and Size: SK83/22 - 2 HP

Speed Ratio: 282.73:1

Motor:

Manufacturer:
HP:
2.0 HP
RPM:
1750 RPM
Voltage:
230/460 V

Sprocket Ratio: 56/8

Screen Travel Speed: 10 F.P.M.

Weight:

Complete Assembly: Approx. 22,500 lbs. Bar Rake: 165 lbs. each

Bar Attachment Chain: 5.5 lbs. per link

Dimensions:

Depth of Well: 38'-0"
Width of Well: 5'-2"

Distance between shafts: 42'-3 3/4"

Screen Manufacturer: Atlas-SSI, Inc.

Type and Size: Incline-Front Clean/Rear Return

Mechanical Bar Screen

4'-0" x 42'-3 3/4"

13.0 APPENDIX C: REPLACEMENT PARTS

<u>Item</u>	Req'd/ <u>Screen</u>	Part No.	Description
1.	30	F70A-0007	Rake Assy. – 4'-0" Wide, A36 w/ UHMW Teeth
2.	120	02-106/582/628	Bar Rake Attachment Bolt, 5/8"-11UNC x 5 1/2" Hex Head Cap Screw w/Nylock Nut & Flat Washer 18-8ss
3.	122 LKS	34-417L	Bar Rake Attachment Chain w/Attachment Angle to be equally spaced along the full length of the chain.
4.	122 LKS	34-417R	Bar Rake Attachment Chain w/Attachment Angle to be equally spaced along the full length of the chain.
5.	1	33-812	Mtr/Red Assy: 2.0 HP/1750 RPM 437:1 Reduction
6.	1	A47N-0026	Drive Sprocket/SPHD, 8 Tooth, 8.04" Pitch Dia., T-1
7.	3	A47L-0006	Shear Pin, Balance, C1018
8.	3	A47L-0005	Shear Pin, Run, C1018
9.	3	A47L-0004	Shear Pin, Test, C1018
10.	1	A64A-0001	Driven Sprocket, 56 Tooth, C.S.
11.	1	16-108	Driven Sprocket Key, SB – 1" x 5 1/4", C1018
12.	82 LKS	35-105	Drive Chain, 3.075" Pitch, C.S.
13.	1	A61A-0153	Head Shaft, 4 7/16" Dia., C1018
14.	2	A62A-0262	Head Sprocket, 12 Tooth, for 4 7/16" Shaft, C.S.
15.	2	33-215	Head Sprocket Key, Gib Head, 1", C.S.
16.	1	F61B-0009	Dead Plate Support Bearing, C.S. w/Bushing, Bronze
17.	2	A44A-0043	Take-up Housing, 4 7/16" Bore, C.S. w/Take-up Roller Bearings

18.	2	A44E-0020	Take-up Screw, 1 1/2" Dia., 303SS
19.	2	A44F-0027	Capstan Assy: 316SS w/Bronze Insert.
20.	2	27-215	Capstan Thrust Bearing, Steel
21.	27	F71A-0012	Trash Rake, UHMW
22.	1	F61B-0011	Idler Shaft, 2 15/16" Dia., C1018
23.	2	A47D-0079	Idler Sprocket, 6 Tooth, for 2 15/16" Shaft, C.S.
24.	2	F61B-0002	Idler Shaft Flange Bearing, C.S. w/Bushing, Bronze
25.	2	A47M-0130	Idler Sprocket Spacer, C1018

14.0 APPENDIX D: COATING INSPECTION & REPAIR

Coating Repair Procedures

For surface rust, wire brush with hand or power brush. It should not be necessary to brush the rust that has bled.

Spray "Chem-Prime" wherever rust is present. So that this process goes as fast as possible, it is recommended that this be applied with an air spray gun that has a "pick-up" tube that draws liquid from a 1-gallon jug. An alternative is a hand operated spray bottle that may be too slow. Person spraying must wear proper breathing apparatus if in the enclosed area of the screen frame.

Three to four hours after application rinse off Chem-Prime with fresh water.

If there are any questions, see instructions found on the Chem-Prime product label.

When surface is dry, it should be ready to apply coating. For coating procedures, please see recommendations provided by the protective paint manufacturer. The original coating may be reapplied if time allows or alternatively the International product Interzone 954 may be used when the part must be put in service (immersed) before the recommended cure time of the original type coating.

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Interzone® 954

Modified Epoxy

WORLD WIDE PRODUCT RANGE

PRODUCT
DESCRIPTION

A two component, low VOC, high solids, modified epoxy barrier coat designed to give long term protection in a single coat application. Will continue to cure when immersed in water and has excellent cathodic disbondment resistance.

INTENDED USES

Primarily designed for use in offshore splashzone maintenance, where its continued cure under immersed conditions make it ideal for coping with tidal movements and surges. May be applied to reoxidized and slightly damp surfaces. Interzone 954 has also found extensive use in a number of other corrosive environments including pulp and paper plants, chemical plants, jetties and sluice gates.

As part of a non-slip deck system in conjunction with appropriate aggregate.

PRACTICAL Information for Interzone 954

 Color
 Range available via the Chromascan* system.

 Gloss Level
 Gloss

 Volume Solids
 85% ± 3% (depends on color)

 Typical Thickness
 14-20 mils (350-500 microns) dry equivalent to 16.5-23.5 mils (412-588 microns) wet

 Theoretical Coverage
 68 sq.ft./US gallon at 20 mils d.f.t. and stated volume solids 1.70 m²/liter at 500 microns d.f.t. and stated volume solids

 Practical Coverage
 Allow appropriate loss factors

 Method of Application
 Airless spray, Air spray, Brush, Roller

 Drying Time

Temperature	Touch Dry	Hard Dry	Overcoating Interval with recommended topcoats	
			Minimum	Maximum
50 ₮ (10 ℃)	14 hours	24 hours	24 hours	14 days
59 T (15 ℃)	10 hours	18 hours	18 hours	10 days
77 ₹ (25 ℃)	4 hours	8 hours	8 hours	7 days
104 ₹ (40 ℃)	90 minutes	3 hours	3 hours	5 days

Flash Point Base (Part A) C/A (Part B) Mixed REGULATORY 86 F (30 ℃) 111 F (44 C) 91 F (33 C) **Product Weight** 14.2 15.0 lb/gal (1.6-1.8 kg/l) VOC 1.36 lb/gal (163 g/l)USA - EPA Method 24 UK - PG6/23(92), Appendix 3 130 g/1

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Interzone® 954

Modified Epoxy

SURFACE PREPARATION

The performance of this product will depend upon the degree of surface preparation. The surface to be coated must be clean and free from contamination. Prior to paint application all surfaces should be assessed and treated in accordance with ISO 8504:1992.

Accumulated dirt and soluble salts must be removed. Dry bristle brushing will normally be adequate for accumulated dirt. Soluble salts should be removed by fresh water washing.

Oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

Abrasive Blast Cleaning

Abrasive blast clean to SSPC SP6 or Sa2½ (ISO 8501-1:1988). If oxidation has occurred between blasting and application of Interzone 954, the surface should be reblasted to the specified visual standard.

Surface defects revealed by the blast cleaning process, should be ground, filled, or treated in the appropriate manner.

A surface profile of 2-3 mils (50-75 microns) is recommended.

Ultra High Pressure Hydroblasting/Abrasive Wet Blasting

May be applied to surfaces prepared to SSPC-SP6 or Sa2½ (ISO 8501-1:1988) which have flash rusted to no worse than Grade HB2½M (refer to International Hydroblasting Standards). It is also possible to apply to damp surfaces in some circumstances. Further information is available from International Protective Coatings.

Aged Coatings

Interzone 954 is suitable for overcoating some sound intact aged coatings. To ensure compatibility, application and evaluation of a test patch is required.

APPLICATION

Mixing	Material is supplied in two containers as a u the proportions supplied. Once the unit h within the working pot life specified.			e unit has been	
	(2) Combi	ne entire cor	itents o	a power agitato of Curing Agent roughly with po	t (Part B) with
Mix Ratio	4 parts : 1 part	by volume			
Working Pot Life	50 F (10 ℃) 3 hours	59 F (15 °C 2 hours	2)	77 ₹ (25 ℃) 90 minutes	104 ₹ (40 ℃) 45 minutes
Airless Spray	Recommended. - Tip range 21-26 thou (0.53-0.66 mm) - Total output fluid pressure at spray tip not less than 2,500 p.s.i. (176 kg/cm²)		ire at spray tip not		
Air Spray (Pressure Pot)	Recommended	Ai	ın r Cap ıid Tip	DeVilbiss M 62 AC	BC or JGA
Brush	Suitable		Typically 4-6 mils (100-150 microns) can be achieved		
Roller	Suitable		pically hieved	3-5 mils (75-12:	5 microns) can be
Thinner	International GTA415 (or GTA220)		Do not thin more than allowed by local environmental legislation.		
Cleaner	International G (or GTA822)	TA415			
Work Stoppages	Do not allow material to remain in hoses, gun or spray equipment. Thoroughly flush all equipment with International GTA415. Once units of paint have been mixed they should not be resealed and it is advised that after prolonged stoppages work recommences with freshly mixed units.				
Clean Up	Clean all equipment immediately after use with International GTA415. It is good working practice to periodically flush out spray equipment during the course of the working day. Frequency of cleaning will depend upon amount sprayed, temperature and elapsed time, including any delays.				
			REMERSE	BOUNDS CONTRACTOR OF STREET	

All surplus materials and empty containers should be disposed of in accordance with appropriate regional regulations/legislation.

Interzone® 954

Modified Epoxy

ADDITIONAL Information

Further information regarding industry standards, terms and abbreviations used in this data sheet can be found in the following sections of the International Protective Coatings data manual:

- · Definitions & Abbreviations
- Surface Preparation
- Paint Application
- · Theoretical & Practical Coverage

Individual copies of these information sections are available upon request.

SAFETY PRECAUTIONS

This product is intended for use only by professional applicators in industrial situations in accordance with the advice given on this sheet, the Material Safety Data Sheet and the container(s), and should not be used without reference to the Material Safety Data Sheet (MSDS) which International Protective Coatings has provided to its customers.

All work involving the application and use of this product should be performed in compliance with all relevant national, Health, Safety & Environmental standards and regulations.

In the event welding or flame cutting is performed on metal coated with this product, dust and fumes will be emitted which will require the use of appropriate personal protective equipment and adequate local exhaust ventilation.

If in doubt regarding the suitability of use of this product, consult International Protective Coatings for further advice.

P	ACE	· S.	70
	AUL	. 31	Z.E.

5 gallon unit

Interzone 954 Base Interzone 954 Curing Agent

4 gallons in 5 gallon container 1 gallon in a 1 gallon container

20 liter unit In

Interzone 954 Base Interzone 954 Curing Agent 16 liters in a 20 liter container 4 liters in a 5 liter container

For availability of other pack sizes contact International Protective Coatings

SHIPPING WEIGHT

U.N. Shipping No. 1263

5 gallon unit

56.6 lb (25.6 kg) Base (Part A) 11.4 lb (5.2 kg) Curing Agent (Part B)

20 liter unit

67 lb (30.4 kg) Base (Part A) 10.1 lb (4.6 kg) Curing Agent (Part B)

STORAGE

Shelf Life

12 months minimum at 77 \mathbb{F} (25 \mathbb{C}). Subject to re-inspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition.

Disclaimer

The information given in this sheet is not intended to be exhaustive and any person using the product for any purpose other than that specifically recommended in this sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at his own risk. Any warranty, if given, or specific Terms & Conditions of Sale, are constained in International's Terms & Conditions of Sale, are constained in International's Terms & Conditions of Sale, are constained an international terms and written and advice we give about the product (whether in this sheet or otherwise) is correct we have no control over either the quality or condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability whatswever or howsover arising for the performance of the product of any loss or damage (when them death or presental injury resulting from our negligence) arising and of the use of the product. The information contained in this sheet is liabile to modification from time to time in the light of experience and our policy of continuous product development.

It is the user's responsibility to check that this sheet is current prior to using the product. Issue date: 1st June 1997

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International Protective Coatings

Worldwide Availability

World Centre	Asia Region	
50 George Street	3 Neythal Road	
London W1A 2BB	Jurong Town	
England	Singapore 628570	

Australasia Region 115 Hyde Road Yeronga Brisbane Queensland Australia Europe Region 50 George Street London W1A 2BB England

Middle East Region PO Box 37 Dammam 31411 Saudt Arabia

North America Region 6001 Antoine Drive Houston Texas 77091 South America Region Rua Gomes de Carvalho, 1356, 15 *Andar, Vila Olimpia, São Paulo, S.P. CEP: 04547-005

Tel: (44) 171 612 1400 Tel: (65) 663 3066 Fax: (44) 171 612 1561 Fax: (65) 266 5287

Tel: (61) 7 3892 8866 Fax: (61) 7 3892 4287 H&S (61) 1800 807 001 Tel: (44) 171 612 1410 Tel: (966) 3 842 8436 Tel: (1) 713 682 1711 Fax: (44) 171 612 1555 Fax: (966) 3 842 4361 Fax. (1) 713 684 1327

Tel: (011) 3044 0344 Fax: (011) 3044 0322

Brazil

USA Toll Free Number (800) 589 1267 www.international-pc.com

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Interzone® 954

Modified Epoxy

PRODUCT CHARACTERISTICS

Maximum film build in one coat is best attained by airless spray. When applying by methods other than airless spray, the required film build is unlikely to be achieved.

Application by air spray may require a multiple cross spray pattern to attain maximum film build. Low or high temperatures may require specific application techniques to achieve maximum film build.

When applying Interzone 954 by brush or roller, it may be necessary to apply multiple coats to achieve the total specified system dry film thickness.

Surface temperature must always be a minimum of 5 F (3 C) above dew point.

Do not apply at steel temperatures below 41 ₹ (5 ℃).

When applying Interzone 954 in confined spaces ensure adequate ventilation.

In special cases where overcoating is required and curing has been at low temperatures and high relative humidities ensure no amine bloom is present prior to application of subsequent topcoats.

Condensation occurring during or immediately after application may result in a matte finish and an inferior film.

Premature exposure to ponding water will cause a color change, especially in dark colors.

In common with all epoxies, Interzone 954 will chalk and discolor on exterior exposure. However, these phenomena are not detrimental to anti-corrosive performance.

Where a durable cosmetic finish with good gloss and color retention is required, overcoat with recommended topcoats.

When applied between tides on jetties, piling etc., Interzone 954 can be immersed within 30 minutes. This will lead to whitening of dark colors but will not affect ultimate anti-corrosive performance.

For use in atmospheric service a minimum dry film thickness of $14~\mathrm{mils}$ ($350~\mathrm{microns}$) is required in one coat when applied direct to steel, for water immersion a minimum of $20~\mathrm{mils}$ ($500~\mathrm{microns}$) dry film thickness is recommended. In each case protection can be achieved in a single coat application by airless spray.

Interzone 954 can be used as a non-skid deck system by modification with addition of GMA132 (crushed flint) aggregate. Application should then be to a suitably primed surface. Typical thicknesses will be between 20-40 mils (500-1,000 microns). Preferred application is by a suitable large tip hopper gun (e.g. Sagola 429 or Air texture gun fitted with a 5-10 mm nozzle). Trowel or roller can be used for small areas. Alternatively, a broadcast method of application can be used. Consult International Protective Coatings for further details.

Compatible with sacrificial and impressed current cathodic protection systems.

Systems Compatibility

Interzone 954 will generally be applied to bare steel prepared by dry abrasive blasting, wet abrasive blasting or ultra high pressure hydroblasting.

The following primers are recommended for Interzone 954:

Intercure 200 Interzinc 42
Intergard 251 Interzinc 52
Intergard 269 (for underwater use) Interzine 315
Interline 982 (for underwater use) Interzone 1000
Interzinc 12 (mist or tie coat recommended)*

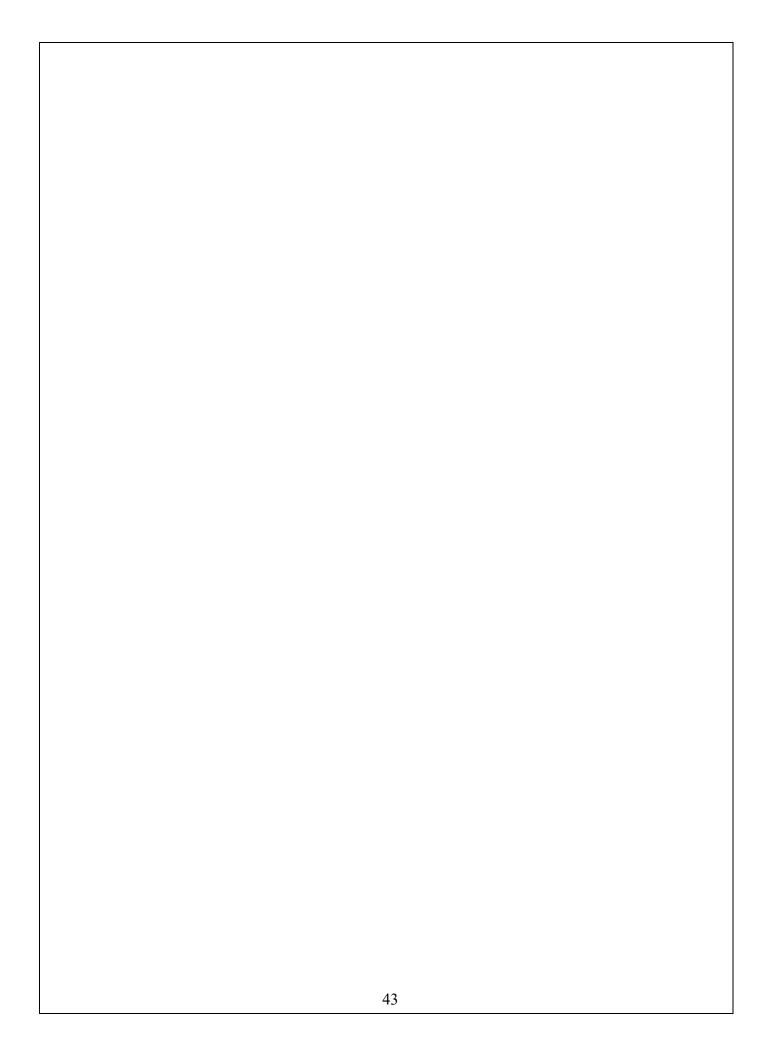
Interzinc 12 (mist or tie coat recommended)*
Interzinc 22 (mist or tie coat recommended)*

The following topcoats are recommended for Interzone 954:

Interfine 629 HS Intergard 740 Intersleek 167 Interthane 990

For other suitable primers/topcoats, consult International Protective Coatings.

^{*} See relevant product data sheet for details.



15.0 APPENDIX E: WARRANTY STATEMENT

CONDITIONS OF SALE

GENERAL-These terms and conditions shall apply to the sale as reflected on the invoice from Seller to Buyer and to any quotation by Seller issued to Buyer in connection herewith. The terms and conditions set forth on the invoice of which this is made a part shall supercede those terms and conditions set forth in any Buyers order.

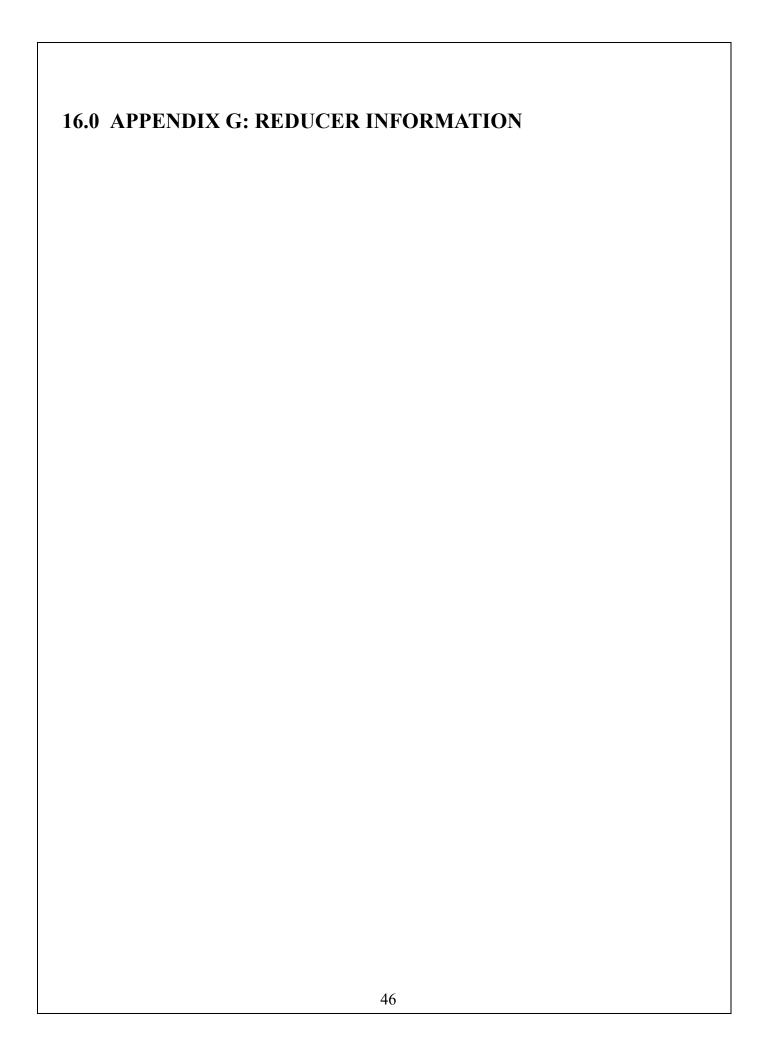
PAYMENT- Sellers prices are F.O.B. Seller's plant, unless otherwise specified. Full payment of the purchase price and any other charges is due within thirty (30) days after invoice date.

WARRANTY STATEMENT- Seller warrants, to the original purchaser only, each new and unused product of its manufacturing to be free from defects in material and workmanship for a period of 18 months after delivery to the original purchaser ("Warranty Period"). If, within the Warranty Period, Seller receives written notice promptly after the discovery of any defect in the material or workmanship in the equipment, Seller shall remedy each such defect, at Seller's option, either by (1) making available F.O.B. Seller's plant replacement part(s); (2) repairing any defective part(s); or (3) authorizing and accepting the return of the Product by the Buyer and refunding the purchase price. This Warranty is not applicable to commercial items used on Seller's assembled equipment which are manufactured by others except to the extent of the original equipment manufacturer's warranty to Seller which Seller is allowed to pass on. The Warranty does not cover repair or replacements required as a result of misuse, mishandling, improper storage, extreme weather, use other than under normal operating conditions, failure to install, test, use, maintain and repair the Product in accordance with Seller's instructions or other use inconsistent with Seller's instructions. The remedies specified in this paragraph constitute Seller's sole obligation and liability and Buyer's exclusive remedy under this Warranty. EXCEPT FOR THE EXPRESS WARRANTIES SET FORTH HEREIN, THERE SHALL BE NO EXPRESS, IMPLIED OR STATUTORY WARRANTIES WITH RESPECT TO THIS SALE AND THE SERVICES TO BE PROVIDED HEREIN. INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, OF FITNESS FOR A PARTICULAR PURPOSE, OF SUITABILITY FOR ANY PARTICULAR PURPOSE, OR REGARDING THE RESULTS TO BE DERIVED FROM THE USE OF THE EQUIPMENT OR SERVICES.

REMEDIES; LIMITATION OF LIABILITY - In no event shall Seller be liable to Buyer for any consequential, exemplary, punitive, or special damages, even if such party has been notified that an act or omission may give rise to such damages. Nothing herein shall limit any right of recovery under any policy of insurance or any bond.

APPLICABLE LAW – The purchase of equipment, merchandise, and/or services described on the invoice which is made a part hereof shall be deemed to have been executed and delivered in the State of Louisiana and it shall be governed by and construed in accordance with the laws of the State of Louisiana. This agreement and all attachments hereto, set forth the entire agreement and understanding between the parties and supersede all prior oral and written, and contemporaneous oral

agreements and understandings related to the subject matter hereof. In the event of any ambiguity or conflict or inconsistency between these conditions and any attachments hereto, the terms and conditions set forth herein shall prevail and control. No representation, promise, inducement or statement of intention not expressly set forth herein has been made by either Buyer or Seller.
DELIVERY- Shipping or delivery date is approximate. Seller shall not be liable for delays in or failure of delivery due to strikes or labor troubles, supplier delays, accidents, fire, flood, acts of God, action by government authority, changes requested by Buyer, or cause beyond its control. If shipment is delayed at the request of the Buyer, payment shall be made as though shipment had been made as specified.



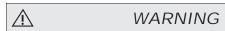


GENERAL INSTRUCTIONS

- RETAIN FOR FUTURE USE

1. Importance of the operating instructions

These operating instructions are intended to provide general information and safety guidelines. It is the responsibility of the buyer, machine builder, installer and user of the NORD product to make sure that all the proper safetynotes and operating instructions have been reviewed and understood. If the contents of this instruction or any applicable operating instructions are not understood, please consult NORD.



Electric motors, gearmotors, electrical brakes, variable frequency drives, and gear reducers contain potentially dangerous high-voltage, rotating-components and surfaces that may become hot during operation. All work involved in the transport, connection, commissioning and maintenance of any NORD product must be carried out by qualified and responsible technicians.

2. Inspect incoming freight

Before accepting shipment from the freight company, thoroughly inspect the NORD equipment for any shipping and handling damage. If any goods called for in the bill of lading or express receipt are damaged, or if the quantity is short, do not accept until the freight express agent makes an appropriate notation on your freight bill or express receipt. If any concealed loss or damage is discovered later, notify your freight carrier or express agent at once, and request a formal review of your claim.

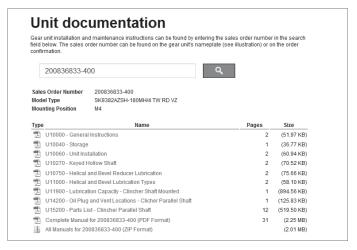
Claims for loss or damage in shipment must not be deducted from the NORD invoice, nor should payment of the NORD invoice be withheld awaiting adjustment of such claims, as the carrier guarantees safe delivery. NORD will try to assist in collecting claims for loss or damage during shipment; however, this willingness on our part does not remove the transportation company's responsibility in reimbursing you for collection of claims or replacement of material.

3. Obtaining detailed operating instructions

One can receive the detailed installation and maintenance instructions by entering a serial number (or NORD order number) at the appropriate location on the NORD web site.

- i. Record the serial number from your gearmotor, gear reducer, or motor nameplate, or record the serial number found on your order confirmation.
- Go to www.nord.com/docs to download the appropriate operating instructions.

EXAMPLE: www.nord.com/docs



4. Intended use

NORD is a supplier of electric motors, gearmotors, reducers, electromechanical brakes, mechanical variators, and electrical variable frequency drives that are intended for commercial installations on larger systems and machines.

⚠ WARNING <u></u>

NORD does not accept any liability for damage or injury caused by:

- Inappropriate use, operation or adaptation of the drive system.
- Unauthorized removal of housing covers, safety and inspection covers, guarding, etc.
- Unauthorized modifications to the drive system.
- Improper servicing or repair work on the drive system.
- Damage caused during shipment or transportation.
- Disregard of the important Safety Notes or Operating Instructions.

NORD Gear Limited
Toll Free in Canada: 800.668.4378

NORD Gear Corporation
Toll Free in the United States: 888.314.6673

08.08.12 www.nord.com/docs



GENERAL INSTRUCTIONS

- RETAIN FOR FUTURE USE -

KLIAIN FOR FOTOKL OSL

5. Notes concerning warranty and liability

All units are supplied according to the terms described in our standard "Conditions of Sale." The unit limited warranty is also defined in our "Conditions of Sale" and is located in the back of our product catalogs as well as the back of your order invoice.

All NORD Safety Notes and all related NORD Operating instructions shall be considered up-to-date at the time in which they were compiled by the buyer, machine builder, installer or user. NORD reserves the right to incorporate technical modifications and information updates to any safety/operating instructions that are within the scope of providing additional knowledge or clarification, communicating design changes, or product enhancements. Information updates may include any NORD product, or subsequent products purchased and supplied by NORD; No specific claims can be derived from the information or illustrations and descriptions contained in the safety notes or related operating instructions.



NORD assumes no liability for personal injury, equipment damage or malfunctions resulting from failure to comply with any installation safety notes. The applicable national, regional, and local work regulations and safety requirements must also be complied with. Failure to comply with any safety notes or regulations may result in serious injury, damage to property, or even death.

6. Checklist for installation and operation

- ✓ Verify that the purchased NORD product has been supplied with the expected accessories & options. Check the received goods and packing slip to make sure items are properly received.
- Make sure that you have all of the required Operating Instructions for your NORD electric motor, gearmotor, reducer, electromechanical brake, mechanical variable speed drives, or electrical variable frequency drives.
- Consult NORD if you feel you are missing any documentation or if you have questions.

08.08.12 www.nord.com/docs



SAFETY NOTES

RETAIN FOR FUTURE USE -



1. Safety & information symbols

All work including transportation, storage, installation, electrical connection, commissioning, servicing, maintenance and repair must be performed only by qualified specialists or personnel. It is recommended that repairs to NORD Products are carried out by the NORD Service Department. Instructions related to operational safety will be emphasized as shown.

Symbol	Meaning
À	General Warning or Hazard - Severe risk or danger of personal injury or death by working around dangerously high electrical voltage or moving machinery. Proper safety precautions must be taken.
STOP	Possible Harmful Situation - Care must be taken to avoid the possibility of damaging the drive unit, driven machine, or the environment.
1	Important Note - Useful note or tip to help assure trouble-free operation.
23	Material Disposal Note - Important note concerning suggested material disposal.

2. Safety warnings

♠ GENERAL WARNINGS

- All work involved in the transport, connection, commissioning and maintenance of any NORD product must be carried out by qualified and responsible technicians. All applicable national, regional, and local work regulations and safety requirements must also be complied with. NORD assumes no liability for personal injury, accidental death, or equipment damage and malfunctions resulting from failure to comply with installation or operating instructions, safety notes, or any work regulations and laws!
- Gear unit installation and maintenance work may only be performed when no power is available to the prime mover or motor. Electric motors, electrical brakes, and variable frequency drives, contain potentially dangerous high-voltage. Prior to installation or maintenance, shut down the power at the circuit breaker or power switch. While working on the drive, make sure the power from the prime mover is isolated or secured on "lock-out" to prevent accidental start-up and to safeguard against injury!
- Surfaces of motors and gear units may become hot during operation or shortly after start-up. In some instances additional protection against accidental contact may be necessary. Use caution to avoid burns or serious injury!

3. Observe published performance range & nameplate data

STOP

HARMFUL SITUATION



Observe the data on all reducer nameplates and verify published ratings for the NORD item/s in question. Do not operate any NORD equipment outside the published performance range. Failure to comply may result in damage to the drive unit, driven machine, or the environment.

U.S. Nameplate



- Model/Type
- 2 Serial Number
- **6** Gear Ratio
- Service Factor
- **5** Torque Rating
- **6** Output Speed RPM
- Mounting Position

European Nameplate



- Model/Type
- Serial Number
- Gear Ratio
- Speed

4. Transportation and handling

Make sure that all eyebolts and lifting lugs are tight and lift only at designed points. Protect the mounting surface from possible damage during transportation.

\wedge

WARNING



Do not attach other machinery or loads to the NORD assembly, since the supplied lifting bolts are not designed for this purpose.

If the gearmotor or assembly is equipped with two suspension eye bolts, then both locations should be used for transportation and placement of the unit; in this case the tension force of the slings must not exceed a 45° angle.

In some instances it may be appropriate to use additional lifting straps or slings in order to assure safe transportation of the assembly. Always use sufficiently rated handling equipment and ensure that adequate safety measures are taken to protect personnel from injury during transportation. Once the NORD assembly is properly installed, remove the transportation fixtures.

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SAFETY NOTES

RETAIN FOR FUTURE USE -



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7. DISPOSAL



Properly dispose of all used gear units and internal parts in accordance with all local regulations. In particular, all lubricants must be properly collected and disposed.

For confirmation of specific materials used in a specific reducer or gearmotor assembly, please consult NORD with the appropriate unit identification or serial number.

Components	Material
Gear wheels, shafts, rolling bearings, parallel keys, snap rings, spacers, shims, etc.	Steel
Gear housing and housing components	Cast iron or Aluminum (depending on type and size)
Worm gears	Bronze alloy
Radial seals, sealing caps, and rubber components	Elastomers with some steel
Coupling components	Plastic or Elastomer with Steel
Housing gaskets and flat oil seals	Asbestos-free sealing or gasket material (various types used)
Gear Oil	Mineral, SHC-Synthetic or PG-Synthetic (can vary)

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STORAGE & COMMISSIONING

- RETAIN FOR FUTURE USE -

1. Storage

1

IMPORTANT NOTE



For storage periods longer than 9 months, or for storage in less than desirable conditions, please consult NORD for recommendations.

Storage for up to 9 months is possible, so long as the following conditions are observed:

- Store the gear unit in its actual mounting position in accordance with the specified oil fill-level, in a clean and dry temperature controlled area. Avoid temperature fluctuations within the range of 0°C and 40°C (32°F to 104°F) and avoid relative humidity conditions in excess of 60%
- Protect all exposed or unpainted shaft and flange surfaces with an anti-corrosion agent or grease.
- Store in a location free from shock and vibration, to avoid false brinelling of bearing elements and raceways.
- Whenever possible, rotate the shafts periodically, by hand if necessary, to help prevent brinelling (bearing damage) and to help keep the shaft seals pliable.
- Avoid direct exposure to the sun or UV light and aggressive or corrosive materials in the environment (ozone, gases, solvents, acids, caustic solutions, salts, radioactivity, etc.

2. Commissioning

Prior to gear unit start-up, complete the following:

 Check the lubricant and be sure the gear unit is filled with the proper oil type, to the proper level, as determined by the mounting position.



IMPORTANT NOTE



Some smaller gear units are supplied as maintenance free/ lubricated for life gear units. Oil level may not be checked on some of these units.

- Check the condition of all shaft seals and all assembled flange gasket areas. If any change is detected in the shape, color, hardness or permeability, or if any leaks are detected, the corresponding shaft seals and/or gaskets must be replaced.
- Remove all anti-corrosive metal protectant from otherwise bare metal surfaces. Follow product manufacturers directions and warnings during surface protection removal.
- Check the resistance of all motor and brake windings to verify the integrity of the winding insulation and inspect all terminal box openings and wire connection areas to verify that all components are dry and free of corrosion.

3. Long-Term Storage

By taking special precautions, problems such as seal leakage and reducer failure due to the lack of lubrication, improper lubrication quantity, or contamination can be avoided. The following precautions will protect gear reducers during periods of extended storage:

- Store the gear unit in its actual mounting position in accordance with the specified oil fill-level, in a clean and dry temperature controlled area. Avoid temperature fluctuations within the range of 0°C and 40°C (32°F to 104°F) and avoid relative humidity conditions in excess of 60%.
- Fill the reducer full with oil that is compatible with the product normally used or recommended during service.
- Apply grease to all unpainted or unprotected shafts, bores, keyways, flange surfaces, tapped holes, and to the exterior of all oil seals.
- Store in a location free from shock and vibration, to avoid false brinelling of bearing elements and raceways.
- Once every few months rotate the input shaft approximately 10-20 revolutions to redistribute the weight of gears and shafts and to prevent brinnelling of the bearings and drying of the seal track.
- Avoid direct exposure to the sun or UV light and aggressive or corrosive materials in the environment (ozone, gases, solvents, acids, caustic solutions, salts, radioactivity, etc.)

4. Commissioning After Long-Term Storage

- Remove all anti-corrosive metal protectant from otherwise bare metal surfaces. Follow product manufacturers directions and warnings during surface protection removal.
- Drain the reducer and refill it with the proper type and amount of lubricant.
- Observe start-up and initial operation to make sure there are no seal or gasket leaks, or unusual sounds, vibration or heat rise during operation.
- Check the resistance of all motor and brake windings to verify the integrity of the winding insulation and inspect all terminal box openings and wire connection areas to verify that all components are dry and free of corrosion.

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UNIT INSTALLATION

- RETAIN FOR FUTURE USE -

1. Installation site

Drives must be properly installed if they are to produce the rated torque. Improper installation may lead to oil leaks, reduced life, or even catastrophic failure. NORD gear drives and motors are intended to be installed at a suitable mounting site under the following conditions:

- Unimpeded airflow to and around the units.
- Accessibility to oil drain, level and breather plugs.
- On brakemotors, allow adequate space for removing the fan guard and replacing and adjusting the brake.
- Mounting surfaces must be flat, torsionally rigid, and dampened against vibration.
- Unless special measures are taken, the immediate vicinity around the gear drive or motor should not be exposed to any aggressive or corrosive substances, contaminated air, ozone, gases, solvents, acids, alkalis, salts, radioactivity, etc.

2. Mounting position

Reducer mounting position charts illustrate the standard mounting positions for horizontal and vertical mounting. All gear units are assembled with the oil fill-level, oil-drain and vent plugs installed in their proper locations, according to the customer-specified mounting position. For mounting orientations other than shown consult NORD Gear.



HARMFUL SITUATION



The gear reducer may not receive proper lubrication if the unit is not mounted in the position for which it is designed. Observe the mounting position designated on the reducer nameplate, or specified in the order acknowledgement. Consult NORD prior to changing mounting position in the field. While it is often possible to simply relocate the oil fill-level and vent locations, and adjust the oil fill amount, in some cases, different mounting positions may lend themselves to different internal construction features.

3. Reducer mounting

- The support foundation must be straight, level and flat. Whether the gear unit is foot-mounted or flange-mounted, NORD recommends that the straightness and flatness of the customer-supplied support foundation follow Table 1.
- The gear unit must be properly aligned with the driven shaft of the machine in order to prevent additional stress or load forces from being imposed upon the gear unit.
- To facilitate oil drainage it may be desirable to elevate the gear box foundation above the surrounding support structure.
- All bolting surfaces must be clean and free from contamination and corrosion.

Table 1: Recommended Straightness and Flatness of Customer-Supplied Support Foundation

Above (in)	To & Including (in)	General Tolerance on Straigtness & Flatness ISO 2768-2, Tolerance Class K
0.00	0.39	+/- 0.002 in
0.39	1.18	+/- 0.004 in
1.18	3.9	+/- 0.008 in
3.9	11.8	+/- 0.016 in
11.8	39	+/- 0.024 in
39	118	+/- 0.031 in

Above (mm)	To & Including (mm)	General Tolerance on Straigtness & Flatness ISO 2768-2, Tolerance Class K
0	10	+/- 0.05 mm
10	30	+/- 0.1 mm
30	100	+/- 0.2 mm
100	300	+/- 0.4 mm
300	1000	+/- 0.6 mm
1000	3000	+/- 0.8 mm

Straightness: Based upon the length of the corresponding line.

Flatness: Based upon the longer lateral surface or the diameter of the circular surface.



HARMFUL SITUATION



The responsibility for the design and construction of the support foundation is with the user. The foundation must be adequate to withstand normal operating loads and possible overloads while maintaining alignment to attached system components under such loads. Motors and drive components mounted on prefabricated base plates can become misaligned during shipment. Always check alignment after installation.

4. Steel foundation

An engineered structural steel foundation should be designed to provide adequate rigidity and prevent loads from distorting the housing or causing misalignment of internal gears and shafts. When foot-mounting the gear reducer, a base plate or sole plate with suitable thickness (generally equal or greater than the thickness of the drive feet) should be securely bolted to steel supports and extend under the entire gear drive assembly. When flange-mounting the gear unit, the bulk head plate must be engineered to minimize buckling distortions and support the cantilevered weight of the gear unit or gear motor.



HARMFUL SITUATION



Do not weld on the gear unit or use the gear unit as an earth or ground connection for any welding procedure as this may cause permanent damage to the bearings and gears.

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UNIT INSTALLATION

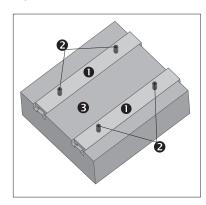
RETAIN FOR FUTURE USE

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5. Concrete foundation

If a concrete foundation is used, allow the concrete to set firmly before bolting down the gear drive. Grout structural steel mounting pads and bolts of sufficient size into the concrete, to adequately distribute the load stress onto the concrete foundation.

Figure 1: Concrete Foundation



- Grouted Structural Steel Mounting Pads
- 2 Mounting Bolts
- **3** Concrete Foundation

6. Bolt connections for footed & flange mounted units

NORD footed reducers and flange-mount reducers (with B5 flange) have clearance designed into the mounting holes to allow for some minor adjustments in alignment. Bolt size, strength and quantity should be verified to insure proper torque reaction capacity whatever the mounting arrangement. Tightening torque for gear reducer mounting bolts, and recommended fastener grades, are provided in Table 2.

Table 2A: Tightening Torque for Inch Reducer Mounting Bolts

Thread Size				
	Grade SAE 5 / ASTM A449		Grade SAE 8	
(in)	(lb-ft)	(Nm)	(lb-ft)	(Nm)
1/4-20	7.1	9.6	10.0	13.6
5/16-18	16	21	22	30
3/8-16	28	37	39	53
1/2-13	69	93	98	132
5/8-11	138	188	195	264
3/4-10	247	334	348	472
7/8-9	396	537	558	757
1-8	592	802	833	1,130
1 1/8-7	-	-	1,233	1,672
1 1/4-7	-	-	1,717	2,327
1 3/8-6	-	-	2,267	3,073
1 1/2-6	-	-	2,983	4,045
1 3/4-5	-	-	4,458	6,045

- Calculated tightening torques are based a conventional 60°, clean and dry (un-lubricated) thread, with threadfriction and head-friction equal to 0.15.
- When using inch-fasteners, NORD recommends a minimum Grade SAE 5 (ASTM A-449) for sizes up to 1-8 UNC, and Grade SAE 8 for all larger sizes.

Table 2B: Tightening Torque for Metric Reducer Mounting Bolts

Above						
	ISO Grade 8.8		ISO Grade 10.9		ISO Grade 12.9	
(mm)	(lb-ft)	(Nm)	(lb-ft)	(Nm)	(lb-ft)	(Nm)
M4	2.4	3.2	3.5	4.7	4.1	5.5
M5	4.7	6.4	6.9	9.3	8.1	11
M6	8	11	12	16	14	19
M8	20	27	29	39	34	46
M10	39	53	58	78	67	91
M12	68	92	100	135	110	155
M14	107	145	159	215	180	250
M16	170	230	247	335	290	390
M18	240	325	343	465	400	540
M20	339	460	487	660	570	770
M22	465	630	664	900	770	1,050
M24	583	790	848	1,150	960	1,300
M27	848	1,150	1,217	1,650	1,440	1,950
M30	1,180	1,600	1,660	2,250	1,950	2,650
M36	2,050	2,780	2,884	3,910	3,470	4,710
M42	3,297	4,470	4,639	6,290	5,560	7,540
M48	4,940	6,700	7,010	9,500	8,260	11,200

- Calculated tightening torques are based on a conventional 60°, clean and dry (un-lubricated) thread, with threadfriction and head-friction equal to 0.15.
- When using metric-fasteners, NORD recommends a minimum ISO Grade 8.8 bolt.

7. Mounting the prime mover

When the motor is not flange mounted or integrally mounted to the gearbox, it is important to properly secure and align the gear drive with respect to the driven machine before attempting to align the prime mover or motor.

- A. After the main gear drive is properly aligned and bolted in place, align the prime mover with respect to the reducer input shaft.
- B. Use shims under the feet of the prime mover as needed, and secure in place with the proper mounting bolts. Dowel pins may be field-installed to help prevent misalignment and ensure proper realignment if removed for service.



When using a high speed coupling connection between the prime mover and the reducer, check alignment per the coupling manufacturers recommendations. If the coupling is misaligned, the reducer alignment or shimming is incorrect. Re-align the gear reducer and re-check the high-speed coupling alignment before realigning the motor.

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HELICAL & BEVEL REDUCER LUBRICATION



RETAIN FOR FUTURE USE -

1. Importance of proper lubrication

Proper gearbox lubrication is essential in order to reduce friction, heat, and component wear. Lubricants reduce heat and wear by inserting a protective "fluid boundary" between mating parts and preventing direct metal to metal contact. Lubricants also help prevent corrosion and oxidation, minimize foam, improve heat transfer, optimize reducer efficiency, absorb shock loads and reduce noise.

Most NORD reducers are shipped from the factory with a pre-determined oil fill level in accordance to the specified reducer size and mounting position.

2. Standard oil type

The following tables indicate the standard oil fill type used. Please see user manual U11000 for more specific information and for optional helical and bevel gear lubricants:

Serviceable Gear Units			
Helical In-line			
Clincher Parallel-Shaft			
Right-Angle Bevel	Standard Oil Fill:		
NORDBLOC® Series In-line	ISO VG 220, Mineral Oil		
NORDBLOC®.1 Series In-line			
Standard Series In-line			



IMPORTANT NOTE



For shipping purposes, the following large Clincher™ gear units are supplied without oil:

• Clincher™ Sizes SK11282, SK11382 and SK12382

Maintenance-free / Lubricated For Life Gear Units			
Clincher™ sizes SK0182NB, SK0282NB & SK1382NB	Standard Oil Fill:		
NORDBLOC® Sizes SK172, SK272, SK371F, SK372, SK373, SK320	ISO VG220 SHC/PAO Synthetic Oil		



IMPORTANT NOTE



Maintenance-free units are supplied as sealed units with no vent-plug. Consult NORD prior to ordering if interested in ordering any of the above sizes as serviceable gear units.



IMPORTANT NOTE



Consult the sticker adjacent to the fill plug to determine the type of lubricant installed at the factory. Some units have special lubricants designed to operate in certain environments or intended to extend the service life or service temperature range of the lubricant. If in doubt about which lubricant is needed for a certain application, please contact NORD Gear.

3. Lubrication replacement

If the gear unit is filled with mineral oil, the lubricant should be replaced at least after every 10,000 operating hours or after every two years. If the gear unit is filled with synthetic oil, the lubricant should be replaced at least after every 20,000 operating hours or after every four years. Often gear reducers are exposed to extreme ambient conditions, hostile environments, wet conditions, or dirty and dusty operating areas. Especially in these situations, it is important to establish a condition-based oil service interval.

4. Oil viscosity

Viscosity, or the oil's resistance to shear under load, is often considered the single most important property of any gear oil.

- Often one will consider making a viscosity correction to the oil to improve the performance when operating the gear unit at low temperature or high temperature.
- In cases of extreme load conditions, gear pairs and antifriction bearings may be more susceptible to sliding or scuffing wear. In these operating conditions, it may also be beneficial to consider an increased lubrication viscosity and/or a lubrication with improved antiwear additive packages.



IMPORTANT NOTE



The user should consult with their primary lubrication supplier before considering changes in oil type or viscosity.

5. Maximum oil sump temperature limit

To prevent reducer overheating, the reducer's maximum oil sump temperature limit must not be exceeded for prolonged periods of operation (up to 3 hours continuous operation depending upon reducer size).

Oil Type	Maximum Oil Temperature Limit					
	NORD AGMA 9005-D94					
Mineral	80-85°C (176-185°F)	95°C (203°F)				
Synthetic	105°C (220°F) 107°C (225°F)					



IMPORTANT NOTE



Use caution when specifying gear reducers for high temperature service. If there is concern about exceeding the allowable safe operating temperatures, please consult NORD to discuss alternatives.

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HELICAL & BEVEL REDUCER LUBRICATION



RETAIN FOR FUTURE USE -

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6. The importance of routine oil analysis

Routine oil analysis, sound lubrication practices, and good tracking of oil performance trends will help establish proper lubrication maintenance and change-out intervals. To maximize equipment reliability, NORD Gear generally recommends a condition-based lubrication maintenance program. One may take exceptions to this general recommendation on sealed-for-life or maintenance-free gear units or smaller and less costly gear units. In these instances, the replacement cost of the gear unit is often small compared to the costs associated with this type of oil analysis program.



HARMFUL SITUATION



NORD suggests replacing the gear oil if oil analysis indicates any of the following:

- Viscosity has changed by approximately 10% or more.
- Debris particles (silicon, dust, dirt or sand) exceed 25 ppm.
- Iron content exceeds 150-200 ppm.
- Water content is greater than 0.05% (500 ppm).
- The total acid number (TAN) tests indicate a significant level of oxidative break-down of the oil, and a critical reduction in performance; If the TAN number measured changes by more than 5% over the new oil, then an oil change would be recommended.

7. Mounting position and oil fill quantity

All NORD Gear reducers are shipped from the factory with a pre-determined oil fill level in accordance to the specified reducer size and mounting position. For additional information, please see the seperate mounting position diagrams and the corresponding oil fill quantity tables for the specified gear unit.

The gearbox nametag will indicate the mounting position that was provided. For mounting orientations other than shown in the mounting position charts, please consult NORD Gear.



HARMFUL SITUATION



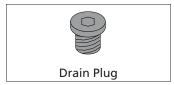
Actual oil volume can vary slightly depending upon the gear case size, mounting and ratio. Prior to commissioning the reducer, check the oil-fill level using the reducer's oil-level plug and drain or add additional oil as needed. The minimum acceptable oil level is 0.15 in (4mm) below the oil level hole.

8. Oil plug locations

All gear units are assembled with the oil fill-level, oil-drain and vent plugs installed in their proper locations, according to the specified mounting position. All standard plugs are metric and utilize sealing gaskets between the head of the plug and the reducer housing.

9. Drain and fill-level plugs

All reducer drain plugs are metric socket head cap screws. For easier identification, it is NORD's standard practice to provide a hex-head screw for the fill-level plug. For ease of draining the used oil from the gear reducer, use the socket head screw located at the lowest part of the gearbox.



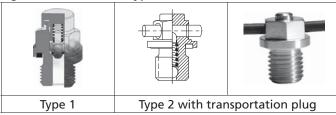


10. Vent plug locations

Reducer venting allows for air pressure differences that occur during operation, between the inner space of the reducer and the atmosphere, while ensuring leak-free operation. The AUTOVENT™ is standard for all vented gear units, unless otherwise noted.

AUTOVENT™ - The AUTOVENT™ helps prevent bearing and gear damage by behaving like a check valve to block the entry of foreign material (water, dust, corrosives, etc.). The breather opens at approximately 2-3 psi during operation and closes tightly as the gearbox cools. This option is perfect for humid conditions and wash-down environments, helping to maintain proper oil cleanliness, and reducing foaming and oxidation. NORD may choose to offer one of two style options as shown in Figure 1. The Type 2 AUTOVENT™ comes closed upon delivery with a transportation sealing plug (see Warning).

Figure 1 AUTOVENT™ Types



Open Vent - An optional open vent can be supplied by NORD. The open vent comes closed upon delivery with a transportation sealing plug (see Warning).

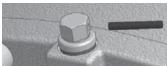


WARNING



To prevent build-up of excessive pressure, sealed vents must be activated as shown prior to gear unit start up.





Sealed vent

Activated vent

Filtered Vent - NORD may offer an optional filtered vent, which allows gases to permeate, but does not allow dust and debris to pass through the vent.

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HELICAL & BEVEL REDUCER LUBRICATION TYPES



RETAIN FOR FUTURE USE -

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Lubrication Tables – Helical and Bevel Gear Units

Standard Oil Lubricants

ISO Viscosity	Oil Type	Ambient Temperature Range	Manufacturer Brand/Type	Notes
	MIN-EP	0 to 40°C (32 to 104°)	Mobilgear 600XP220	♦ 0
VG220	PAO	-35 to 60°C (-31 to 140°F)	Mobil SHC630	♦ ❷
	FG	-5 to 40°C (23 to 104°F)	Fuchs FM220	•

Optional Oil Lubricants

ISO Viscosity	Oil Type	Ambient Temperature Range	Manufacturer Brand/Type	Notes
VG460	PAO	-35 to 80°C (-31 to 176°F)	Mobil SHC 634	-
VG460	FG-PAO	-35 to 80°C (-31 to 176°F)	Mobil SHC Cibus 460	-
VG220	FG-PAO	-35 to 60°C (-31 to 140°F)	Mobil SHC Cibus 220	-
VG150	PAO	-35 to 25°C (-31 to 77°F)	Mobil SHC629	-

Grease Options (applied to greased bearings and seal cavities)

NLGI Grade	Grease Type/Thickener	Ambient Temperature Range	Manufacturer Brand/Type	Notes
	Standard (Li-Complex)	-30 to 60°C (-22 to 140°F)	Mobil Grease XHP222	40
NLGI 2	High Temp (Polyurea)	-40 to 80°C (-40 to 176°F)	Mobil / Polyrex EP 2	♦ ❷
	Food-Grade (Polyurea)	-30 to 40°C (-22 to 104°F)	Mobil SHC Polyrex 222	•

- **♦** Stocked Lubricants
- Standard product on serviceable gear units
- 2 Standard product on maintenance free gear units

1

IMPORTANT NOTES



- The "Ambient Temperature" is intended to be an operation guideline based upon the typical properties of all the lubricant. The viscosity and other properties of the lubricant change based upon load, speed, ambient conditions, and reducer operating temperatures. The user should consult with their lubrication supplier & NORD gear before considering changes in oil type or viscosity.
- To prevent reducer overheating, observe the maximum operating oil temperature limits:

Mineral Oil: 80-85 °C (176 – 180 °F).

Synthetic Oil: 105 °C (225 °F).

- In the following instances, please consult NORD for specific recommendations:
 - √ Gear units will operate in high ambient temperature conditions exceeding 40 °C (104 °F).
 - √ Gear units will operate in cold ambient temperature conditions approaching 0 °C (32 °F) or lower.
 - $\sqrt{}$ Lower than an ISO VG100 viscosity oil is being considered for a cold-temperature service.
 - √ Fluid grease is required for lubricating the gear unit.
- Observe the general lubrication guidelines outlined in user manual U10750.

Oil Formulation Codes

MIN-EP - Mineral Oil with EP Additive

PAO-EP - Synthetic Polyalphaolefin Oil with EP Additive

PAO - Synthetic Polyalphaolefin Oil PG - Synthetic Polyglycol Oil

FG - Food-Grade Oil

FG-PAO - Food-Grade, Synthetic Poyalphaolefin Oil FG-PG - Food-Grade, Synthetic Polyglycol Oil

Lubrication Notes

- Avoid using (EP) gear oils in worm gears that contain sulfur-phosphorous chemistries, as these additives can react adversely with bronze worm gears and accelerate wear.
- Food grade lubricants must be in compliance with FDA 212 CFR 178.3570 and qualify as a NSF-H1 lubricant. Please consult with lubrication manufacturer for more information.
- When making a lubrication change, check with the lubrication supplier to assure compatibility and to obtain recommended cleaning or flushing procedures.
- Do not to mix different oils with different additive packages or different base oil formulation types. Polyglycol (PG) oils are not miscible with other oil types and should never be mixed with mineral oil or polyalphaolefin (PAO) synthetic oil.

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Ventilation

Most gear reducers (except for SK0182NB, SK0282NB and SK1382NB) are equipped with a vent which helps compensate for air pressure differences between the inner space of the gear unit and the atmosphere.

The spring-pressure vent (Autovent™) is commonly supplied and factory-installed. Normally open vents may also be supplied as an option; normally-open vents are closed upon delivery in order to prevent oil leakage during transport. When normally open vents are supplied, the sealing plugs must be removed prior to commissioning the reducer.

Prior to reducer start-up, it is important to check the maintenance manual to verify that the vent is properly located with respect to mounting position.

Mounting Position

The reducer mounting position determines the approximate oil fill-level and the appropriate vent location. In some cases mounting position may dictate possible variation in final reducer assembly.

If considering any mounting positions that are not shown as catalog-standard options, it is critical that the customer consult with NORD prior to ordering.

Oil Fill Quantities

Oil fill quantities shown in the catalog or maintenance instructions are approximate amounts. The actual oil volume varies depending upon the gear ratio. Prior to commissioning the reducer, the oil-fill level should be checked using the reducer's oil-level plug. It may be necessary to drain excess oil or add additional oil.

Unless otherwise specified, NORD supplies most all gear units factory-filled with the standard lubrication type per the specified mounting position. Gear units SK10282, SK10382, SK11282, SK11382, and SK12382 are supplied without oil.

Lubrication Replacement

If the gear unit is filled with mineral oil, the lubricant should be replaced at least after every 10,000 operating hours or after every two years. If the gear unit is filled with synthetic oil, the lubricant should be replaced at least after every 20,000 operating hours or after every four years.

Often gear reducers are exposed to extreme ambient conditions, hostile environments, wet conditions, or dirty and dusty operating areas. Especially in these situations, it is important to change the reducer lubricant more often that what is suggested as a typical guideline.

The Importance of Routine Oil Analysis

Routine oil analysis, sound lubrication practices, and good tracking of oil performance trends as related to specific equipment, will help establish proper lubrication maintenance and change-out intervals.

To maximize equipment reliability, NORD Gear generally recommends a condition-based lubrication maintenance program. One may take exceptions to this general recommendation on sealed-for-life or maintenance-free gear units or smaller and less costly gear units. In these instances, the replacement cost of the gear unit is often small compared to the costs associated with this type of oil analysis program.

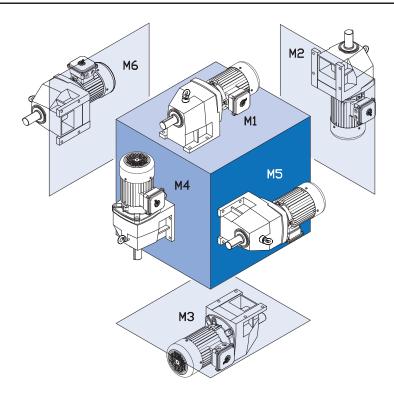
NORD suggests replacing the gear oil if oil analysis indicates any of the following:

- Viscosity has changed by approximately 10% or more.
- Debris particles (silicon, dust, dirt or sand) exceed 25 ppm.
- Iron content exceeds 150-200 ppm.
- Water content is greater than 0.05% (500 ppm).
- Acid number tests indicate a significant level of oxidative break-down of the oil and a critical reduction in performance.

In-line Foot Mount Positions & Oil Fill Quantities







Mounting Position	M	11	M	12	M	13	M	14	IV	15	M	16
	Quarts	Liters										
SK02	0.16	0.15	0.63	0.60	0.74	0.70	0.63	0.60	0.42	0.40	0.42	0.40
SK03	0.32	0.30	1.06	1.00	0.85	0.80	0.95	0.90	0.63	0.60	0.63	0.60
SK11E	0.26	0.25	0.53	0.50	0.58	0.55	0.42	0.40	0.37	0.35	0.37	0.35
SK12	0.26	0.25	0.79	0.75	0.90	0.85	0.79	0.75	0.53	0.50	0.53	0.50
SK13	0.63	0.60	1.32	1.25	1.16	1.10	1.27	1.20	0.74	0.70	0.74	0.70
SK21E	0.63	0.60	1.27	1.20	1.27	1.20	1.06	1.00	1.06	1.00	1.06	1.00
SK22	0.53	0.50	1.90	1.80	2.11	2.00	1.90	1.80	1.43	1.35	1.43	1.35
SK23	1.37	1.30	2.54	2.40	2.43	2.30	2.48	2.35	1.69	1.60	1.69	1.60
SK31E	1.16	1.10	2.85	2.70	2.33	2.20	2.43	2.30	1.80	1.70	1.80	1.70
SK32	0.95	0.90	2.64	2.50	3.17	3.00	3.07	2.90	2.11	2.00	2.11	2.00
SK33N	1.69	1.60	3.07	2.90	3.38	3.20	3.91	3.70	2.43	2.30	2.43	2.30
SK41E	1.80	1.70	2.75	2.60	3.49	3.30	2.64	2.50	2.75	2.60	2.75	2.60
SK42	1.37	1.30	4.76	4.50	4.76	4.50	4.55	4.30	3.38	3.20	3.38	3.20
SK43	3.17	3.00	5.92	5.60	5.50	5.20	6.98	6.60	3.81	3.60	3.81	3.60
SK51E	2.33	2.20	4.65	4.40	4.97	4.70	4.23	4.00	3.59	3.40	3.59	3.40
SK52	2.64	2.50	7.40	7.00	7.19	6.80	7.19	6.80	5.39	5.10	5.39	5.10
SK53	4.76	4.50	9.20	8.70	8.14	7.70	9.20	8.70	6.34	6.00	6.34	6.00
SK62	6.87	6.50	15.9	15.0	13.7	13.0	16.9	16.0	15.9	15.0	15.9	15.0
SK63	13.7	13.0	15.3	14.5	15.3	14.5	16.9	16.0	13.7	13.0	13.7	13.0
SK72	10.6	10.0	24.3	23.0	19.0	18.0	27.5	26.0	24.3	23.0	24.3	23.0
SK73	21.7	20.5	21.1	20.0	23.8	22.5	28.5	27.0	21.1	20.0	21.1	20.0
SK82	14.8	14.0	37.0	35.0	28.5	27.0	46.5	44.0	33.8	32.0	33.8	32.0
SK83	31.7	30.0	32.8	31.0	35.9	34.0	39.1	37.0	34.9	33.0	34.9	33.0
SK92	26.4	25.0	77.1	73.0	49.7	47.0	80.3	76.0	55.0	52.0	55.0	52.0
SK93	56.0	53.0	74.0	70.0	62.4	59.0	76.1	72.0	51.8	49.0	51.8	49.0
SK102	38.1	36.0	83.5	79.0	69.8	66.0	107.8	102	75.1	71.0	75.1	71.0
SK103	78.2	74.0	75.1	71.0	78.2	74.0	102.5	97.0	70.8	67.0	70.8	67.0



HELICAL & BEVEL REDUCER LUBRICATION TYPES



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Oil Cross-reference Chart

ISO Viscosity	Oil Type	Ambient Temperature Range	Mobil	Shell	Castrol	E UGHS	KLÖBER
	MIN-EP	0 to 25°C (32 to 77°F)	Mobilgear 600XP150	Omala 150	Alpha SP150	Renolin EP150	Klüberoil GEM 1-150N
	PAO-EP	-30 to 25 °C (-22 to 77 °F)	Mobilgear SHC150	Omala HD 150	Alphasyn EP150	Gearmaster SYN150/NA	Klübersynth EG 4-150
	PAO	-30 to 25°C (-22 to 77°F)	Mobil SHC629	Omala RL 150	Alphasyn T150	N/A	Klübersynth GEM 4-150N
VG150	PG	-25 to 25°C (-13 to 77°F)	Mobil Glygoyle 150	Tivela S150	Alphasyn PG150	Renolin PG150	Klübersynth GH 6-150
	FG	0 to 25°C (32 to 77°F)	Mobil DTE FM 150	N/A	N/A	N/A	N/A
	FG-PAO	-15 to 25°C (5 to 77°F)	Mobil SHC Cibus 150	N/A	N/A	Cassida GL150	Klüberoil 4 UH 1-150N
	FG-PG	-25 to 25°C (-13 to 77°F)	Mobil Glygoyle 150	N/A	N/A	N/A	Klübersynth UH1 6-150
	MIN-EP	0 to 40°C (32 to 104°)	Mobilgear 600XP220	Omala 220	Alpha SP220	Renolin EP220	Klüberoil GEM 1-220N
	PAO-EP	-30 to 60 °C (-22 to 140 °F)	Mobilgear SHC220	Omala HD220	Alphasyn EP220	Gearmaster SYN220/NA	Klübersynth EG 4-220
	PAO	-30 to 60°C (-22 to 140°F)	Mobil SHC630	Omala RL220	Alphasyn T220	N/A	Klübersynth GEM 4-220N
VG220	PG	-25 to 60°C (-13 to 140°F)	Mobil Glygoyle 220	Tivela S220	Alphasyn PG220	Renolin PG220	Klübersynth GH 6-220
	FG	0 to 40°C (32 to 104°F)	Mobil DTE FM 220	N/A	N/A	Fuchs FM220	N/A
	FG-PAO	-25 to 60°C (-13 to 140°F)	Mobil SHC Cibus 220	N/A	N/A	Cassida GL220	Klüberoil 4 UH 1-220N
	FG-PG	-25 to 60°C (-13 to 140°F)	Mobil Glygoyle 220	N/A	N/A	Cassida WG220	Klübersynth UH1 6-220
	MIN-EP	0 to 40°C (32 to 104°F)	Mobilgear 600XP460	Omala 460	Alpha SP460	Renolin EP460	Klüberoil GEM 1-460N
	PAO-EP	-20 to 80°C (-4 to 176°F)	Mobilgear SHC460	Omala HD460	Alphasyn EP460	Gearmaster SYN460/NA	Klübersynth EG 4-460
	PAO	-20 to 80°C (-4 to 176°F)	Mobil SHC 634	Omala RL460	Alphasyn T460	N/A	Klübersynth GEM 4-460N
VG460	PG	-20 to 80°C (-4 to 176°F)	Mobil Glygoyle 460	Tivela S460	Alphasyn PG460	N/A	Klübersynth GH 6-460
	FG	0 to 40°C (32 to 104°F)	Mobil DTE FM460	N/A	N/A	Fuchs FM460	N/A
	FG-PAO	-20 to 80°C (-4 to 176°F)	Mobil SHC Cibus 460	N/A	N/A	Cassida GL460	Klüberoil 4 UH 1-460N
	FG-PG	-20 to 80°C (-4 to 176°F)	Mobil Glygoyle 460	N/A	N/A	Cassida WG460	Klübersynth UH1 6-460

Low-end service temperature limit may vary for a specific lubricant; Please also see the important notes on Page 1.

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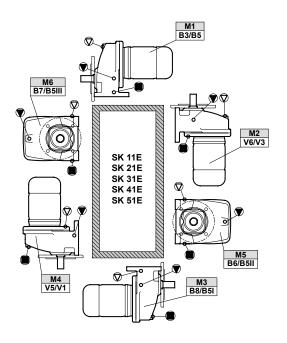
HELICAL IN-LINE OIL PLUG & VENT LOCATIONS

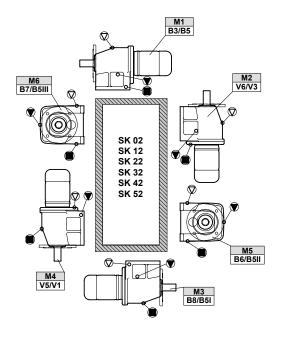


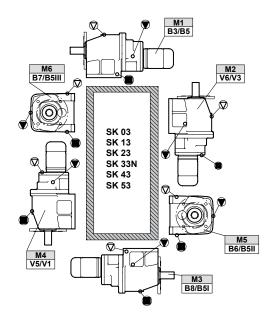
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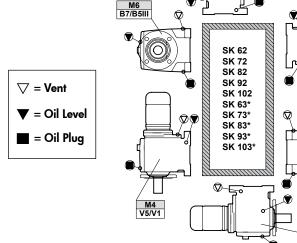
Oil plug connections

Prior to commissioning the reducer, check the oil-fill level using the reducer's oil-level plug and drain or add additional oil as needed. The minimum acceptable oil level is 0.15 in (4mm) below the oil level hole. For mounting orientations other than shown please consult NORD Gear. New plug locations may be required.









* Oil level for 3 stage gear units.

M3 B8/B5I

M2 V6/V3

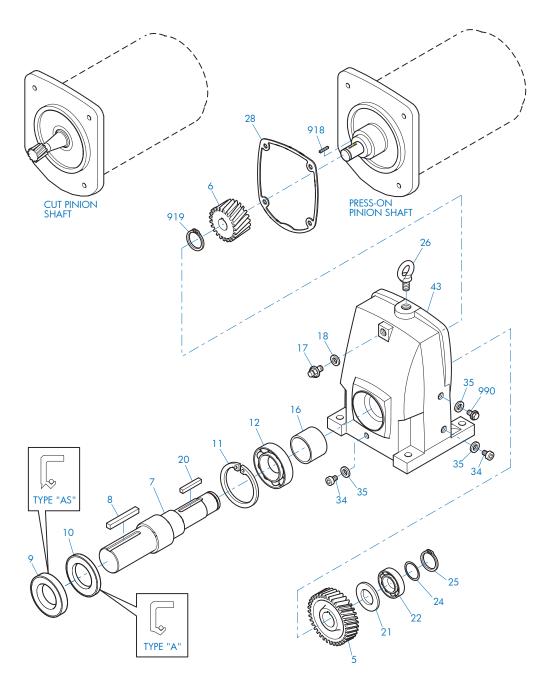
M5 B6/B5II

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- RETAIN FOR FUTURE USE -



SK 11E - SK 51E Foot Mount

11	Gear Pinion Output Shaft Key Oil Seal Oil Seal	16 Spacer 17 Vent Plug 18 Seal 20 Key 21 Spacer 22 Anti-Friction Bearing	26 Flanged Eye Bolt 28 Gasket 34 Drain Plug 35 Gasket 43 Gearcase 918 Key
11	Oil Seal Snap Ring Anti-Friction Bearing	22 Anti-Friction Bearing24 Shim25 Snap Ring	918 Key 919 Snap Ring 990 Oil Level Plug
12	Anti-inction bearing	25 Shap King	330 Oli Level Flug

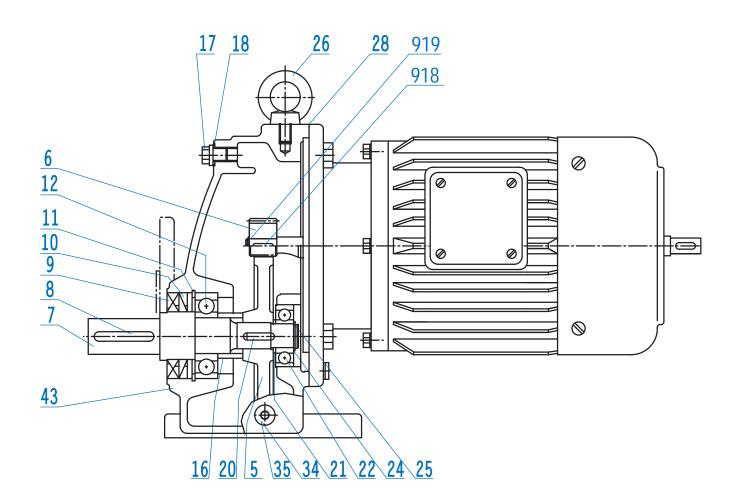
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- RETAIN FOR FUTURE USE -



SK 11E - SK 51E Foot Mount

5 6 7	Gear Pinion Output Shaft	16 Spacer 17 Vent Plug 18 Seal	26 Flanged Eye Bolt 28 Gasket 34 Drain Plug
8	Key	20 Key	35 Gasket
9 10	Oil Seal Oil Seal	21 Spacer 22 Anti-Friction Bearing	43 Gearcase 918 Key
11	Snap Ring	24 Shim	919 Snap Ring
	Anti-Friction Bearing	25 Snap Ring	

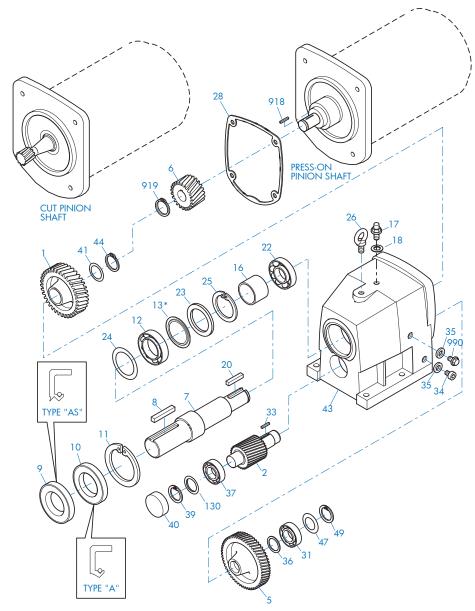
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SK02 - SK52 Foot Mount

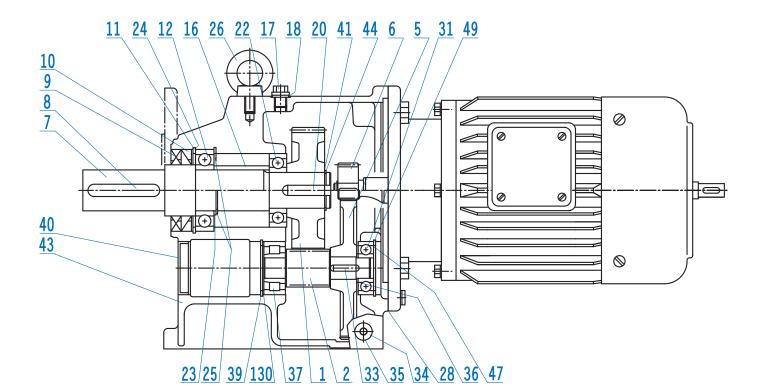
^{*} Conditionally used part

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SK02 - SK52 Foot Mount

^{*} Conditionally used part

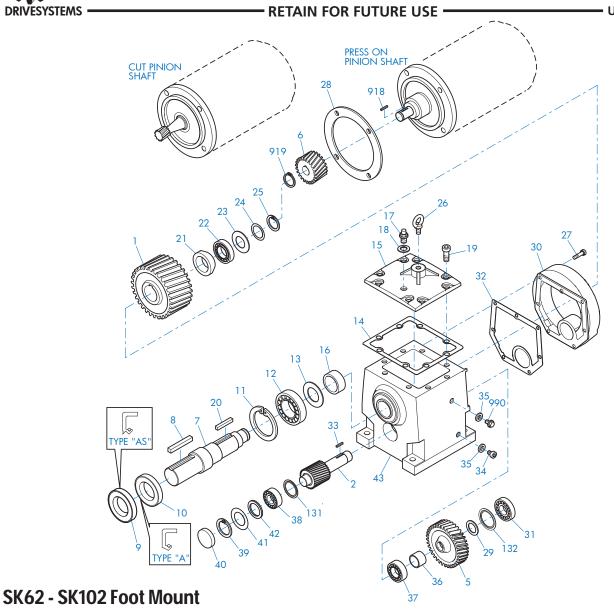
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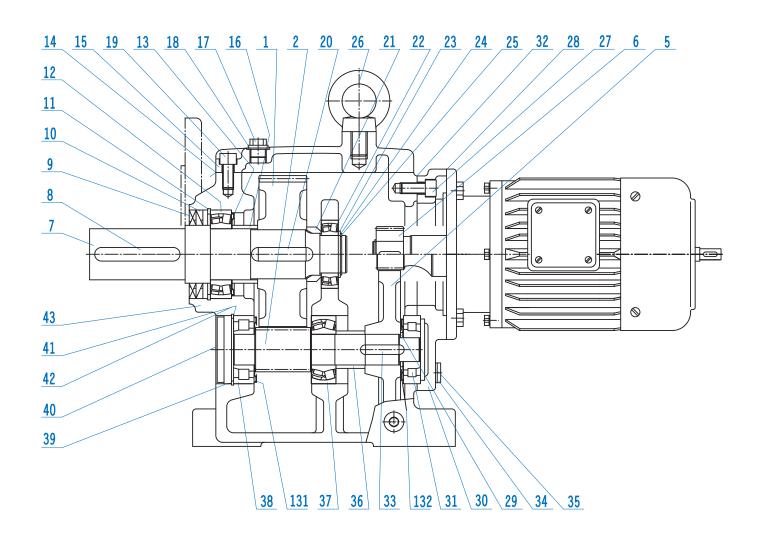


	Gear Pinion Shaft Gear Pinion Output Shaft Key Oil Seal Oil Seal Snap Ring Anti-Friction Bearing NILOS ring	24 25 26 27 28 29	Bolt Key Spacer Anti-Friction Bearing Thrust Washer Shim Snap Ring Flanged Eye Bolt Bolt Gasket Spacer	36 37 38 39 40 41 42 43 131 132	Gasket Spacer Anti-Friction Bearing Anti-Friction Bearing Snap Ring Bore Plug Shim Thrust Washer Gearcase NILOS Ring NILOS Ring
11	Oil Seal Snap Ring	26 27	Flanged Eye Bolt Bolt	43	Thrust Washer Gearcase
		29 30		132 918	
16 17 18	Spacer Vent Plug Seal	32 33	Gasket Key Drain Plug	990	Oil Level Plug





- RETAIN FOR FUTURE USE -



SK62 - SK102 Foot Mount

1 Gear 2 Pinion Shaft 5 Gear 6 Pinion 7 Output Shaft 8 Key 9 Oil Seal 10 Oil Seal 11 Snap Ring 12 Anti-Friction Bearing 13 NILOS ring* 14 Gasket 15 Inspection Cover 16 Spacer 17 Vent Plug	18 Seal 19 Bolt 20 Key 21 Spacer 22 Anti-Friction Bearing 23 Thrust Washer 24 Shim 25 Snap Ring 26 Flanged Eye Bolt 27 Bolt 28 Gasket 29 Spacer 30 Input Cover 31 Anti-Friction Bearing 32 Gasket	33 Key 34 Drain Plug 35 Gasket 36 Spacer 37 Anti-Friction Bearing 38 Anti-Friction Bearing 39 Snap Ring 40 Bore Plug 41 Shim 42 Thrust Washer 43 Gearcase 131 NILOS Ring* 132 NILOS Ring* 918 Key 919 Snap Ring
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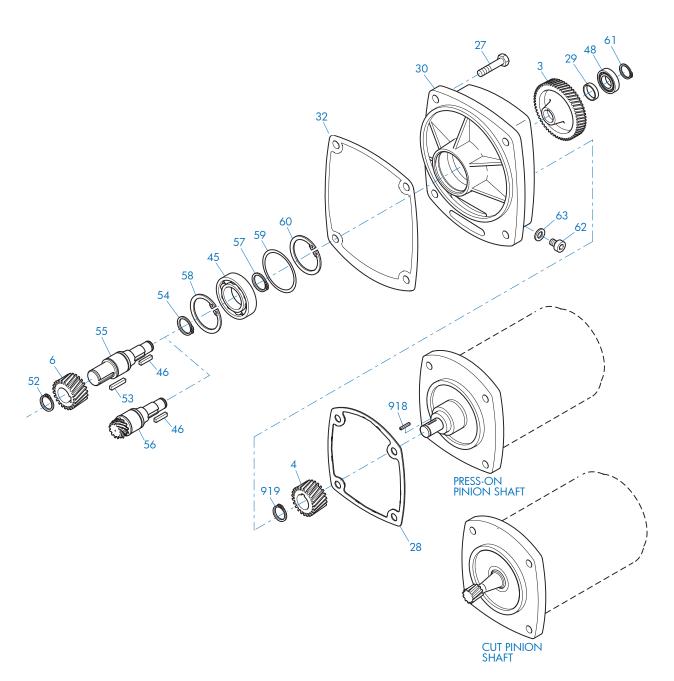
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- RETAIN FOR FUTURE USE -



SK03 - SK53 Third Stage Reduction Gear

4 F 6 F 27 E 28 (29 S 30 T 32 (Gear Pinion Pinion Bolt Gasket Spacer Third Reduction Gearcase Gasket Anti-Friction Bearing	48 52 53 54 55 56 57	Key Anti-Friction Bearing Snap Ring Key Snap Ring Intermediate Shaft, Plain Intermediate Shaft, Gearcut Snap Ring Snap Ring	60 61 62 63 918	Shim Snap Ring Snap Ring Oil Plug Gasket Key Snap Ring
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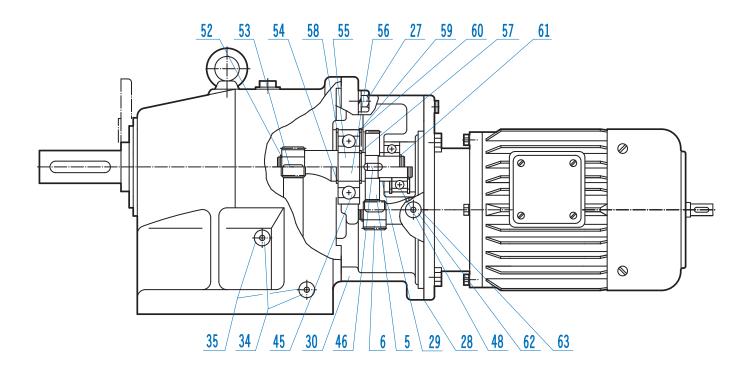
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- RETAIN FOR FUTURE USE -



SK03 - SK53 Using Third Stage Reduction Gear

3 Gear 4 Pinion 6 Pinion 27 Bolt 28 Gasket 29 Spacer 30 Third Reduction Gearcase 32 Gasket 45 Anti-Friction Bearing	46 Key 48 Anti-Friction Bearing 52 Snap Ring 53 Key 54 Snap Ring 55 Intermediate Shaft, Plain 56 Intermediate Shaft, Gearcut 57 Snap Ring 58 Snap Ring	59 Shim 60 Snap Ring 61 Snap Ring 62 Oil Plug 63 Gasket 918 Key 919 Snap Ring	
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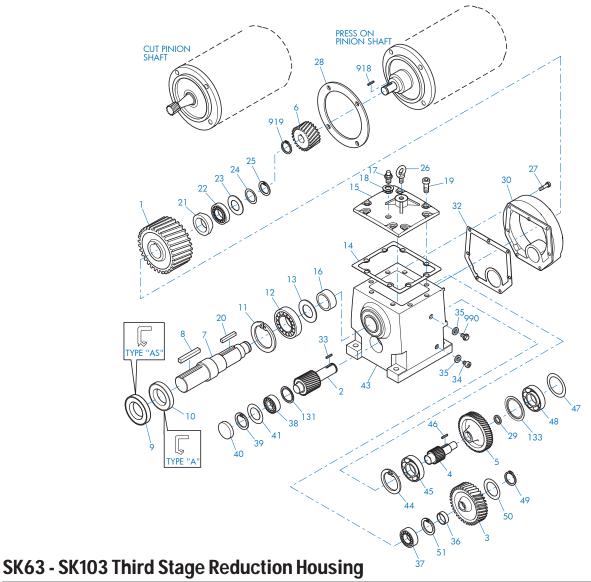
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1 Gear 2 Pinion Shaft 3 Gear 4 Pinion Shaft 5 Gear 6 Pinion 7 Output Shaft 8 Key 9 Oil Seal 10 Oil Seal 11 Snap Ring 12 Anti-Friction Bearing 13 NILOS Ring 14 Gasket 15 Inspection Cover 16 Spacer 17 Vent Plug	19 Bolt 20 Key 21 Spacer 22 Anti-Friction Bearing 23 Thrust Washer 24 Shim 25 Snap Ring 26 Flanged Eye Bolt 27 Bolt 28 Gasket 29 Spacer 30 Input Cover 32 Gasket 33 Key 34 Drain plug 35 Gasket 36 Spacer	38 Anti-Friction Bearing 39 Snap Ring 40 Bore Plug 41 Shim 43 Gearcase 44 Snap Ring 45 Anti-Friction Bearing 46 Key 47 Shim 48 Bearing 49 Snap Ring 50 Thrust Washer 51 Snap Ring 131 NILOS Ring 133 NILOS Ring 918 Key 919 Snap Ring
17 Vent Plug	36 Spacer	919 Snap Ring
18 Seal	37 Anti-Friction Bearing	990 Oil Level Plug

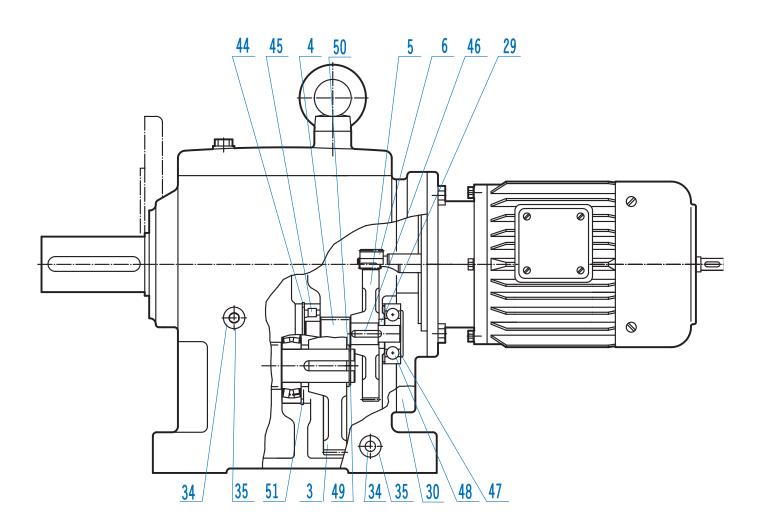
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- RETAIN FOR FUTURE USE -



SK63 - SK103 Foot Mount

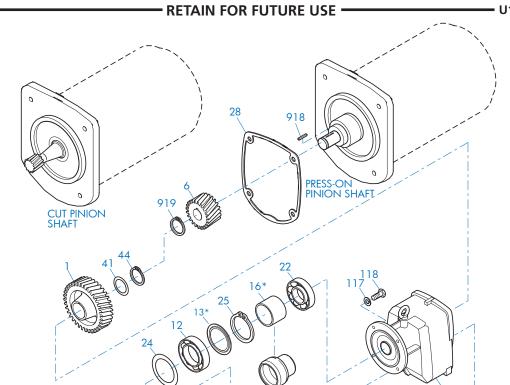
3 Gear 4 Pinion 9 5 Gear 6 Pinion 28 Gasket 29 Spacer 30 Input C	haft 33 34 35 44	Gasket Key Drain plug Gasket Snap Ring Anti-Friction Bearing Key	47 Shim 48 Bearing 49 Snap Ring 50 Thrust Washer 51 Snap Ring 133 NILOS Ring
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TYPE "A"

1 Gear 2 Pinion Shaft 5 Gear 6 Pinion 12 Anti-Friction Bearing	33 Key 36 Spacer 37 Anti-Friction Bearing 39 Snap Ring 40 Bore Plug	115 Lock Washer 116 Bolt 117 Lock Washer 118 Bolt 119 Intermediate Shaft, Plain

^{*} Conditionally used part

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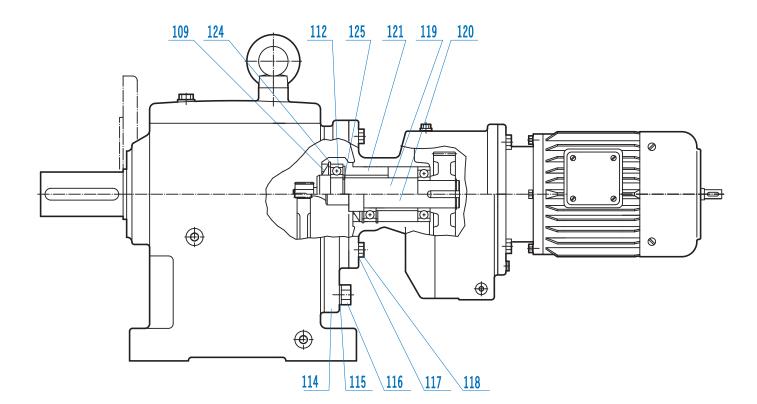
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- RETAIN FOR FUTURE USE -



SK12/02 - SK103/52 Input Compound Reduction

12 Anti-Friction Bearing 13 Nilos Ring* 16 Spacer* 25 Snap Ring 109 Oil Seal 114 Intermediate Flange	115 Lock Washer 116 Bolt 117 Lock Washer 118 Bolt 119 Intermediate Shaft, Plain	120 Intermediate Shaft, Gearcut 121 Bearing Sleeve* 124 Snap Ring
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^{*} Conditionally used part

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TROUBLESHOOTING



- RETAIN FOR FUTURE USE -

Troubleshooting

This section identifies some of the most common issues involved with NORD Gear speed reducers , and provides recommendations to assist you in defining and answering your questions as you work with our products. You may also contact our Engineering/Application departments if your questions are not answered in the table below.

Problem With	the Reducer	Possible Causes	Suggested Remedy
	Overloading	Load exceeds the capacity of the reducer	Check rated capacity of reducer, replace with unit of sufficient capacity or reduce the load.
Runs Hot		Insufficient lubrication	Check lubricant level and adjust up to recommended levels
	Improper lubrication	Excessive lubrication	Check lubricant level and adjust down to recommended levels.
		Wrong lubrication	Flush out and refill with correct lubricant as recommended
	Loose foundation bolts	Weak mounting structure	Inspect mounting of reducer. Tighten loose bolts and/or reinforce mounting and structure.
		Loose hold down bolts	Tighten bolts
Runs Noisy	Failure of bearings	May be due to lack of lubricant	Replace bearing. Clean and flush reducer and fill with recommended lubricant.
		Overload	Check rated capacity of reducer.
	Insufficient lubricant	Level of lubricant in reducer not properly maintained.	Check lubricant level and adjust to factory recommended level.
	Internal parts are broken or missing	Overloading of reducer can cause damage	Replace broken parts. Check rated capacity of reducer.
Output shaft does not turn		Key missing or sheared off on input shaft.	Replace key.
		Coupling loose or disconnected	Properly allign reducer and coupling. Tighten coupling.
	Worn seals	Caused by dirt or grit entering seal.	Replace seals. Autovent may be clogged. Replace or clean.
		Overfilled reducer	Check lubricant level and adjust to recommended level.
Oil Leakage	Unit runs hot or leaks	Vent clogged.	Clean or replace, being sure to prevent any dirt from falling into the reducer.
	Incorrect fill level	Improper mounting position, such as wall or ceiling mount of horizontal reducer.	Check mounting position on the name tag & verify with mounting chart in manual.



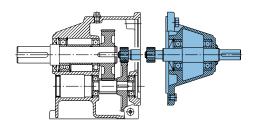
SOLID INPUT SHAFT (W)

- RETAIN FOR FUTURE USE -

U45300 - 1 of 5

1. Solid Input Shaft (W)

The shaft will be inch or metric, depending on how the unit was ordered. Measure and verify the shaft before mounting anything on the shaft. Below are the tolerances used for the solid shafts.



2. Solid shaft diameter tolerance

Reducer input shaft extensions have a diameter tolerance as specified in **Table 1**.

Table 1: Solid Shaft Diameter Tolerance

Above ø (in)	To & Including Ø (in)	Tolerance (in)
0.375	1.750	+0.0000 / -0.0005
1.750	2.750	+0.0000 / -0.0010

Above	To & Including	Tolerance	ISO 286-2
ø (mm)	ø (mm)	(mm)	Fit Class
10	18	+0.012 / +0.001	k6
18	30	+0.015 / +0.002	k6
30	50	+0.018 / +0.002	k6
50	70	+0.030 / +0.011	m6

3. Fitting drive elements onto the reducer solid shaft

Solid input shaft extensions are provided with a drill and tap feature as indicated in Table 2. When installing drive elements such as coupling hubs, pulleys, sprockets, or gears, NORD recommends using the threaded hole in the end of the shaft, along with a suitable assembly device fitted into the threaded hole.

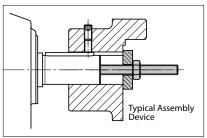


Table 2: Solid Input Shaft End - Threaded Holes

Above ø (in)	To & Including Ø (in)	Tap size & Depth (in)
0.375	0.500	10-24 x 0.43 in
0.500	0.875	1/4-20 x 0.59 in
0.875	0.938	5/16-18 x 0.71 in
0.938	1.100	3/8-16 x 0.87 in
1.100	1.300	1/2-13 x 1.10 in
1.300	1.875	5/8-11 x 1.42 in
1.875	2.750	3/4-10 x 1.73 in

Above	To & Including	Tap Size & Depth
ø (mm)	ø (mm)	(mm)
10	13	M4 x 10 mm
13	16	M5 x 12.5 mm
16	21	M6 x 16 mm
21	24	M8 x 19 mm
24	30	M10 x 22 mm
30	38	M12 x 28 mm
38	50	M16 x 36 mm
50	70	M20 x 42 mm





<u>/!\</u>

DO NOT DRIVE or **HAMMER** the coupling hub, pulley, sprocket, or gear into place. An endwise blow to the reducer shaft can generate damaging axial forces and cause damage to the reducer housing, bearings or internal components.

To avoid serious injury the user must provide suitable safety guards for all rotating shafts and shaft components such as couplings, chain drives, belt drives, etc. All guarding must adhere to local regulations and safety standards.

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SOLID INPUT SHAFT (W)

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4. Installing interference-fit hubs to the reducer shaft

Prior to installing any interference-fit hubs to the reducer shaft, consult with the manufacturer to determine proper assembly and fit. Interference-fits usually require heating the coupling, sprocket or gear hub, per the manufacturer's recommendations. Coupling hub installation typically follows ANSI/AGMA 9002-A86. Always make sure the reducer shaft seals are protected from the heat source. Apply uniform heat to the drive element hub to prevent distortion. NORD does not recommend heating the drive element hub beyond 212°F to 275°F (100°C to 135° C).



WARNING



When using heat to mount a drive element hub, do not use open flame in a combustible atmosphere or near flammable materials. Use suitable protection to avoid burns or serious injury.



HARMFUL SITUATION



When using external chain or belt drives, make sure the reducer is sized so that the shaft and bearings have adequate capacity. To avoid unnecessary bearing loads and additional shaft deflection, mount all power take-off devices (sprockets, pulleys, etc.) so that the applied load center is as close to the gear housing as possible and check component alignment and tension of any belts or chains per the manufacturer's recommendation. Do not over tighten the belts or chains.

5. Coupling installation

The performance and life of any coupling depends upon how well it is installed. Coupling hubs are typically mounted flush with the shaft ends, unless specifically ordered for overhung mounting. Shaft couplings should be installed according to the coupling manufacturer's recommendations for gap, angular and parallel alignment. To help obtain critical shaft alignment coupling hubs may be installed to the machine shafts prior to final shimming or tightening of the foundation bolts. Proper coupling alignment allows for thermal and mechanical shaft movement during operation and ensures that only torque (no radial load) is transmitted between the mating shafts.

Coupling gap and angular alignment

The shaft gap must be sufficient to accommodate any anticipated thermal or mechanical axial movement. When setting the coupling gap, insert a spacer or shim stock equal to the required spacing or gap between the coupling hub faces. Measure the clearance using feeler gauges at 90-degree intervals, to verify the angular alignment.

Parallel (or offset) alignment

Mount a dial indicator to one coupling hub, and rotate this hub, sweeping the outside diameter of the other hub. The parallel or offset misalignment is equal to one-half of the total indicator reading. Another method is to rest a straight edge squarely on the outside diameter of the hubs at 90° intervals and measure any gaps with feeler gauges. The maximum gap measurement is the parallel or offset misalignment.

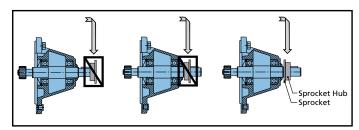
Check alignment

After both angular and parallel alignments are within specified limits, tighten all foundation bolts securely and re-check critical alignment. If any of the specified limits for alignment are exceeded, realign the coupling.

6. Installing sheaves (pulleys), sprockets and gears

To avoid unnecessary bearing loads and additional shaft deflection, mount all power take-off devices (sprockets, pulleys, gears, etc.) so that the applied load center is as close to the gear housing as possible, as shown in **Figure 2**.

Figure 2: Pully or Sprocket Mounting



Align the driver sheave or sprocket with the driven sheave or sprocket by placing a straight-edge length-wise across the face of the sheaves or sprockets. Alignment of bushed sheaves and sprockets should be checked only after bushings have been tightened. Check horizontal shaft alignment by placing one leg of a square or a level vertically against the face of the sheave or sprocket.

Always check component alignment and tension any belts or chains per the manufacturer's recommendation. The ideal belt or chain tension allows proper wrap of the driver and driven wheels, while maintaining the lowest possible tension of the belts or chain, so that no slipping occurs under load conditions. Check belt or chain tension frequently over the first 24 to 48 hours of operation.



HARMFUL SITUATION



When using external chain or belt drives, make sure the reducer is sized so that the shaft and bearings have adequate capacity. To avoid unnecessary bearing loads and additional shaft deflection, mount all power take-off devices (sprockets, pulleys, etc.) so that the applied load center is as close the gear housing as possible and check component alignment and tension of any belts or chains per the manufacturer's recommendation. Do not over tension the belts or chains.

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SOLID INPUT SHAFT (W)

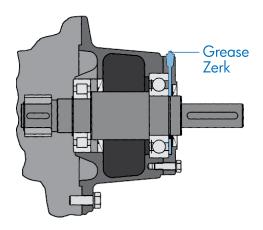
- RETAIN FOR FUTURE USE -

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7. Service Guidelines for W-Shaft Input with Grease Fitting

On some solid shaft input (Type W) gear units, the outer roller bearing needs to be re-greased at regular service intervals. This is necessary for double-stage gearboxes sizes SK62 or SK6282 and larger, and triple-stage gearboxes from size SK73, SK7382 or SK9072.1 and larger.

To lubricate the bearing of the input shaft, approximately 0.75 to 1.0 ounces (20-25 grams) grease should be added by the grease fitting approximately after every 2,500 hours of service or at least every 6 months. The W-shaft input is factory assembled with the proper amount and type of grease. The type of grease supplied depends upon the type of oil specified at time of order.



Reducer Oil Type Grease Type/Thickener		NLGI Grade	Ambient Temperature Range	Manufacturer Brand/Type	
Mineral	Standard (Li-Complex)	NLGI 2	-30 to 60°C (-22 to 140°F)	Mobil Grease XHP222	
Synthetic	High Temp (Polyurea)	NLGI 2	-40 to 80°C (-40 to 176°F)	Mobil / Polyrex EP 2	
Food-Grade	Food-Grade (Polyurea)	NLGI 2	-30 to 40°C (-22 to 104°F)	Mobil SHC Polyrex 222	



HARMFUL SITUATION



Grease compatibility depends upon the type of thickener or soap complex used, the base oil type suspended within the thickener, and the type of additives used. The user should check with the lubrication supplier before making substitutions in brand and type in order to assure compatibility and to avoid causing damage to the extended bearing.

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SOLID INPUT SHAFT (W)



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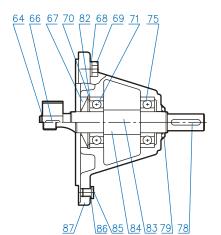
W-Type Input Parts List for UNICASE Gearboxes

SK 02 - SK 52 SK 03 - SK 63

SK 0182NB - SK 6382

SK 02040 - SK 42125 SK 13050 - SK 43125

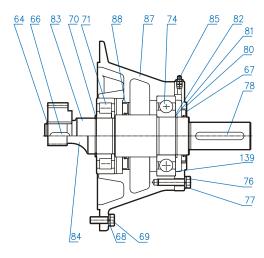
SK 9012.1 - SK 9052.1 SK 9013.1 - SK 9053.1



SK 62 - SK 72 SK 73 - SK 93

SK 6282 - SK 7282 SK 7382 - SK 9382

SK 9072.1



Circlip 64

66 Key

Shaft Seal 67

Washer 68

Hexagon Screw 69

70

Circlip Input Shaft Bearing 71

74 Ball Bearing

75 Input Shaft Bearing

76 Washer

Hexagon Screw 77

78 Key

79 Oil Flinger

Bearing Cover Circlip 80

81

Shim 82

83 Input Shaft, Plain

Input Shaft, Gearcut 84

Drain Plug 85

86 Seal

Input Bearing Housing 87

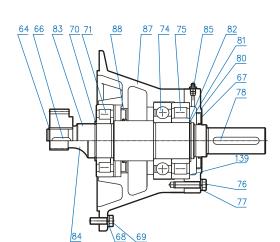
Shaft Seal (Oil Flinger) 88

139 Shim

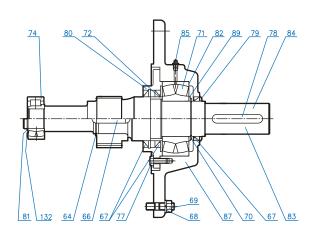
SK 82 - SK 102 SK 103

SK 8282 - SK 9282

SK 9082.1 - SK 9092.1



SK 10282 - SK 12382



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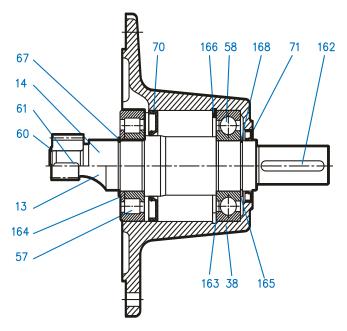
SOLID INPUT SHAFT (W)

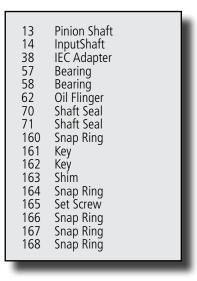


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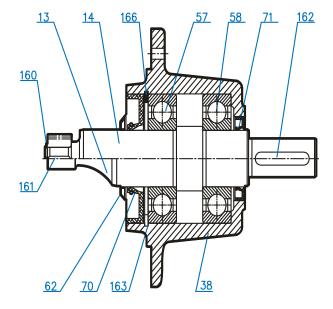
W-Type Inputs for Parts List for Nordbloc / 92 Bevel Gearboxes

SK172 - SK673 SK92072 - SK92372





SK772 - SK973 SK92672 - SK92772



NYOGS RIVERFRONT PUMP STATION

OPERATIONS & MAINTENANCE MANUAL FOR 4'-0" x 39'-0" 2-POST TRAVELING WATER SCREEN

MODEL #: 2PV-0439-FX-NFS

SERIAL #: SO-3804 A/B



Atlas - Screening Systems International, Inc. P.O. Box 760 / 215 Highway 19 Slaughter, LA 70777

> <u>MANUFACTURED FOR:</u> <u>D.A. Collins Construction Co., Inc.</u> Wilton, NY

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1.0 INTRODUCTION

This manual has been prepared to assist in the installation, operation and maintenance of your Screening Systems International Traveling Water Screen. It does not purport to cover all details for variations in the equipment or its installation, or to provide for every possible contingency to be met in connection with installation, operation or maintenance of the Traveling Water Screen.

Quality material has been used in the manufacture of this equipment. With careful, proper maintenance and servicing it will conform to your requirements and provide years of reliable operation. It is therefore of great importance that maintenance personnel are properly trained. We are not responsible for damage, which is a result of non-compliance with this manual.

Should any questions arise about these instructions, the equipment, or its installation, additional information may be obtained by contacting us at:

Atlas - SSI 215 Highway 19 P.O. Box 760 Slaughter, LA 70777

Phone (225) 654-3900 Fax (225) 654-3966 E-mail: sales@atlas-ssi.com

READ THESE DIRECTIONS CAREFULLY BEFORE INSTALLING AND OPERATING THE SCREEN.

2.0 DESCRIPTION OF OPERATION

Traveling Water Screens are automatically cleaned screening devices that are used to remove floating or suspended debris from a channel of water. Traveling Water Screens are used at surface water intakes to protect pumping and other downstream equipment from objectionable debris.

Traveling Water Screens consist of a continuous series of wire mesh panels bolted to non-metallic basket frames and attached to two matched strands of roller chain. The chain operates in a vertical path over head sprockets and curved boot guides. Carrying the baskets down into the water, around the boot guides, and back up over the head sprockets. As raw water passes through the revolving baskets, debris is collected and retained on the upstream face of the wire mesh panels. The larger particles of debris are collected on a lifting shelf that forms the lower, or trailing edge of the basket frame.

The debris-laden baskets are lifted out of the water and above the operating floor where a high-pressure water spray is directed outward through the mesh to remove impinged debris. The spray wash water and debris are collected in a trough for further disposal.

The path of the chain and basket tray assemblies is guided within a track that also forms a skeleton-like frame to support the screen structure. A labyrinth seal between the screen frame structure and channel wall prevents debris from passing around the screen. The basket end plates are designed to form a seal between the ends of the basket and the chain guide tracks.

These Traveling Water Screens are designed to be operated when a specified differential head loss occurs and/or on a time lapse basis. Under certain conditions, the Traveling Water Screens may be operated more frequently or even continuously (i.e. under heavy and continuous debris loading conditions).

3.0 ATLAS - SCREENING SYSTEMS INTERNATIONAL, INC. LIABILITY STATEMENT

NOTE

SCREENING SYSTEMS INTERNATIONAL DOES NOT ACCEPT LIABILITY FOR ANY CORRECTIVE OR OTHER WORK, OR EXPENDITURES OF ANY KIND THAT HAVE NOT BEEN AUTHORIZED BY SCREENING SYSTEMS INTERNATIONAL, INC. IN WRITING PRIOR TO THE COMMENCEMENT OF SUCH WORK, OR PRIOR TO COMMITTING TO SUCH EXPENDITURES, WITHOUT EXCEPTION.

4.0 GENERAL SAFETY PRECAUTIONS

Screening Systems International Traveling Water Screens are designed for safe operation within the limits of their rated capacity. They have been designed with protective guards and housings to prevent operator contact with rotating machinery.

If maintenance or inspection of a screen must be performed with the chain guards, housing, etc. removed, authorized and trained personnel should do the inspection, and special precautions must be taken to prevent access by unauthorized personnel.

FAILURE TO EXERCISE CAUTION AND COMPLY WITH SAFETY RULES MAY RESULT IN SERIOUS PERSONAL INJURY AND WILL VOID SCREENING SYSTEMS INTERNATIONAL'S RESPONSIBILITY. ALSO, FAILURE TO EXERCISE CAUTION MAY RESULT IN EQUIPMENT AND PROPERTY DAMAGE AND COULD VOID SCREENING SYSTEMS INTERNATIONAL'S WARRANTY.

The following guidelines for safe operation and maintenance must be followed:

• Screen operation should be limited to trained personnel. All operators and maintenance personnel should thoroughly read and understand this manual and be instructed in the location and operation of all stopping devices.

Avoid Accidents! All equipment must be "Locked Out" electrically & mechanically before any maintenance or work of any kind can be performed.

- After electrically "Locking Out" the screen, if basket removal is required, the carrier chain <u>must</u> be secured **before** basket removal and kept secured during maintenance procedures, to prevent any rotation of the machine.
- Never remove overload or safety devices from screen.
- Practice good housekeeping. Keep areas around the screen clear of obstructions; locate and seal any water leaks.

See following page for General Safety Precautions continued.

GENERAL SAFETY PRECAUTIONS CONT'D

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•	wear safety	ropes wnen	working around	i an o	pen screen well.

• Do not operate equipment with visually damaged sprockets or chain, or loose fasteners. Repair damaged or malfunctioning equipment before continuing operation.

WE ASSUME NO RESPONSIBILITY FOR ACCIDENTS INCURRED BY ANY PERSONNEL NOT IN THE EMPLOY OF SCREENING SYSTEMS INTERNATIONAL.

Contact Screening Systems International if there are any questions about recommended safety procedures.

5.0 GENERAL INFORMATION & SITE PREPARATION

5.1 Damaged Shipments

THOROUGHLY INSPECT THIS EQUIPMENT BEFORE ACCEPTING SHIPMENT FROM THE TRANSPORTATION COMPANY.

If any of the items identified in the Bill of Lading or Packing Slip are damaged, or the quantity is incorrect, an appropriate notation must be made on the freight bill and immediately reported to Screening Systems International to insure proper substantiation for claims and adjustments.

If any concealed loss or damage is discovered, notify your freight agent and Screening Systems International at once and request an on-site inspection.

5.2 Handling Recommendations

When handling this equipment, care should be taken to avoid supporting or lifting in a manner that would place excessive stress on parts that are not designed to support the weight of the load. This equipment should be moved only when lifting devices are of sufficient capacity to handle the weight and size of the load.

Please refer to the Data Sheet included on page 31 of this manual for a guide to the approximate screen weight and component configuration.

IMPROPER LIFTING OR HANDLING OF THE TRAVELING WATER SCREEN AND ITS COMPONENTS MAY RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE, AND MAY VOID THE EQUIPMENT WARRANTY.

Please contact Screening Systems International Inc. for additional handling recommendations.

5.3 Preparation of Site

Before the actual erection of the equipment is begun, a thorough inspection of the site is necessary.

Screening Systems International, Inc. assumes no responsibility for site preparation.

It is recommended that the site be cleared of all excess material to allow for free and easy movement by the erectors and equipment they are utilizing.

All foundation anchor bolts, wall guides, and other steelwork embedded in concrete must be checked for cleanliness, accuracy of location and alignment. Before erection of the equipment proceeds, the party or parties responsible must correctly position steelwork or anchor bolts that are incorrectly located.

5.4 Preparation of Screen Well

Before installation and erection of the screen, it is necessary to inspect the condition of the screen well. The bottom must be level and free of debris. Wall guides must be vertically true and parallel, and in line with each other.

The width and depth of the well must conform to the dimensions on general arrangement drawing.

Screens installed in poorly constructed wells may suffer serious damage, and premature wear.

6.0 STORAGE OF MATERIAL

6.1 Storage Prior to Assembly/Erection

If possible, store the Traveling Water Screen and its components in a warehouse or similar type enclosure to protect them from contamination by foreign materials.

If indoor storage is not possible, observe the following guidelines for outdoor storage:

- 1. Frame sections, basket assemblies and other structural components should be blocked off the ground in a manner to prevent distortion of structural members, and to avoid accumulation of rainwater and/or snow. If possible, cover with tarpaulin.
- 2. Electric motors, reducers, electrical controls, shaft assemblies, chain and other machinery components should be blocked off the ground and covered to prevent contact with foreign material.

NOTE: OUTDOOR STORAGE OF THESE COMPONENTS IS NOT RECOMMENDED.

- 3. All screen components should be checked upon arrival at job site for chips or cracks in the surface coating. These areas should be touched up with field paint prior to storage. Protective coating which may have been marred in handling should be re-coated.
- 4. Some painted surfaces may be affected by sunlight. To prevent potential problems, all painted material should be covered to protect the coating from sunlight.
- 5. Periodic checks should be made of the stored material to check for possible rusting of unpainted surfaces, especially where extended or long-term storage will be required.

6.2 Storage After Assembly and Erection

When the equipment has been installed in the intake chamber, prior to plant operation, care must be taken to assure that the units are not submerged in stagnant water for long periods (longer than two weeks).

SEVERE CORROSION OF MATERIALS, INCLUDING STAINLESS STEELS MAY RESULT FROM PROLONGED SUBMERSIONS IN STAGNANT WATER.

The screens should be operated periodically to rotate chain and baskets from the submerged conditions and to reduce the possibility of sanding or silting of the boot guides in the bottom frame section.

The following procedures are recommended to preserve the screens until they can be placed in normal operation:

- 1. All basket chain rollers must be fully greased as soon as possible.
- 2. Head shaft take-up bearings must be lubricated. Ref. Recommended Lubrication Schedule on Page 29.
- 3. Shear pin device shearing surfaces must be lubricated (sprocket and hub-faces). Remove shear-pin and rotate by hand to lubricate completely, ref. Drive Assembly Page 21.
- 4. Speed reducers must be filled to the proper level with the correct oil. (See lubrication data in the reducer manual APPENDIX H: REDUCER INFORMATION.) Until power is available, the shear pins should be removed so the couplings between the motors and reducers can be rotated manually. Drive units should be rotated once every 2 to 3 weeks.
- 5. Spray nozzles must be covered until spray water is available. This is necessary to keep nozzles and pipes free of foreign material.
- 6. Grease all take-up capstan bearings and screws. Ref. Recommended Lubrication Schedule Page 29.
- 7. Lubricate drive chains with motor oil.

When power is available, the screens should be rotated at least one complete revolution each week until they are placed in normal operation.

Before the screens are placed in normal operation, all bearings, rollers, etc. should be re-greased. The reducer units must be drained, flushed, and re-filled with the correct oil to the proper level.

NOTE: See Recommended Lubrication Schedule page 29 for proper lubrication recommendations.

7.0 TRAVELING WATER SCREEN ASSEMBLY

7.1 Shop Assembled Screens

Some Screening Systems International Traveling Water Screens are shop assembled and shipped as complete units. If your screens have been pre-assembled at the factory, the installer can skim over the sections of this manual describing screen assembly.

IT IS RECOMMENDED THAT THE INSTALLATION AND MAINTENANCE PERSONNEL BECOME FAMILIAR WITH THE ASSEMBLY PROCEDURES TO FACILITATE TROUBLESHOOTING, AND SCREEN DISASSEMBLY, IF EVER REQUIRED.

7.2 Field Assembly

Whenever it becomes necessary to ship a Traveling Water Screen disassembled, or "knocked down"; all components of the knocked down sections should be located and identified before proceeding with assembly.

The Traveling Water Screen is assembled in the sequence indicated in this manual and on the general arrangement drawing. A knocked down screen, and most screens with sprocket centers greater than 35 feet, are often assembled in sections, with each succeeding frame section bolted together while suspended over the screen well. This procedure is described in the following sections of this manual.

However, the installer may choose to assemble the screens on the ground in one piece. If this procedure is followed, it will be necessary to block up the screens so that the frame is adequately supported throughout its entire length. It is recommended that Screening Systems International be contacted for additional information if this procedure will be used to install screens with sprocket centers greater than 35 feet.

7.3 Assembly of Screen

USE CAUTION WHEN LIFTING AND HANDLING VARIOUS SECTIONS TO AVOID DISTORTING ANY MEMBERS.

Refer any questions that arise during the assembly of this screen directly to Screening Systems International, Inc.

7.4 Boot Section Assembly

Boot sections are usually shipped assembled. All dimensions should be field checked to assure alignment was not disturbed in shipment.

Place the assembled boot section over the screen well so that the front of the frame faces the direction of the flow. The flanges should be aligned over the wall guides and slowly lowered until the splice plates are located just above operating floor level. Block the boot section at this elevation.

It may be necessary to apply grease to the wall guides or side frame flanges to facilitate the lowering of the screen into well.

7.5 Intermediate Section Assembly

The intermediate sections are usually constructed in sections approximately ten feet long. However, the length of the uppermost or upper intermediate section may vary from six to fifteen feet. If not factory assembled, the intermediate section(s) should now be assembled.

The intermediate section should be positioned over the boot section and bolted in place using splice plates and the cross-channel end plates located on the cross-member assembly. Repeat this procedure until the upper intermediate section is bolted in place and the entire screen frame assembly can be lowered until the boot section rests on the well bottom.

7.6 Head Section Assembly

The structural portion of the head section is factory assembled prior to shipment. If not already in place, it is now necessary to install the head shaft assembly.

The six tooth head sprockets should be mounted to the head shaft, using tapered keys, and the shaft positioned between the head section side frames. The take-up bearings, with take-up screws and capstans in place, are now installed onto each end of the shaft and located over the bearing guideways. The driven sprocket can be mounted on the driven end of the shaft using the proper key.

NOTE: The head shaft assembly should be left in the lowest position in the head section for carrier chain installation. See Basket Chain Installation on page 16.

With the head shaft assembly in place, the head section can be positioned over the upper intermediate section and securely bolted in place. The entire screen assembly can now be lifted by the two lifting lugs located on the top of the screen head section.

7.7 Frame Adjustment

With the screen frame assembled, and the boot section resting on the well bottom, the frame should be checked for vertical alignment and the outside frame dimensions verified against the general arrangement drawing.

A plumb line should be used to ensure that each head sprocket is properly aligned with the boot chain guide assembly below it. Alignment should be within 1/8".

Shimming beneath the boot section side panel frame at the corners can level the boot section.

<u>WARNING</u> - Do not shim under the curved boot plate. This will distort the boot plate and cause the screen to jam.

All shims must be welded to the frame to prevent them from slipping out of place.

The boot section must be level and rest firmly on the floor of the well. Openings between the base of the boot section and the well floor should be no greater than the size of the openings in the basket mesh. Any larger openings should be grouted or caulked to prevent debris from passing under the screen.

The head shaft should be checked to ensure that it is parallel with the centerline of the curved boot guides. Adjustments may be made using the take-up capstans.

7.8 Spray Pipe Assembly

The spray wash assembly can now be installed by bolting the spray pipe to the support brackets located in the head section. The spray nozzles can now be mounted to the spray pipe. The final adjustment of the spray header will be made later.

7.9 Basket Chain Installation

The basket chain is shipped in coiled segments approximately ten feet long. Each segment is classified as right or left hand. Reference Figure 7. This designation identifies on which side of the screen that the chain will be installed to ensure that the head of the chain pins are to the outside, providing proper access to the lubrication fittings.

NOTE: THE BASKET CHAIN SHOULD BE INSTALLED WITH THE HEAD SHAFT TAKE-UP BEARINGS IN THEIR LOWEST POSITION.

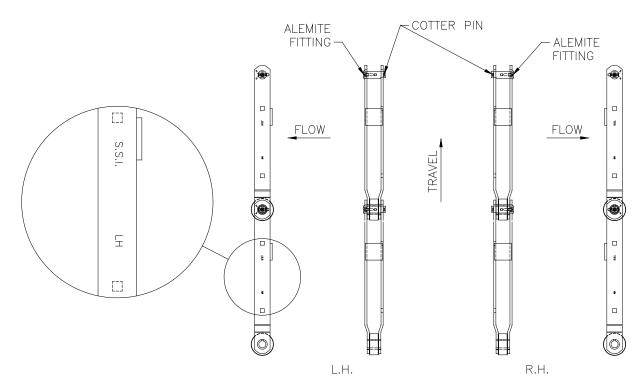


Figure 7

Prior to installing the chain, it will be necessary to identify and segregate the chain into separate leftand right-hand segments. Reference Figure 7. The chain can then be installed by threading a pair of chain segments over the head sprockets and rotating the sprockets until the end of the chain segments are in a convenient position to add another section. The process is continued until all segments are installed and the ends coupled.

THE CHAIN SHOULD BE KEPT TAUT DURING INSTALLATION BY ATTACHING A BLOCK AND TACKLE TO THE LEAD LINK.

Some of the chain parts have been heat treated to increase wear resistance. If it is necessary to drive a pin, or other chain component, a block of hard wood should be placed on the pin prior to hammering.

The basket chain joints should be greased initially and about every several hundred hours of operation. See Recommended Lubrication Schedule page 29. (This does not apply to non-lubricated chain. See the Traveling Water Screen Data Sheet for the type chain used on your screen.) The grease fills the cavities between the roller and bushings, between the roller and sidebar, and between the pin and bushing, so that sand, dirt, or other abrasive materials cannot get into these spaces and cause premature wear. The proper grease to accomplish this function must be heavy enough so that it will not wash out, and waterproof so it will not dissolve. See Recommended Lubrication Schedule page 29.

7.10 Basket Installation

Prior to installing the baskets to the chain, both strands of chain should be blocked or anchored, or the head shaft snubbed so that the baskets cannot roll free over the head sprockets.

The baskets are mounted to the chain as shown on the General Arrangement Drawing. The baskets are bolted to the chain by first inserting the carriage head bolt through the inside sidebar of the carrier chain and then through the basket end plate. A nylock hex nut and flat washer are then used to lock the bolts in place.

After mounting the first two baskets, the screen should be rotated until the baskets are in the boot section. After again blocking the chain, the baskets can be mounted, and the screen rotated until these baskets are in the boot section. This procedure can continue, and the number of baskets mounted can be progressively increased. Always rotate the newly mounted baskets to keep the weight evenly distributed.

NOTE: The carrier chain should always be secured when mounting the baskets.

Leave the last two baskets off to allow access to the spray pipe for final spray adjustment and access to the head shaft for setting the head shaft level.

After an initial run-in period of at least one-hour, the basket attachment bolts should be re-tightened.

7.11 Chain Tension Adjustment

Initial Chain Adjustment (New Chain)

Before adjusting the carrier chain tension, the head sprockets should be positioned with the sprocket tooth located directly over the centerline of the head shaft. The head shaft should be set in the proper position as shown on the General Arrangement by simultaneously turning the take up capstans (clockwise). Then, the head shaft should be leveled to within 1/32" per foot (3mm per meter) of length using a carpenter's level.

The capstans should be turned the same amount on both sides, so the head shaft is level at all times.

Then, the chain tension should be adjusted by simultaneously turning the take up capstans (clockwise) in equal amounts until the carrier chain is tight. The capstans should then be loosened 3 to 4 revolutions to obtain proper running freedom in the machine. **Best method** for ensuring correct tension is to have a diver check that carrier chain roller has 1/8" clearance to the curved chain guide.

NOTE: If your screen is equipped with a top mounted spring suspension system, see page 20 for proper suspension system adjustment, after the screen is operational.

Chain Adjustment (Maintenance)

Chain tension and wear should be inspected on a regular basis, monthly or quarterly inspections are recommended depending on screen operation. The following items should be checked at each inspection.

The chain should be lubricated during each inspection.

The rollers on the carrier chain should be inspected on a regular basis for wear. When the rollers show 3/16" to 1/4" (5mm to 6mm) play, the chain should be replaced at this time.

The carrier chain sidebars should be inspected for corrosion, wear and or damage. Damaged links should be replaced immediately, and the same number of links should be replaced on the opposite side.

The carrier chain tension should always be tight enough to keep the chain engaged on the boot section track bars (so that chain in not "sagging" in the boot). When the chain is allowed to run too loosely, excessive wear may occur on the boot section track bars and the carrier chain. However, over-tensioning will also decrease the life of the carrier chain and track bars.

The chain tension should be maintained by observing that the chain rollers have free movement against the curved chain guide or have up to a 1/8" clearance to the curved chain guide.

An indicator of correct chain tension can be observed by examining the horizontal movement on the downstream side of the screen. If the horizontal movement is more than 4" (100mm), the chain should be tightened. Also, if the chain doesn't have enough horizontal movement, the chain is too tight and needs to be loosened.

Another indicator of improper chain tension is the basket rails and end plates. If the rails or end plates show signs of scraping or dragging caused by the basket passing through the boot section, the chain should be tightened.

Note: The chain tension should always be adjusted as stated above in the Initial Chain Adjustment Section. Whenever possible, the **Best Method** from above should be used to adjust the carrier chain tension.

Any other questions concerning chain wear or tension adjustment should be addressed to Screening Systems International, Inc.

7.12 **Spring Suspension System – Tension Adjustment**

If your unit is equipped with a top mounted spring suspension system; it must be adjusted before normal operation using the following procedure.

- 1. Set the head shaft per the first two paragraphs of Section 7.11 (Initial Chain Adjustment).
- 2. Using a tape or scale, with the machine running, measure the amplitude (height of movement) of the system's top retaining plate (Reference Figure 10).
 - A. If the retaining plate does not move, tighten the capstan one full turn and check again If no movement is for movement. observed, tighten the capstan again until movement is noticeable and go to step B. At no time should the head shaft be allowed to become unleveled.
 - B. The correct amplitude of the top plate should be between 1/16" and 3/16". If the top plate moves greater than or less than the given range, adjust the capstan in 1/4turn increments to obtain the proper movement. Recheck that the head shaft has remained level.

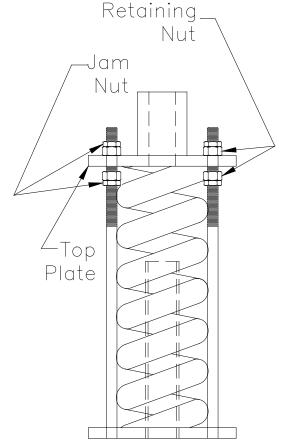


Figure 10

3. After adjusting the capstans at the position for correct movement, adjust the retainer nuts above and below the top plate to be within ½" of the top plate. Then, lock the corresponding jam nuts to the upper and lower retaining nuts.

NOTE: PLATE MOVEMENT SHOULD NOT BE ALLOWED TO EXCEED 3/16" UNDER NORMAL OPERATING CONDITIONS. THE SPRING SUSPENSION SYSTEM WILL REQUIRE PERIODIC INSPECTION AND ADJUSTMENT TO MAINTAIN THE CORRECT TENSION OF THE HEAD SHAFT ASSEMBLY.

WARNING: IMPROPER ADJUSTMENT OF THE SUSPENSION SYSTEM WILL GREATLY REDUCE THE LIFE OF THE BASKET CARRIER CHAIN.

7.13 Spray Pipe Adjustment

The opening left by the omission of the last two baskets allows access for the final adjustment of the spray pipe assembly.

With the spray header connected to the spray water supply line, adjust the spray header and the spray pattern.

Adjust the upper spray header so that the nozzles are located approximately 14", from the basket wire mesh. The header pipe should be rotated so that the nozzles clean the entire basket screen surface. Varying water pressure and debris loading may affect the operation of the spray wash system. Observation and adjustment can best secure the most effective spray pattern.

After the spray pattern has been adjusted, the last two baskets can be mounted on the carrier chain.

7.14 Splash Housing Assembly

The front and rear splash housings can be assembled to the head section as shown in the general arrangement drawing.

The housings should be positioned in place and clamped to the head section frame. Using the holes in the head section as a pattern, the splash housings should then be drilled for mounting.

Remove the splash housings and apply a waterproof sealer to all the field joints. Reposition the housings and bolt in place using 3/8"-16 UNC x 1-1/4", hex head cap screws, flat washers and hex nuts. Flat washers should be used on all bolts on the fiberglass side of the housings. Grout may be used under the splash housing if called for on the general arrangement drawings.

7.15 Drive Unit Assembly

The motor/reducer unit should come mounted to the head section. If not, the unit should be mounted to the motor/reducer mounts, located on the top of the head section.

The drive sprocket and the shear pin device are now ready to be mounted. First slide the set collar onto the low speed shaft; do not tighten the set screws at this time. Now install the drive sprocket as shown in Figure 11. The shear pin device should now be positioned on the shaft and the key installed. Approximately ¼" of shaft should extend out of the shear pin device. Tighten the set screws in both the shear pin device and the set collar.

The speed reducer is shipped without oil. Fill the reducer with the correct amount of the proper lubricant. Reference the manufacture's manual in the appendix of the manual. Do not over fill the reducer with oil.

Make all necessary electrical connections to the motor. Only a qualified electrician should do this.

The drive chain tension should NEVER be adjusted by moving the capstans. The drive chain tension must be checked whenever the basket chain is adjusted. The tension on the idler sprocket should be relieved prior to running the machine in reverse.

Check the drive and driven sprocket alignment and assemble the drive chain as shown on the general arrangement drawing. Chain tension can be adjusted by adding or subtracting links. There should be 1 to 2 inches of sag in the unloaded span of the drive chain.

Insert a test shear pin (see **Shear Pin** section, page 23) in the shear pin hub device.

CAUTION: REVIEW THE INSTALLATION AND MAINTENANCE CHECKLIST, PAGE 24. MAKE SURE ALL PERSONNEL ARE CLEAR OF THE MACHINERY BEFORE JOGGING THE MOTOR OR OPERATING THE SCREEN.

Jog the screen for one complete revolution to assure the absence of any binding. If no binding occurs remove the test pin from the shear pin device and install the normal drive pin. If the traveling water screen does not operate smoothly during the test run, review the Installation and Maintenance Checklist and/or consult Screening Systems.

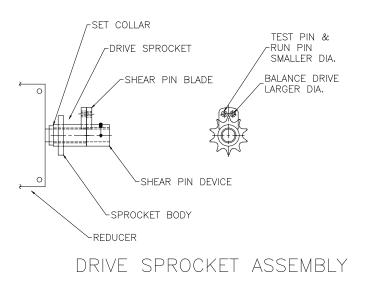


Figure 11

8.0 SHEAR PIN

The shear pin hub device is furnished with three (3) different types of shear pins, the test pin, the normal drive pin, and the balanced drive pin.

1. Test Pin (Color Coded Orange)

The test pin is to be used for testing and adjusting only. This pin is inserted in the smaller of the two holes in the shear pin hub device and is designed to shear at a proper load to prevent serious damage to the screen should anything unusual happen during testing or adjusting. It is important that the necked down section of the pin be lined up with the shearing faces of the driving and driven hubs of the shear pin device.

2. Normal Drive Pin (Color Coded White)

The normal drive pin is the smaller of the two solid pins provided. This pin is inserted in the smaller of the two holes in the shear pin hub device. This pin should be used for normal operations and is rated to shear at approximately 75% of the NEMA rated stalling torque of the motor.

3. Balanced Drive Pin (Color Coded Red)

The balanced drive pin is the larger of the two solid pins provided and is installed in the larger of the two holes in the shear pin hub device. This pin is designed to shear at slightly higher than the NEMA rated stalling torque of the motor and should only be used in emergencies when the normal drive pin has sheared due to excessive head loss.

The two different diameter holes in the shear pin device are off set to prevent insertion of the normal drive and the balanced drive shear pins at the same time.

BECAUSE THE BALANCED DRIVE SHEAR PIN IS SIZED AT THE MAXIMUM TORQUE THE MOTOR CAN WITHSTAND WITHOUT DAMAGE, A STEEL BOLT OR ANY OTHER METHOD OF BOLTING OUT THE SHEAR PIN HUB DEVICE SHOULD NOT BE USED, SINCE SERIOUS DAMAGE TO THE SCREEN PARTS COULD RESULT.

Note: Color coding identified is optional and only provided upon customers request. Pins can be identified by physical characteristics; if color coding is absent.

9.0 INSTALLATION & MAINTENANCE CHECKLIST

The following check points **MUST** be reviewed before initial Traveling Water Screen operation:

- 1. The chain tension must be equal in both strands of basket carrier chain. If your unit is equipped with a spring suspension system, follow the instructions on page 20 for proper chain adjustment.
- 2. Basket chain direction of travel should be confirmed. Check this manual and the General Arrangement drawing for the proper chain and basket installation.
- 3. Basket chain joints must be properly lubricated, unless maintenance free, non-lubricated chain has been supplied. Check the Traveling Water Screen Data Sheet for the type chain supplied with your screen.
- 4. The head shaft must be level within 1/32" per foot of length. If necessary, remove one basket to verify.
- 5. The head shaft and the boot section track bars must be plumb.
- 6. The head shaft take-up bearings must be lubricated.
- 7. The nozzle spray pattern must cover the entire basket width.
- 8. A minimum water pressure of 70 PSI must be available.
- 9. The reducer must be filled to the proper oil level.
- 10. The motor must rotate in the proper direction.
- 11. Check the motor coupling for proper alignment.
- 12. The drive chain must be properly tensioned and lubricated.
- 13. The drive and driven sprocket alignment should be checked.
- 14. If your screen is equipped with a shear pin device, a properly sized shear pin must be installed.
- 15. All set collars and set screws on the drive assembly should be tightened.
- 16. All shaft keys should be checked to ensure that they are properly positioned.

10.0 INSPECTION AND MAINTENANCE

10.1 General

Periodic inspection and maintenance of the screen is required to keep your Screening Systems International Traveling Water Screens operating at maximum efficiency.

A scheduled routine maintenance program is the best insurance against costly down time due to mechanical failure.

The installation portion of this manual should be referred to when attempting maintenance procedures.

10.2 Baskets

Periodically check basket attachment bolts to ensure that they are properly tightened. The loss of a basket may cause severe damage to the screen and other baskets.

The integrity of the wire mesh should be routinely checked. Damaged mesh should be replaced.

Wire mesh should be frequently checked for debris accumulations that may indicate inadequate operation of the spray system.

Missing wire mesh attachment bolts or clamp bars should be immediately replaced.

Baskets that have bent or damaged basket frame members should be replaced, and the cause of the damage should be investigated.

Basket frames should be periodically inspected for wear indicating improper chain tension or misalignment. If wear is evident, chain tension should be checked.

10.3 Basket Chain

When disconnecting chain, always make sure that both strands of chain are blocked or anchored so that they cannot roll free over the head sprockets. If replacement of one or more links is required, replacement of the link(s) on the opposite strand of chain is also required. Do not replace links on one chain and not the other.

Chain tension should be checked frequently.

Chain joints should be lubricated with heavy waterproof grease after every, one hundred hours of operation, or thirty days, whichever is sooner. In addition to lubricating the wearing surfaces, grease fills the cavities between the roller and bushing so that sand and other abrasive material cannot enter and cause premature wear.

Several links of the chain should be removed and inspected for wear on an annual basis.

10.4 Take-up Bearings

Head shaft take-up bearings should be lubricated with waterproof grease a minimum of monthly. While greasing it should be verified that housing is accepting grease. The bearings should always be greased prior to adjusting chain tension.

The head shaft should pass completely through the length of the bearing. It should be inspected regularly to ensure that the shaft has not shifted laterally.

10.5 Boot Section Guides

The boot section track bars should be inspected for wear on an annual basis.

10.6 Debris Trough

The debris trough should be periodically checked for debris accumulations and washed out, if necessary.

10.7 Spray System

The spray system should be inspected on a weekly basis. The nozzle orifices should be checked for plugging and cleaned if necessary.

Worn or damaged nozzles should be replaced immediately.

The spray pattern should be inspected to ensure that the entire width of the basket is being cleaned.

10.8 Head Sprockets

Head sprocket tooth inserts should be periodically checked for wear and replaced if necessary.

10.9 Drive Sprocket and Shear Pin Hub

The faces between the shear pin drive sprocket and the shear pin hub should be lubricated annually to prevent surfaces from rusting together.

10.10 Drive Chain

Drive chain tension should be checked on a weekly basis or whenever basket chain is adjusted. Tension can be adjusted by adding or subtracting links so that there is 1 to 2 inches of sag in the unloaded span.

WARNING: THE DRIVE CHAIN TENSION SHOULD NEVER BE ADJUSTED BY MOVING THE CAPSTANS.

10.11 Speed Reducer

See the reducer manufacturer's bulletin for maintenance and lubrication information included in this manual.

10.12 Transmission

See the transmission manufacturer's bulletin for maintenance and lubrication information included in this manual.

10.13 Coupling

See the coupling information for alignment and lubrication information.

10.14 Motor

See the motor manufacturer's bulletin for maintenance and lubrication information.

10.15 Take-up Screw

The threads of the take-up screws, and the take-up thrust bearings should be lubricated monthly, or whenever the chain tension is adjusted.

10.16 Splash Housings

Promptly repair or reseal splash housings whenever a leak is evident.

10.17 Surface Coating
Surface coating integrity must always be maintained. During normal operation and maintenance procedures, personnel should be checking for coating integrity, however, coating should be checked monthly as a minimum. If chips, rust, etc. are discovered then the coating should be repaired as per the Coating Repair Procedures on page 42. Also, any time the traveling water screen and/or its parts are handled, marring may occur, and the protective coating should be repaired as stated above.
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11.0 APPENDIX A: RECOMMENDED LUBRICATION SCHEDULE

Head shaft Bearing	
Lubricant: How frequently:	Texaco Starplex 2 or equal. 100 Hours for Bronze bushing, 150 Hours for Thordon bushing, 200 Hours for Roller bearings, or 30 Days minimum.
Method: Remarks:	Alemite fitting. While greasing, verify that housing is accepting grease.
Drive Sprocket	
Lubricant: How frequently: Method: Remarks:	Texaco Starplex 2 or equal. Monthly Alemite fitting. Frequency of operation of screen will determine how often greasing will be required.
Shear-Pin Hub Device	
(Blade Faces) Lubricant:	Texaco Starplex 2 or equal.
How frequently:	Semi-Annually.
Method:	Best way.
Remarks:	This is to prevent these surfaces from rusting together.
Speed Reducer	
Lubricant:	See manufacturers bulletin (APPENDIX H: REDUCER INFORMATION.)
How frequently:	See manufacturers bulletin (APPENDIX H: REDUCER INFORMATION.)
Method:	See manufacturers bulletin (APPENDIX H: REDUCER INFORMATION.)
Remarks:	The oil level in the speed reducer should always be checked before running.
Drive Chain	

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Lubricant:

Remarks:

How frequently: Method:

Open gear lubricant 100 Hours operation or 30 Days.

Chain should be cleaned yearly to prevent a buildup of the lubricant.

Spray on.

Idler Sprocket

Lubricant: Texaco Starplex 2 or equal. How frequently: 100 Hours operation or 30 Days.

Method: Alemite fitting

Remarks: None

Take-up Capstans

Lubricant: Texaco Starplex 2 or equal.

How frequently: Monthly

Method: Alemite fitting

Remarks: None

Water Screen Chain (If applicable)

Lubricant: Texaco Starplex 2 or equal.

How frequently: Every 100 operating hours for C.S round

parts,

150 Hours for 17-4PH SS round parts, 200 Hours for 17-4PH SS w/Nitronic 60,

or every 30 Days minimum.

Method: Alemite fitting.

Remarks: The primary function of the grease is to

fill the cavities between the pins, rollers, and bushing, so that sand, dirt, and other corrosive materials cannot fill these

spaces and cause premature wear.

12.0 APPENDIX B: TRAVELING WATER SCREEN DATA SHEET

NYOGS Riverfront Pump Station MODEL # 2PV-0439-FX-NFS SERIAL # SO-3804 A/B

MATERIALS:

Shafts: Head Carbon Steel, C-1018

Framework: ASTM A36 Carbon Steel – Epoxy Coated Chain & Rollers: C.S. Sidebars, 17-4 PHss Pins & Rollers,

Nitronic 60 Bushings, Non-Lubricated

SCREEN PANELS:

Number/Dimensions: 45/24" Pitch x 4'-0" B.W.

Materials:

Frame: Non-Metallic

Mesh: 14 Gauge, 304SS with 3/8" Sq. Openings

GEAR REDUCER:

Manufacturer: Nord Speed Ratio: 294.26:1

MOTOR:

Manufacturer: Nord

HP/RPM: 1 HP / 1725/420 RPM

SPROCKET RATIO: 56/8

SCREEN TRAVEL SPEED: 10.0 F.P.M.

SPRAY WASH REQUIREMENTS: 131 GPM – 100 PSI

124 GPM - 90 PSI 117 GPM - 80 PSI 110 GPM - 70 PSI **WEIGHT:**

Complete Assembly: Approx. 17,000 lbs. Screen Panel: 105 lbs. Each

Carrier Chain: 11.8 lbs. Per ft.

DIMENSIONS:

Depth of Well: 38'-0"
Width of Well: 5'-2"
Distance Between Shafts: 39'-0"

SCREEN MANUFACTURER: ATLAS – SSI / Rex

TYPE AND SIZE: TWS Thru Flow 4'-0" x 39'-0"

13.0 APPENDIX C: REPLACEMENT PARTS

<u>Item</u>	Req'd/ <u>Screen</u>	Part No.	Description
1.	45	A70B-0095	Basket Assy: 4'-0" FG w/Wire Mesh
2.	45	A73E-0078	Wire Mesh Panel, 14ga 304SS 3/8" Sq. Openings
3.	180	01-096/628	Basket Attachment Bolt, 5/8"-11UNC x 2 1/2", Hex Head Cap Screw, 316SS w/Flat Washer
4.	180	01-582	Basket Attachment Nut, 5/8"-11UNC, Nylock Jam Nut, 316 SS
5.	90 FT	34-282R	Carrier Chain, Right Hand, 24" Pitch, 3/8" C.S. Sidebars, 17-4 SS Pins & Rollers, Nitronic 60 Bushings Non-Lubricated
6.	90 FT	34-282L	Carrier Chain, Left Hand, 24" Pitch, 3/8" C.S. Sidebars, 17-4 SS Pins & Rollers, Nitronic 60 Bushings Non-Lubricated
7.	1	33-810	Motor/Reducer Assy: 1 HP, 294.26:1 Reduction
8.	1	A47N-0008	Drive Sprocket/SPHD, 8 Tooth, C.S.
9.	3	A47L-0025	Shear Pin, Balance
10.	3	A47L-0026	Shear Pin, Run
11.	3	A47L-0027	Shear Pin, Test
12.	1	A64A-0016	Driven Sprocket, 56 Tooth, C.S.
13.	1	35-125	Drive Chain, 2.563" Pitch, A-520, C.S.
14.	1	A61A-0684	Head shaft, 3 15/16" Dia., C1018
15.	2	33-215	Head shaft Key, 1" Gib Head Taper.

16.	2	A62A-0018	Head Sprocket, 6 Tooth, 48" Pitch Dia., C.S.
17.	12	A62F-0002	Tooth Inserts, Head Sprocket, 410 Heat Treated Stainless Steel, w/ 18-8 SS Hardware
18.	2	A44A-0120	Take-Up Housing, 3 15/16" Bore, C.S. w/Take-Up Roller Bearings
19.	2	A44E-0002	Take-Up Screw, 1 1/2" Dia., 303 SS
20.	2	A44F-0027	Capstan Assy., 1 1/2" Dia, C.S. w/Bronze Insert
21.	2	27-215	Capstan Thrust Bearing, 1 1/2" Dia., C.S.
22.	18	33-510	Spray Nozzle, Aluminum Bronze, 3/4" NPT
23.	1	A90A-0469	LH Front Splash Housing, Fiberglass
24.	1	A90A-0468	RH Front Splash Housing, Fiberglass
25.	1	Re-Use Existing	Rear Roll-Up Door
26.	1	A92A-0028	LH Chain Guard, Fiberglass
27.	1	A92A-0052	RH Chain Guard, Fiberglass

14.0 APPENDIX D: TRAVELING WATER SCREENS – TROUBLE SHOOTING

SYMPTOM – POSSIBLE <u>CAUSES</u> - <u>ACTIONS</u>

14.1 Carrier Chain and/or Basket Problems

1. SYMPTOM - Free play in rollers exceeds 1/8".

CAUSE - Normal chain wear.

ACTION - Replace carrier chain. Chain links must be replaced in pairs or all at one time

and not by parts. Don't replace roller parts (pin, roller, & bushing); this can affect the integrity of the chain and reduce the life of the carrier chain.

2. SYMPTOM – <u>Carrier chain excessively stretched (head shaft assembly adjusted near end of travel (6 to 8 inches above initial setting)).</u>

CAUSE - See above Symptom (#1).

ACTION - See above Symptom (#1).

3. SYMPTOM – <u>Basket interference when head loss increases.</u>

CAUSE - Improper carrier chain tension.

ACTION - Adjust carrier chain tension per assembly instructions – Section 7.11 - Chain

Tension Adjustment.

4. SYMPTOM - Carrier chain does not run smoothly (jumps, pops, and/or bangs).

CAUSE - Carrier chain riding up on head sprocket teeth inserts due to improper chain

tension or excessive wear.

ACTION - Stop screen immediately, inspect chain and sprockets and replace chain

and/or sprocket teeth if required. Inspect entire screen for any other areas of misalignment. You may need to increase the inspection and adjustment

schedule to prevent excessive wear.

5. SYMPTOM - Damaged mesh panels and/or basket frames.

- Large debris penetrated wire mesh or bent (damaged) basket rails.

ACTION

- Inspect and remove large debris (large tree limbs, etc.) from well. Replace (or at least repair) mesh. Replace bent and damaged basket frame parts. Repair coating when required.

6. SYMPTOM- Basket rails extremely distorted and wire mesh pulled out.

CAUSE

- This is due to a very large head loss. Automatic control systems with alarms and automatic shutdowns may not have operated correctly. Some examples are:

- a) Differential control failure.
- b) Motor failure.
- c) Wash water failure.
- d) Very high debris loading.

ACTION

- Repair or replace all damaged items. The entire traveling screen and the well should be inspected to locate the cause of the failure. After assessing the circumstances, if extreme debris loading is the cause, plan for special operations whenever the same conditions could occur again.

14.2 Component Wear Problems

7. SYMPTOM – Noisy head shaft bearings.

CAUSE - Worn or dry bearings.

ACTION - Lubricate appropriately. Inspect for wear as soon as possible and replace bronze bushing if required.

8. SYMPTOM – Head sprocket tooth insert worn out by more than $\frac{1}{4}$ ".

CAUSE - Normal wear.

- Replace all tooth inserts. (Note: New carrier chain life will be greatly reduced if chain is replaced and then run with worn tooth inserts).

9. SYMPTOM – Chain guide wear more than ¼".

CAUSE - Normal wear.

ACTION - Replace chain guides, post guides, and/or track bars.

10. SYMPTOM – Wear Points (chain guides, track bars, chain rollers, inserts, seals, etc.) wear out quickly.

CAUSE - High sand or abrasive silt content in water. This is difficult to predict at the

design stage.

ACTION - This problem is difficult to solve. Intake structure alteration, a permanent

sand collecting device in front of the screen pit, etc. may be required.

14.3 Spray Wash and Debris Problems

11. SYMPTOM – <u>Surfaces contacted by the spray wash show signs of abrasion from the spray wash.</u>

CAUSE - See above Symptom (#10).

ACTION - See above Symptom (#10).

12. SYMPTOM – <u>Large amounts of debris larger than the mesh opening are found</u> downstream of the traveling water screen.

CAUSE - a) Holes in wire mesh panel.

- b) Sealing strips damaged or worn out.

- c) Flow is bypassing traveling screen.

ACTION - a) Replace (or at least repair) damaged mesh panel.

- b) Replace damaged or worn sealing strips regularly.

- c) Inspect concrete structure and repair any alternate paths for unscreened water to enter the downstream (clean) side of the screen.

13. SYMPTOM - Basket wire mesh not cleaned off (vertically continuous strip from basket to basket).

CAUSE - Clogged spray nozzle(s).

ACTION - Flush spray header or remove and clean nozzles.

14. SYMPTOM - Wash water debris troughs get clogged and wash water does not flow.

CAUSE - This is generally due to a constriction in the debris trough.

ACTION - Inspect the debris trough to observe where the clogging begins. Remove this

constriction in the debris trough.

15. SYMPTOM - Debris trapped on debris deflector and interferes with rotation.

CAUSE

- a) If this happens only occasionally (i.e. heavy loading periods of the year), this is not abnormal.
- b) If occurrence is frequent, it indicates either inadequate spray wash or larger debris quantity than expected.

ACTION

- a) Hand clean as required.
- b) Check and adjust spray wash.

16. SYMPTOM - Spray wash suddenly stops cleaning properly.

CAUSE

- a) Clogged spray nozzle(s).
- b) Piping, fittings, valves, etc. restricted by marine growth, debris, etc.
- c) Leak in spray wash supply piping.
- d) Spray wash water valve incorrectly positioned (off).
- e) Wash water pump not operating properly.

ACTION

- a) Flush spray header or remove and clean nozzles.
- b) Clean out piping, etc.
- c) Repair leaks in piping.
- d) Check automatic control settings of the valve as well as the valve itself; then reset the control setting or manually open the valve.
 - e) Inspect, repair, or reset the pump and its controls.

14.4 Operational and Drive System Problems

17. SYMPTOM - Noisy motor/reducer unit.

CAUSE

- a) Low oil level.
- b) Damaged, worn, or faulty bearings, etc.

ACTION

- a) Fill oil to proper level.

- b) If qualified, disassemble motor/reducer and replace bearings, etc.

18. SYMPTOM - Screen doesn't run but has power to its control panel.

CAUSE - a) Incorrect control settings, damaged motor starters, blown fuses, etc.

- b) Permissive controls not allowing screen to run.
- c) Motor not running despite having power to it.

ACTION - a) Reset control setting or check and replace as required - motor starters, disconnects, phase monitors, fuses, etc.

- b) Clear permissive (low spray wash pressure, differential min., etc.).
- c) Check motor and repair as required.

19. SYMPTOM - Motor overload with little or no head loss.

CAUSE - Carrier chain tension is too tight.

ACTION - Adjust carrier chain tension per assembly instructions – Section 7.11 -Chain Tension Adjustment.

20. SYMPTOM - Motor stopped or overload tripped while in operation.

CAUSE - a) Motor failure.

- b) Extreme head loss.

ACTION - a) Inspect and repair motor as required.

- b) Check differential controls, etc. Reduce differential minimums if required.

If condition occurs repeatedly, call Screening Systems.

21. SYMPTOM - <u>Drive chain rides up, hops, or skips on drive or driven sprocket.</u>

CAUSE - a) Improper tensioning.

- b) Drive chain assembly worn out (sprocket teeth, chain, etc.).

ACTION - a) Adjust drive chain tension.

- b) Replace worn drive chain, drive sprocket, and/or driven sprocket as soon as possible.

22. SYMPTOM - <u>Screen suddenly stops through motor overload, without any large increase in head loss.</u>

CAUSE - a) Stoppage due to large debris jammed in boot section.

- b) Causes #1, 2, 3, 4, 20, 21 and especially #9 may be the problem.

ACTION - a) See Action #5.

- b) See Action #1, 2, 3, 4, 20, 21 and #9.

23. SYMPTOM - After not being rotated for a long period of time, screen does not start or does not run smoothly.

CAUSE - a) Carrier chain pins, rollers and/or bushings seizing up.

- b) Sealing strips sticking.

- c) Take-up (head shaft) bearings seizing up.

ACTION - a) Unjam chains with lubricant penetrant (apply by brush or sprayer) and run at low speed for one hour.

- b) Unstick seal strips with blunt blade; hose all seal strip & end plate contacts.

- c) Properly lubricate Take-up bearings.

After installation, the traveling screen should not be allowed to be submerged in stagnant water for long periods – see Storage of Material - Section 6.2 - Storage After Assembly and Erection.

24. SYMPTOM - Screen rotates; but not smoothly.

CAUSE - a) Debris trapped on debris deflector and interferes with rotation.

- b) Large debris in well.

- c) Head shaft bearing wear or unleveled shaft causes basket frames to rub against frame work (post guides or chain guides).

ACTION - a) See Action #15.

- b) See Action #5.

- c) Replace worn parts, check alignments, and adjust carrier chain tension per assembly instructions – Section 7.11 - Chain Tension Adjustment.

If there are any questions, call Screening Systems.

14.5 Miscellaneous Problems

25. SYMPTOM – Marine growth on channel walls and traveling screens.

CAUSE - Insufficient chlorinating and favorable waters.

ACTION - Clean regularly. Use anti-fouling paint but check with Screening Systems if it is compatible with the paint on the machines and the metals used. Some anti-fouling paints can induce corrosion.

26. SYMPTOM – Marine life (i.e. zebra mussels, etc.) on/in equipment downstream of screens.

CAUSE - Small and microscopic size muscles, etc. can pass through the screen

openings and attach (and grow) on unprotected downstream equipment.

ACTION - Smaller mesh when possible and/or more efficient chlorinating can help.

27. SYMPTOM – <u>Differential continues to increase (mesh doesn't get cleaned) in spite of normal spray wash.</u>

CAUSE - This unusual situation can have various causes and each call for a special

solution.

ACTION - Call Screening Systems for possible remedies.

28. SYMPTOM – <u>Debris (sea weed, leaves, jelly fish, etc.) are not fully cleaned by the spray wash.</u>

CAUSE - Spray wash system and screen automatic controls may need to be adjusted to

deal with special sizes and species.

ACTION - Call Screening Systems for possible remedies.

Call us for discussion of possible remedies.

To prevent an unexpected loss of screened water, it is usually better for the plant to shut the screen down for preventative maintenance and inspection rather than having an unexpected failure.

15.0 APPENDIX E: COATING INSPECTION & REPAIR

Coating Repair Procedures

For surface rust, wire brush with hand or power brush. It should not be necessary to brush the rust that has bled.

Spray "Chem-Prime" wherever rust is present. So that this process goes as fast as possible, it is recommended that this be applied with an air spray gun that has a "pick-up" tube that draws liquid from a 1-gallon jug. An alternative is a hand operated spray bottle that may be too slow. Person spraying must wear proper breathing apparatus if in the enclosed area of the screen frame.

Three to four hours after application rinse off Chem-Prime with fresh water.

If there are any questions, see instructions found on the Chem-Prime product label.

When surface is dry, it should be ready to apply coating. For coating procedures, please see recommendations provided by the protective paint manufacturer. The original coating may be reapplied if time allows or alternatively the International product Interzone 954 may be used when the part must be put in service (immersed) before the recommended cure time of the original type coating.

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Protective Coatings

Interzone® 954

Modified Epoxy

WORLD WIDE PRODUCT RANGE

PRODUCT
DESCRIPTION

A two component, low VOC, high solids, modified epoxy barrier coat designed to give long term protection in a single coat application. Will continue to cure when immersed in water and has excellent cathodic disbondment resistance.

INTENDED USES

Primarily designed for use in offshore splashzone maintenance, where its continued cure under immersed conditions make it ideal for coping with tidal movements and surges. May be applied to reoxidized and slightly damp surfaces. Interzone 954 has also found extensive use in a number of other corrosive environments including pulp and paper plants, chemical plants, jetties and sluice gates.

As part of a non-slip deck system in conjunction with appropriate aggregate.

PRACTICAL Information for Interzone 954 Color Range available via the Chromascan® system.

Gloss Level Gloss

Volume Solids 85% ± 3% (depends on color)

Typical Thickness 14-20 mils (350-500 microns) dry equivalent to 16.5-23.5 mils (412-588 microns) wet

Theoretical Coverage 68 sq.ft./US gallon at 20 mils d.f.t. and stated volume solids 1.70 m²/liter at 500 microns d.f.t. and stated volume solids

Practical Coverage Allow appropriate loss factors

Method of Application Airless spray, Air spray, Brush, Roller

Drying Time

Overcoating Interval with recommended topcoats Maximum Touch Dry Hard Dry Minimum Temperature 50 F (10 ℃) 14 hours 24 hours 24 hours 14 days 18 hours 59 T (15 ℃) 10 hours 18 hours 10 days 77 F (25 °C) 4 hours 8 hours 8 hours 7 days 90 minutes 104 ₹ (40 ℃) 3 hours 3 hours 5 days

REGULATORY DATA Flash Point

Base (Part A) 86 ∓ (30 ℃)

C/A (Part B) 111 F (44 °C) Mixed 91 F (33 C)

Product Weight

14.2-15.0 lb/gal (1.6-1.8 kg/l)

VOC

1.36 lb/gal (163 g/l)

USA - EPA Method 24

130 g/1

UK - PG6/23(92), Appendix 3

Page No. 1 of 4

Interzone® 954

Modified Epoxy

SURFACE PREPARATION

The performance of this product will depend upon the degree of surface preparation. The surface to be coated must be clean and free from contamination. Prior to paint application all surfaces should be assessed and treated in accordance with ISO 8504:1992.

Accumulated dirt and soluble salts must be removed. Dry bristle brushing will normally be adequate for accumulated dirt. Soluble salts should be removed by fresh water washing.

Oil or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

Abrasive Blast Cleaning

Abrasive blast clean to SSPC SP6 or Sa2½ (ISO 8501-1:1988). If oxidation has occurred between blasting and application of Interzone 954, the surface should be reblasted to the specified visual standard.

Surface defects revealed by the blast cleaning process, should be ground, filled, or treated in the appropriate manner.

A surface profile of 2-3 mils (50-75 microns) is recommended.

Ultra High Pressure Hydroblasting/Abrasive Wet Blasting

May be applied to surfaces prepared to SSPC-SP6 or Sa2½ (ISO 8501-1:1988) which have flash rusted to no worse than Grade HB2½M (refer to International Hydroblasting Standards). It is also possible to apply to damp surfaces in some circumstances. Further information is available from International Protective Coatings.

Aged Coatings

Interzone 954 is suitable for overcoating some sound intact aged coatings. To ensure compatibility, application and evaluation of a test patch is required.

APPLICATION

Mixing	Material is supplied in two containers as a unit. Always mix a complete unit in the proportions supplied. Once the unit has been mixed it must be used within the working pot life specified.				
	(2) Combine	e entire conten	ith a power agitato ts of Curing Agen horoughly with po	t (Part B) with	
Mix Ratio	4 parts : 1 part by	volume			
Working Pot Life	50 F (10 °C) 3 hours	59 ₹ (15 °C) 2 hours	77 ₹ (25 °C) 90 minutes	104 F (40 C) 45 minutes	
Airless Spray	Recommended Tip range 21-26 thou (0.53-0.66 mm) - Total output fluid pressure at spray tip not less than 2,500 p.s.i. (176 kg/cm²)		ire at spray tip not		
Air Spray (Pressure Pot)	Recommended.	Gun Air Ca Fluid		BC or JGA	
Brush	Suitable		Typically 4-6 mils (100-150 microns) can be achieved		
Roller	Suitable		Typically 3-5 mils (75-125 microns) can be achieved		
Thinner	International GT (or GTA220)		Do not thin more than allowed by local environmental legislation.		
Cleaner	International GT (or GTA822)	A415			
Work Stoppages	Thoroughly flush paint have been r	all equipment mixed they sho	uld not be resealed	l GTA415. Once units of d and it is advised that after	
Clean Up	prolonged stoppages work recommences with freshly mixed units. Clean all equipment immediately after use with International GTA415. It is good working practice to periodically flush out spray equipment during the course of the working day. Frequency of cleaning will depend upon amount sprayed, temperature and elapsed time, including any delays.				
				54 CATACOM C 48 6 C 5 (4 C C C C C C C C C C C C C C C C C C	

All surplus materials and empty containers should be disposed of in accordance with appropriate regional regulations/legislation.

Interzone® 954

Modified Epoxy

PRODUCT CHARACTERISTICS

Maximum film build in one coat is best attained by airless spray. When applying by methods other than airless spray, the required film build is unlikely to be achieved.

Application by air spray may require a multiple cross spray pattern to attain maximum film build. Low or high temperatures may require specific application techniques to achieve maximum film build.

When applying Interzone 954 by brush or roller, it may be necessary to apply multiple coats to achieve the total specified system dry film thickness.

Surface temperature must always be a minimum of 5 F (3 °C) above dew point.

Do not apply at steel temperatures below 41 F (5 °C).

When applying Interzone 954 in confined spaces ensure adequate ventilation.

In special cases where overcoating is required and curing has been at low temperatures and high relative humidities ensure no amine bloom is present prior to application of subsequent topcoats.

Condensation occurring during or immediately after application may result in a matte finish and an inferior film.

Premature exposure to ponding water will cause a color change, especially in dark colors.

In common with all epoxies, Interzone 954 will chalk and discolor on exterior exposure. However, these phenomena are not detrimental to anti-corrosive performance.

Where a durable cosmetic finish with good gloss and color retention is required, overcoat with recommended topcoats.

When applied between tides on jetties, piling etc., Interzone 954 can be immersed within 30 minutes. This will lead to whitening of dark colors but will not affect ultimate anti-corrosive performance.

For use in atmospheric service a minimum dry film thickness of $14~\mathrm{mils}$ ($350~\mathrm{microns}$) is required in one coat when applied direct to steel, for water immersion a minimum of $20~\mathrm{mils}$ ($500~\mathrm{microns}$) dry film thickness is recommended. In each case protection can be achieved in a single coat application by airless spray.

Interzone 954 can be used as a non-skid deck system by modification with addition of GMA132 (crushed flint) aggregate. Application should then be to a suitably primed surface. Typical thicknesses will be between 20-40 mils (500-1,000 microns). Preferred application is by a suitable large tip hopper gun (e.g. Sagola 429 or Air texture gun fitted with a 5-10 mm nozzle). Trowel or roller can be used for small areas. Alternatively, a broadcast method of application can be used. Consult International Protective Coatings for further details.

Compatible with sacrificial and impressed current cathodic protection systems.

Systems Compatibility

Interzone 954 will generally be applied to bare steel prepared by dry abrasive blasting, wet abrasive blasting or ultra high pressure hydroblasting.

The following primers are recommended for Interzone 954:

Intercure 200 Interzinc 42
Intergard 251 Intergard 269
Intergard 269 (for underwater use) Interzine 315
Interline 982 (for underwater use) Interzone 1000
Interzinc 12 (mist or tie coat recommended)*

Interzinc 12 (mist or tie coat recommended)*
Interzinc 22 (mist or tie coat recommended)*

The following topcoats are recommended for Interzone 954:

Interfine 629 HS Intergard 740 Intersleek 167 Interthane 990

For other suitable primers/topcoats, consult International Protective Coatings.

^{*} See relevant product data sheet for details.

Interzone® 954

Modified Epoxy

ADDITIONAL INFORMATION

Further information regarding industry standards, terms and abbreviations used in this data sheet can be found in the following sections of the International Protective Coatings data manual:

- · Definitions & Abbreviations
- Surface Preparation
- Paint Application
- · Theoretical & Practical Coverage

Individual copies of these information sections are available upon request.

SAFETY PRECAUTIONS

This product is intended for use only by professional applicators in industrial situations in accordance with the advice given on this sheet, the Material Safety Data Sheet and the container(s), and should not be used without reference to the Material Safety Data Sheet (MSDS) which International Protective Coatings has provided to its customers.

All work involving the application and use of this product should be performed in compliance with all relevant national, Health, Safety & Environmental standards and regulations.

In the event welding or flame cutting is performed on metal coated with this product, dust and fumes will be emitted which will require the use of appropriate personal protective equipment and adequate local exhaust ventilation.

If in doubt regarding the suitability of use of this product, consult International Protective Coatings for further advice.

P	 2 5		

5 gallon unit

20 liter unit

Interzone 954 Base Interzone 954 Curing Agent

4 gallons in 5 gallon container 1 gallon in a 1 gallon container

Interzone 954 Base

Interzone 954 Base Interzone 954 Curing Agent

16 liters in a 20 liter container 4 liters in a 5 liter container

For availability of other pack sizes contact International Protective Coatings

SHIPPING WEIGHT

U.N. Shipping No. 1263

5 gallon unit

56.6 lb (25.6 kg) Base (Part A) 11.4 lb (5.2 kg) Curing Agent (Part B)

20 liter unit

67 lb (30.4 kg) Base (Part A) 10.1 lb (4.6 kg) Curing Agent (Part B)

STORAGE

Shelf Life

12 months minimum at 77 \mathbb{F} (25 \mathbb{C}). Subject to re-inspection thereafter. Store in dry, shaded conditions away from sources of heat and ignition.

Disclaimer

The information given in this sheet is not intended to be exhaustive and any person using the product for any purpose other than that specifically recommended in this sheet without first obtaining written confirmation from us as to the suitability of the product for the intended purpose does so at his own risk. Any warranty, if given, or specific Terms & Conditions of Sale, are constained in International's Terms & Conditions of Sale, are constained in International's Terms & Conditions of Sale, are constained an international terms and written and advice we give about the product (whether in this sheet or otherwise) is correct we have no control over either the quality or condition of the substrate or the many factors affecting the use and application of the product. Therefore, unless we specifically agree in writing to do so, we do not accept any liability whatswever or howsover arising for the performance of the product of any loss or damage (when them death or presental injury resulting from our negligence) arising and of the use of the product. The information contained in this sheet is liabile to modification from time to time in the light of experience and our policy of continuous product development.

It is the user's responsibility to check that this sheet is current prior to using the product. Issue date: 1st June 1997

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International Protective Coatings

Worldwide Availability

Asia Region
3 Neythal Road
Jurong Town
Singapore 628570

Aust	ralasia I	tegic
115	Hyde Re	had
Yero	inga	
Brist	bane	
One	ensland	

Australia

Europe Region Mic 50 George Street PO London W1A 2BB Dar England Sau

Middle East Region PO Box 37 Dammam 31411 Saudt Arabia

North America Region 6001 Antoine Drive Houston Texas 77091 South America Region Rua Gomes de Carvalho, 1356, 15 *Andar, Vila Olimpia, São Paulo, S.P. CEP: 04547-005 Brazil

Tel: (44) 171 612 1400 Tel: (65) 663 3066 Fax: (44) 171 612 1561 Fax: (65) 266 5287

Tel: (61) 7 3892 8866 Fax: (61) 7 3892 4287 H&S (61) 1800 807 001 Tel: (44) 171 612 1410 Tel: (966) 3 842 8436 Tel: (1) 713 682 1711 Fax: (44) 171 612 1555 Fax: (966) 3 842 4361 Fax: (1) 713 684 1327

Tel: (011) 3044 0344 Fax: (011) 3044 0322

USA Toll Free Number (800) 589 1267 www.international-pc.com

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GI2029 11/97



CHEMPRIME is not a paint, it is a chemical rust solvent and converter. Coating life can be increased 100 to 300% by first treating steel with Chemprime to remove and convert rust to the inert iron-zince-strontium film which increases paint adhesion and reduces corrosion. Rust is converted into an iron-zincstrontium cellular glass-like film which is bonded to the parent metal.

CHEMPRIME IS USED TO DISSOLVE AND REMOVE RUST, SCALE, AND DEPOSITS FROM BOTH INTERNAL AND EXTERNAL SURFACES OF CHEMICAL AND MECHANICAL EQUIPMENT. CHEMPRIME HAS BEEN TESTED AND APPROVED FOR USE BY THE MILITARY-CONFORMS TO SEVERAL MIL. SPECIFICATIONS.

CORROSION

DESCALES

DEPOSITS

CAUTION...

Keep out of reach of children. Avoid excessive contact with skin. Use rubber gloves and goggles. If injested, administer large quantities of milk. See physician. If splashed in eyes, flush thoroughly with fresh water. See physician. Spray in well ventilated areas CONTAINS PHOSPHORIC ACID.

New, Sandblasted, or Galvanized Metal – Remove grease, and dirt with solvent and cleaners. Apply CHEMPRIME and allow to dry 3 to 8 hours, prime and paint.

Rusty Metal – Remove heavy loose rust by wire brush or scraper, apply CHEMPRIME. Allow to dry 3 to 8 hours, prime and paint.

Rust and Scale Remover – Soak rusty or scaly part in CHEMPRIME from 1 to 5 hours to dissolve oxides and leave a corrosion resistant film. Dry and oil. Coolers, pipe lines, pumps, radiators, tanks, etc., are filled with CHEMPRIME from 1 to 10 hours and then flushed with water.

Rust Stains & Painted Surfaces – Apply CHEMPRIME; allow 10 to 20 minutes for drying. Wash with fresh water.

WARNING: DO NOT USE ON METALLIC PAINT, WILL CAUSE STAINING.



REMOVES RUST

16.0 APPENDIX F: WARRANTY STATEMENT

CONDITIONS OF SALE

GENERAL-These terms and conditions shall apply to the sale as reflected on the invoice from Seller to Buyer and to any quotation by Seller issued to Buyer in connection herewith. The terms and conditions set forth on the invoice of which this is made a part shall supercede those terms and conditions set forth in any Buyers order.

PAYMENT- Sellers prices are F.O.B. Seller's plant, unless otherwise specified. Full payment of the purchase price and any other charges is due within thirty (30) days after invoice date.

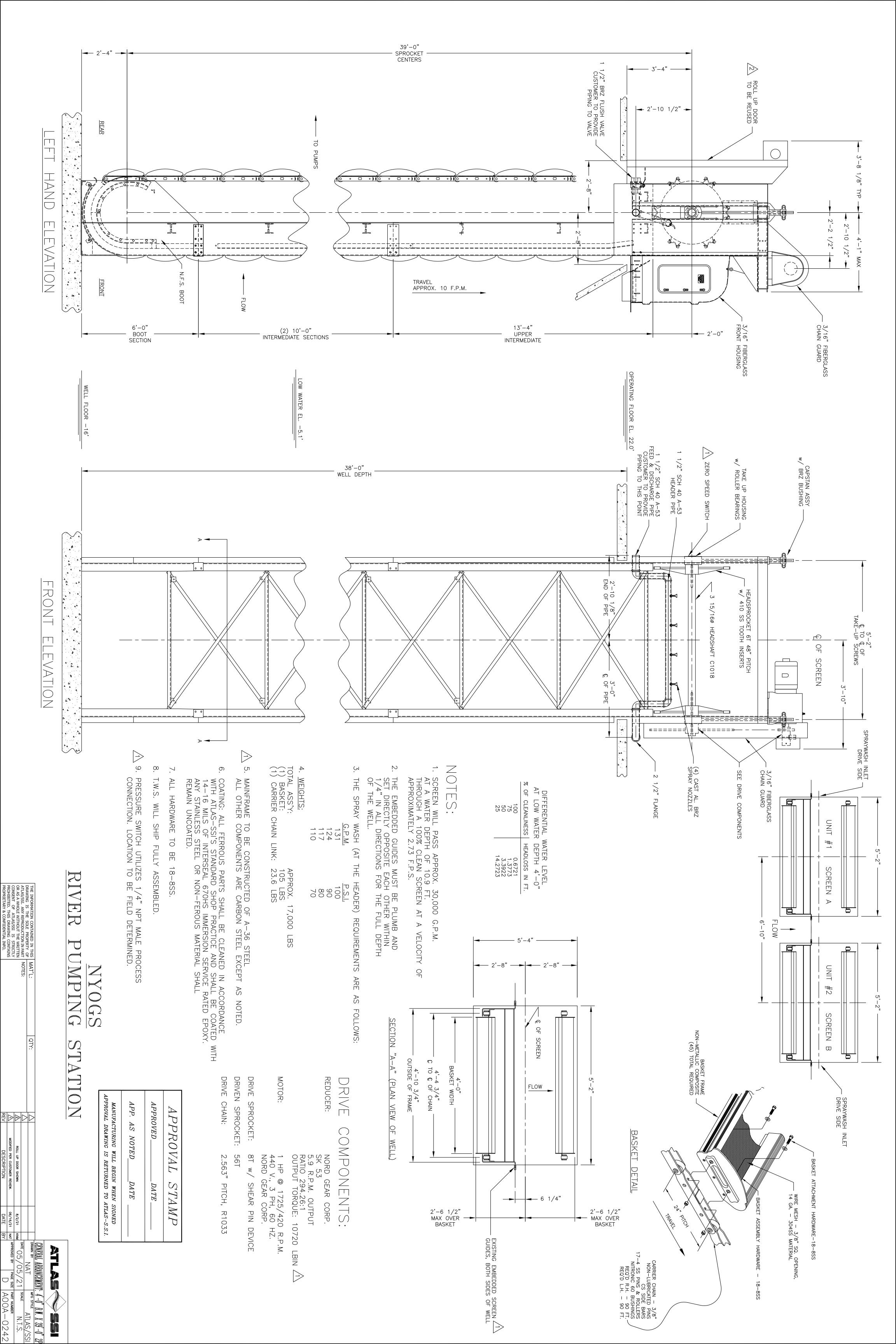
WARRANTY STATEMENT- Seller warrants, to the original purchaser only, each new and unused product of its manufacturing to be free from defects in material and workmanship for a period of 18 months after delivery to the original purchaser ("Warranty Period"). If, within the Warranty Period, Seller receives written notice promptly after the discovery of any defect in the material or workmanship in the equipment, Seller shall remedy each such defect, at Seller's option, either by (1) making available F.O.B. Seller's plant replacement part(s); (2) repairing any defective part(s); or (3) authorizing and accepting the return of the Product by the Buyer and refunding the purchase price. This Warranty is not applicable to commercial items used on Seller's assembled equipment which are manufactured by others except to the extent of the original equipment manufacturer's warranty to Seller which Seller is allowed to pass on. The Warranty does not cover repair or replacements required as a result of misuse, mishandling, improper storage, extreme weather, use other than under normal operating conditions, failure to install, test, use, maintain and repair the Product in accordance with Seller's instructions or other use inconsistent with Seller's instructions. remedies specified in this paragraph constitute Seller's sole obligation and liability and Buyer's exclusive remedy under this Warranty. EXCEPT FOR THE EXPRESS WARRANTIES SET FORTH HEREIN, THERE SHALL BE NO EXPRESS, IMPLIED OR STATUTORY WARRANTIES WITH RESPECT TO THIS SALE AND THE SERVICES TO BE PROVIDED HEREIN. INCLUDING WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, OF FITNESS FOR A PARTICULAR PURPOSE, OF SUITABILITY FOR ANY PARTICULAR PURPOSE, OR REGARDING THE RESULTS TO BE DERIVED FROM THE USE OF THE EQUIPMENT OR SERVICES.

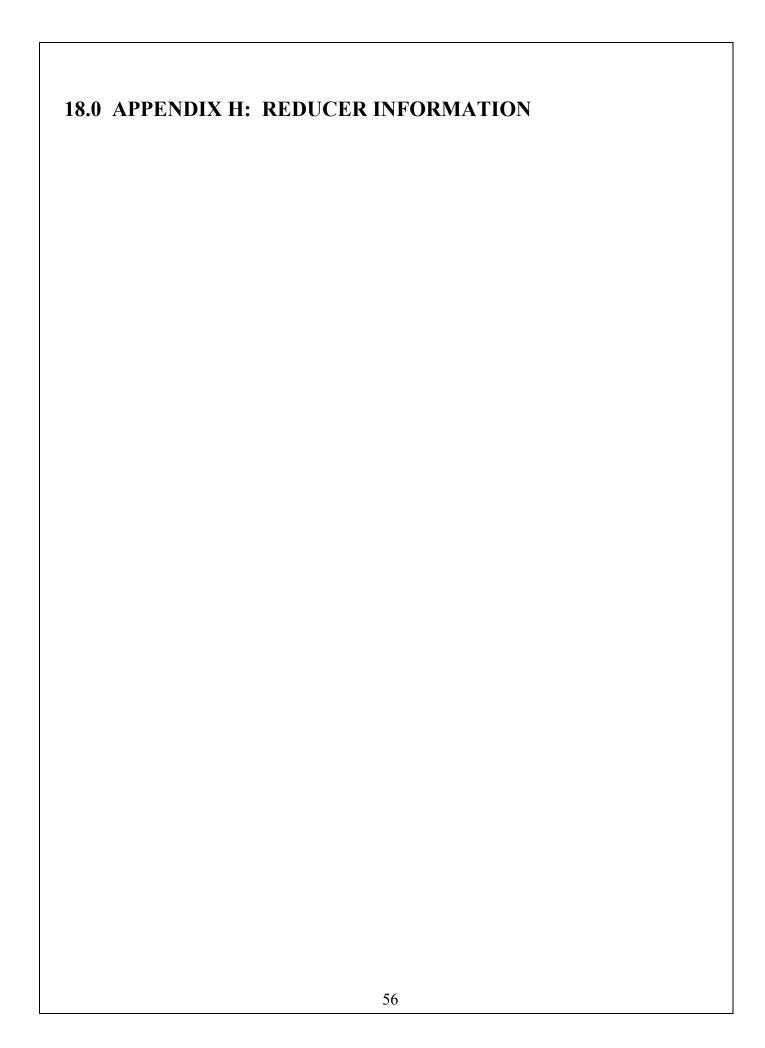
REMEDIES; LIMITATION OF LIABILITY - In no event shall Seller be liable to Buyer for any consequential, exemplary, punitive, or special damages, even if such party has been notified that an act or omission may give rise to such damages. Nothing herein shall limit any right of recovery under any policy of insurance or any bond.

APPLICABLE LAW – The purchase of equipment, merchandise, and/or services described on the invoice which is made a part hereof shall be deemed to have been executed and delivered in the State of Louisiana and it shall be governed by and construed in accordance with the laws of the State of Louisiana. This agreement and all attachments hereto, set forth the entire agreement and understanding between the parties and supersede all prior oral and written, and contemporaneous oral agreements and understandings related to the subject matter hereof. In the event of any ambiguity or

conflict or inconsistency between these conditions and any attachments hereto, the terms and conditions set forth herein shall prevail and control. No representation, promise, inducement or statement of intention not expressly set forth herein has been made by either Buyer or Seller. TAXES AND FREIGHT- Buyer shall be responsible for applicable local, state or federal taxes, and all freight bills required for this purpose unless otherwise specified. **DELIVERY-** Shipping or delivery date is approximate. Seller shall not be liable for delays in or failure of delivery due to strikes or labor troubles, supplier delays, accidents, fire, flood, acts of God, action by government authority, changes requested by Buyer, or cause beyond its control. shipment is delayed at the request of the Buyer, payment shall be made as though shipment had been made as specified.

17.0 APPENDIX G: DRAWINGS	Drawing #
General Arrangement for Traveling Water Screen	A00A-0242







GENERAL INSTRUCTIONS

- RETAIN FOR FUTURE USE

1. Importance of the operating instructions

These operating instructions are intended to provide general information and safety guidelines. It is the responsibility of the buyer, machine builder, installer and user of the NORD product to make sure that all the proper safetynotes and operating instructions have been reviewed and understood. If the contents of this instruction or any applicable operating instructions are not understood, please consult NORD.



WARNING



Electric motors, gearmotors, electrical brakes, variable frequency drives, and gear reducers contain potentially dangerous high-voltage, rotating-components and surfaces that may become hot during operation. All work involved in the transport, connection, commissioning and maintenance of any NORD product must be carried out by qualified and responsible technicians.

2. Inspect incoming freight

Before accepting shipment from the freight company, thoroughly inspect the NORD equipment for any shipping and handling damage. If any goods called for in the bill of lading or express receipt are damaged, or if the quantity is short, do not accept until the freight express agent makes an appropriate notation on your freight bill or express receipt. If any concealed loss or damage is discovered later, notify your freight carrier or express agent at once, and request a formal review of your claim.

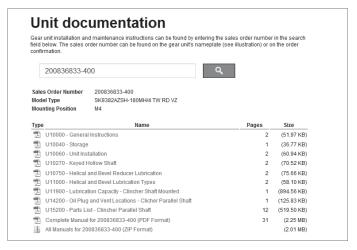
Claims for loss or damage in shipment must not be deducted from the NORD invoice, nor should payment of the NORD invoice be withheld awaiting adjustment of such claims, as the carrier guarantees safe delivery. NORD will try to assist in collecting claims for loss or damage during shipment; however, this willingness on our part does not remove the transportation company's responsibility in reimbursing you for collection of claims or replacement of material.

3. Obtaining detailed operating instructions

One can receive the detailed installation and maintenance instructions by entering a serial number (or NORD order number) at the appropriate location on the NORD web site.

- i. Record the serial number from your gearmotor, gear reducer, or motor nameplate, or record the serial number found on your order confirmation.
- Go to www.nord.com/docs to download the appropriate operating instructions.

EXAMPLE: www.nord.com/docs



4. Intended use

NORD is a supplier of electric motors, gearmotors, reducers, electromechanical brakes, mechanical variators, and electrical variable frequency drives that are intended for commercial installations on larger systems and machines.

\wedge

WARNING



NORD does not accept any liability for damage or injury caused by:

- Inappropriate use, operation or adaptation of the drive system.
- Unauthorized removal of housing covers, safety and inspection covers, guarding, etc.
- Unauthorized modifications to the drive system.
- Improper servicing or repair work on the drive system.
- Damage caused during shipment or transportation.
- Disregard of the important Safety Notes or Operating Instructions.

NORD Gear LimitedToll Free in Canada: 800.668.4378

NORD Gear CorporationToll Free in the United States: 888.314.6673

08.08.12 www.nord.com/docs



GENERAL INSTRUCTIONS

- RETAIN FOR FUTURE USE -

5. Notes concerning warranty and liability

All units are supplied according to the terms described in our standard "Conditions of Sale." The unit limited warranty is also defined in our "Conditions of Sale" and is located in the back of our product catalogs as well as the back of your order invoice.

All NORD Safety Notes and all related NORD Operating instructions shall be considered up-to-date at the time in which they were compiled by the buyer, machine builder, installer or user. NORD reserves the right to incorporate technical modifications and information updates to any safety/operating instructions that are within the scope of providing additional knowledge or clarification, communicating design changes, or product enhancements. Information updates may include any NORD product, or subsequent products purchased and supplied by NORD; No specific claims can be derived from the information or illustrations and descriptions contained in the safety notes or related operating instructions.



NORD assumes no liability for personal injury, equipment damage or malfunctions resulting from failure to comply with any installation safety notes. The applicable national, regional, and local work regulations and safety requirements must also be complied with. Failure to comply with any safety notes or regulations may result in serious injury, damage to property, or even death.

6. Checklist for installation and operation

- ✓ Verify that the purchased NORD product has been supplied with the expected accessories & options. Check the received goods and packing slip to make sure items are properly received.
- Make sure that you have all of the required Operating Instructions for your NORD electric motor, gearmotor, reducer, electromechanical brake, mechanical variable speed drives, or electrical variable frequency drives.
- Consult NORD if you feel you are missing any documentation or if you have questions.

08.08.12 www.nord.com/docs



SAFETY NOTES

RETAIN FOR FUTURE USE -



1. Safety & information symbols

All work including transportation, storage, installation, electrical connection, commissioning, servicing, maintenance and repair must be performed only by qualified specialists or personnel. It is recommended that repairs to NORD Products are carried out by the NORD Service Department. Instructions related to operational safety will be emphasized as shown.

Symbol	Meaning
À	General Warning or Hazard - Severe risk or danger of personal injury or death by working around dangerously high electrical voltage or moving machinery. Proper safety precautions must be taken.
STOP	Possible Harmful Situation - Care must be taken to avoid the possibility of damaging the drive unit, driven machine, or the environment.
	Important Note - Useful note or tip to help assure trouble-free operation.
23	Material Disposal Note - Important note concerning suggested material disposal.

2. Safety warnings

♠ GENERAL WARNINGS

- All work involved in the transport, connection, commissioning and maintenance of any NORD product must be carried out by qualified and responsible technicians. All applicable national, regional, and local work regulations and safety requirements must also be complied with. NORD assumes no liability for personal injury, accidental death, or equipment damage and malfunctions resulting from failure to comply with installation or operating instructions, safety notes, or any work regulations and laws!
- Gear unit installation and maintenance work may only be performed when no power is available to the prime mover or motor. Electric motors, electrical brakes, and variable frequency drives, contain potentially dangerous high-voltage. Prior to installation or maintenance, shut down the power at the circuit breaker or power switch. While working on the drive, make sure the power from the prime mover is isolated or secured on "lock-out" to prevent accidental start-up and to safeguard against injury!
- Surfaces of motors and gear units may become hot during operation or shortly after start-up. In some instances additional protection against accidental contact may be necessary. Use caution to avoid burns or serious injury!

3. Observe published performance range & nameplate data

STOP

HARMFUL SITUATION



Observe the data on all reducer nameplates and verify published ratings for the NORD item/s in question. Do not operate any NORD equipment outside the published performance range. Failure to comply may result in damage to the drive unit, driven machine, or the environment.

U.S. Nameplate



- Model/Type
- 2 Serial Number
- **3** Gear Ratio
- Service Factor
- **5** Torque Rating
- **6** Output Speed RPM
- Mounting Position

European Nameplate



- Model/Type
- Serial Number
- **3** Gear Ratio
- Speed

4. Transportation and handling

Make sure that all eyebolts and lifting lugs are tight and lift only at designed points. Protect the mounting surface from possible damage during transportation.

\wedge

WARNING



Do not attach other machinery or loads to the NORD assembly, since the supplied lifting bolts are not designed for this purpose.

If the gearmotor or assembly is equipped with two suspension eye bolts, then both locations should be used for transportation and placement of the unit; in this case the tension force of the slings must not exceed a 45° angle.

In some instances it may be appropriate to use additional lifting straps or slings in order to assure safe transportation of the assembly. Always use sufficiently rated handling equipment and ensure that adequate safety measures are taken to protect personnel from injury during transportation. Once the NORD assembly is properly installed, remove the transportation fixtures.

NORD Gear LimitedToll Free in Canada: 800.668.4378

NORD Gear Corporation
Toll Free in the United States: 888.314.6673

06.09.09 www.nord.com/docs



SAFETY NOTES

RETAIN FOR FUTURE USE -



7. DISPOSAL



Properly dispose of all used gear units and internal parts in accordance with all local regulations. In particular, all lubricants must be properly collected and disposed.

For confirmation of specific materials used in a specific reducer or gearmotor assembly, please consult NORD with the appropriate unit identification or serial number.

Components	Material
Gear wheels, shafts, rolling bearings, parallel keys, snap rings, spacers, shims, etc.	Steel
Gear housing and housing components	Cast iron or Aluminum (depending on type and size)
Worm gears	Bronze alloy
Radial seals, sealing caps, and rubber components	Elastomers with some steel
Coupling components	Plastic or Elastomer with Steel
Housing gaskets and flat oil seals	Asbestos-free sealing or gasket material (various types used)
Gear Oil	Mineral, SHC-Synthetic or PG-Synthetic (can vary)

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STORAGE & COMMISSIONING

- RETAIN FOR FUTURE USE -

1. Storage

1

IMPORTANT NOTE



For storage periods longer than 9 months, or for storage in less than desirable conditions, please consult NORD for recommendations.

Storage for up to 9 months is possible, so long as the following conditions are observed:

- Store the gear unit in its actual mounting position in accordance with the specified oil fill-level, in a clean and dry temperature controlled area. Avoid temperature fluctuations within the range of 0°C and 40°C (32°F to 104°F) and avoid relative humidity conditions in excess of 60%
- Protect all exposed or unpainted shaft and flange surfaces with an anti-corrosion agent or grease.
- Store in a location free from shock and vibration, to avoid false brinelling of bearing elements and raceways.
- Whenever possible, rotate the shafts periodically, by hand if necessary, to help prevent brinelling (bearing damage) and to help keep the shaft seals pliable.
- Avoid direct exposure to the sun or UV light and aggressive or corrosive materials in the environment (ozone, gases, solvents, acids, caustic solutions, salts, radioactivity, etc.

2. Commissioning

Prior to gear unit start-up, complete the following:

 Check the lubricant and be sure the gear unit is filled with the proper oil type, to the proper level, as determined by the mounting position.



IMPORTANT NOTE



Some smaller gear units are supplied as maintenance free/lubricated for life gear units. Oil level may not be checked on some of these units.

- Check the condition of all shaft seals and all assembled flange gasket areas. If any change is detected in the shape, color, hardness or permeability, or if any leaks are detected, the corresponding shaft seals and/or gaskets must be replaced.
- Remove all anti-corrosive metal protectant from otherwise bare metal surfaces. Follow product manufacturers directions and warnings during surface protection removal.
- Check the resistance of all motor and brake windings to verify the integrity of the winding insulation and inspect all terminal box openings and wire connection areas to verify that all components are dry and free of corrosion.

3. Long-Term Storage

By taking special precautions, problems such as seal leakage and reducer failure due to the lack of lubrication, improper lubrication quantity, or contamination can be avoided. The following precautions will protect gear reducers during periods of extended storage:

- Store the gear unit in its actual mounting position in accordance with the specified oil fill-level, in a clean and dry temperature controlled area. Avoid temperature fluctuations within the range of 0°C and 40°C (32°F to 104°F) and avoid relative humidity conditions in excess of 60%.
- Fill the reducer full with oil that is compatible with the product normally used or recommended during service.
- Apply grease to all unpainted or unprotected shafts, bores, keyways, flange surfaces, tapped holes, and to the exterior of all oil seals.
- Store in a location free from shock and vibration, to avoid false brinelling of bearing elements and raceways.
- Once every few months rotate the input shaft approximately 10-20 revolutions to redistribute the weight of gears and shafts and to prevent brinnelling of the bearings and drying of the seal track.
- Avoid direct exposure to the sun or UV light and aggressive or corrosive materials in the environment (ozone, gases, solvents, acids, caustic solutions, salts, radioactivity, etc.)

4. Commissioning After Long-Term Storage

- Remove all anti-corrosive metal protectant from otherwise bare metal surfaces. Follow product manufacturers directions and warnings during surface protection removal.
- Drain the reducer and refill it with the proper type and amount of lubricant.
- Observe start-up and initial operation to make sure there are no seal or gasket leaks, or unusual sounds, vibration or heat rise during operation.
- Check the resistance of all motor and brake windings to verify the integrity of the winding insulation and inspect all terminal box openings and wire connection areas to verify that all components are dry and free of corrosion.

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1. Installation site

UNIT INSTALLATION

- RETAIN FOR FUTURE USE -

Drives must be properly installed if they are to produce the rated torque. Improper installation may lead to oil leaks, reduced life, or even catastrophic failure. NORD gear drives and motors are intended to be installed at a suitable mounting site under the following conditions:

- Unimpeded airflow to and around the units.
- Accessibility to oil drain, level and breather plugs.
- On brakemotors, allow adequate space for removing the fan guard and replacing and adjusting the brake.
- Mounting surfaces must be flat, torsionally rigid, and dampened against vibration.
- Unless special measures are taken, the immediate vicinity around the gear drive or motor should not be exposed to any aggressive or corrosive substances, contaminated air, ozone, gases, solvents, acids, alkalis, salts, radioactivity, etc.

2. Mounting position

Reducer mounting position charts illustrate the standard mounting positions for horizontal and vertical mounting. All gear units are assembled with the oil fill-level, oil-drain and vent plugs installed in their proper locations, according to the customer-specified mounting position. For mounting orientations other than shown consult NORD Gear.



HARMFUL SITUATION



The gear reducer may not receive proper lubrication if the unit is not mounted in the position for which it is designed. Observe the mounting position designated on the reducer nameplate, or specified in the order acknowledgement. Consult NORD prior to changing mounting position in the field. While it is often possible to simply relocate the oil fill-level and vent locations, and adjust the oil fill amount, in some cases, different mounting positions may lend themselves to different internal construction features.

3. Reducer mounting

- The support foundation must be straight, level and flat. Whether the gear unit is foot-mounted or flange-mounted, NORD recommends that the straightness and flatness of the customer-supplied support foundation follow Table 1.
- The gear unit must be properly aligned with the driven shaft of the machine in order to prevent additional stress or load forces from being imposed upon the gear unit.
- To facilitate oil drainage it may be desirable to elevate the gear box foundation above the surrounding support structure.
- All bolting surfaces must be clean and free from contamination and corrosion.

Table 1: Recommended Straightness and Flatness of Customer-Supplied Support Foundation

Above (in)	To & Including (in)	General Tolerance on Straigtness & Flatness ISO 2768-2, Tolerance Class K
0.00	0.39	+/- 0.002 in
0.39	1.18	+/- 0.004 in
1.18	3.9	+/- 0.008 in
3.9	11.8	+/- 0.016 in
11.8	39	+/- 0.024 in
39	118	+/- 0.031 in

Above (mm)	To & Including (mm)	General Tolerance on Straigtness & Flatness ISO 2768-2, Tolerance Class K
0	10	+/- 0.05 mm
10	30	+/- 0.1 mm
30	100	+/- 0.2 mm
100	300	+/- 0.4 mm
300	1000	+/- 0.6 mm
1000	3000	+/- 0.8 mm

Straightness: Based upon the length of the corresponding line.

Flatness: Based upon the longer lateral surface or the diameter of the circular surface.



HARMFUL SITUATION



The responsibility for the design and construction of the support foundation is with the user. The foundation must be adequate to withstand normal operating loads and possible overloads while maintaining alignment to attached system components under such loads. *Motors and drive components mounted on prefabricated base plates can become misaligned during shipment. Always check alignment after installation.*

4. Steel foundation

An engineered structural steel foundation should be designed to provide adequate rigidity and prevent loads from distorting the housing or causing misalignment of internal gears and shafts. When foot-mounting the gear reducer, a base plate or sole plate with suitable thickness (generally equal or greater than the thickness of the drive feet) should be securely bolted to steel supports and extend under the entire gear drive assembly. When flange-mounting the gear unit, the bulk head plate must be engineered to minimize buckling distortions and support the cantilevered weight of the gear unit or gear motor.



HARMFUL SITUATION



Do not weld on the gear unit or use the gear unit as an earth or ground connection for any welding procedure as this may cause permanent damage to the bearings and gears.

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UNIT INSTALLATION

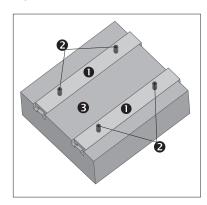


- RETAIN FOR FUTURE USE -

5. Concrete foundation

If a concrete foundation is used, allow the concrete to set firmly before bolting down the gear drive. Grout structural steel mounting pads and bolts of sufficient size into the concrete, to adequately distribute the load stress onto the concrete foundation.

Figure 1: Concrete Foundation



- Grouted Structural Steel Mounting Pads
- 2 Mounting Bolts
- **3** Concrete Foundation

6. Bolt connections for footed & flange mounted units

NORD footed reducers and flange-mount reducers (with B5 flange) have clearance designed into the mounting holes to allow for some minor adjustments in alignment. Bolt size, strength and quantity should be verified to insure proper torque reaction capacity whatever the mounting arrangement. Tightening torque for gear reducer mounting bolts, and recommended fastener grades, are provided in Table 2.

Table 2A: Tightening Torque for Inch Reducer Mounting Bolts

Thread Size								
		SAE 5 / I A449	Grade SAE 8					
(in)	(lb-ft)	(Nm)	(lb-ft)	(Nm)				
1/4-20	7.1	9.6	10.0	13.6				
5/16-18	16	21	22	30				
3/8-16	28	37	39	53				
1/2-13	69	93 98		132				
5/8-11	138	188	195	264				
3/4-10	247	334	348	472				
7/8-9	396	537	558	757				
1-8	592	802	833	1,130				
1 1/8-7	-	-	1,233	1,672				
1 1/4-7	-	-	1,717	2,327				
1 3/8-6	-	-	2,267	3,073				
1 1/2-6	-	-	2,983	4,045				
1 3/4-5	-	-	4,458	6,045				

- Calculated tightening torques are based a conventional 60°, clean and dry (un-lubricated) thread, with threadfriction and head-friction equal to 0.15.
- When using inch-fasteners, NORD recommends a minimum Grade SAE 5 (ASTM A-449) for sizes up to 1-8 UNC, and Grade SAE 8 for all larger sizes.

Table 2B: Tightening Torque for Metric Reducer Mounting Bolts

Above							
	ISO Grade 8.8		ISO Gra	ISO Grade 10.9		ISO Grade 12.9	
(mm)	(lb-ft)	(Nm)	(lb-ft)	(lb-ft) (Nm)		(Nm)	
M4	2.4	3.2	3.5	4.7	4.1	5.5	
M5	4.7	6.4	6.9	9.3	8.1	11	
M6	8	11	12	16	14	19	
M8	20	27	29	39	34	46	
M10	39	53	58	78	67	91	
M12	68	92	100	135	110	155	
M14	107	145	159	215	180	250	
M16	170	230	247	335	290	390	
M18	240	325	343	465	400	540	
M20	339	460	487	660	570	770	
M22	465	630	664	900	770	1,050	
M24	583	790	848	1,150	960	1,300	
M27	848	1,150	1,217	1,650	1,440	1,950	
M30	1,180	1,600	1,660	2,250	1,950	2,650	
M36	2,050	2,780	2,884	3,910	3,470	4,710	
M42	3,297	4,470	4,639	6,290	5,560	7,540	
M48	4,940	6,700	7,010	9,500	8,260	11,200	

- Calculated tightening torques are based on a conventional 60°, clean and dry (un-lubricated) thread, with threadfriction and head-friction equal to 0.15.
- When using metric-fasteners, NORD recommends a minimum ISO Grade 8.8 bolt.

7. Mounting the prime mover

When the motor is not flange mounted or integrally mounted to the gearbox, it is important to properly secure and align the gear drive with respect to the driven machine before attempting to align the prime mover or motor.

- A. After the main gear drive is properly aligned and bolted in place, align the prime mover with respect to the reducer input shaft.
- B. Use shims under the feet of the prime mover as needed, and secure in place with the proper mounting bolts. Dowel pins may be field-installed to help prevent misalignment and ensure proper realignment if removed for service.



IMPORTANT NOTE



When using a high speed coupling connection between the prime mover and the reducer, check alignment per the coupling manufacturers recommendations. If the coupling is misaligned, the reducer alignment or shimming is incorrect. Re-align the gear reducer and re-check the high-speed coupling alignment before realigning the motor.

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HELICAL & BEVEL REDUCER LUBRICATION



RETAIN FOR FUTURE USE -

1. Importance of proper lubrication

Proper gearbox lubrication is essential in order to reduce friction, heat, and component wear. Lubricants reduce heat and wear by inserting a protective "fluid boundary" between mating parts and preventing direct metal to metal contact. Lubricants also help prevent corrosion and oxidation, minimize foam, improve heat transfer, optimize reducer efficiency, absorb shock loads and reduce noise.

Most NORD reducers are shipped from the factory with a pre-determined oil fill level in accordance to the specified reducer size and mounting position.

2. Standard oil type

The following tables indicate the standard oil fill type used. Please see user manual U11000 for more specific information and for optional helical and bevel gear lubricants:

Serviceable Gear Units							
Helical In-line							
Clincher Parallel-Shaft							
Right-Angle Bevel	Standard Oil Fill:						
NORDBLOC® Series In-line	ISO VG 220, Mineral Oil						
NORDBLOC®.1 Series In-line							
Standard Series In-line							



IMPORTANT NOTE



For shipping purposes, the following large Clincher™ gear units are supplied without oil:

Clincher™ Sizes SK11282, SK11382 and SK12382

Maintenance-free / Lubricated For Life Gear Units						
Clincher™ sizes SK0182NB, SK0282NB & SK1382NB	Standard Oil Fill:					
NORDBLOC® Sizes SK172, SK272, SK371F, SK372, SK373, SK320	ISO VG220 SHC/PAO Synthetic Oil					



IMPORTANT NOTE



Maintenance-free units are supplied as sealed units with no vent-plug. Consult NORD prior to ordering if interested in ordering any of the above sizes as serviceable gear units.



IMPORTANT NOTE



Consult the sticker adjacent to the fill plug to determine the type of lubricant installed at the factory. Some units have special lubricants designed to operate in certain environments or intended to extend the service life or service temperature range of the lubricant. If in doubt about which lubricant is needed for a certain application, please contact NORD Gear.

3. Lubrication replacement

If the gear unit is filled with mineral oil, the lubricant should be replaced at least after every 10,000 operating hours or after every two years. If the gear unit is filled with synthetic oil, the lubricant should be replaced at least after every 20,000 operating hours or after every four years. Often gear reducers are exposed to extreme ambient conditions, hostile environments, wet conditions, or dirty and dusty operating areas. Especially in these situations, it is important to establish a condition-based oil service interval.

4. Oil viscosity

Viscosity, or the oil's resistance to shear under load, is often considered the single most important property of any gear oil.

- Often one will consider making a viscosity correction to the oil to improve the performance when operating the gear unit at low temperature or high temperature.
- In cases of extreme load conditions, gear pairs and antifriction bearings may be more susceptible to sliding or scuffing wear. In these operating conditions, it may also be beneficial to consider an increased lubrication viscosity and/or a lubrication with improved antiwear additive packages.



IMPORTANT NOTE



The user should consult with their primary lubrication supplier before considering changes in oil type or viscosity.

5. Maximum oil sump temperature limit

To prevent reducer overheating, the reducer's maximum oil sump temperature limit must not be exceeded for prolonged periods of operation (up to 3 hours continuous operation depending upon reducer size).

Oil Type	Maximum Oil Temperature Limit					
	NORD AGMA 9005-D94					
Mineral	80-85°C (176-185°F)	95°C (203°F)				
Synthetic	105°C (220°F)	107°C (225°F)				



IMPORTANT NOTE



Use caution when specifying gear reducers for high temperature service. If there is concern about exceeding the allowable safe operating temperatures, please consult NORD to discuss alternatives.

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HELICAL & BEVEL REDUCER LUBRICATION



RETAIN FOR FUTURE USE -

U10750 - 2 of 2

6. The importance of routine oil analysis

Routine oil analysis, sound lubrication practices, and good tracking of oil performance trends will help establish proper lubrication maintenance and change-out intervals. To maximize equipment reliability, NORD Gear generally recommends a condition-based lubrication maintenance program. One may take exceptions to this general recommendation on sealed-for-life or maintenance-free gear units or smaller and less costly gear units. In these instances, the replacement cost of the gear unit is often small compared to the costs associated with this type of oil analysis program.



HARMFUL SITUATION



NORD suggests replacing the gear oil if oil analysis indicates any of the following:

- Viscosity has changed by approximately 10% or more.
- Debris particles (silicon, dust, dirt or sand) exceed 25 ppm.
- Iron content exceeds 150-200 ppm.
- Water content is greater than 0.05% (500 ppm).
- The total acid number (TAN) tests indicate a significant level of oxidative break-down of the oil, and a critical reduction in performance; If the TAN number measured changes by more than 5% over the new oil, then an oil change would be recommended.

7. Mounting position and oil fill quantity

All NORD Gear reducers are shipped from the factory with a pre-determined oil fill level in accordance to the specified reducer size and mounting position. For additional information, please see the seperate mounting position diagrams and the corresponding oil fill quantity tables for the specified gear unit.

The gearbox nametag will indicate the mounting position that was provided. For mounting orientations other than shown in the mounting position charts, please consult NORD Gear.



HARMFUL SITUATION



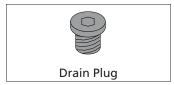
Actual oil volume can vary slightly depending upon the gear case size, mounting and ratio. Prior to commissioning the reducer, check the oil-fill level using the reducer's oil-level plug and drain or add additional oil as needed. The minimum acceptable oil level is 0.15 in (4mm) below the oil level hole.

8. Oil plug locations

All gear units are assembled with the oil fill-level, oil-drain and vent plugs installed in their proper locations, according to the specified mounting position. All standard plugs are metric and utilize sealing gaskets between the head of the plug and the reducer housing.

9. Drain and fill-level plugs

All reducer drain plugs are metric socket head cap screws. For easier identification, it is NORD's standard practice to provide a hex-head screw for the fill-level plug. For ease of draining the used oil from the gear reducer, use the socket head screw located at the lowest part of the gearbox.



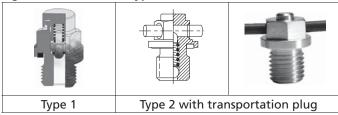


10. Vent plug locations

Reducer venting allows for air pressure differences that occur during operation, between the inner space of the reducer and the atmosphere, while ensuring leak-free operation. The AUTOVENT™ is standard for all vented gear units, unless otherwise noted.

AUTOVENT™ - The AUTOVENT™ helps prevent bearing and gear damage by behaving like a check valve to block the entry of foreign material (water, dust, corrosives, etc.). The breather opens at approximately 2-3 psi during operation and closes tightly as the gearbox cools. This option is perfect for humid conditions and wash-down environments, helping to maintain proper oil cleanliness, and reducing foaming and oxidation. NORD may choose to offer one of two style options as shown in Figure 1. The Type 2 AUTOVENT™ comes closed upon delivery with a transportation sealing plug (see Warning).

Figure 1 AUTOVENT™ Types

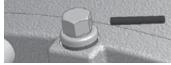


Open Vent - An optional open vent can be supplied by NORD. The open vent comes closed upon delivery with a transportation sealing plug (see Warning).



To prevent build-up of excessive pressure, sealed vents must be activated as shown prior to gear unit start up.





Sealed vent

Activated vent

Filtered Vent - NORD may offer an optional filtered vent, which allows gases to permeate, but does not allow dust and debris to pass through the vent.

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HELICAL & BEVEL REDUCER LUBRICATION TYPES



RETAIN FOR FUTURE USE -

ME II MIN I ON I OTOME

Lubrication Tables – Helical and Bevel Gear Units

Standard Oil Lubricants

ISO Viscosity	Oil Type	Oil Type Ambient Temperature Range M			
	MIN-EP	0 to 40°C (32 to 104°)	Mobilgear 600XP220	40	
VG220	PAO	-35 to 60°C (-31 to 140°F)	Mobil SHC630	♦ ❷	
	FG	-5 to 40°C (23 to 104°F)	Fuchs FM220	•	

Optional Oil Lubricants

ISO Viscosity	Oil Type	Oil Type Ambient Temperature Range		Notes
VG460	PAO	-35 to 80°C (-31 to 176°F)	Mobil SHC 634	-
VG460	FG-PAO	-35 to 80°C (-31 to 176°F)	Mobil SHC Cibus 460	-
VG220	FG-PAO	-35 to 60°C (-31 to 140°F)	Mobil SHC Cibus 220	-
VG150	PAO	-35 to 25°C (-31 to 77°F)	Mobil SHC629	-

Grease Options (applied to greased bearings and seal cavities)

	<u> </u>	<u>-</u>		
NLGI Grade	Grease Type/Thickener	Ambient Temperature Range	Manufacturer Brand/Type	Notes
	Standard (Li-Complex)	-30 to 60°C (-22 to 140°F)	Mobil Grease XHP222	40
NLGI 2	High Temp (Polyurea)	-40 to 80°C (-40 to 176°F)	Mobil / Polyrex EP 2	6 0
	Food-Grade (Polyurea)	-30 to 40°C (-22 to 104°F)	Mobil SHC Polyrex 222	•

- **♦** Stocked Lubricants
- Standard product on serviceable gear units
- 2 Standard product on maintenance free gear units

1

IMPORTANT NOTES



- The "Ambient Temperature" is intended to be an operation guideline based upon the typical properties of all the lubricant. The viscosity and other properties of the lubricant change based upon load, speed, ambient conditions, and reducer operating temperatures. The user should consult with their lubrication supplier & NORD gear before considering changes in oil type or viscosity.
- To prevent reducer overheating, observe the maximum operating oil temperature limits:

Mineral Oil: 80-85 °C (176 - 180 °F).

Synthetic Oil: 105 °C (225 °F).

- In the following instances, please consult NORD for specific recommendations:
 - √ Gear units will operate in high ambient temperature conditions exceeding 40 °C (104 °F).
 - √ Gear units will operate in cold ambient temperature conditions approaching 0 °C (32 °F) or lower.
 - $\sqrt{}$ Lower than an ISO VG100 viscosity oil is being considered for a cold-temperature service.
 - $\sqrt{}$ Fluid grease is required for lubricating the gear unit.
- Observe the general lubrication guidelines outlined in user manual U10750.

Oil Formulation Codes

MIN-EP - Mineral Oil with EP Additive

PAO-EP - Synthetic Polyalphaolefin Oil with EP Additive

PAO - Synthetic Polyalphaolefin Oil PG - Synthetic Polyglycol Oil

FG - Food-Grade Oil

FG-PAO - Food-Grade, Synthetic Poyalphaolefin Oil FG-PG - Food-Grade, Synthetic Polyglycol Oil

Lubrication Notes

- Avoid using (EP) gear oils in worm gears that contain sulfur-phosphorous chemistries, as these additives can react adversely with bronze worm gears and accelerate wear.
- Food grade lubricants must be in compliance with FDA 212 CFR 178.3570 and qualify as a NSF-H1 lubricant. Please consult with lubrication manufacturer for more information.
- When making a lubrication change, check with the lubrication supplier to assure compatibility and to obtain recommended cleaning or flushing procedures.
- Do not to mix different oils with different additive packages or different base oil formulation types. Polyglycol (PG) oils are not miscible with other oil types and should never be mixed with mineral oil or polyalphaolefin (PAO) synthetic oil.

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Lubrication

Ventilation

Most gear reducers (except for SK0182NB, SK0282NB and SK1382NB) are equipped with a vent which helps compensate for air pressure differences between the inner space of the gear unit and the atmosphere.

The spring-pressure vent (Autovent[™]) is commonly supplied and factory-installed. Normally open vents may also be supplied as an option; normally-open vents are closed upon delivery in order to prevent oil leakage during transport. When normally open vents are supplied, the sealing plugs must be removed prior to commissioning the reducer.

Prior to reducer start-up, it is important to check the maintenance manual to verify that the vent is properly located with respect to mounting position.

Mounting Position

The reducer mounting position determines the approximate oil fill-level and the appropriate vent location. In some cases mounting position may dictate possible variation in final reducer assembly.

If considering any mounting positions that are not shown as catalog-standard options, it is critical that the customer consult with NORD prior to ordering.

Oil Fill Quantities

Oil fill quantities shown in the catalog or maintenance instructions are approximate amounts. The actual oil volume varies depending upon the gear ratio. Prior to commissioning the reducer, the oil-fill level should be checked using the reducer's oil-level plug. It may be necessary to drain excess oil or add additional oil.

Unless otherwise specified, NORD supplies most all gear units factory-filled with the standard lubrication type per the specified mounting position. Gear units SK10282, SK10382, SK11282, SK11382, and SK12382 are supplied without oil.

Lubrication Replacement

If the gear unit is filled with mineral oil, the lubricant should be replaced at least after every 10,000 operating hours or after every two years. If the gear unit is filled with synthetic oil, the lubricant should be replaced at least after every 20,000 operating hours or after every four years.

Often gear reducers are exposed to extreme ambient conditions, hostile environments, wet conditions, or dirty and dusty operating areas. Especially in these situations, it is important to change the reducer lubricant more often that what is suggested as a typical guideline.

The Importance of Routine Oil Analysis

Routine oil analysis, sound lubrication practices, and good tracking of oil performance trends as related to specific equipment, will help establish proper lubrication maintenance and change-out intervals.

To maximize equipment reliability, NORD Gear generally recommends a condition-based lubrication maintenance program. One may take exceptions to this general recommendation on sealed-for-life or maintenance-free gear units or smaller and less costly gear units. In these instances, the replacement cost of the gear unit is often small compared to the costs associated with this type of oil analysis program.

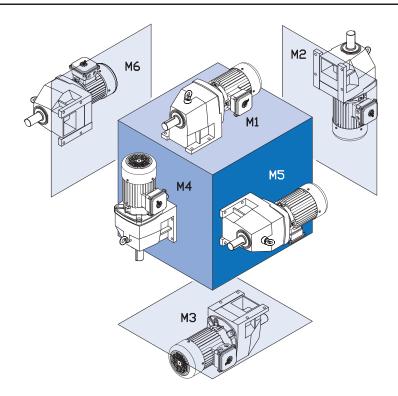
NORD suggests replacing the gear oil if oil analysis indicates any of the following:

- Viscosity has changed by approximately 10% or more.
- Debris particles (silicon, dust, dirt or sand) exceed 25 ppm.
- Iron content exceeds 150-200 ppm.
- Water content is greater than 0.05% (500 ppm).
- Acid number tests indicate a significant level of oxidative break-down of the oil and a critical reduction in performance.

In-line Foot Mount Positions & Oil Fill Quantities







Mounting Position	M	11	M	12	M	13	IV	14	IV	15	M	16
	Quarts	Liters										
SK02	0.16	0.15	0.63	0.60	0.74	0.70	0.63	0.60	0.42	0.40	0.42	0.40
SK03	0.32	0.30	1.06	1.00	0.85	0.80	0.95	0.90	0.63	0.60	0.63	0.60
SK11E	0.26	0.25	0.53	0.50	0.58	0.55	0.42	0.40	0.37	0.35	0.37	0.35
SK12	0.26	0.25	0.79	0.75	0.90	0.85	0.79	0.75	0.53	0.50	0.53	0.50
SK13	0.63	0.60	1.32	1.25	1.16	1.10	1.27	1.20	0.74	0.70	0.74	0.70
SK21E	0.63	0.60	1.27	1.20	1.27	1.20	1.06	1.00	1.06	1.00	1.06	1.00
SK22	0.53	0.50	1.90	1.80	2.11	2.00	1.90	1.80	1.43	1.35	1.43	1.35
SK23	1.37	1.30	2.54	2.40	2.43	2.30	2.48	2.35	1.69	1.60	1.69	1.60
SK31E	1.16	1.10	2.85	2.70	2.33	2.20	2.43	2.30	1.80	1.70	1.80	1.70
SK32	0.95	0.90	2.64	2.50	3.17	3.00	3.07	2.90	2.11	2.00	2.11	2.00
SK33N	1.69	1.60	3.07	2.90	3.38	3.20	3.91	3.70	2.43	2.30	2.43	2.30
SK41E	1.80	1.70	2.75	2.60	3.49	3.30	2.64	2.50	2.75	2.60	2.75	2.60
SK42	1.37	1.30	4.76	4.50	4.76	4.50	4.55	4.30	3.38	3.20	3.38	3.20
SK43	3.17	3.00	5.92	5.60	5.50	5.20	6.98	6.60	3.81	3.60	3.81	3.60
SK51E	2.33	2.20	4.65	4.40	4.97	4.70	4.23	4.00	3.59	3.40	3.59	3.40
SK52	2.64	2.50	7.40	7.00	7.19	6.80	7.19	6.80	5.39	5.10	5.39	5.10
SK53	4.76	4.50	9.20	8.70	8.14	7.70	9.20	8.70	6.34	6.00	6.34	6.00
SK62	6.87	6.50	15.9	15.0	13.7	13.0	16.9	16.0	15.9	15.0	15.9	15.0
SK63	13.7	13.0	15.3	14.5	15.3	14.5	16.9	16.0	13.7	13.0	13.7	13.0
SK72	10.6	10.0	24.3	23.0	19.0	18.0	27.5	26.0	24.3	23.0	24.3	23.0
SK73	21.7	20.5	21.1	20.0	23.8	22.5	28.5	27.0	21.1	20.0	21.1	20.0
SK82	14.8	14.0	37.0	35.0	28.5	27.0	46.5	44.0	33.8	32.0	33.8	32.0
SK83	31.7	30.0	32.8	31.0	35.9	34.0	39.1	37.0	34.9	33.0	34.9	33.0
SK92	26.4	25.0	77.1	73.0	49.7	47.0	80.3	76.0	55.0	52.0	55.0	52.0
SK93	56.0	53.0	74.0	70.0	62.4	59.0	76.1	72.0	51.8	49.0	51.8	49.0
SK102	38.1	36.0	83.5	79.0	69.8	66.0	107.8	102	75.1	71.0	75.1	71.0
SK103	78.2	74.0	75.1	71.0	78.2	74.0	102.5	97.0	70.8	67.0	70.8	67.0



HELICAL & BEVEL REDUCER LUBRICATION TYPES



- RETAIN FOR FUTURE USE -

Oil Cross-reference Chart

ISO Viscosity	Oil Type	Ambient Temperature Range	Mobil	Shell	Castrol	E UGHS	KLÖBER
	MIN-EP	0 to 25°C (32 to 77°F)	Mobilgear 600XP150	Omala 150	Alpha SP150	Renolin EP150	Klüberoil GEM 1-150N
	PAO-EP	-30 to 25 °C (-22 to 77 °F)	Mobilgear SHC150	Omala HD 150	Alphasyn EP150	Gearmaster SYN150/NA	Klübersynth EG 4-150
	PAO	-30 to 25°C (-22 to 77°F)	Mobil SHC629	Omala RL 150	Alphasyn T150	N/A	Klübersynth GEM 4-150N
VG150	PG	-25 to 25°C (-13 to 77°F)	Mobil Glygoyle 150	Tivela S150	Alphasyn PG150	Renolin PG150	Klübersynth GH 6-150
	FG	0 to 25°C (32 to 77°F)	Mobil DTE FM 150	N/A	N/A	N/A	N/A
	FG-PAO	-15 to 25°C (5 to 77°F)	Mobil SHC Cibus 150	N/A	N/A	Cassida GL150	Klüberoil 4 UH 1-150N
	FG-PG	-25 to 25°C (-13 to 77°F)	Mobil Glygoyle 150	N/A	N/A	N/A	Klübersynth UH1 6-150
	MIN-EP	0 to 40°C (32 to 104°)	Mobilgear 600XP220	Omala 220	Alpha SP220	Renolin EP220	Klüberoil GEM 1-220N
	PAO-EP	-30 to 60 °C (-22 to 140 °F)	Mobilgear SHC220	Omala HD220	Alphasyn EP220	Gearmaster SYN220/NA	Klübersynth EG 4-220
	PAO	-30 to 60°C (-22 to 140°F)	Mobil SHC630	Omala RL220	Alphasyn T220	N/A	Klübersynth GEM 4-220N
VG220	PG	-25 to 60°C (-13 to 140°F)	Mobil Glygoyle 220	Tivela S220	Alphasyn PG220	Renolin PG220	Klübersynth GH 6-220
	FG	0 to 40°C (32 to 104°F)	Mobil DTE FM 220	N/A	N/A	Fuchs FM220	N/A
	FG-PAO	-25 to 60°C (-13 to 140°F)	Mobil SHC Cibus 220	N/A	N/A	Cassida GL220	Klüberoil 4 UH 1-220N
	FG-PG	-25 to 60°C (-13 to 140°F)	Mobil Glygoyle 220	N/A	N/A	Cassida WG220	Klübersynth UH1 6-220
	MIN-EP	0 to 40°C (32 to 104°F)	Mobilgear 600XP460	Omala 460	Alpha SP460	Renolin EP460	Klüberoil GEM 1-460N
	PAO-EP	-20 to 80°C (-4 to 176°F)	Mobilgear SHC460	Omala HD460	Alphasyn EP460	Gearmaster SYN460/NA	Klübersynth EG 4-460
	PAO	-20 to 80°C (-4 to 176°F)	Mobil SHC 634	Omala RL460	Alphasyn T460	N/A	Klübersynth GEM 4-460N
VG460	PG	-20 to 80°C (-4 to 176°F)	Mobil Glygoyle 460	Tivela S460	Alphasyn PG460	N/A	Klübersynth GH 6-460
	FG	0 to 40°C (32 to 104°F)	Mobil DTE FM460	N/A	N/A	Fuchs FM460	N/A
	FG-PAO	-20 to 80°C (-4 to 176°F)	Mobil SHC Cibus 460	N/A	N/A	Cassida GL460	Klüberoil 4 UH 1-460N
	FG-PG	-20 to 80°C (-4 to 176°F)	Mobil Glygoyle 460	N/A	N/A	Cassida WG460	Klübersynth UH1 6-460

Low-end service temperature limit may vary for a specific lubricant; Please also see the important notes on Page 1.

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Oil plug connections

HELICAL IN-LINE OIL PLUG & VENT LOCATIONS



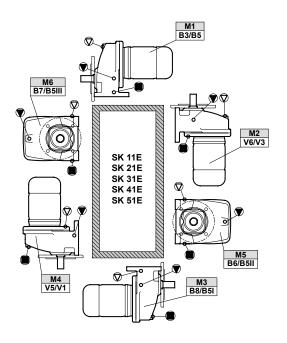
M2 V6/V3

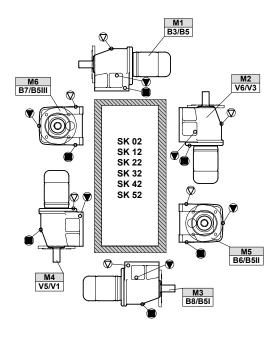
M5 B6/B5II

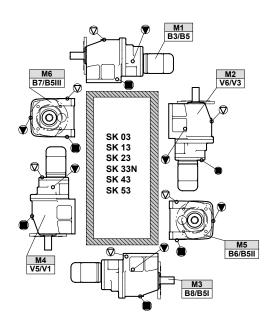
M3 B8/B5I

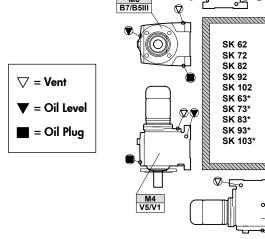
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Prior to commissioning the reducer, check the oil-fill level using the reducer's oil-level plug and drain or add additional oil as needed. The minimum acceptable oil level is 0.15 in (4mm) below the oil level hole. For mounting orientations other than shown please consult NORD Gear. New plug locations may be required.









* Oil level for 3 stage gear units.

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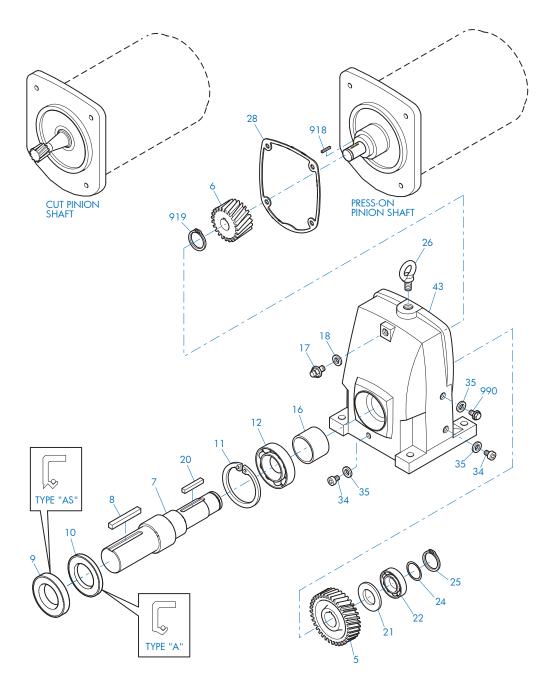
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- RETAIN FOR FUTURE USE -



SK 11E - SK 51E Foot Mount

11	Gear Pinion Output Shaft Key Oil Seal Oil Seal	16 Spacer 17 Vent Plug 18 Seal 20 Key 21 Spacer 22 Anti-Friction Bearing	26 Flanged Eye Bolt 28 Gasket 34 Drain Plug 35 Gasket 43 Gearcase 918 Key
11	Oil Seal Snap Ring Anti-Friction Bearing	22 Anti-Friction Bearing24 Shim25 Snap Ring	918 Key 919 Snap Ring 990 Oil Level Plug
12	Anti-inction bearing	25 Shap King	330 Oli Level Flug

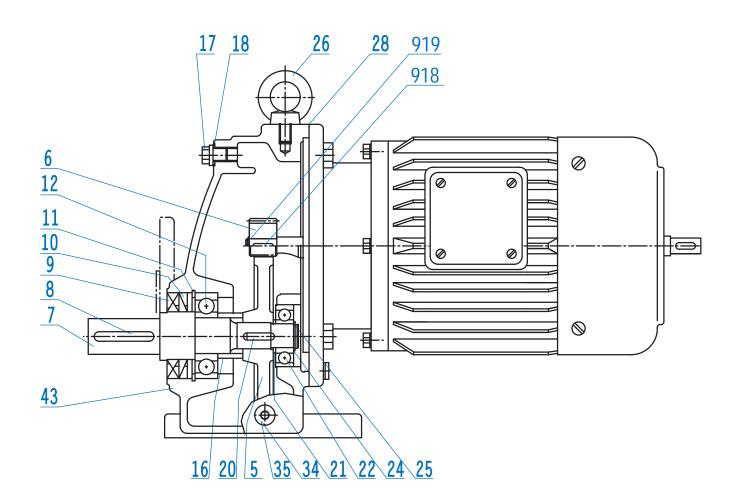
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- RETAIN FOR FUTURE USE -



SK 11E - SK 51E Foot Mount

5 6 7	Gear Pinion Output Shaft	16 Spacer 17 Vent Plug 18 Seal	26 Flanged Eye Bolt 28 Gasket 34 Drain Plug
8	Key	20 Key	35 Gasket
9 10	Oil Seal Oil Seal	21 Spacer 22 Anti-Friction Bearing	43 Gearcase 918 Key
11	Snap Ring	24 Shim	919 Snap Ring
	Anti-Friction Bearing	25 Snap Ring	

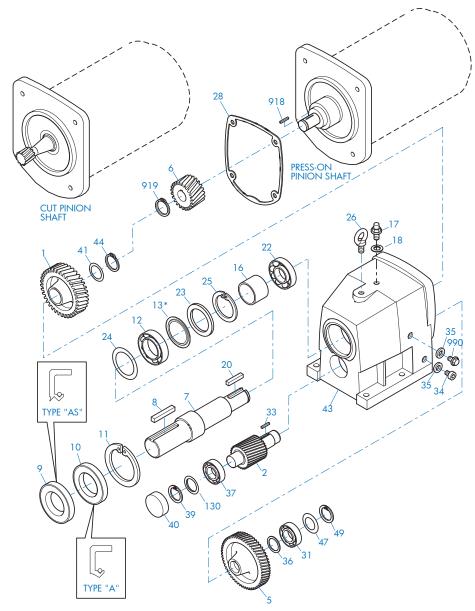
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SK02 - SK52 Foot Mount

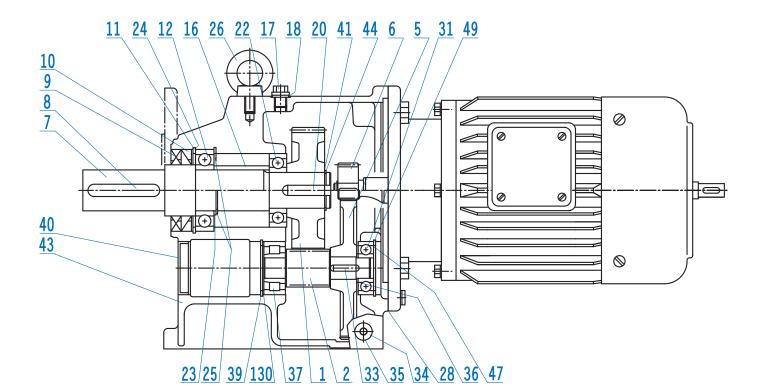
^{*} Conditionally used part

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- RETAIN FOR FUTURE USE -



SK02 - SK52 Foot Mount

^{*} Conditionally used part

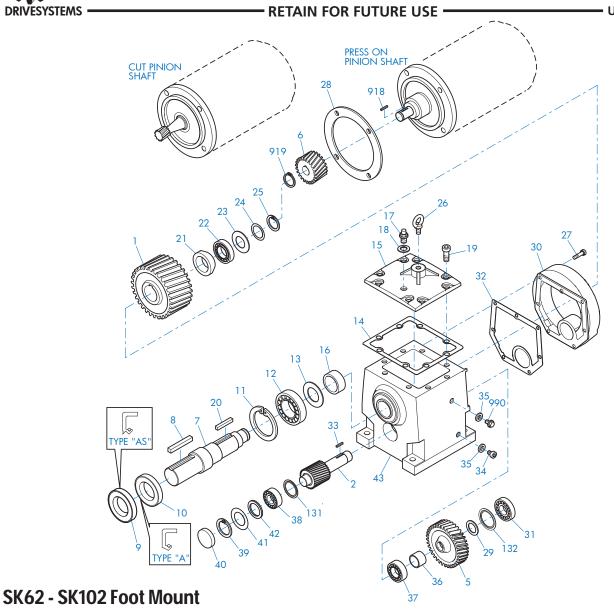
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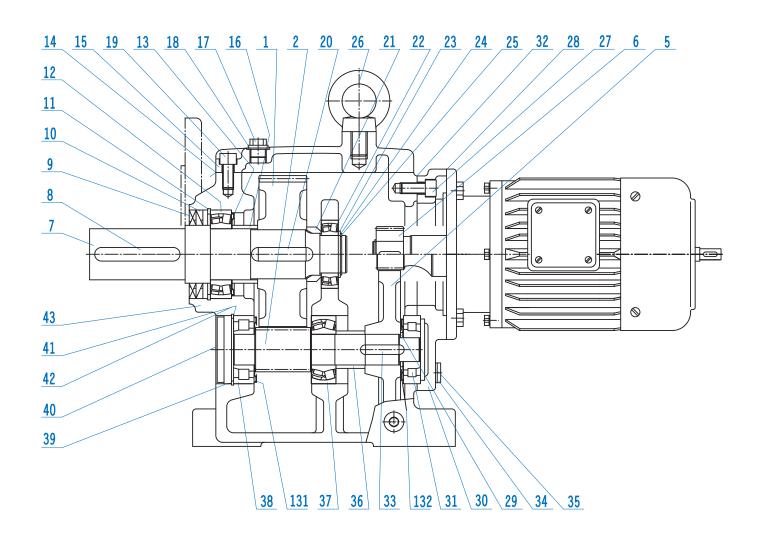


	Gear Pinion Shaft Gear Pinion Output Shaft Key Oil Seal Oil Seal Snap Ring Anti-Friction Bearing NILOS ring	24 25 26 27 28 29	Bolt Key Spacer Anti-Friction Bearing Thrust Washer Shim Snap Ring Flanged Eye Bolt Bolt Gasket Spacer	36 37 38 39 40 41 42 43 131 132	Gasket Spacer Anti-Friction Bearing Anti-Friction Bearing Snap Ring Bore Plug Shim Thrust Washer Gearcase NILOS Ring NILOS Ring
11	Oil Seal Snap Ring	26 27	Flanged Eye Bolt Bolt	43	Thrust Washer Gearcase
		29 30		132 918	
16 17 18	Spacer Vent Plug Seal	32 33	Gasket Key Drain Plug	990	Oil Level Plug





- RETAIN FOR FUTURE USE -



SK62 - SK102 Foot Mount

1 Gear 2 Pinion Shaft 5 Gear 6 Pinion 7 Output Shaft 8 Key 9 Oil Seal 10 Oil Seal 11 Snap Ring 12 Anti-Friction Bearing 13 NILOS ring* 14 Gasket 15 Inspection Cover 16 Spacer 17 Vent Plug	18 Seal 19 Bolt 20 Key 21 Spacer 22 Anti-Friction Bearing 23 Thrust Washer 24 Shim 25 Snap Ring 26 Flanged Eye Bolt 27 Bolt 28 Gasket 29 Spacer 30 Input Cover 31 Anti-Friction Bearing 32 Gasket	33 Key 34 Drain Plug 35 Gasket 36 Spacer 37 Anti-Friction Bearing 38 Anti-Friction Bearing 39 Snap Ring 40 Bore Plug 41 Shim 42 Thrust Washer 43 Gearcase 131 NILOS Ring* 132 NILOS Ring* 918 Key 919 Snap Ring
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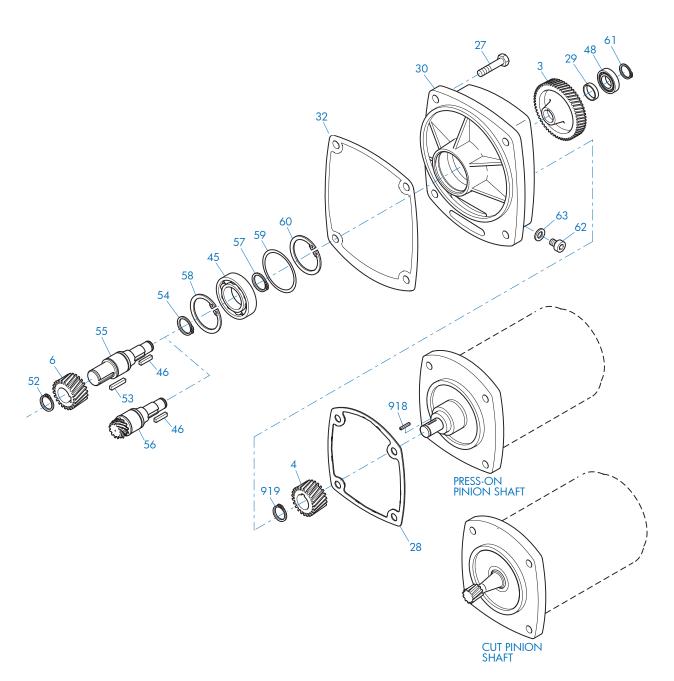
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- RETAIN FOR FUTURE USE -



SK03 - SK53 Third Stage Reduction Gear

4 F 6 F 27 F 28 G 29 S 30 S	Gear Pinion Pinion Bolt Gasket Spacer Third Reduction Gearcase Gasket Anti-Friction Bearing	48 52 53 54 55 56 57	Key Anti-Friction Bearing Snap Ring Key Snap Ring Intermediate Shaft, Plain Intermediate Shaft, Gearcut Snap Ring Snap Ring	60 61 62 63 918	Shim Snap Ring Snap Ring Oil Plug Gasket Key Snap Ring
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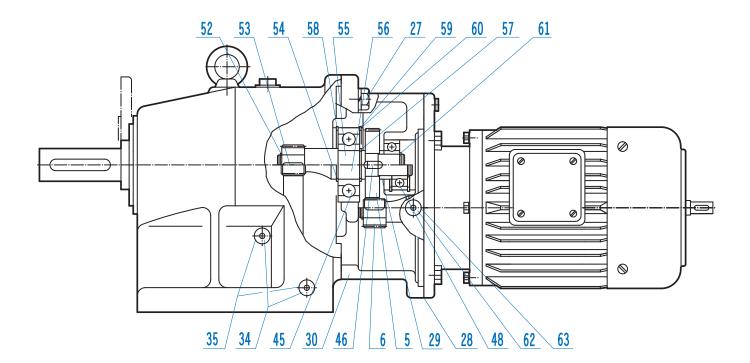
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SK03 - SK53 Using Third Stage Reduction Gear

3 Gea 4 Pini 6 Pini 27 Bol 28 Gas 29 Spa 30 Thii 32 Gas 45 Ant	ion 4 ion 5 lt 5 sket 5 acer 5 ird Reduction Gearcase 5 sket 5	18 52 53 54 55 56 57	Key Anti-Friction Bearing Snap Ring Key Snap Ring Intermediate Shaft, Plain Intermediate Shaft, Gearcut Snap Ring Snap Ring	60 61 62 63 918	Shim Snap Ring Snap Ring Oil Plug Gasket Key Snap Ring
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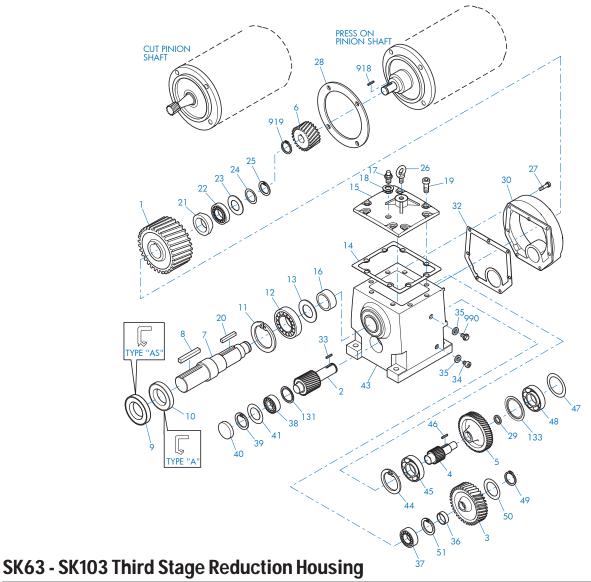
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- RETAIN FOR FUTURE USE -



1 Gear 2 Pinion Shaft 3 Gear 4 Pinion Shaft 5 Gear 6 Pinion 7 Output Shaft 8 Key 9 Oil Seal 10 Oil Seal 11 Snap Ring 12 Anti-Friction Bearing 13 NILOS Ring 14 Gasket 15 Inspection Cover 16 Spacer 17 Vent Plug	19 Bolt 20 Key 21 Spacer 22 Anti-Friction Bearing 23 Thrust Washer 24 Shim 25 Snap Ring 26 Flanged Eye Bolt 27 Bolt 28 Gasket 29 Spacer 30 Input Cover 32 Gasket 33 Key 34 Drain plug 35 Gasket 36 Spacer	38 Anti-Friction Bearing 39 Snap Ring 40 Bore Plug 41 Shim 43 Gearcase 44 Snap Ring 45 Anti-Friction Bearing 46 Key 47 Shim 48 Bearing 49 Snap Ring 50 Thrust Washer 51 Snap Ring 131 NILOS Ring 133 NILOS Ring 918 Key 919 Snap Ring
17 Vent Plug	36 Spacer	919 Snap Ring
18 Seal	37 Anti-Friction Bearing	990 Oil Level Plug

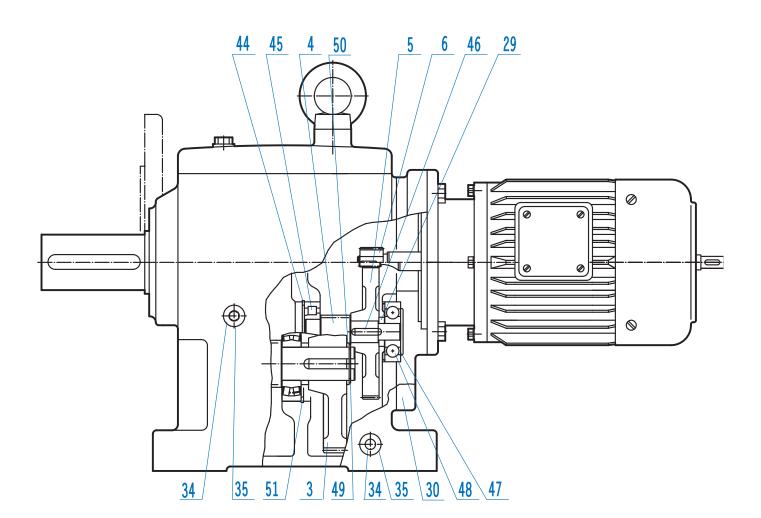
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- RETAIN FOR FUTURE USE -



SK63 - SK103 Foot Mount

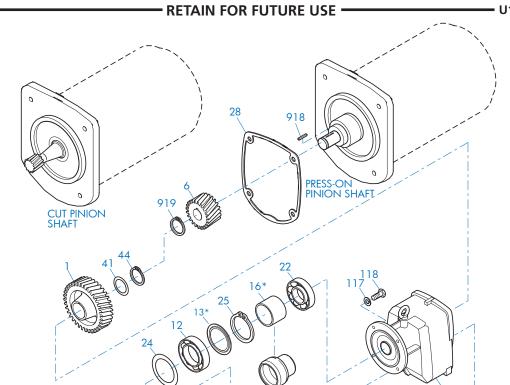
3 Gear 4 Pinion 5 Gear 6 Pinion 28 Gasket 29 Spacer 30 Input C	haft 33 34 35 44	Gasket Key Drain plug Gasket Snap Ring Anti-Friction Bearing Key	47 Shim 48 Bearing 49 Snap Ring 50 Thrust Washer 51 Snap Ring 133 NILOS Ring
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TYPE "A"

1 Gear 2 Pinion Shaft 5 Gear 6 Pinion 12 Anti-Friction Bearing	33 Key 36 Spacer 37 Anti-Friction Bearing 39 Snap Ring 40 Bore Plug	115 Lock Washer 116 Bolt 117 Lock Washer 118 Bolt 119 Intermediate Shaft, Plain

^{*} Conditionally used part

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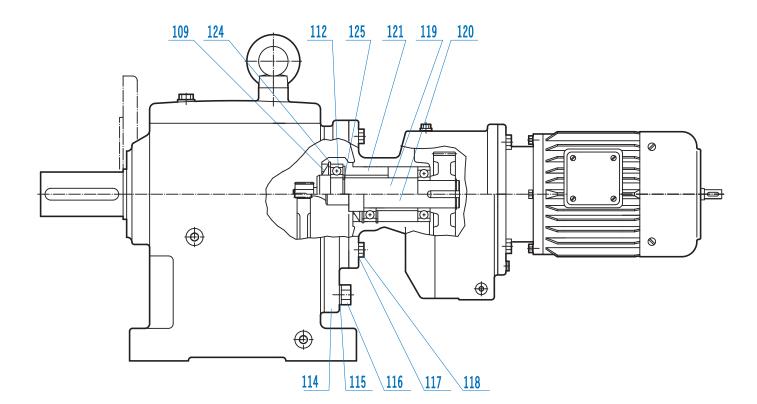
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SK12/02 - SK103/52 Input Compound Reduction

12 Anti-Friction Bearing 13 Nilos Ring* 16 Spacer* 25 Snap Ring 109 Oil Seal 114 Intermediate Flange	115 Lock Washer 116 Bolt 117 Lock Washer 118 Bolt 119 Intermediate Shaft, Plain	120 Intermediate Shaft, Gearcut 121 Bearing Sleeve* 124 Snap Ring
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^{*} Conditionally used part

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TROUBLESHOOTING



- RETAIN FOR FUTURE USE -

Troubleshooting

This section identifies some of the most common issues involved with NORD Gear speed reducers , and provides recommendations to assist you in defining and answering your questions as you work with our products. You may also contact our Engineering/Application departments if your questions are not answered in the table below.

Problem With	the Reducer	Possible Causes	Suggested Remedy
	Overloading	Load exceeds the capacity of the reducer	Check rated capacity of reducer, replace with unit of sufficient capacity or reduce the load.
Runs Hot		Insufficient lubrication	Check lubricant level and adjust up to recommended levels
	Improper lubrication	Excessive lubrication	Check lubricant level and adjust down to recommended levels.
		Wrong lubrication	Flush out and refill with correct lubricant as recommended
	Loose foundation bolts	Weak mounting structure	Inspect mounting of reducer. Tighten loose bolts and/or reinforce mounting and structure.
		Loose hold down bolts	Tighten bolts
Runs Noisy	Failure of bearings	May be due to lack of lubricant	Replace bearing. Clean and flush reducer and fill with recommended lubricant.
		Overload	Check rated capacity of reducer.
	Insufficient lubricant	Level of lubricant in reducer not properly maintained.	Check lubricant level and adjust to factory recommended level.
		Overloading of reducer can cause damage	Replace broken parts. Check rated capacity of reducer.
	Internal parts are broken or missing	Key missing or sheared off on input shaft.	Replace key.
		Coupling loose or disconnected	Properly allign reducer and coupling. Tighten coupling.
	Worn seals	Caused by dirt or grit entering seal.	Replace seals. Autovent may be clogged. Replace or clean.
Oil Leakage	Hait wood bet an India	Overfilled reducer	Check lubricant level and adjust to recommended level.
	Unit runs hot or leaks	Vent clogged.	Clean or replace, being sure to prevent any dirt from falling into the reducer.
	Incorrect fill level	Improper mounting position, such as wall or ceiling mount of horizontal reducer.	Check mounting position on the name tag & verify with mounting chart in manual.

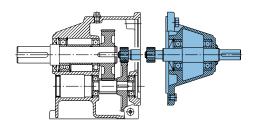


- RETAIN FOR FUTURE USE -

U45300 - 1 of 5

1. Solid Input Shaft (W)

The shaft will be inch or metric, depending on how the unit was ordered. Measure and verify the shaft before mounting anything on the shaft. Below are the tolerances used for the solid shafts.



2. Solid shaft diameter tolerance

Reducer input shaft extensions have a diameter tolerance as specified in **Table 1**.

Table 1: Solid Shaft Diameter Tolerance

Above ø (in)	To & Including Ø (in)	Tolerance (in)
0.375	1.750	+0.0000 / -0.0005
1.750	2.750	+0.0000 / -0.0010

Above	To & Including	Tolerance	ISO 286-2
ø (mm)	ø (mm)	(mm)	Fit Class
10	18	+0.012 / +0.001	k6
18	30	+0.015 / +0.002	k6
30	50	+0.018 / +0.002	k6
50	70	+0.030 / +0.011	m6

3. Fitting drive elements onto the reducer solid shaft

Solid input shaft extensions are provided with a drill and tap feature as indicated in Table 2. When installing drive elements such as coupling hubs, pulleys, sprockets, or gears, NORD recommends using the threaded hole in the end of the shaft, along with a suitable assembly device fitted into the threaded hole.

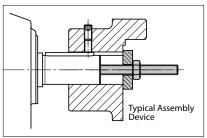


Table 2: Solid Input Shaft End - Threaded Holes

Above ø (in)	To & Including Ø (in)	Tap size & Depth (in)
0.375	0.500	10-24 x 0.43 in
0.500	0.875	1/4-20 x 0.59 in
0.875	0.938	5/16-18 x 0.71 in
0.938	1.100	3/8-16 x 0.87 in
1.100	1.300	1/2-13 x 1.10 in
1.300	1.875	5/8-11 x 1.42 in
1.875	2.750	3/4-10 x 1.73 in

Above	To & Including	Tap Size & Depth
ø (mm)	ø (mm)	(mm)
10	13	M4 x 10 mm
13	16	M5 x 12.5 mm
16	21	M6 x 16 mm
21	24	M8 x 19 mm
24	30	M10 x 22 mm
30	38	M12 x 28 mm
38	50	M16 x 36 mm
50	70	M20 x 42 mm





<u>/!\</u>

DO NOT DRIVE or **HAMMER** the coupling hub, pulley, sprocket, or gear into place. An endwise blow to the reducer shaft can generate damaging axial forces and cause damage to the reducer housing, bearings or internal components.

To avoid serious injury the user must provide suitable safety guards for all rotating shafts and shaft components such as couplings, chain drives, belt drives, etc. All guarding must adhere to local regulations and safety standards.

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- RETAIN FOR FUTURE USE -

4. Installing interference-fit hubs to the reducer shaft

Prior to installing any interference-fit hubs to the reducer shaft, consult with the manufacturer to determine proper assembly and fit. Interference-fits usually require heating the coupling, sprocket or gear hub, per the manufacturer's recommendations. Coupling hub installation typically follows ANSI/AGMA 9002-A86. Always make sure the reducer shaft seals are protected from the heat source. Apply uniform heat to the drive element hub to prevent distortion. NORD does not recommend heating the drive element hub beyond 212°F to 275°F (100°C to 135° C).



WARNING



When using heat to mount a drive element hub, do not use open flame in a combustible atmosphere or near flammable materials. Use suitable protection to avoid burns or serious injury.



HARMFUL SITUATION



When using external chain or belt drives, make sure the reducer is sized so that the shaft and bearings have adequate capacity. To avoid unnecessary bearing loads and additional shaft deflection, mount all power take-off devices (sprockets, pulleys, etc.) so that the applied load center is as close to the gear housing as possible and check component alignment and tension of any belts or chains per the manufacturer's recommendation. Do not over tighten the belts or chains.

5. Coupling installation

The performance and life of any coupling depends upon how well it is installed. Coupling hubs are typically mounted flush with the shaft ends, unless specifically ordered for overhung mounting. Shaft couplings should be installed according to the coupling manufacturer's recommendations for gap, angular and parallel alignment. To help obtain critical shaft alignment coupling hubs may be installed to the machine shafts prior to final shimming or tightening of the foundation bolts. Proper coupling alignment allows for thermal and mechanical shaft movement during operation and ensures that only torque (no radial load) is transmitted between the mating shafts.

Coupling gap and angular alignment

The shaft gap must be sufficient to accommodate any anticipated thermal or mechanical axial movement. When setting the coupling gap, insert a spacer or shim stock equal to the required spacing or gap between the coupling hub faces. Measure the clearance using feeler gauges at 90-degree intervals, to verify the angular alignment.

Parallel (or offset) alignment

Mount a dial indicator to one coupling hub, and rotate this hub, sweeping the outside diameter of the other hub. The parallel or offset misalignment is equal to one-half of the total indicator reading. Another method is to rest a straight edge squarely on the outside diameter of the hubs at 90° intervals and measure any gaps with feeler gauges. The maximum gap measurement is the parallel or offset misalignment.

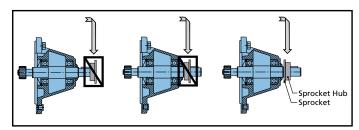
Check alignment

After both angular and parallel alignments are within specified limits, tighten all foundation bolts securely and re-check critical alignment. If any of the specified limits for alignment are exceeded, realign the coupling.

6. Installing sheaves (pulleys), sprockets and gears

To avoid unnecessary bearing loads and additional shaft deflection, mount all power take-off devices (sprockets, pulleys, gears, etc.) so that the applied load center is as close to the gear housing as possible, as shown in Figure 2.

Figure 2: Pully or Sprocket Mounting



Align the driver sheave or sprocket with the driven sheave or sprocket by placing a straight-edge length-wise across the face of the sheaves or sprockets. Alignment of bushed sheaves and sprockets should be checked only after bushings have been tightened. Check horizontal shaft alignment by placing one leg of a square or a level vertically against the face of the sheave or sprocket.

Always check component alignment and tension any belts or chains per the manufacturer's recommendation. The ideal belt or chain tension allows proper wrap of the driver and driven wheels, while maintaining the lowest possible tension of the belts or chain, so that no slipping occurs under load conditions. Check belt or chain tension frequently over the first 24 to 48 hours of operation.



HARMFUL SITUATION



When using external chain or belt drives, make sure the reducer is sized so that the shaft and bearings have adequate capacity. To avoid unnecessary bearing loads and additional shaft deflection, mount all power take-off devices (sprockets, pulleys, etc.) so that the applied load center is as close the gear housing as possible and check component alignment and tension of any belts or chains per the manufacturer's recommendation. Do not over tension the belts or chains.

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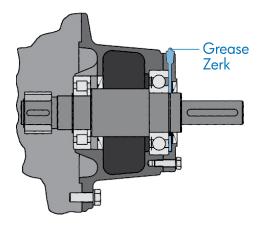
- RETAIN FOR FUTURE USE -

U45300 - 3 of 5

7. Service Guidelines for W-Shaft Input with Grease Fitting

On some solid shaft input (Type W) gear units, the outer roller bearing needs to be re-greased at regular service intervals. This is necessary for double-stage gearboxes sizes SK62 or SK6282 and larger, and triple-stage gearboxes from size SK73, SK7382 or SK9072.1 and larger.

To lubricate the bearing of the input shaft, approximately 0.75 to 1.0 ounces (20-25 grams) grease should be added by the grease fitting approximately after every 2,500 hours of service or at least every 6 months. The W-shaft input is factory assembled with the proper amount and type of grease. The type of grease supplied depends upon the type of oil specified at time of order.



Reducer Oil Type	Grease Type/Thickener	NLGI Grade	Ambient Temperature Range	Manufacturer Brand/Type
Mineral	Standard (Li-Complex)	NLGI 2	-30 to 60°C (-22 to 140°F)	Mobil Grease XHP222
Synthetic	High Temp (Polyurea)	NLGI 2	-40 to 80°C (-40 to 176°F)	Mobil / Polyrex EP 2
Food-Grade	Food-Grade (Polyurea)	NLGI 2	-30 to 40°C (-22 to 104°F)	Mobil SHC Polyrex 222



HARMFUL SITUATION



Grease compatibility depends upon the type of thickener or soap complex used, the base oil type suspended within the thickener, and the type of additives used. The user should check with the lubrication supplier before making substitutions in brand and type in order to assure compatibility and to avoid causing damage to the extended bearing.

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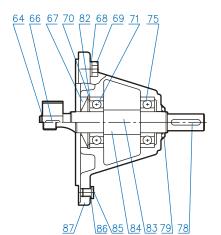
W-Type Input Parts List for UNICASE Gearboxes

SK 02 - SK 52 SK 03 - SK 63

SK 0182NB - SK 6382

SK 02040 - SK 42125 SK 13050 - SK 43125

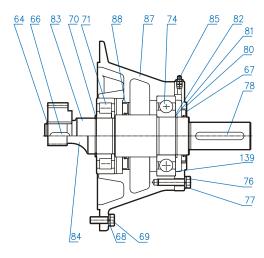
SK 9012.1 - SK 9052.1 SK 9013.1 - SK 9053.1



SK 62 - SK 72 SK 73 - SK 93

SK 6282 - SK 7282 SK 7382 - SK 9382

SK 9072.1



Circlip 64

66 Key

Shaft Seal 67

Washer 68

Hexagon Screw 69

70

Circlip Input Shaft Bearing 71

74 Ball Bearing

75 Input Shaft Bearing

76 Washer

Hexagon Screw 77

78 Key

79 Oil Flinger

Bearing Cover Circlip 80

81

Shim 82

83 Input Shaft, Plain

Input Shaft, Gearcut 84

Drain Plug 85

86 Seal

Input Bearing Housing 87

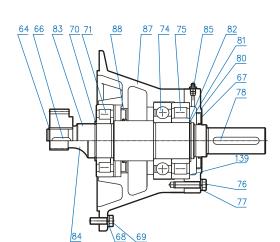
Shaft Seal (Oil Flinger) 88

139 Shim

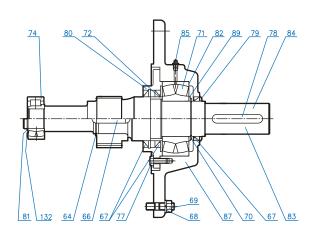
SK 82 - SK 102 SK 103

SK 8282 - SK 9282

SK 9082.1 - SK 9092.1



SK 10282 - SK 12382



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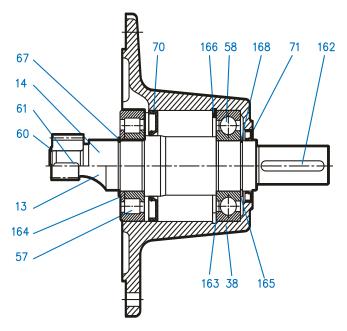


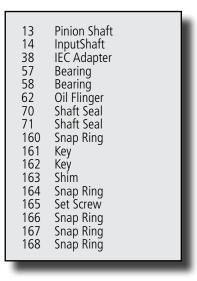


- RETAIN FOR FUTURE USE -

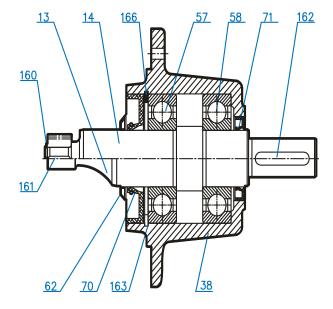
W-Type Inputs for Parts List for Nordbloc / 92 Bevel Gearboxes

SK172 - SK673 SK92072 - SK92372





SK772 - SK973 SK92672 - SK92772

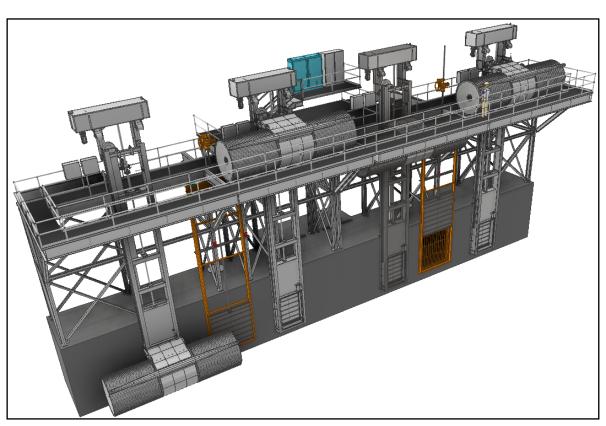


Attachment 4: OGS Technical Manual: Wedge Wire Water Screen



NEW YORK OGS TECHNICAL MANUAL

RETRIEVABLE INTAKE SCREEN - ISI PROJECT No. 17-0500



O&M MANUAL

REVISION: -REVISION DATE: 10/14/2022



8417 River Road, Sacramento, CA 95832 (916) 665-2727 isi-screens.com



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PART 1 - EQUIPMENT SUMMARY

EQUIPMENT SUMMARY5



EQUIPMENT SUMMARY

The quantity four (4) T72-84EA-R intake screens built for the New York OGS project are self-cleaning, with the wedgewire cylinders forming a "T" shape off of the central manifold. The screen surface is periodically cleaned by rotating the cylinder itself in both a forward and reverse direction. The rotation of each cylinder is driven by a 1 HP submersible drive unit, giving the screen a rotational speed of approximately 2 RPM. This rotation allows the exterior of the wedgewire to be cleaned by a fixed position external brush and the interior of the wedgewire to be cleaned by a rotating internal brush. Each T72-84EA-R is capable of diverting 16,345 gpm at 0.46 feet per second through-slot velocity.

Each screen's central manifold is mounted to a retrieval track that allows the T-Screen assembly to be raised and lowered with an electric hoist, controlled either by the hoist local control panel or a wireless pendant. Each retrieval track is equipped with isolation gates that are controlled with gate actuators. The gate actuators are controlled at the SGBD Local Control Panel for each screen with indicator lights for gate open, gate closed, and gate fault. Two sluice gates independent of the four intake screens were built with a gate opening of 84" x 90" each. When in the open position, the sluice gates can withdraw 101.79 MGD/157.5 cfs at a velocity of 1.5 fps. The sluice gates are controlled locally using buttons on the actuator.

By design, ISI intake screens require very little in the way of maintenance. Both the internal and external brushes can be adjusted to compensate for wear, or replaced if necessary. The screen submersible drive units are sealed at the factory and are non-serviceable, with the exception of anode replacement.

The screen cleaning cycles are normally controlled automatically, dictated by time interval and water level differential between the river and the flow channels. For both automatic control scenarios, settings are input by an operator at the Human Machine Interface (HMI - touchscreen.) Operational feedback for the screens can be seen at the HMI integrated in the main control panel. Contained within the main control panel are all necessary motor starters, relays, transformers and PLC, etc, to operate all four screen systems.

Each T-Screen can also be controlled manually, through either a wireless pendent or switches on the local control panel that allow for forward and reverse rotation of the screen cylinders. Each T-Screen installation has two local control panels (LCP's): the SGBD LCP for screen and gate operation and the Hoist LCP for hoist operation. Each LCP includes switches to allow for local, manual operation as well as feedback lights.



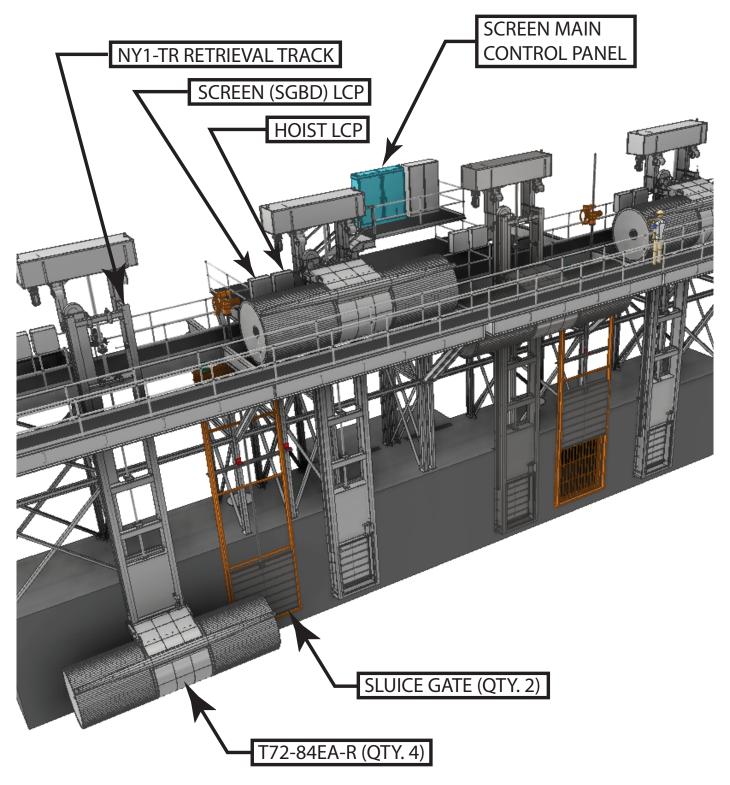


Figure 1. NY OGS Equipment Layout



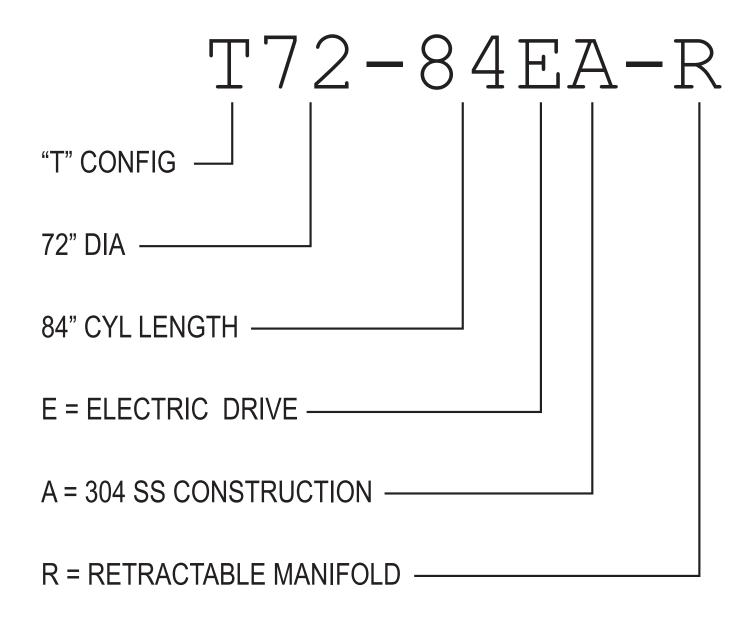


Figure 2. Equipment Number Description



PART 2 - OPERATIONAL PROCEDURES

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CONTROLS - MAIN HMI PAGE OVERVIEW

The main page of the intake screen HMI (Human Machine Interface - Touchscreen) shows the status for each T-screen, winch, hold down bar, gate, and other key information on the screen's automatic cleaning cycles.

The HMI is split into four quadrants with each quadrant showing the status of one of the four screens. At the top of each quadrant there is an indicator for "SYSTEM MODE" displays whether the screen mode switch on the local control panel is in the Manual, Off, or Auto position. If the pendant is active for that screen, a countdown timer will display.

In the middle of each quadrant is a graphic of a screen. On each of the cylinders there is a round indicator dot showing the current status of the screen. The indicator will be grey if in standby, green if running in forward or reverse, orange if in a delay for change of direction, and red if there is a fault.

Below the screen model are three status indicators: a "WINCH STATUS", "HOLD DOWN BAR", and "GATE STATUS" indicator. "WINCH STATUS" displays the current status of the winch. When the winch is in operation, the "WINCH STATUS" will light up green and arrows will display on the screen to show the direction of the screen travel.

"HOLD DOWN BAR" will show as grey when the hold down bar is engaged and over the screen acting on the "engaged" limit switch. It will also show grey when the hold down bar is full out of position of the screen and acting on the "disengaged" limit switch. Lastly, "HOLD DOWN BAR" will be yellow if it is not engaging either of the two limit switches and is in a mid-travel or unknown position.

"GATE STATUS" will show the position of the gate. If the gate is fully closed or fully open, the indicator will be grey with the appropriate text. If the gate is in transit, the indicator bar will be pink with the appropriate text. If there is a fault, the indicator bar will be red and state "FAULT".

When the operator presses the "CLEANING CYCLES PER DAY" button a popup with a number pad is initiated. This allows the operator to change the number of cleaning cycles per 24 hour period. This will change the "REMAINING TIME TO CLEAN" such that there are equal length time intervals between automatic cleaning cycles. The "REMAINING TIME TO CLEAN" is a countdown timer that displays the amount of time until the next automatic cleaning cycle.

When a screen is set to "AUTO," the screens will automatically go through a cleaning cycle when the interval timer for the cleaning cycle ends. If a screen is switched to "OFF" or "MANUAL" the screen will not operate during the next automatic cleaning cycle. The duration of the cycle is dictated by the value set for "SCREEN CLEANING TIME." By pressing the "SCREEN CLEANING TIME" button a popup with a number pad will allow the operator to set the duration of an automatic cleaning cycle.

The "CLEAN NOW (ALL SCREENS)" functionality immediately begins a rotation cycle of all screens that are set to "AUTO." The cleaning cycle will run for the duration set on the "SCREEN CLEANING TIME MM:SS" panel and will reset the "REMAINING TIME TO CLEAN" timer.



The bottom left shows a "HIDE STATUS" button will clear the text from each of the status indication areas.

The bottom middle has a button to pull up the alarm page. See subsection "CONTROLS - ALARM PAGE OVERVIEW" for more information.

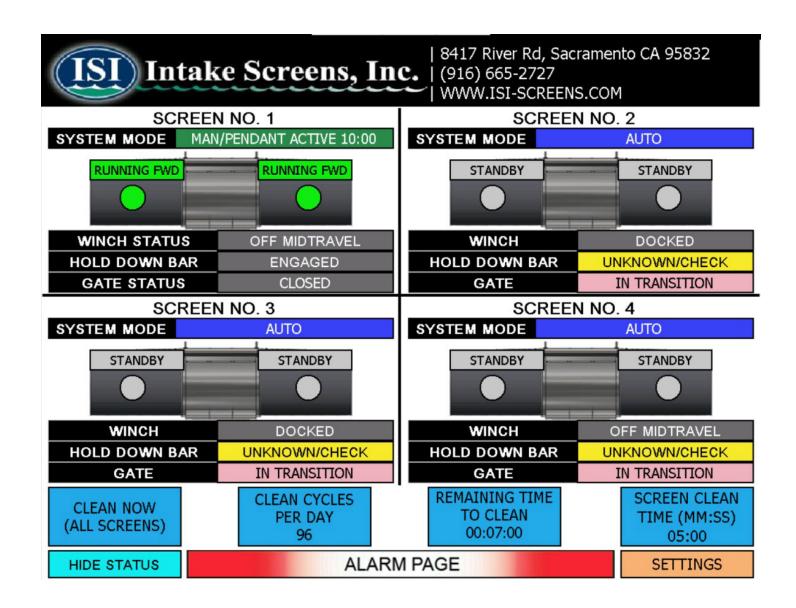


Figure 3. Main HMI Page



CONTROLS - SETTING PAGE OVERVIEW

The settings page provides information on the water level differential for the screens. It also provides status information for the sluice gates and allows for control of the sluice gates.

The three boxes at the top of the screen show the current water level readings for the river, channel 1, and channel 2 water level sensors. The two boxes below this named "CURRENT CHANNEL # DIFF" take the difference between the river water level and the respective current channel water level. These values are display only and cannot be changed by the operator.

The next two boxes are "CHANNEL # DIFFERENTIAL SETPOINT" which is a operator defined value in which an automatic cleaning cycle will start based off of the water level differential. This is factory set at 1.0' but can be changed by the operator. The operator must be logged in to change this value.

Below that is the "CHANNEL # DIFFERENTIAL ON DELAY" which is an operator defined value that sets the amount of time the water level differential must be above the differential set point in order for the automatic cleaning cycle to begin. This set point helps prevent any momentary jump in water level readings starting a cleaning cycle unnecessarily. This is factory set at 10 seconds but can be changed by the operator. The operator must be logged in to change this value.

Next, the "CHANNEL # DIFFERENTIAL OFF DELAY" is a operator defined value that sets the amount of time the water level differential must be below the differential set point in order to stop automatic cleaning cycles from restarting. This helps prevent any momentary fall in water level readings that would stop cleaning cycles when the true water level is above the desired set point. This is factory set at 10 seconds but can be changed by the operator.

Lastly, the "MANUAL PENDANT TIMEOUT" is the amount of time that the wireless pendant will stay active on a screen once it has been activated. This is factory set at 10 minutes but can be changed by the operator. The operator must be logged in to change this value

On the left side of the screen it shows the status for Sluice Gates 1A and 1B. The indication bar will display whether the gate is open, closed, in transit, or in a fault state. When an operator is logged in, the sluice gate can be open and closed using the HMI. When logged out, there will be no buttons below the indicator bar. However, when the operator has logged in, two buttons "OPEN" and "CLOSE" will appear. These buttons will open and close the sluice gates respectively.

FOR OPERATOR LOGIN: see the orange "LOGIN" button near the bottom center of the screen. Only once the correct login information is provided can an operator use the sluice gates or change set points. Please contact ISI for Login information if needed.

The bottom left button "HMI OVERVIEW" will bring the operator back to the Main HMI Page (see CONTROLS - MAIN HMI PAGE OVERVIEW for additional information).

The bottom right button "ADMIN SETTINGS" is an settings page that allows for changing the water level sensor scaling and provide minimum and maximum values for operator set points.



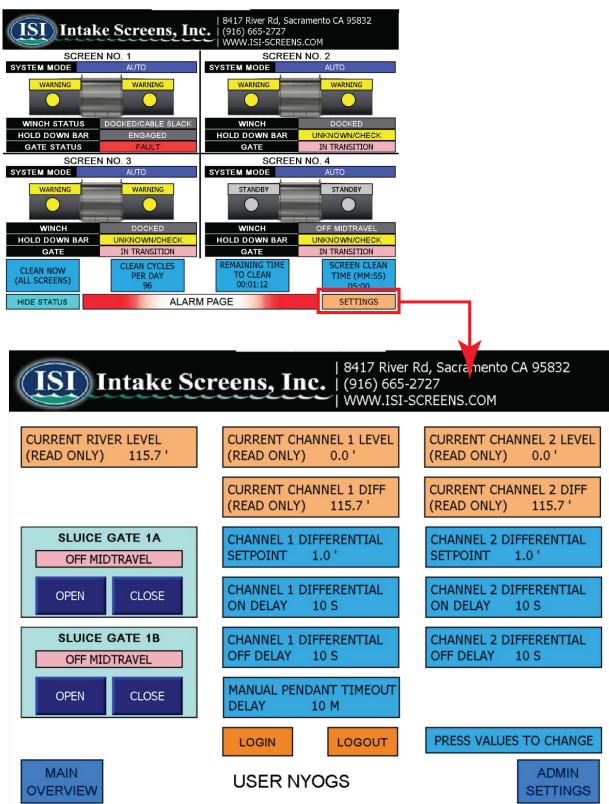


Figure 4. Settings HMI Page





Figure 5. Admin HMI Page



CONTROLS - ALARM PAGE OVERVIEW

After pressing the "Alarm" button on the main page, the Alarm page can be accessed from the pop up window.

This page shows any current active alarms, as well as any inactive alarms that have not been cleared from the list. The alarm number, time, date, status, description and group are all shown in the provided table. Active alarms will be highlighted as red.

The "Alarm Reset" button will reset the state of all faults.

The "Alarm Clear" button clears the selected fault and removes it from the log. The "Reset Alarms" button clears the fault, but leaves the fault in the log.

ALARM PAGE OVERVIEW

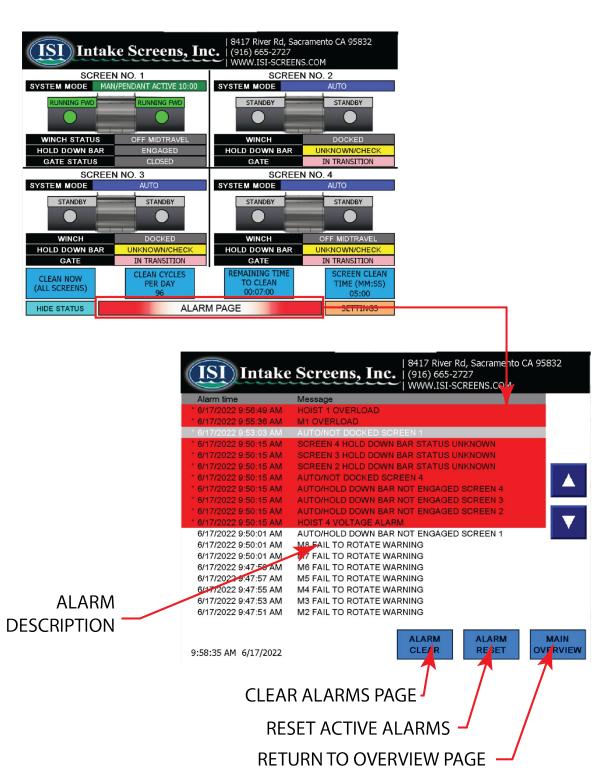


Figure 6. Alarm Page Overview

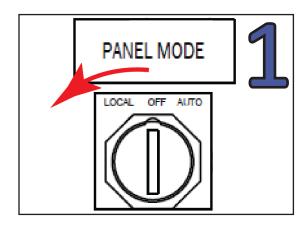


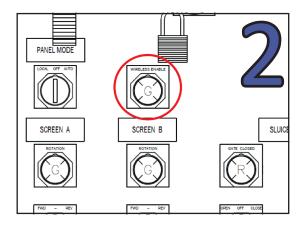
LOWERING THE SCREEN

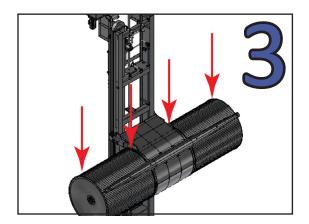
Screen lowering assumes the initial condition of the screen being positioned at the top of the retrieval track, the gate is closed, the stop pins are pulled back (see Part 4 - Safety for instructions on moving the stop pins), and all system disconnect switches are turned to the "ON" position.

- 1) On the SGBD-LCP for the screen that will be lowered, turn the "PANEL MODE" switch for the intake screen to the "LOCAL" position.
- 2) Optionally, for wireless pendent operation, press the "WIRELESS ENABLE" button on the local control panel. The button will light up to confirm the wireless pendent is active, allowing the operator use of the pendent for a defined period of time. There will be a confirmation on the HMI that the pendant is engaged and a countdown timer showing the remaining time the pendant will be active. If the timer elapses, the "WIRELESS ENABLE" button must be pressed again to continue using the pendant.
- 3) On the local control panel or the wireless pendent, press and hold "DOWN" until the screen reaches the bottom of the track and the cable goes slack. The winch will shut off automatically.
- 4) On the SGBD-LCP, turn the mode select switch for the intake screen to the "AUTO" position, enabling normal time based cleaning cycles.









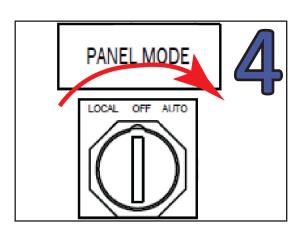


Figure 7. Startup Sequence

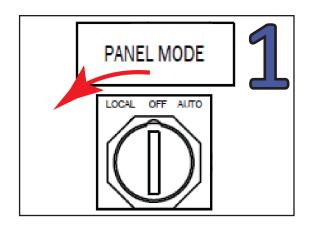


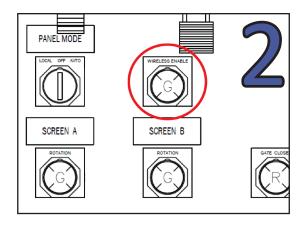
RAISING THE SCREEN

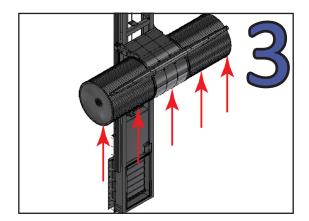
The screen raising process assumes the initial condition of the screen being docked at the bottom of the retrieval track, the stop pins are pulled back, and all system disconnect switches are turned to the "ON" position.

- 1) On the local control panel for the screen that will be raised, turn the mode select switch for the intake screen to the "LOCAL" position.
- 2) For wireless pendent operation, press the "WIRELESS ENABLE" button on the local control panel. The button will light up to confirm the wireless pendent is active, allowing the operator use of the pendent for a defined period of time. There will be a confirmation on the HMI that the pendant is engaged and a countdown timer showing the remaining time the pendant will be active. If the timer elapses, the "WIRELESS ENABLE" button must be pressed again to continue using the pendant.
- 3) Raise the screen so that it closely approaches but does not contact the hard stops at the top of the track. Push the stop pins forward and secure them in place, then lower the screen onto the pins.
 - 4) On the main control panel, turn the mode select switch for the intake screen to the "OFF" position.









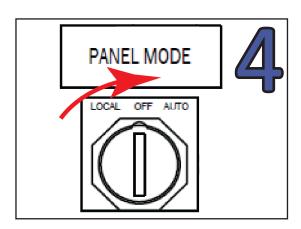


Figure 8. Screen Raising Sequence



PART 3 - PREVENTATIVE MAINTENANCE PROCEDURES

EXTERNAL BRUSH ADJUSTMENT	21
INTERNAL BRUSH ADJUSTMENT	
EXTERNAL BRUSH REPLACEMENT	25
INTERNAL BRUSH REPLACEMENT	27
ANODE REPLACEMENT	29
CYLINDER ROLLER WHEEL REPLACEMENT	30
MAINTENANCE SCHEDULES	31



EXTERNAL BRUSH ADJUSTMENT

This procedure assumes the screen being stationed at the top of the retrieval track and secured by the stop pins. See Part 4 - Safety for a complete description of securing the screen with the stop pins.

The optimum position for the bristles sees them penetrating the outside of the wedgewire and just touching the wedgewire support bars. Always use anti-seize lubricant on all stainless steel fasteners.

- 1) If the brush requires adjustment, start by slackening the clamp bolts.
- 2) Loosen the lock nuts on all three adjustment bolts.
- 3) Gradually adjust the brush down evenly using the adjustment bolts. Stop when the ends of the bristles are just touching the wedgewire backing bars. Move the brush in small increments adjusting the brush too far will see an aggressive brushing motion which will reduce brush life.
 - 4) Once the brush has been adjusted into the correct position, tighten the adjustment lock nuts.
 - 5) Tighten all clamp bolts.
- 6) Turn the screen mode to local and manually run the screen in the Fwd. and Rev. direction to verify the adjustment of the brush, Make sure the brush is adjusted evenly across its span.

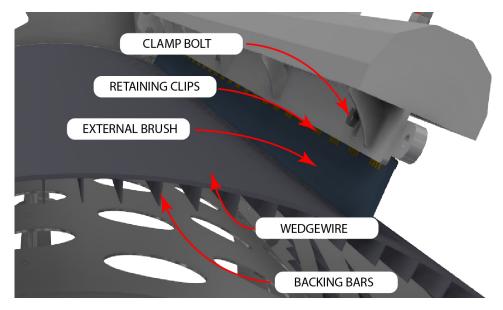
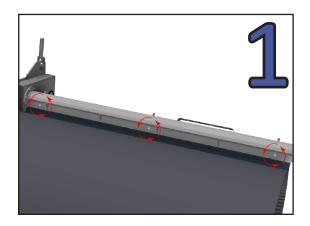
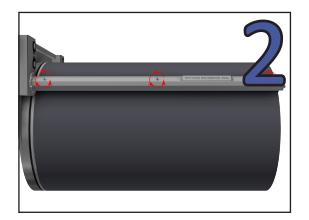
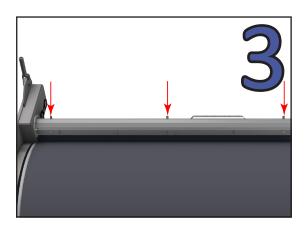


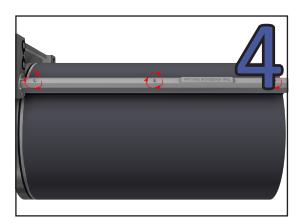
Figure 9. External Brush Components











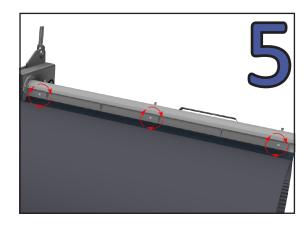




Figure 10. External Brush Adjustment Sequence



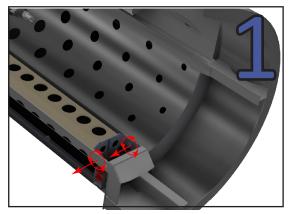
INTERNAL BRUSH ADJUSTMENT

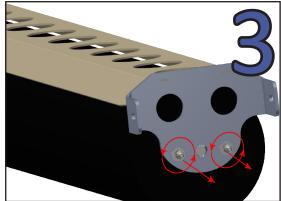
This procedure assumes the screen being stationed at the top of the retrieval track and secured by the stop pins. See Part 4 - Safety for a complete description of securing the screen with the stop pins.

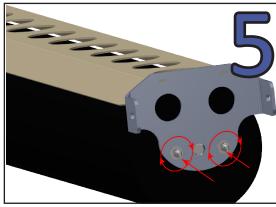
To check the internal bristle penetration, carefully feel the outer surface of the wedgewire in the area of the internal brush with the palm of your hand. Bristles should be flush or just slightly proud of the outer surface of the wedgewire. Always use anti-seize lubricant on all stainless steel fasteners.

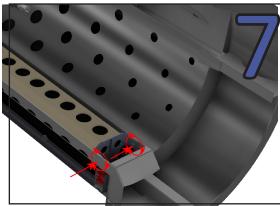
- 1) If the internal brush requires adjustment, start by removing the two internal brush attachment bolts.
- 2) Remove the internal brush assembly from the manifold.
- 3) Loosen the two bearing pin bolts on either side of the brush bracket.
- 4) Adjust the brush down.
- 5) With the brush position adjusted, tighten all the bearing pin bolts.
- 6) Reinstall the brush assembly into the brush trough in the manifold.
- 7) Reinstall and tighten the attachment bolts.
- 8) Turn the screen mode to local and run the screen in the Fwd and Rev direction to verify the new adjustment of the brush. Make sure the brush is adjusted evenly across its span. Please Note: always test run the screen any time the internal brush has been reinstalled. If the screen is not run, permanent bristle deformation could result.

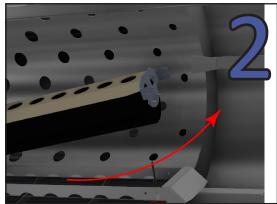


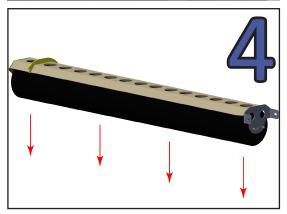












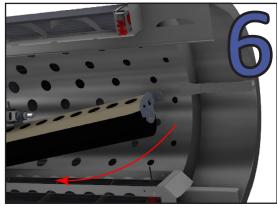




Figure 11. Internal Brush Adjustment Sequence

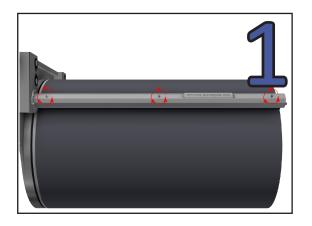


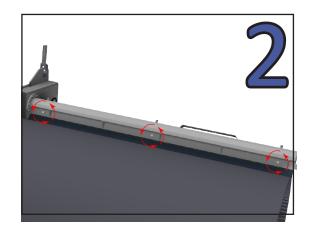
EXTERNAL BRUSH REPLACEMENT

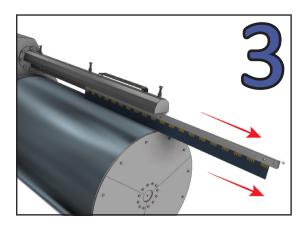
This procedure assumes the screen being stationed at the top of the retrieval track and secured by the stop pins. See Part 4 - Safety for a complete description of securing the screen with the stop pins. Always use anti-seize lubricant on all stainless steel fasteners.

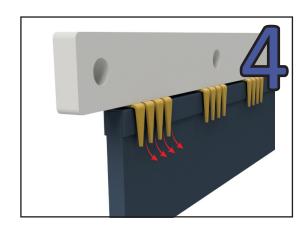
- 1) Loosen lock nuts and back off all adjustment bolts.
- 2) Remove the clamp bolts.
- 3) Remove the brush assembly from the brush arm.
- 4) Using a suitable method to hold the backing bar of the brush, pry the retaining clips back such that the brush can be released from the backing bar.
- 5) Replace the brush with a new one, then gently and evenly hammer the clips back down, using a soft mallet or dead blow. Tap the clips down evenly, and only enough to retain the brush do not hammer the clips flat.
- 6) Reinstall the assembly to the brush arm and adjust as required please see External Brush Adjustment.

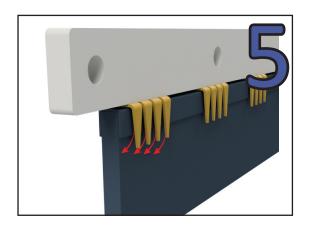












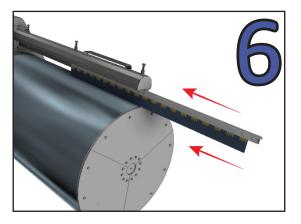


Figure 12. External Brush Replacement Sequence



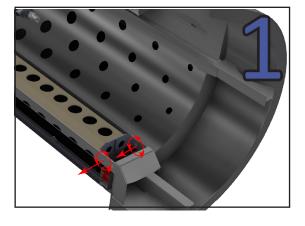
INTERNAL BRUSH REPLACEMENT

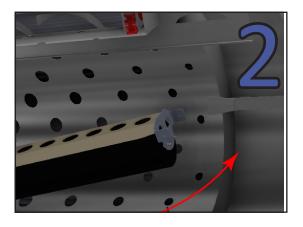
This procedure assumes the screen being stationed at the top of the retrieval track and secured by the stop pins. See Part 4 - Safety for a complete description of securing the screen with the stop pins. Always use anti-seize lubricant on all stainless steel fasteners.

- 1) Remove the two internal brush attachment bolts.
- 2) Remove the internal brush assembly from the manifold.
- 3) Remove the two bearing pin bolts on either side of the brush bracket.
- 4) Remove the internal brush from the bracket.
- 5) Remove the bearing pins (and bushings, if required) from the old brush.
- 6) Install the bushings (if required) and bearing pins to the new brush. Reassemble brush to the brack-

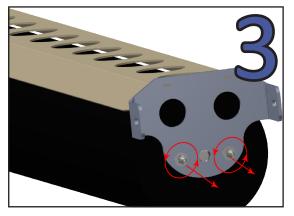
et.

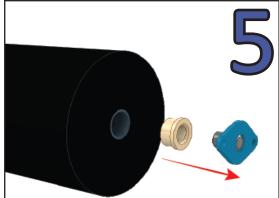
- 7) Tighten all bearing pin bolts.
- 8) Reinstall the brush into the brush trough in the manifold.
- 9) Install and tighten the attachment bolts then adjust as required please see Internal Brush Adjustment.

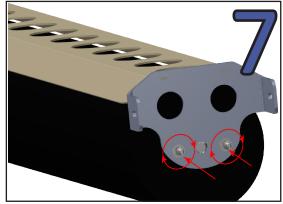


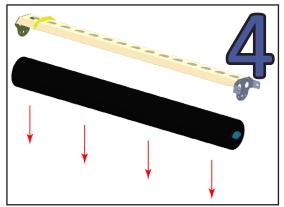


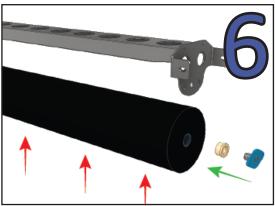


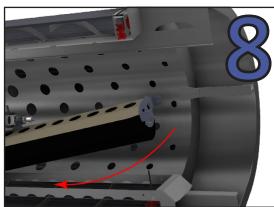












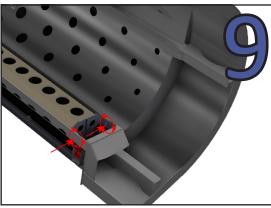


Figure 13. Internal Brush Replacement Sequence



ANODE REPLACEMENT

This procedure assumes the screen being stationed at the top of the retrieval track and secured by the stop pins. See Part 4 - Safety for a complete description of securing the screen with the stop pins. Always use anti-seize lubricant on all stainless steel fasteners.

- 1) Remove the 5/8" nut that secures the anode from the stud.
- 2) Slide the anode off the rod.
- 5) Apply grease or silicone around the threaded rod.
- 6) Slide the replacement anode on the threaded rod.
- 7) Apply grease or silicone around the threaded rod and tighten the 5/8" nut onto the threaded

NOTE: It is important that the connection between the anode and mounting stud is sealed so that water is not allowed between the ID of the anode and the OD of the threaded rod. This can allow corrosion to happen from the inside out, shortening the life of the anode.

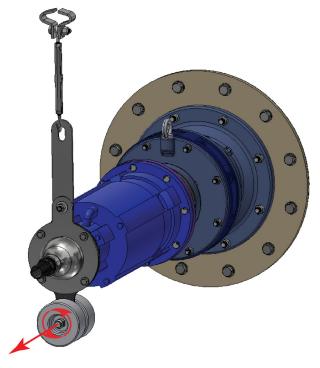


Figure 14. Anode Replacement



CYLINDER ROLLER WHEEL REPLACEMENT

This procedure assumes the screen being stationed at the top of the retrieval track and secured by the stop pins. See Part 4 - Safety for a complete description of securing the screen with the stop pins. Always use anti-seize lubricant on all stainless steel fasteners.

- 1) To check for proper alignment of a roller wheel to the shaft, rattle the roller wheel . A properly functioning roller wheel should sit on the shaft as a rattle fit. If there is noticeable and excessive radial movement of the roller wheel (more than 1/8" to 3/16") about the shaft the wheel needs to be replaced as the bearings have worn past acceptable amounts.
- 2) Remove the internal brush trough. See the process for trough removal in "internal brush replacement" and "internal brush adjustment".
- 3) Remove the 1/2" bolt that secures the roller wheel assembly. Remove the worn the roller wheel assembly. Repair/replace as necessary.
- 4) Reinstall roller wheel assembly into place and slide the 1/2" bolt through the roller wheel. Tighten the bolt to secure the roller wheel into place. Please Note: Do not fully torque this bolt tighten enough to keep bolt from moving laterally and fully engage the nylock.

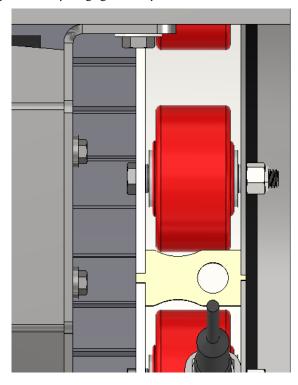


Figure 15. Roller Wheel Replacement



MAINTENANCE SCHEDULES

Daily: None

Weekly: None

Monthly: None

Semi-Annually: None

Annually: ISI recommends the following checks on an annual basis to verify the condition of the screens:

- Pull screen to the top of the retrieval track, engage stop pins.
- Check external and internal brush adjustments. Adjust if necessary.
- Check general screen condition for signs of bio fouling, mussel growth, siltation, etc. Clean if required.
- Visually inspect retrieval rails for signs of impinged debris (sticks, etc.). Remove if necessary.
- Visually check anodes.
- Physically check the cylinder roller wheels for wear and replace if necessary. Roller wheels should have a lifespan of 5 years or greater. Inspection is not explicitly necessary the first few years of operation.



PART 4 - SAFETY

SAFETY PROCEDURES	32
STOP PIN PROCEDURE	33

SAFETY PROCEDURES

- Follow all site specific Lock Out/Tag Out procedures when working on the intake screen.
- Before doing any work on the intake screens, ensure that the stop pins are in place. See the procedure below.



STOP PIN PROCEDURE

This procedure assumes the screen being stationed at the bottom of the retrieval track. Please ensure that the proper procedures for working at heights for the site are followed. Always use anti-seize lubricant on all stainless steel fasteners.

The retrieval track has three sets of stop pins: the upper stop pins, the inspection level stop pins, and the winter storage stop pins. The upper stop pins are to prevent the screen from being raised off of the track in the event of upper limit switch failure. The inspection level stop pins are for putting the screen at deck level for maintenance and inspection. The winter storage level stop pins are just below deck allowing the screens to be above water level during winter.

- 1) Remove the 1/2" pin retainer bolts.
- 2) Rotate, pull back, then rotate again the pin across the channel to lock the pin into place. Repeat the step for the second stop pin. Repeat these steps for the inspection level stop pins if necessary. **ENSURE THE WINTER STORAGE LEVEL STOP PINS ARE FULLY BACK BEFORE RAISING THE SCREEN.**
- 3) If raising to the inspection position, raise the screen so that the top of the screen manifold is close to but not touching the top stop pins. There must be enough space for the inspection pins to slide into the intake manifold. If raising to the winter storage position, raise until the interior of the intake manifold is just above the pins.
- 4) Rotate and slide the stop pins back into their engaged positions, for the desired screen position. Reinstall the 1/2" pin retaining bolts. Slowly lower the screen onto the stop pins until the cable goes slack and the hoist no longer allows downward travel.

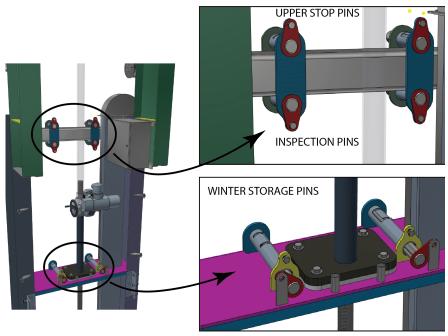
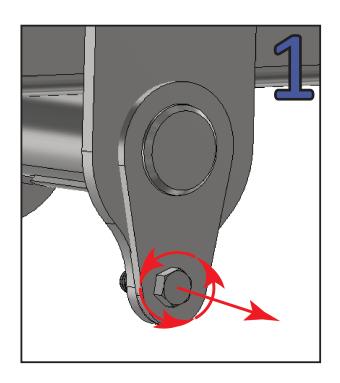
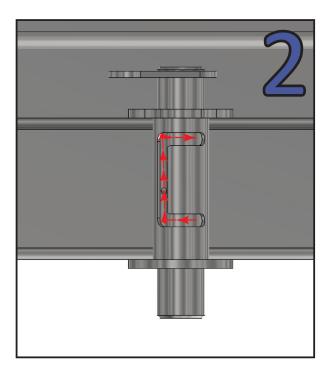
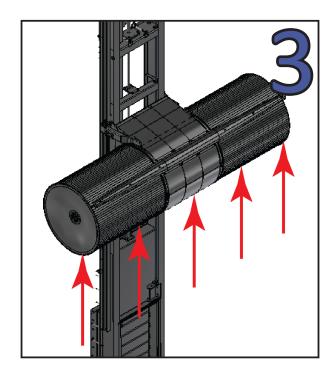


Figure 16. Stop Pin Positions









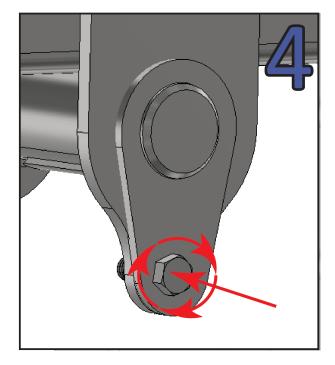


Figure 17. Stop Pin Operation Sequence

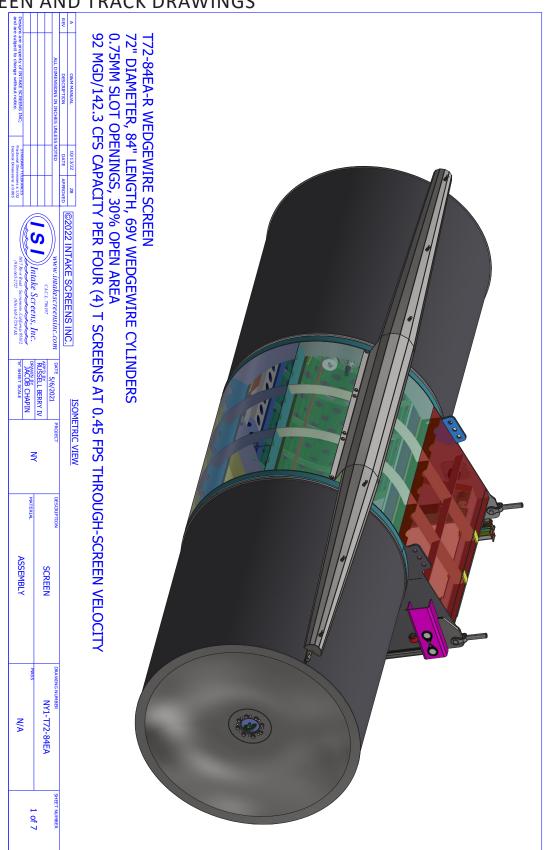


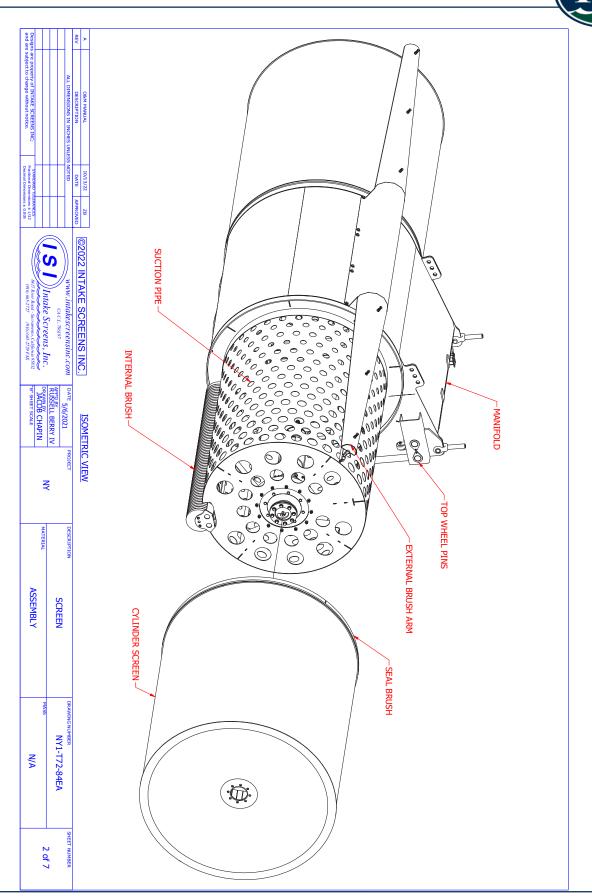
PART 5 - DRAWINGS

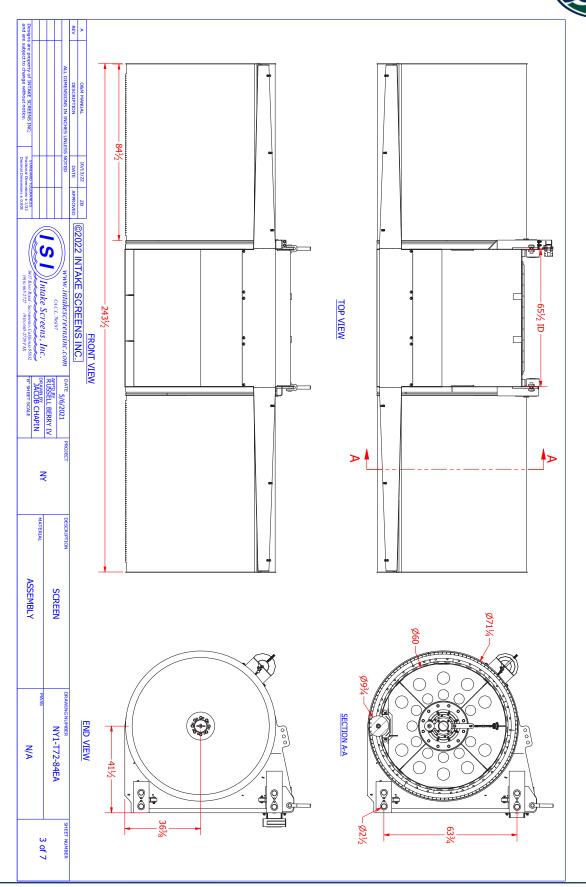
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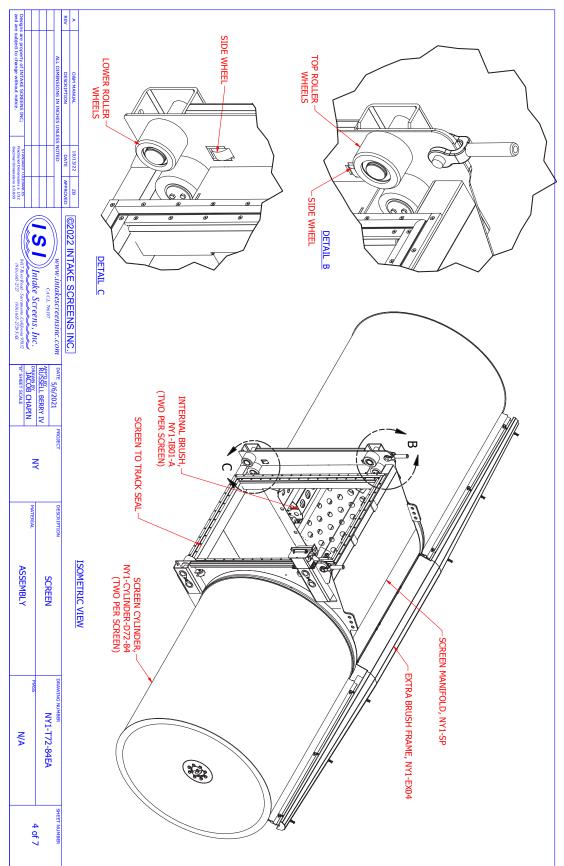
SCREEN AND TRACK DRAWINGS

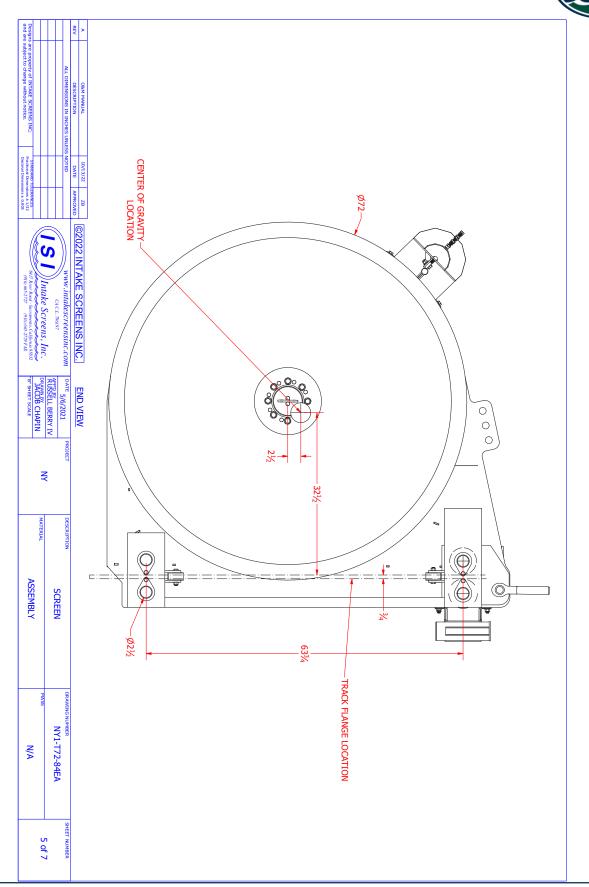


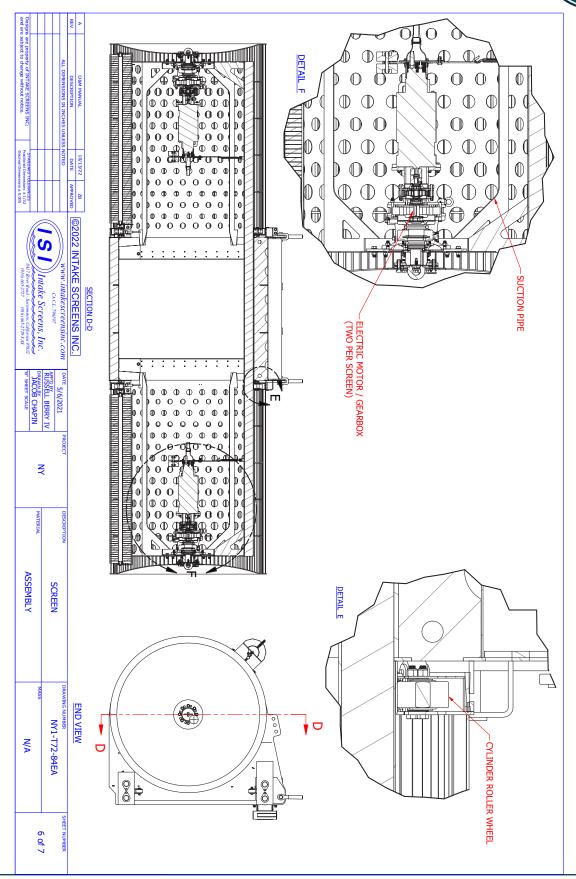


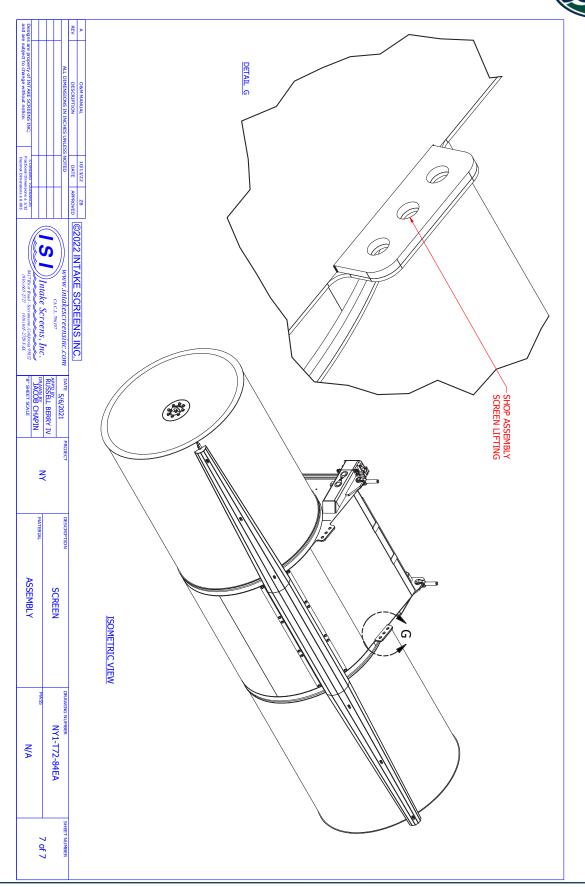


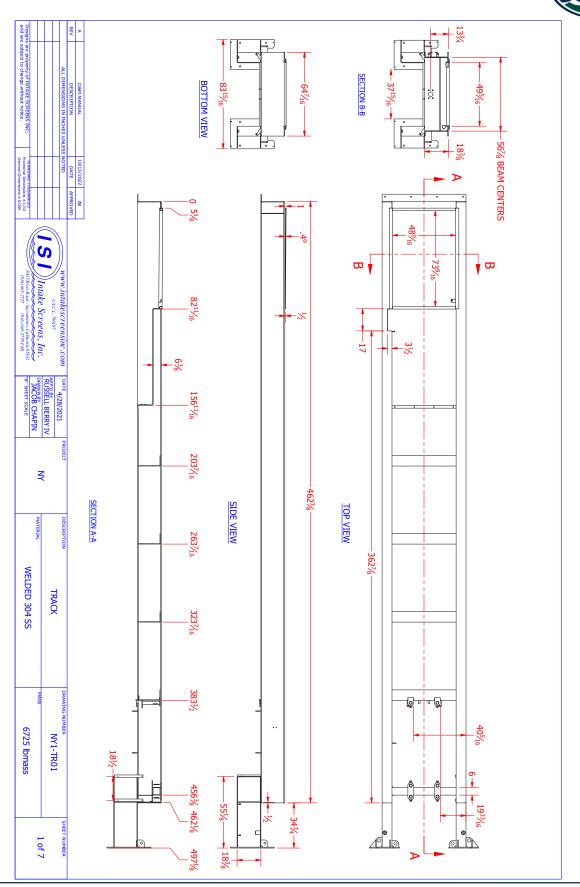


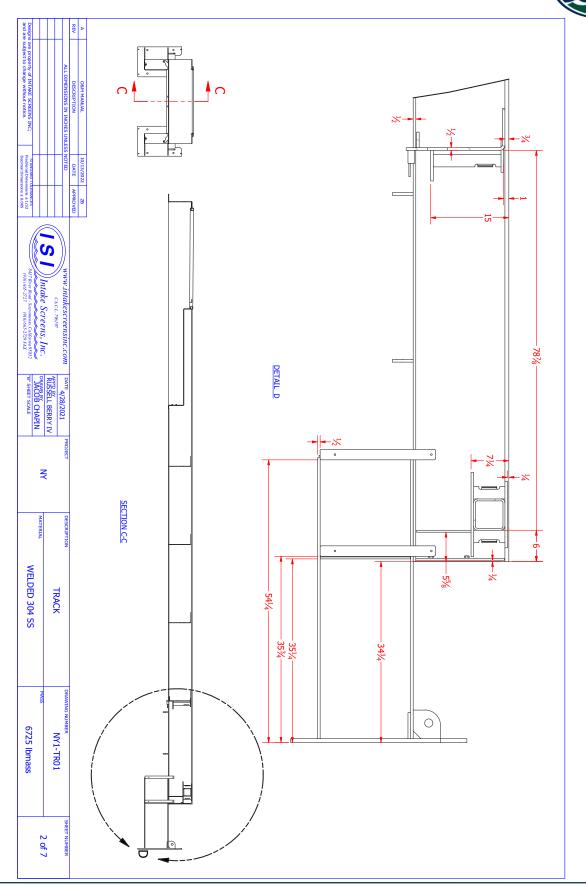


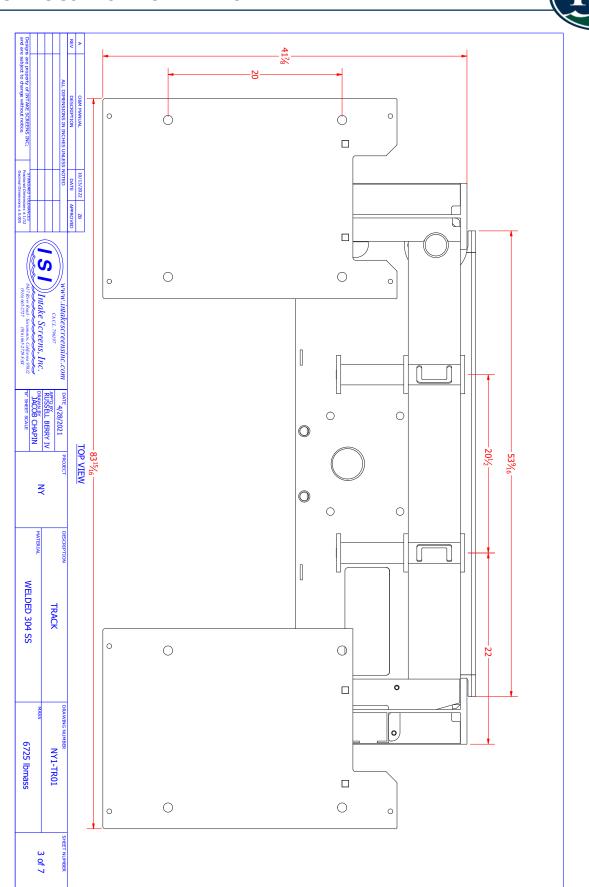




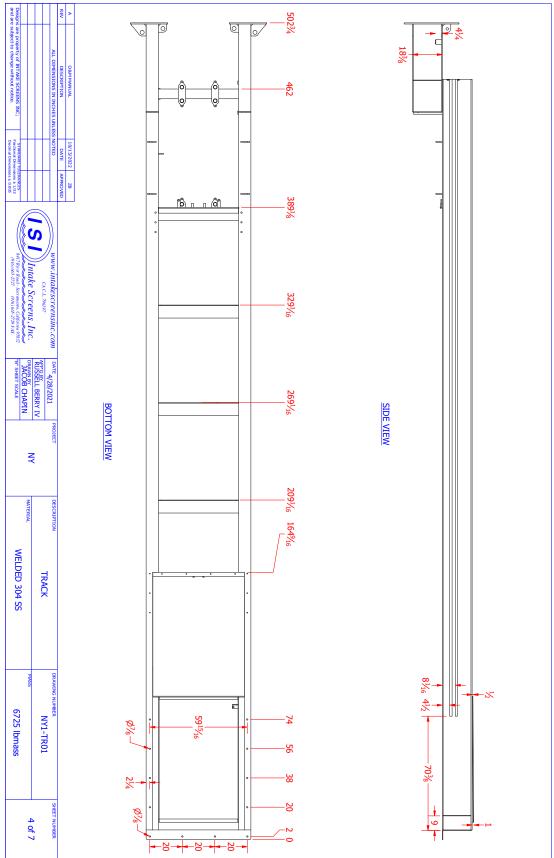


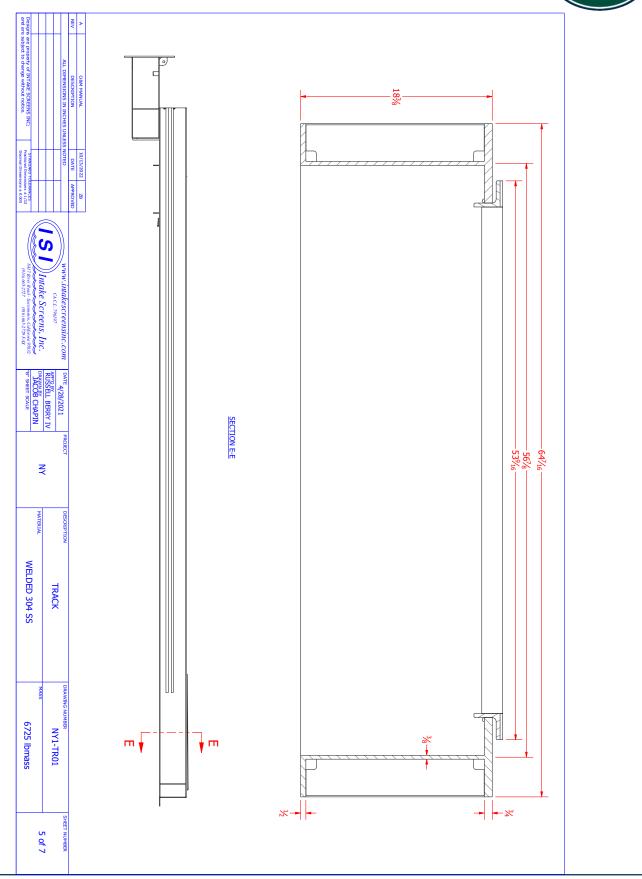


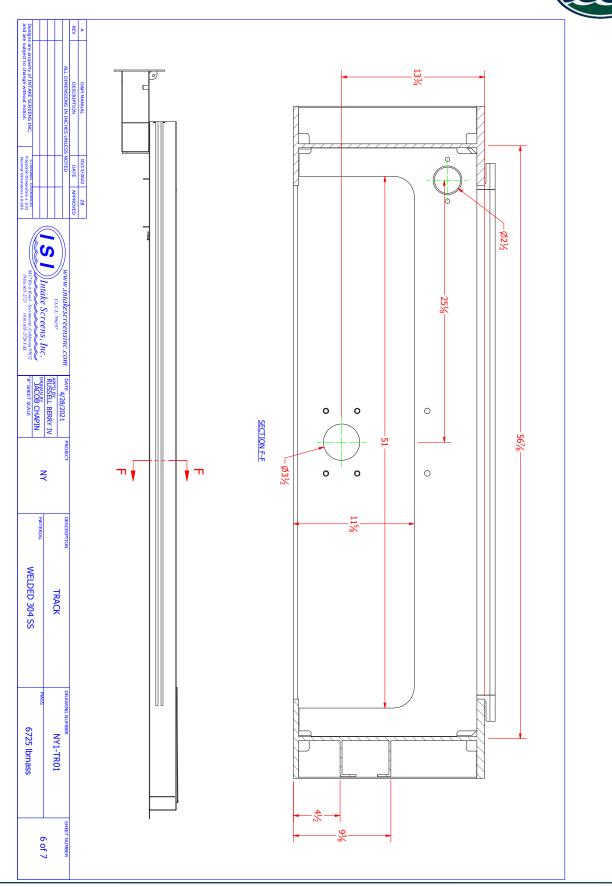




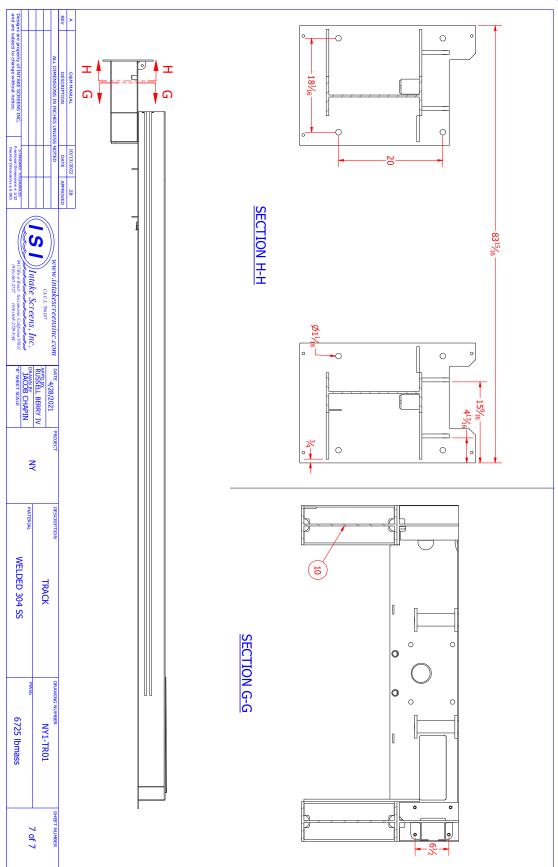




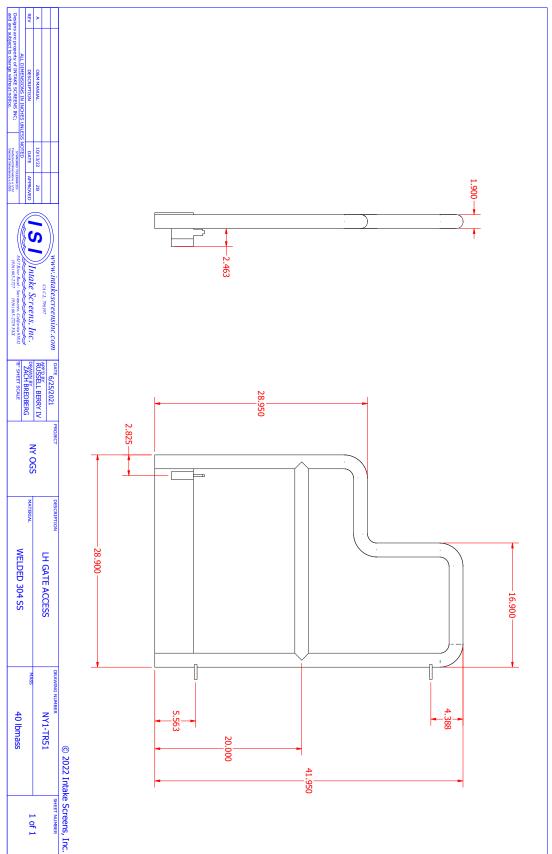




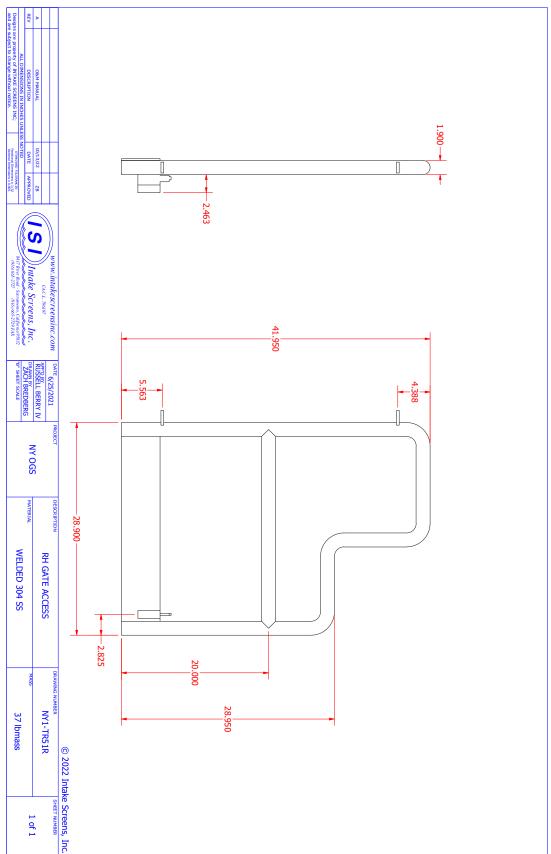












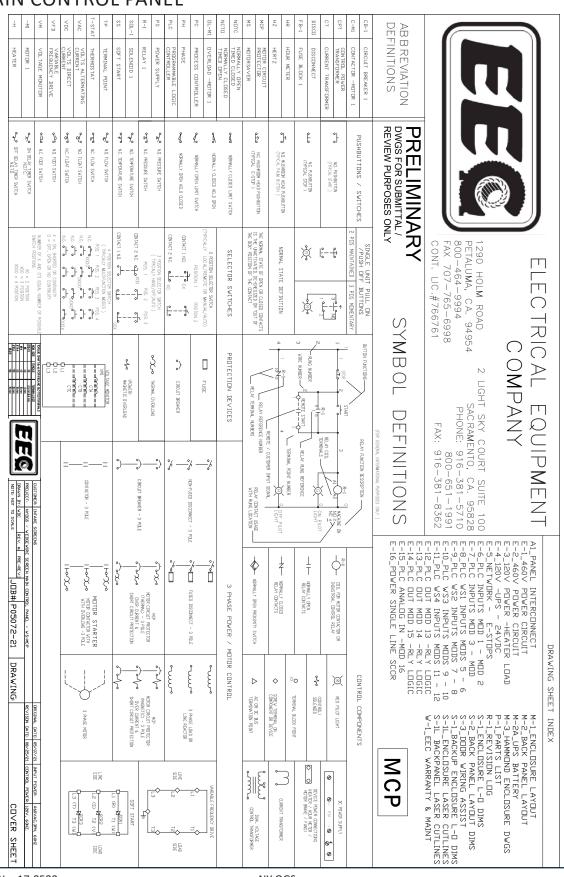


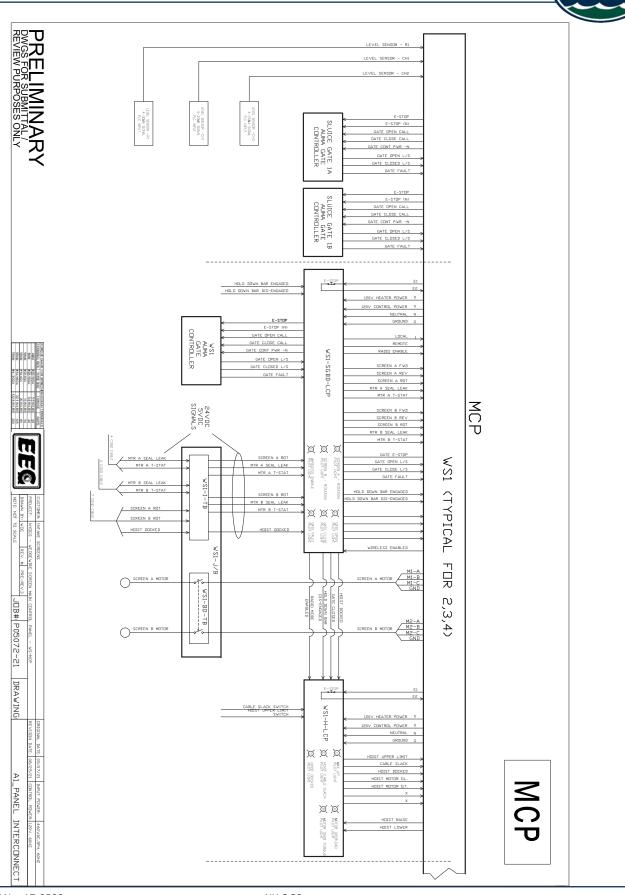
PART 6 - WIRING DIAGRAMS

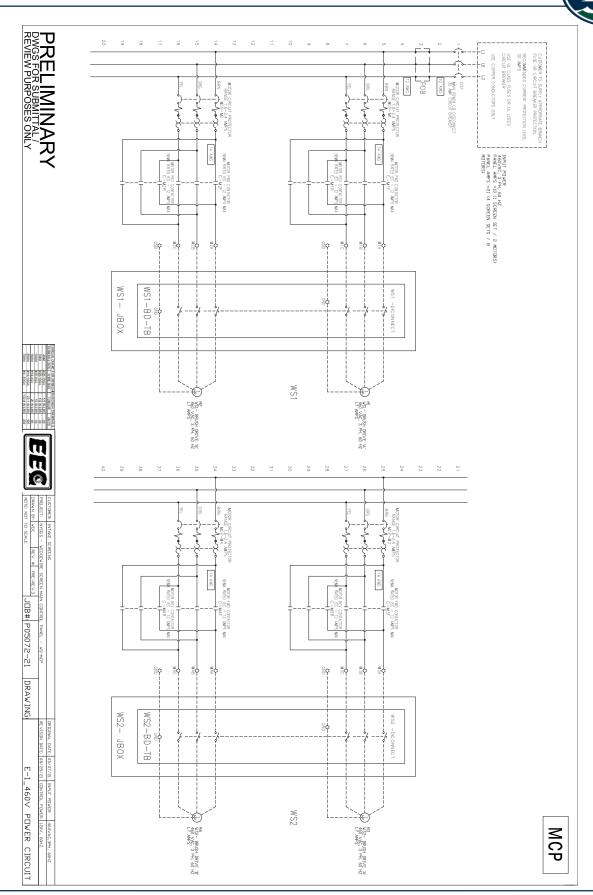
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SGBD-LCP (TYP. FOR WS1-WS4)	. 73
H-LCP (TYP. FOR WS1-WS4)	. 82
JUNCTION BOX (TYP. FOR WS1-WS4)	. 91

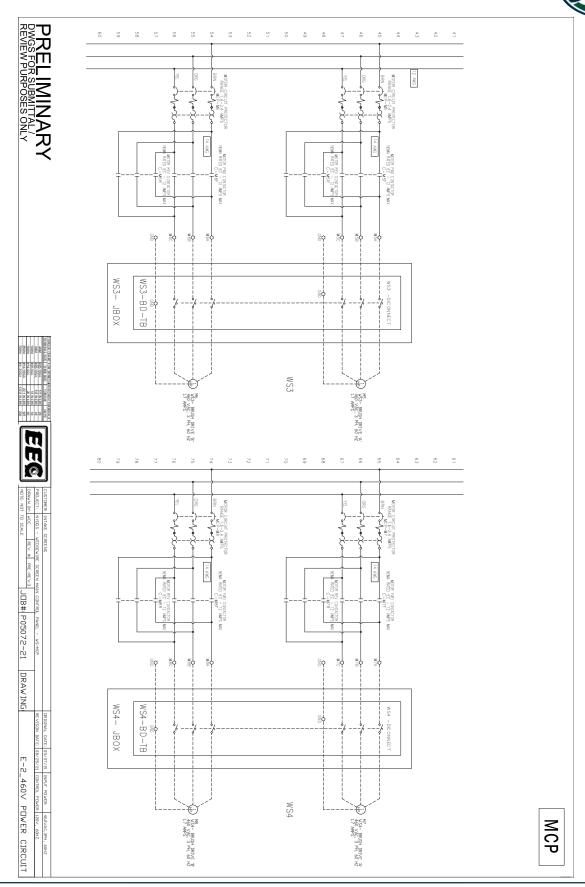
ISI

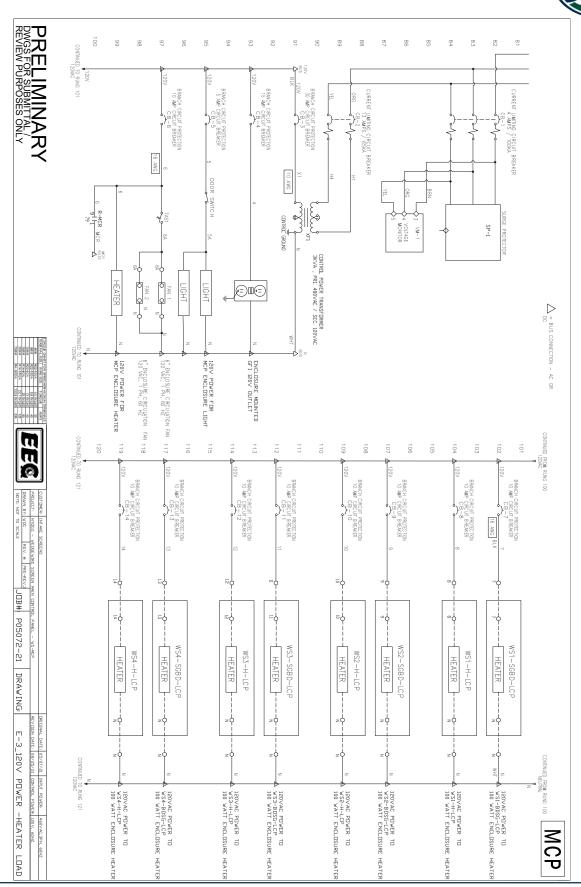
MAIN CONTROL PANEL

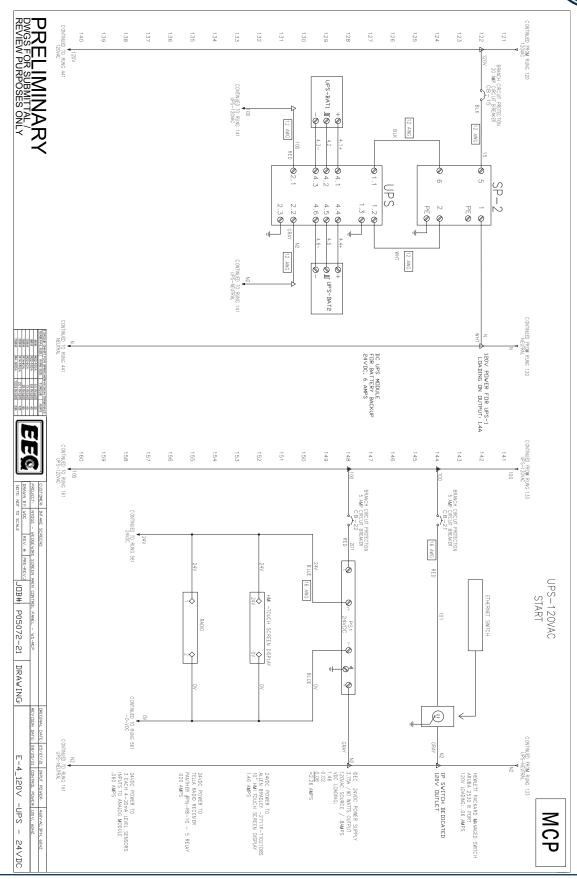




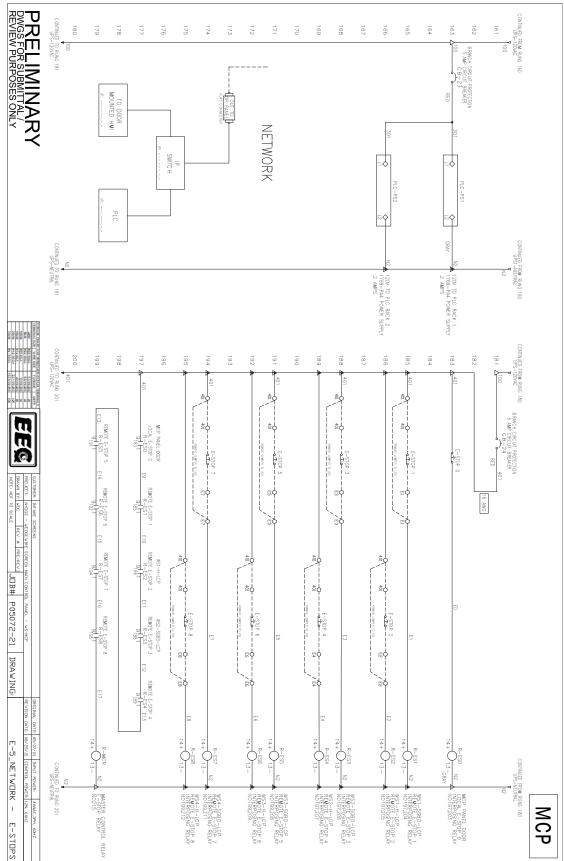




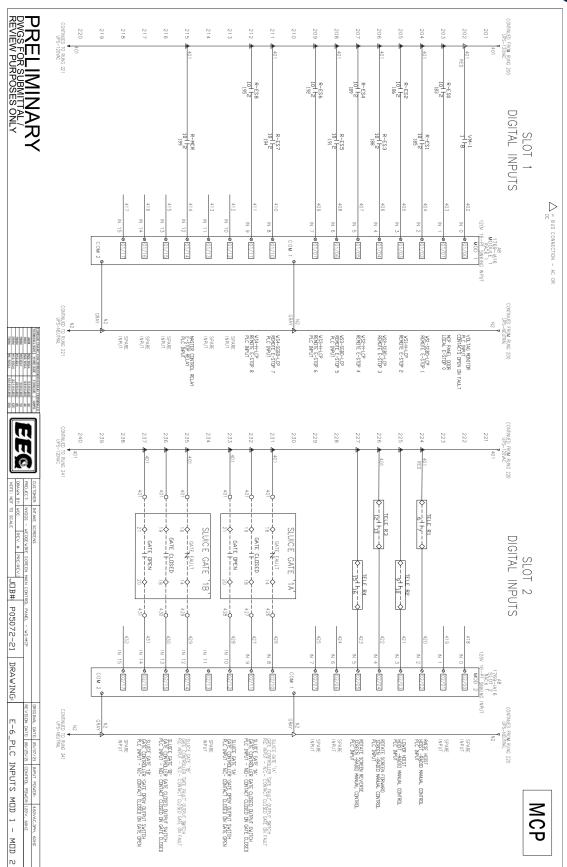


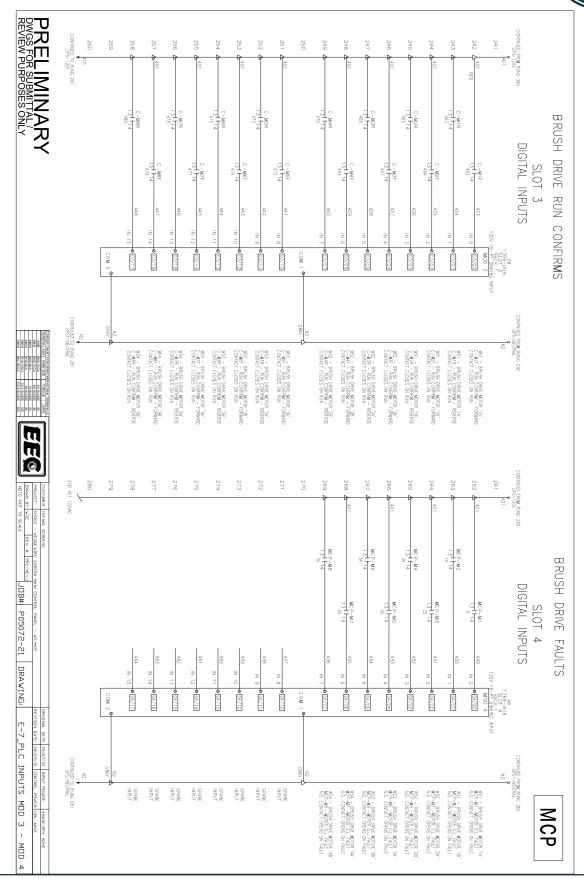




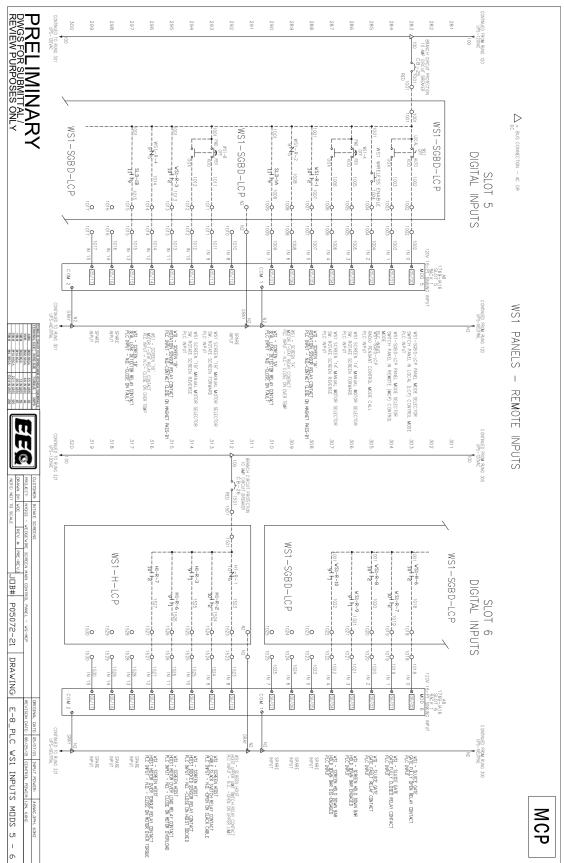










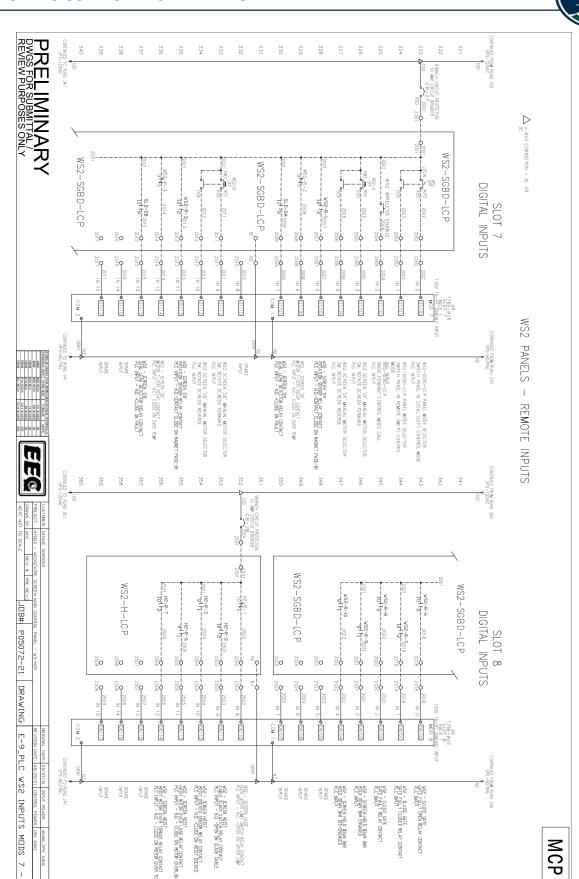


SPARE

SPARE

SPARE

V.S. - SCREEN HOIST HOIST NOTING OVER TORQUE RELAY CONTACT PLC INPUT - N.O. - CLOSE ON NOTING OVER TORQUE VS2 - SCREEN HOIST HOIST NOTOR OVER LOAD RELAY CONTACT PLC INPUT - NO. - CLOSE ON NOTOR OVERLOAD VS2 - SCREEN HOIST HOIST DOCKED SENSOR RELAY CONTACT PLC INPUT - N.O. -CLOSE ON HOIST DOCKED



SPARE

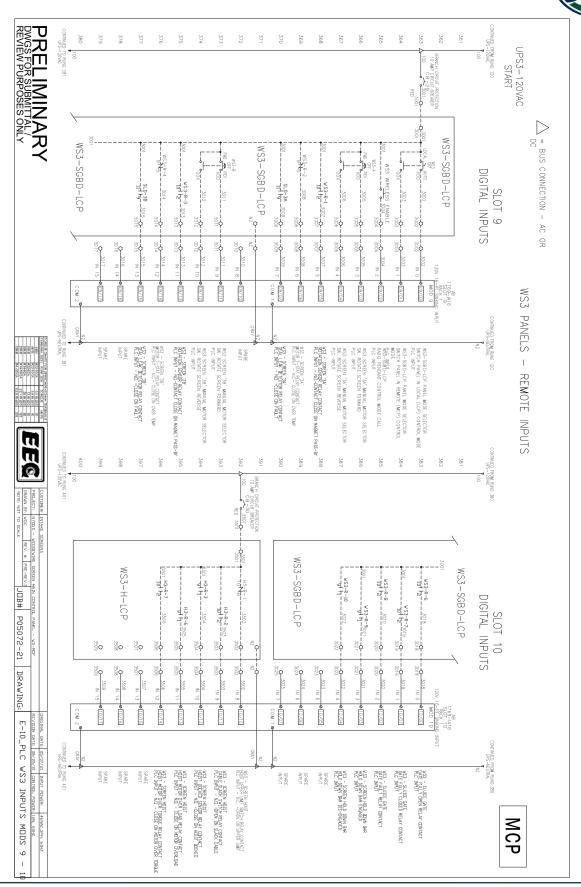
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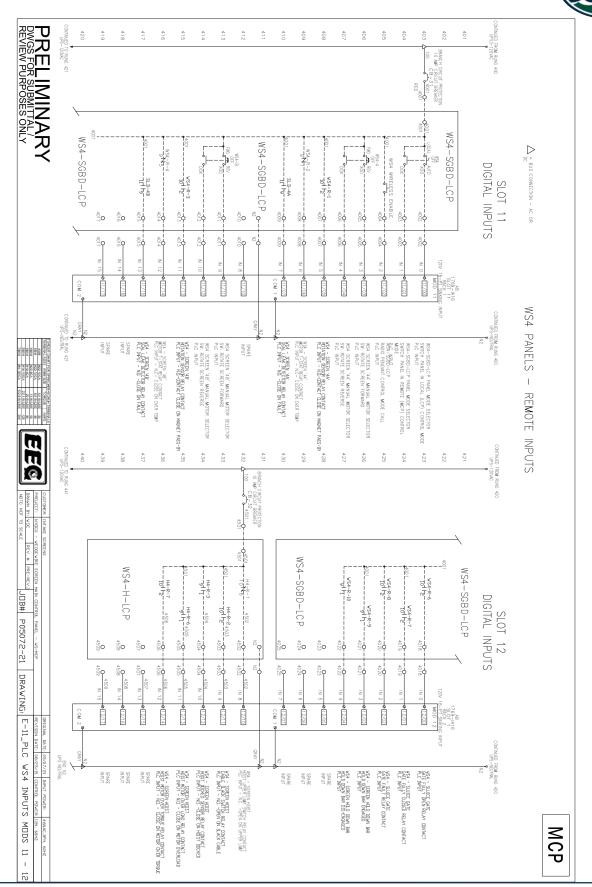
VS2 - SCREEN HOLD DOWN BAR HOLD DOWN BAR ENGAGED PLC INPUT VS2 - SLUICE GATE GATE FAULT RELAY CONTACT PLC INPUT VS2 - SLUICE GATE GATE FULLY CLOSED RELAY CONTACT PLC INPUT VS2 - SLUICE GATE GATE FULLY OPEN RELAY CONTACT PLC INPUT

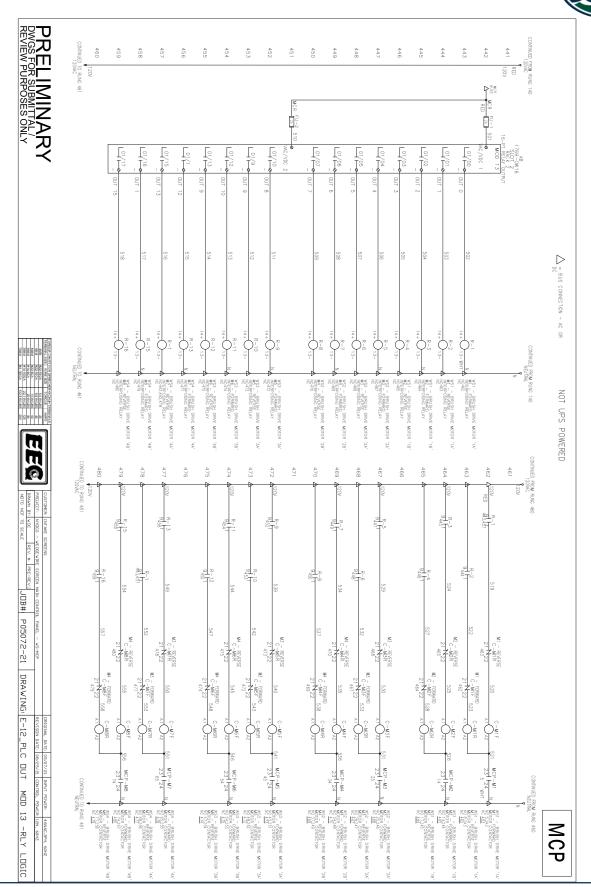
MCP

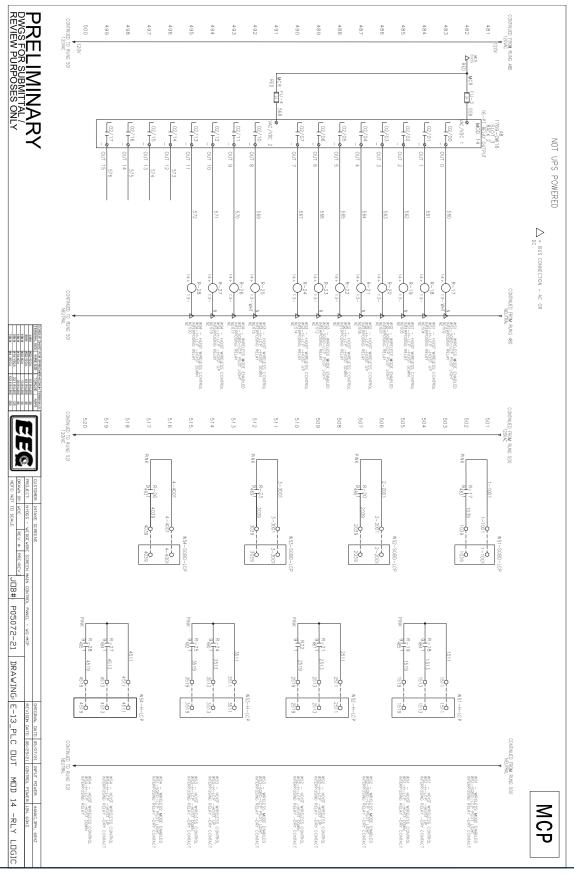
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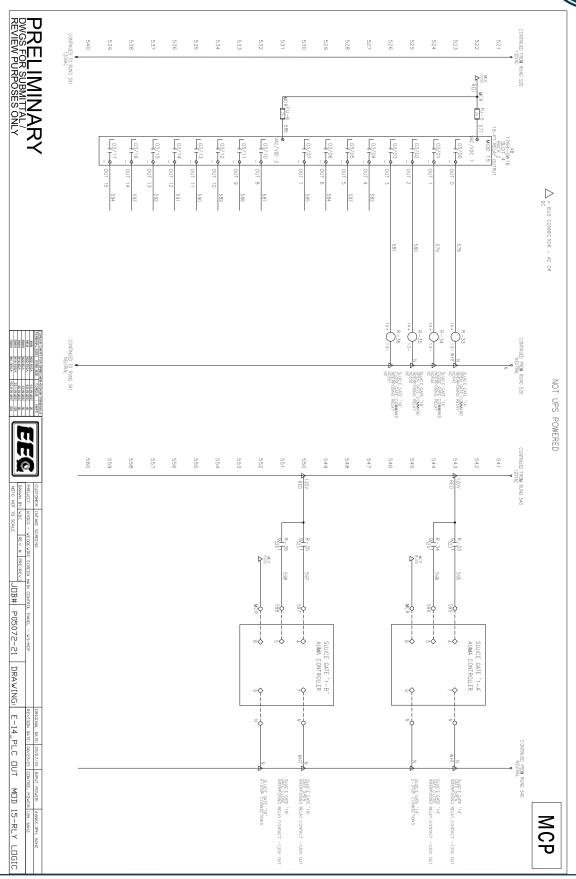
VS2 - SCREEN HDIST CABLE SLACK SVITCH RELAY CONTACT PLC INPUT - N.G -OPEN DN SLACK CABLE

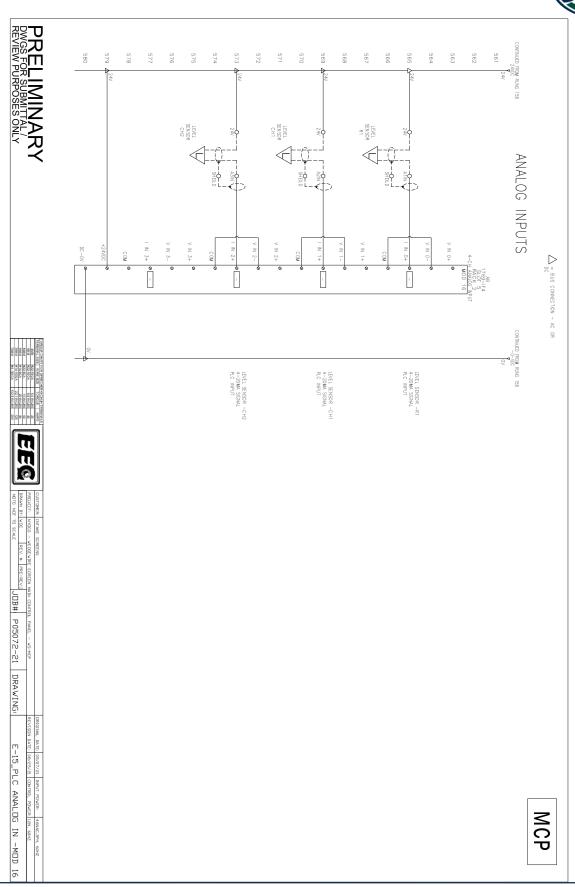


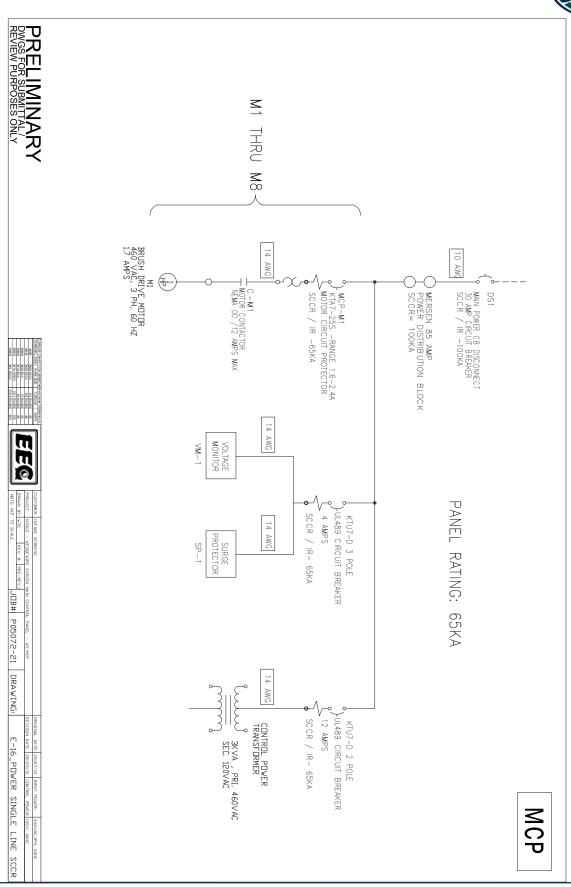




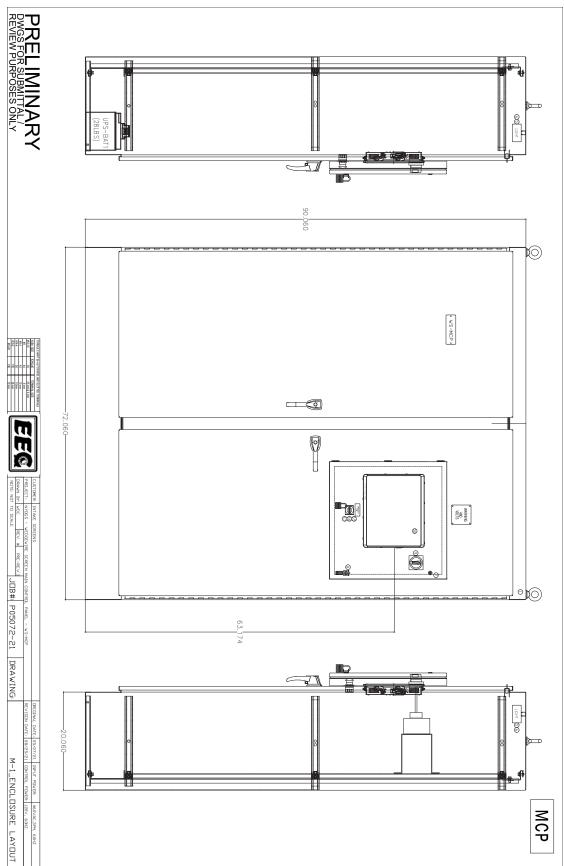




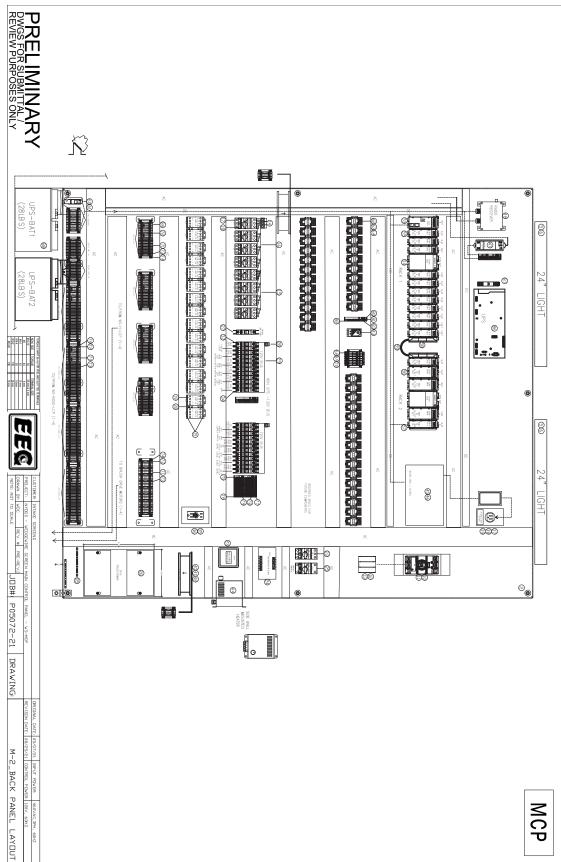


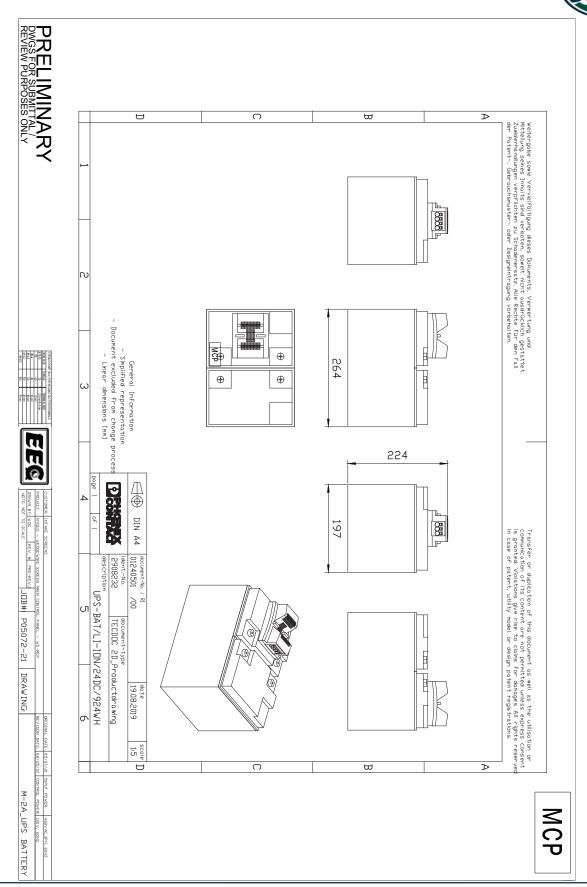


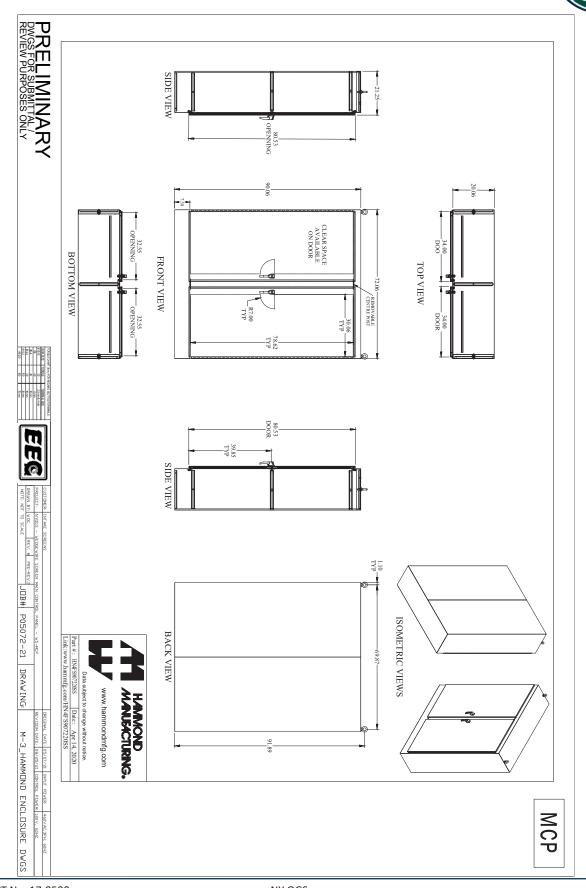






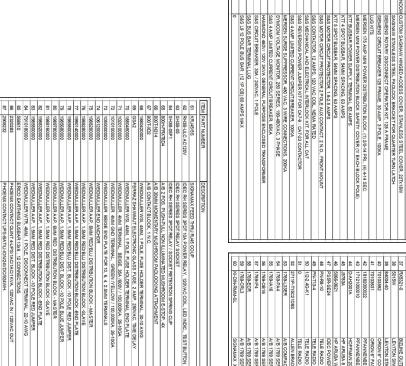












MEL	ITEM PART NUMBER	DESCRIPTION
악	0	0
32	L9-15/1/D	S&S CIRCUIT BREAKER, 15A / 480/277/AC, 1 POLE
ಜ	L9-5/1/D	S&S CIRCUIT BREAKER, 5A / 480/277VAC, 1 POLE
22	L9-10/1/D	S&S CIRCUIT BREAKER, 10A / 480/277/AC, 1 POLE
35	RX5321-0	BIZLINE OUTDOOR SINGLE-GANG BOX
88	GFNT1-W	LEVITON 15 AMP GFCI OUTLET WITH WALLPLATE
37	RX5321-0	BIZLINE OUTDOOR SINGLE-GANG BOX
38	5015W	LEVITON SINGLE RECEPTACLE, 120 VAC, 1 PH, 15 AMP,
39	84004-40	LEVITON STAINLES STEEL SINGLE RECEPTACLE WALL PLATE
46	70103592	ORION 6" COOLING FAN, 120 VAC
41	70103631	ORION 6" FAN FINGER GUARD
42	18182000022	PFANNENBERG 6" FAN BRACKET
43	17121000010	PFANNENBERG FLZ 530 COOLING T-STAT
4	D-AH2001A	HOFFMAN 200 WATT PANEL HEATER WITH THERMOSTAT, 120 VAC
45	J9783A	HP ARUBA 8 PORTMANAGED SWITCH, 120VAC
46	5066-0621	HP ARUBA WALL MOUNT KIT FOR 2530-8 SWITCH
47	PS5R-SE24	IDEC POWER SUPPLY, 90 WATT, 120 VAC INPUT, 24 VDC OUTPUT, CLASS 1, DIVISION 2
46	PN-R8-10	TELE RADIO Rx STD 5 RELAY 12-24VDC WITH EXTERNAL ANTENNA CONNECTION
49	PN-T13-4	TELE RADIO 4 BUTTON RADIO TRANSMITTER, 150FT RANGE
8	1/2-2.4G-K1	TELE RADIO HALF WAVE 2.4GHZ ANTENNA KIT W/ 3FT. CABLE EXTENSION
51	0	TELE RADIO NAMEPLATE - CUSTOM PLATE BLACK ON YELLOW
52	2711P-T15C21D8S	ALLEN BRADLEY PANEL VIEW PLUS 7, 15", COLOR, ETHERNET, 24VDC
83	1769-L33ER	A/B COMPACTLOGIX 5370-L3 PROCESSOR, 2MB
2	1769-PA4	A/B 1769 SERIES POWER SUPPLY 120-220VAC
8	1769-IA16	A/B 1769 SERIES 16 POINT 120VAC DIGITAL INPUT MODULE
85	1769-OB16	A/B 1769 SERIES 16 POINT DC SOLID STATE SOURCE OUTPUT MODULE, 24VDC
57	1769-IF4	A/B 1769 SERIES 4 CHANNEL ANALOG INPUT MODULE
88	1769-ECR	A/B 1769 SERIES MODULE RIGHT END CAP
56	1769-CRL3	A/B 1769 SERIES COMPACT LOGIC RIGHT TO LEFT BUS EXPANSION CABLE

3 AFICITIE
4 FLKCOS
5 FLKCATB
6 24 TB
7 SCE+HMKZ218SS(NO WINDOW
8 SCE+HMKZ18SS(NO WINDOW
9 3VA6137-0FK35
10 3VA 5130-6EC31-0AA0

DOOR ENCLOSURE, 90Tx72Wx20D, NEMA 4X

MCP

CONTROL DE TRANS.

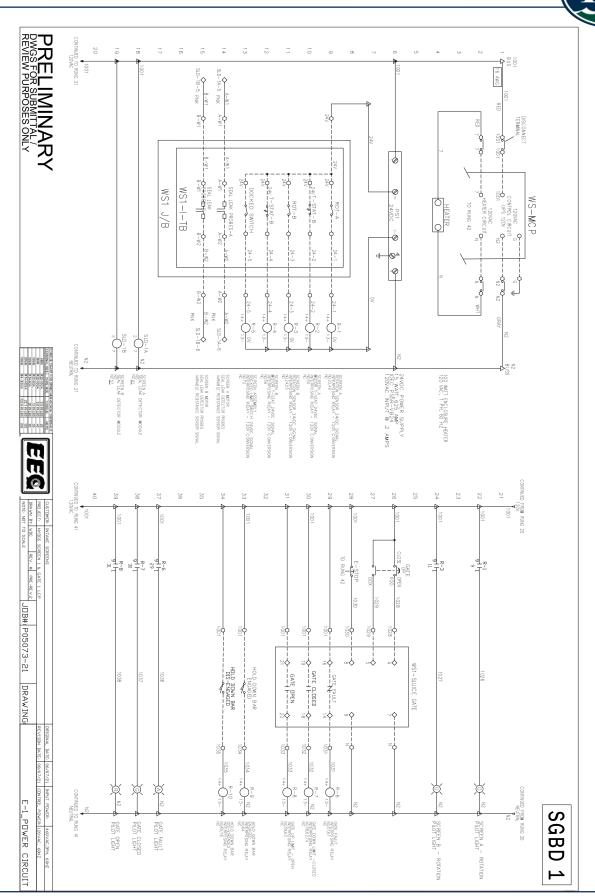
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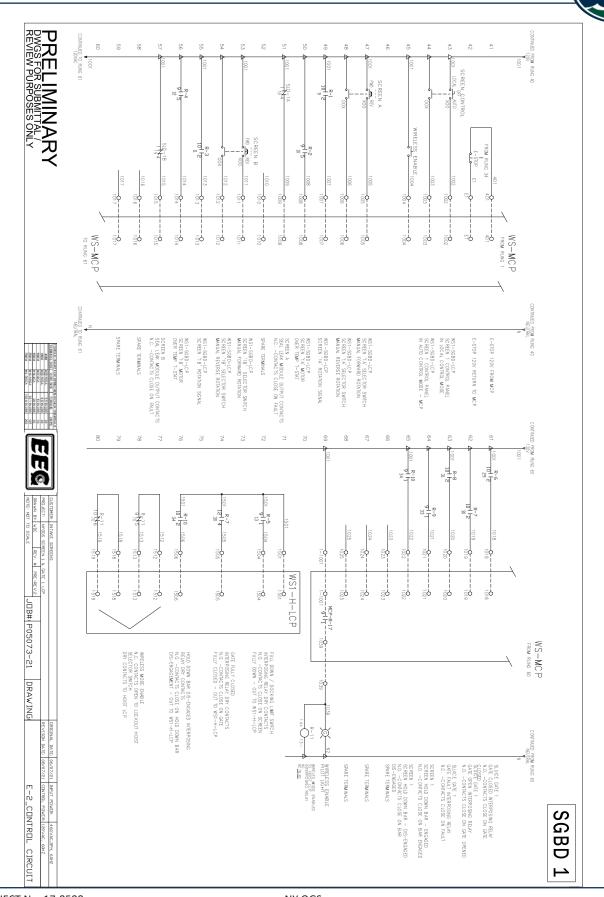
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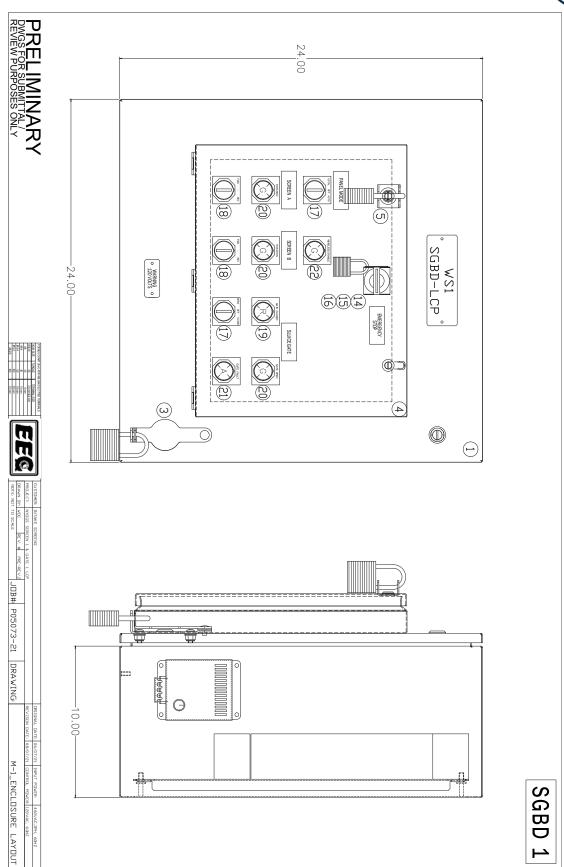
SGBD-LCP (TYP. FOR WS1-WS4)

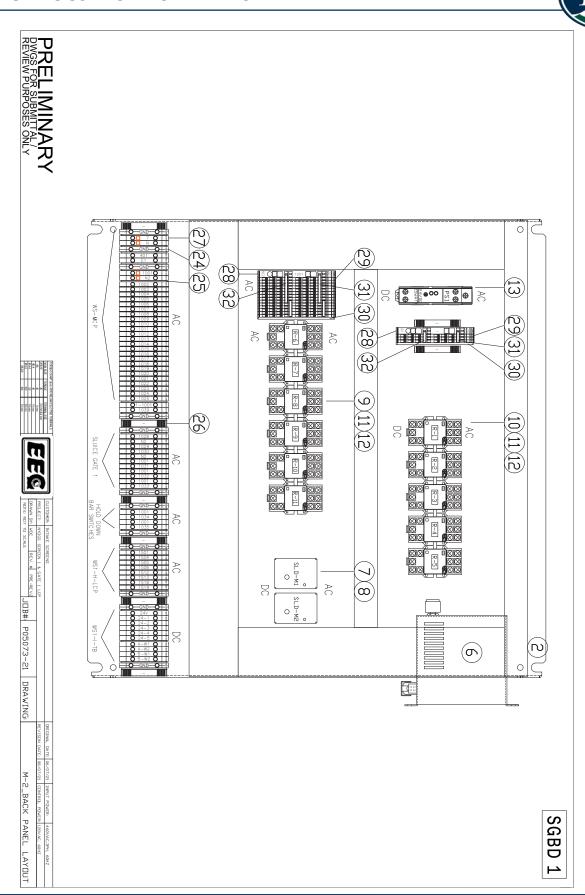




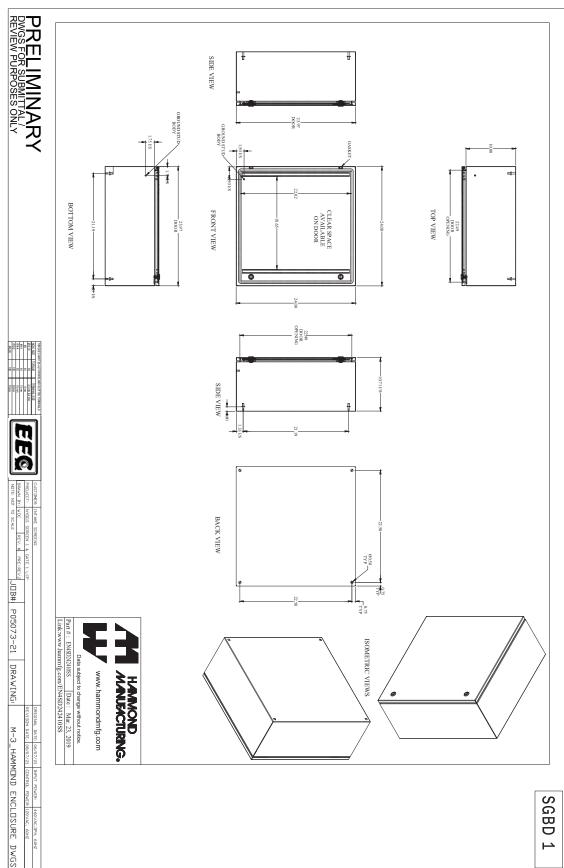














	_	_			
34	33	32	31	ITEM	
0	0	1985680000	1985800000	PART NUMBER	
0	0	WEIDMULLER AAP, 1.5MM REDIBLU DIST. BLOCK -10 POLE BLUE JUMPER	WEIDMULLER AAP, 1.5MM RED/BLU DIST. BLOCK -10 POLE RED JUMPER	DESCRIPTION	

-	TEM TAIN MONDEN	DESCRIPTION
	ENVICEDANATORS	HAMMOND STANLESS STEEL ENGLOSIBE 24T-2406-100 NEMA AV
2	EP2424	HAMMOND BACKPANEL FOR 24 X 24 ENCLOSURE
ω	EPA	HAMMOND ENCLOSURE MOUNTED PED LOCK ADAPTER, 14GA., STAINLESS STEEL
4	SCE-HA1814SS	SAGINAW HINGED ACCESS COVER, STAINLESS STEEL
O1	SCE-MINQPL	SAGINAW PADLOCK BRACKET, STAINLESS STEEL
6	D-AH1001A	HOFFMAN 100 WATT PANEL HEATER WITH THERMOSTAT, 120 VAC
7	201-100-SLD	SYMCOM PUMPSAVER SEAL DECTECTOR, 120 VAC, 1 PH, 60 HZ, 8-PIN BASE
00	OT08-PC	SYMCOM RELAY SOCKET RATED 600 VAC FOR USE WITH SYMCOM DEVICES
9	RH3B-ULC AC120V	IDEC RH SEREIS 3PDT 10A POWER RELAY, 120VAC COIL, LED INDIC., TEST BUTTON
10	RH3B-ULC DC24V	IDEC RH SEREIS 3PDT 10A POWER RELAY, 24VDC COIL, LED INDIC., TEST BUTTON
11	SH3B-05	IDEC RH SERIES 3PDT RELAY SOCKET
12	SH3B-05F1	IDEC RH SERIES 3PDT RELAY / SOCKET RETENTION SPRING CLIP
13	PS5R-SB24	IDEC POWER SUPPLY, 15 WATT, 120 VAC INPUT, 24 VDC OUTPUT, CLASS 1, DIVISION 2
14	800H-FRXT6D4	A/B 2 POS, PUSH-PULL NON ILLUMINATED MUSHROOM E-STOP
15	800T-N314	A/B 30MM MOMENTARY MUSHROOM PADLOCKING ATTACHMENT
16	800H-XD2	A/B CONTACT BLOCK, 1 N.C.
17	800H-JR2B	A/B 3 POS MAINTAINED 4X SELECTOR SWITCH, 2 NO, 2 NC, W/ KB7 CAM
18	800H-JR91B	A/B 3 POS SPRING RETURN 4X SELECTOR SWITCH, 2 NO, 2 NC, W/ KB7 CAM
19	800H-QRH10R	A/B RED LED PILOT LIGHT, 120VAC FULL VOLTAGE
20	800H-QRH10G	A/B GREEN LED PILOT LIGHT, 120VAC FULL VOLTAGE
21	800H-QRH10A	A/B AMBER LED PILOT LIGHT, 120VAC FULL VOLTAGE
22	800H-QRTH10G	A/B GREEN LED PUSH-TO-TEST PILOT LIGHT, 120VAC FULL VOLTAGE
23	1020100000	WEIDMULLER 4MM TERMINAL, BEIGE, 35A /600V / 100,000KA, 26-10GA
24	1010100000	WEIDMULLER 4MM GND TERMINAL, GREEN /YELLOW / 100,000KA, 26-10GA
25	1050000000	WEIDMULLER BEIGE END PLATE FOR 10, 6, 4, 2.5MM TERMINALS
26	1061200000	WEIDMULLER END ANCHOR
27	7910180000	WEIDMULLER WTR, 4MM, 1 POLE, DISCONNECT TERMINAL, 22-10 AWG
28	1988260000	WEIDMULLER AAP, 6MM REDIBLU DISTRIBUTION BLOCK - MASTER
29	1988280000	WEIDMULLER AAP, 1.5MM RED/BLU DISTRIBUTION BLOCK -SLAVE
30	1990140000	WEIDMULLER AAP, 1.5MM RED/BLU DISTRIBUTION BLOCK -END PLATE
MEM	ITEM PART NUMBER	DESCRIPTION
31	1985800000	WEIDMULLER AAP, 1.5MM REDIBLU DIST. BLOCK -10 POLE RED JUMPER
32	1985680000	WEIDMULLER AAP, 1.5MM RED/BLU DIST. BLOCK -10 POLE BLUE JUMPER
33	0	

SGBD \vdash

JOB# P05073-21 DRAWING



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ELECTRICAL EQUIPMENT COMPANY

1290 HOLM ROAD PETALUMA, CA. 94954 800-464-9994 FAX 707-765-6998 CONT. LIC:#766761

WARRANTY AND GENERAL

Company Inc .(EEC) to be free of defects in materials or workmansh

Industrial Control Panels

Limited Warranty

2 LIGHT SKY COURT SUITE 100 SACRAMENTO, CA. 95828 PHONE: 916–381–5710 800–651–1991 FAX: 916–381–8362

Electrical Equipment Company Inc. warrants the construction of Indi

5 If the factory opts the equipment owner

policy.

6 Written copies of

7 Warranty Detern Failures determined

caused or associated EEC. All warranty re expenses to and fron the failure sole option of olidays. Travel

4 if a replacement component is required sconer than it will take for the above factory evaluation, the customer may purchase a replacement component from EEC. The failed component must be returned for factory evaluation as per the above paragraph. If the failed component is covered under warranty, and the factory agrees to issue a credit to EEC for the failed component, EEC will at that time issue a credit to the equipment owner for the purchase price less any freight charges.

3 Warranty Determination - Component Parts
Warranty coverage will be the determination of the manufacturer of the failed component. The failed component must be returned to EEC Warranty coverage will be the determination of the manufacturer for warranty evaluation. If the component freight prepaid. EEC will arrange to have the component returned to the manufacturer for warranty evaluation. If the component manufacturer determines the failure to be covered under their warranty policy, a replacement component will be sent to the owner of the industrial Control Panel according to the terms and conditions of the component manufacturer's warranty policy.

2 Puration of Warranty The warranty period starts the day the industrial Control Panel ships from our manufacturing facility and extends for twelve months past that date, regardless of when the industrial Control Panel is installed, or commissioned.

1 What is Covered This warranty covers defects in material or workmanship of any industrial control panel manufactured by EEC.

8 Additional Exclus
EEC is not responsib
equipment. This warr
riots, civil commotion

9 EEC shall not be like which might aris

manufactures manual of individual components for detailed informatic The following information on this page is to be considered as general

de-energized whenever posible and applicable lock-out / tag-out procedures observed to reduce the risk of electrical shock, injury or death All maintenance procedures are to be performed by "Qualified Persor al panel

Components by Type - Periodic Specific Maintenance

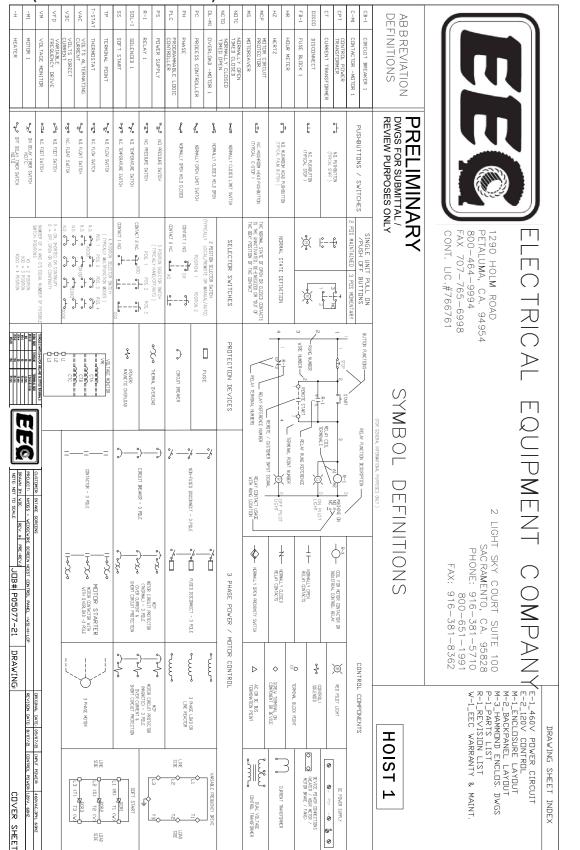
General Panel Maintenance

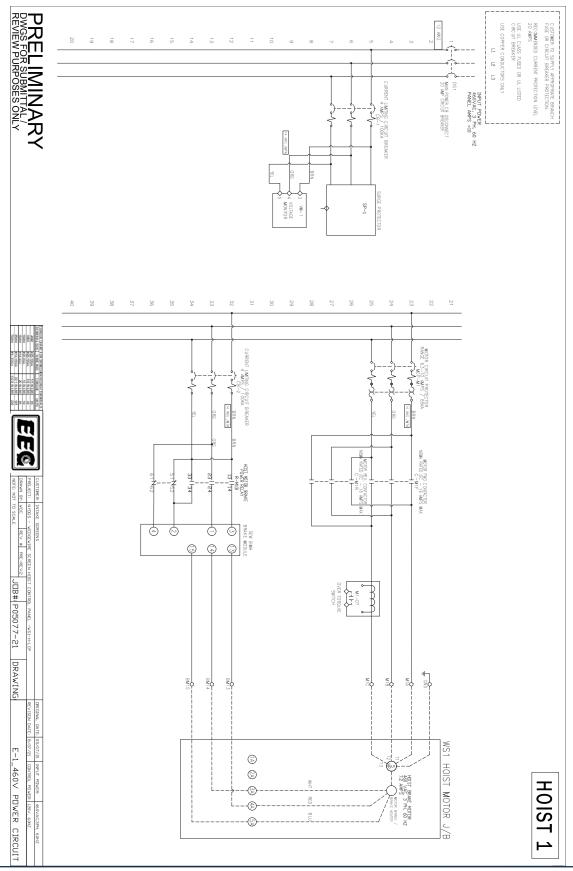
working order OAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	— Physical damage that compromises the integrity, function or safety of the enclosure. — Are Pilot devices in good working order - switch's, light bulbs or panel meters — Are connecting conduits secure and tight — Is the disconnect in good plant.	General Inspection - thin
or broken — Are fan / exhaust filters in place or missing	— Are the cooling fan(s) running — Are there any noises coming from the panel buzzing or relay chatter cooling fan bearing noise — Does the panel feel excessively warm or hot panel fan louver plates physically blocked	General Inspection - things to look and listen for
any discoloration of conductors	Are there any noises coming fan (s) — Is there excessive dust or running from the panel buzzing or relay chatter or terminal connections cooling fan bearing noises cooling fan bearing noise hexcessively warm or hot panel fan louver plates physically blocked — Inspect for odd smells and	d listen for
NOTION OF THE PROPERTY OF THE	Inspect for excessive dust and / or seasonal moisture on unit / heat sink Annually -check power and control connections for tightness and corrosion -Clean heat sinks and casings Rule of Thumb- Keep equipment clean, dry and connections tight	Electronics (VFD, Soft Start, PLC, Pwr Sup.) Monthly
PROJECT: MOTOS SCREENS I & CAME LLCP TRANA BY VOC. TO SCALE LLCP TO	- Listen for loud relay buzzing or contact chatter Annually - Check power and coil connections for tightness and corrosion - Manually test overload trip and reset switch's - Inspect contacts condition for severe pits or burns - replace as necessary	Electro-mechanical (Mtr. Str., Contactor, Control Rly) Monthly
JUB# P05073-21 DRAWING: W-1_EEC WARRANTY & MAINI	Insure condensation drainage equipment is functioning correctly Seasonal To prevent frost damage, the temperature in the water circuit must not fall below +1C /33F anywhere in the system If unit is not in use during frost conditions, it must be emptied of water using compressed air or shop vac.	A/W Heat Exchanger
SECURION. DATE SOCIZE INSUFER PRICES. 460/AC,SH; 60/2 SECURION DATE SOCIZE CONTROL PRICES. 66/2 W-1_EEC WARRANITY & MAINT	Clean filters to ensure consistent CFM for adequate panel cooling Annually Test thermostat to insure fan circuit functionality by rotating thermostat adjustment dial off of current set point to above or below current temperature to force fan to switch on or off, then return to set point.	Panel Fan / Exhaust
No. 17-0	500	

~	MAINTENANCE INFORMATION FOR
	ENCLOSED ELECTRICAL EQUIPMENT
	ASSEMBLED BY ELECTRICAL EQUIPMENT COMPANY, INC.
ustrii hip fa	ustrial Control Panels manufactured by Electrical Equipment hip for a period of twelve months as outlined below.
s to rep er by E	to repair and return the failed component to the owner in adherence with their warranty policy no credit will be issued to er by EEC. The equipment owner will be responsible for any freight charges in accordance with the factory warranty
the co	the component manufacturers warranty policy are available from EEC or the component manufacturer.
minaticed by EE and with repairs om the	mination - Workmanship dually workmanship will be repaired by EEC. Only the labor required to repair the failure by EEC to be caused by faulty workmanship is covered in this warranty. The extent of the repair or replacement is the sole option of repairs will be made during normal business hours, \$0.00 am to \$0.00 pm, Monday thru Friday, excluding Holidays. Travel pm the job site if required is the responsibility of the equipment owner.
usions lible for arranty on's, ac	usions bile for any failures that are determined by EEC to be caused due to misapplication, misuse or mistandling, of the bile for any failures that are determined by EEC to be caused by act of God, environmental contamination, fire, brins, acts of war, radiation, vandalism or any other similar or dissimilar occurrences beyond EEC's control.
e held r se out	e held responsible for damage to person or property, consequential loss, loss of profit, losses on goods in store or the se out of failure of the equipment delivered, irrespective of the cause.
guia on.	guidelines / recommendations only. Please consult the appropriate on.
nne/	nnel" only (as defined by CAL-OSHA), with the enclosure / electrical panel

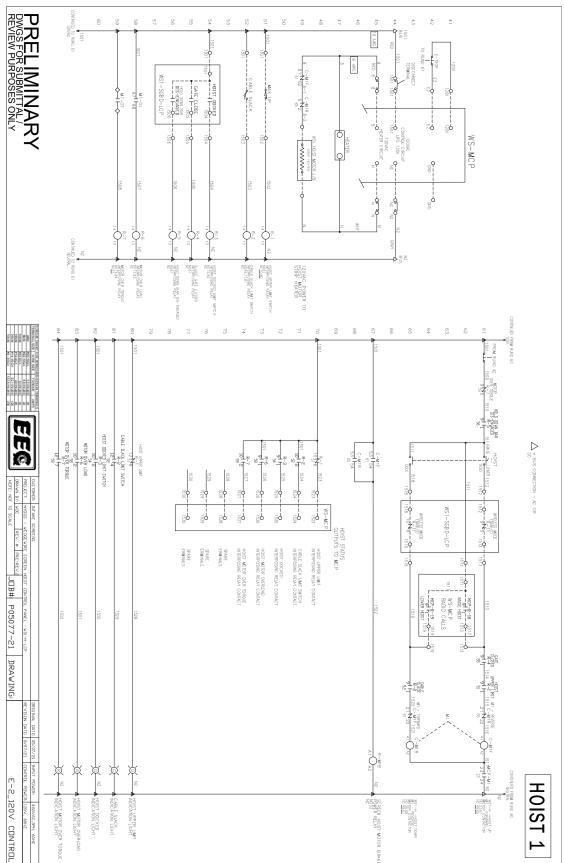
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H-LCP (TYP. FOR WS1-WS4)

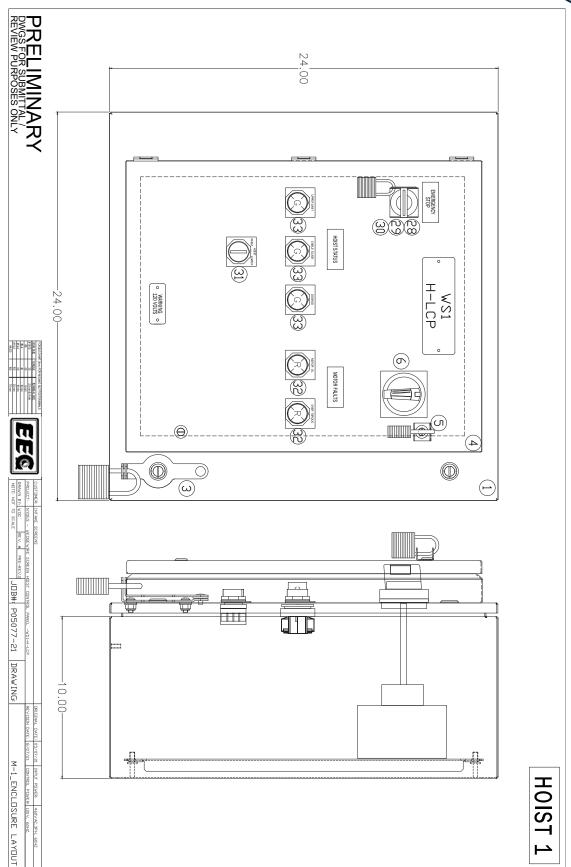


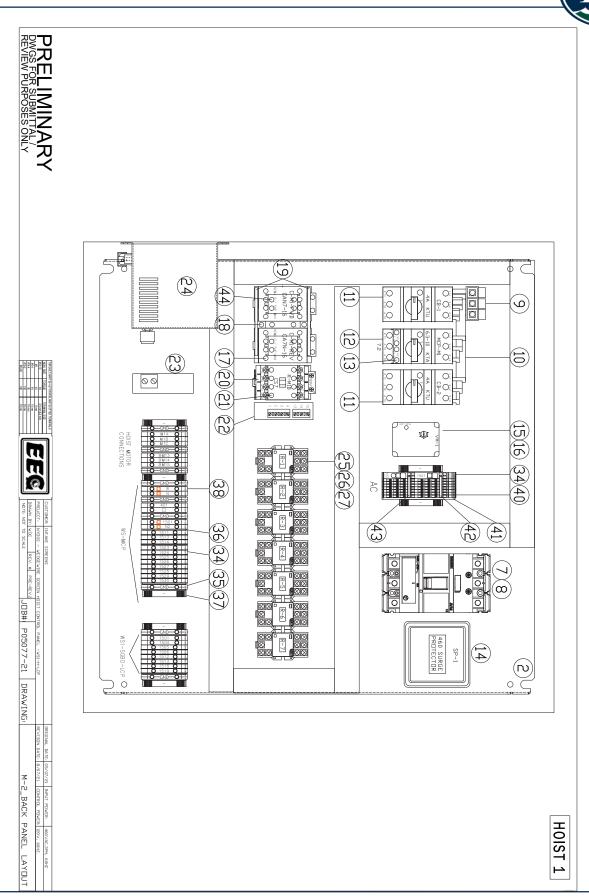


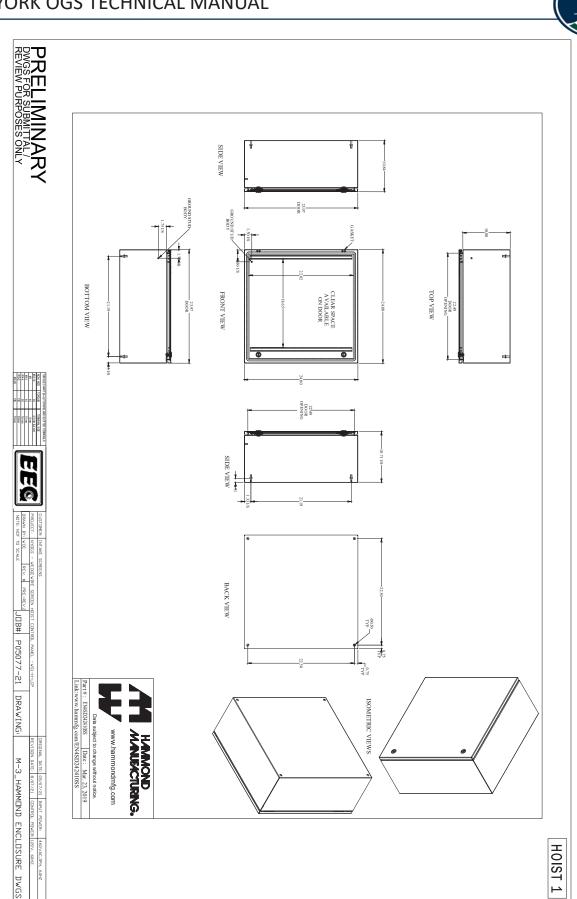












HOIST 1





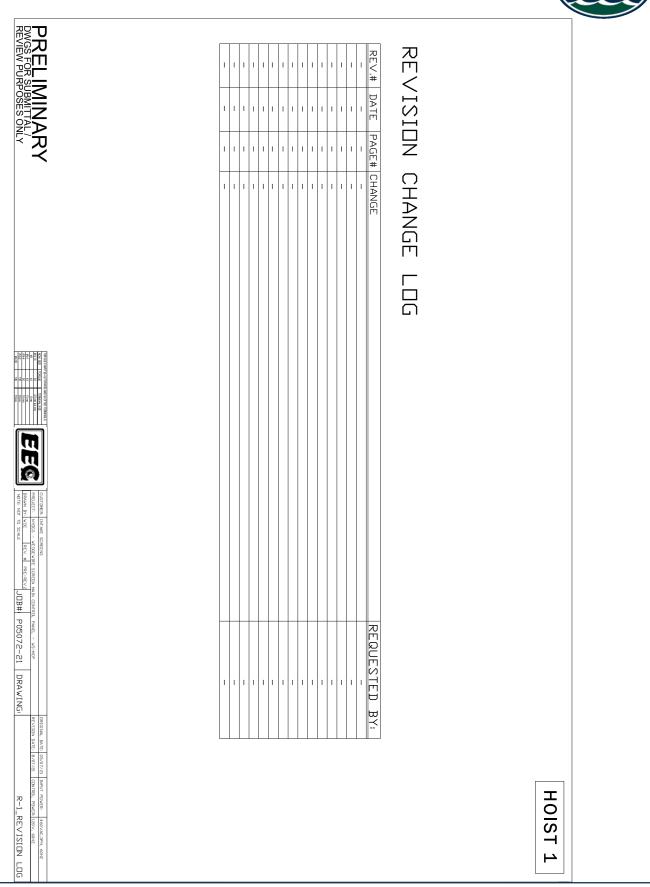
4	SCE-HA1814SS	SAGINAW HINGED ACCESS COVER, STAINLESS STEEL
5	SCE-MINQPL	SAGINAW PADLOCK BRACKET, STAINLESS STEEL
0	3VA9137-0FK35	SIEMENS ROTARY DISCONNECT OPERATOR KIT, 125 A FRAME
7	3VA 5120-6EC31-0AA0	SIEMENS CIRCUIT BREAKER 125 FRAME, 20 AMP, 3 POLE, 100KA
8	3VA 9133-0JB11	LUG KITS
9	KT7-32-A3E	KT7 BUSBAR POWER SUPPLY TERMINAL, 63 AMPS
10	KT7-32-DB-54-3	KT7 3 SPOT BUSBAR, 54MM SPACING, 63 AMPS
11	KTU7-D-3D-4	S&S 4 AMP LIMITED CURRENT CIRCUIT BREAKER, 100KA
12	KTA7-25S-10A	S&S MOTOR CIRCUIT PROTECTOR, 6.3-10 AMPS
13	KT7-PE1-20	S&S MOTOR CIRCUIT PROTECTOR 2 POLE AUX CONTACT, 2 N.O., FRONT MOUNT
14	STXR480D05	MERSEN SURGE SUPPRESSOR, 480 VAC, 3 WIRE CONNECTIONS, 200KA
15	201A	SYMCOM VOLTAGE MONITOR, 201A SERIES, 190-480V, 3 PHASE, 8-PIN BASE
16	OT08-PC	SYMCOM RELAY SOCKET RATED 600 VAC FOR USE WITH SYMCOM DEVICES
17	CAN7-16-10-120	S&S CONTACTOR, 16 AMPS, 120 VAC COIL, NEMA RATED
18	CM7-02	S&S MECHANICAL AND ELECTRICAL INTERLOCK KIT, FOR ALL CA7
19	CAUT7-PW23	S&S REVERSING POWER JUMPER KIT FOR CA7-9 : CA7-23 CONTACTOR
20	CS7-40E-120	S&S CONTROL RELAY, 120 VAC COIL
21	CS7-PV-22	S&S TOP AUX CONTACT BLOCK, 2-NO, 2-NC
22	0825 818 X	SEW EURODRIVE RECTIFIER BRAKE / HEATER MODULE TYPE BMH1.5
23	AS1-NOU-SP	NK TECHNOLOGIES CURRENT SENSOR, AS1 SERIES, N.O CLOSES ON HIGH AMPS
24	D-AH1001A	HOFFMAN 100 WATT PANEL HEATER WITH THERMOSTAT, 120 VAC
25	RH3B-ULC AC120V	IDEC RH SEREIS 3PDT 10A POWER RELAY, 120VAC COIL, LED INDIC., TEST BUTTON
26	SH3B-05	IDEC RH SERIES 3PDT RELAY SOCKET
27	SH3B-05F1	IDEC RH SERIES 3PDT RELAY / SOCKET RETENTION SPRING CLIP
28	800H-FRXT6D4	A/B 2 POS, PUSH-PULL NON ILLUMINATED MUSHROOM E-STOP
29	800T-N314	A/B 30MM MOMENTARY MUSHROOM PADLOCKING ATTACHMENT
3	30 800H-XD2	A/B CONTACT BLOCK 1 N C

HAMMOND STAINLESS STEEL ENCLOSURE, 24Tx24Wx10D, NEMA 4X
HAMMOND BACKFANEL FOR 24 X 24 ENCLOSURE
HAMMOND ENCLOSURE MOUNTED PED LOCK ADAPTER, 14GA., STAINLESS STEEL

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WEIDMULLER AAP, 1.5MM RED/BLU DIST. BLOCK -10 POLE BLUE JUMPER	1985680000	43
WEIDMULLER AAP, 1.5MM RED/BLU DIST. BLOCK -10 POLE RED JUMPER	1985800000	42
WEIDMULLER AAP, 1.5MM RED/BLU DISTRIBUTION BLOCK -END PLATE	1990140000	41
WEIDMULLER AAP, 1.5MM RED/BLU DISTRIBUTION BLOCK -SLAVE	1988280000	46
WEIDMULLER AAP, 6MM RED/BLU DISTRIBUTION BLOCK - MASTER	1988260000	39
WEIDMULLER WTR, 4MM, 1 POLE, DISCONNECT TERMINAL, 22-10 AWG	7910180000	38
WEIDMULLER END ANCHOR	1061200000	37
WEIDMULLER BEIGE END PLATE FOR 10, 6, 4, 2.5MM TERMINALS	1050000000	88
WEIDMULLER 4MM GND TERMINAL, GREEN /YELLOW / 100,000KA, 26-10GA	1010100000	35
WEIDMULLER 4MM TERMINAL, BEIGE, 35A /600V / 100,000KA, 26-10GA	1020100000	32
A/B GREEN LED PILOT LIGHT, 120VAC FULL VOLTAGE	800H-QRH10G	ಜ
A/B RED LED PILOT LIGHT, 120VAC FULL VOLTAGE	800H-QRH10R	32
A/B 3 POS SPRING RETURN 4X SELECTOR SWITCH, 2 NO, 2 NC, W/ KB7 CAM	800H-JR91B	31

HOIST 1

CUSTORES INTACE SPECIAL PAGE SP



Is the disconnect in good

secure and tight

Are connecting conduits

light bulbs or panel meters working order - switch's,

Are Pilot devices in good

working order

Are fan / exhaust filters in place or missing

EE

JUB# P05077-21

DRAWING:

W-1_EEC WARRANTY & MAINT

Physical damage that

compromises the integrity

function or safety of the





TRIC \geq EQUIPMENT \bigcirc OMPANY

ENCLOSED ELECTRICAL EQUIPMENT MAINTENANCE INFORMATION ASSEMBLED BY S

WARRANTY AND GENERAL

Industrial Control Panels Limited Warranty

1 What is Covered

Duration of Warranty

1290 HOLM ROAD PETALUMA, CA. 94954 800-464-9994 FAX 707-765-6998

CONT. LIC.#766761 Electrical Equipment Company Inc. warrants the construction of Industrial Control Panels manufactured by Electrical Equipment

ELECTRICAL EQUIPMENT COMPANY, INC

2 LIGHT SKY COURT SUITE 100 SACRAMENTO, CA. 95828 PHONE: 916–381–5710 800–651–1991 FAX: 916–381–8362

Company Inc .(EEC) to be free of defects in materials or workmanship for a period of twelve months as outlined below 5 If the factory opts to repair and return the failed component to the owner in adherence with their warranty policy no credit will be issued to the equipment owner by EEC. The equipment owner will be responsible for any freight charges in accordance with the factory warranty

6 Written copies of the component manufacturers warranty policy are available from EEC or the component manufacturer

The warranty period starts the day the Industrial Control Panel ships from our manufacturing facility and extends for twelve months past that date, regardless of when the Industrial Control Panel is installed, or commissioned.

warranty covers defects in material or workmanship of any industrial control panel manufactured by EEC

Warranty Determination - Component Parts

4 If a replacement component is required scorer than it will take for the above fectory evaluation, the customer may purchase a replacement component from EEC. The failed component must be returned for factory evaluation as per the above paragraph. If the failed component is covered under warranty, and the factory agrees to issue a credit to EEC for the failed component, EEC will at that time issue a credit to the equipment owner for the purchase price less any freight charges.

Warranty coverage will be the determination of the manufacturer of the failed component. The failed component must be returned to EEC Will arrange to have the component returned to the manufacturer for warranty evaluation. If the component returned to the manufacturer of semantines the failure to be covered under their warranty policy, a replacement component will be sent to the owner of the industrial Control Panel according to the terms and conditions of the component manufacturer's warranty policy.

7 Warranty Determination - Workmanship Failures determined by EEC, Only the labor required to repair the failure realized elemined by EEC to be caused by faulty workmanship will be repaired by EEC. Only the labor required to repair the failure caused or associated with the faulty workmanship is covered in this warranty. The extent of the repair or replacement is the sole option of EEC. All warranty repairs will be made during normal business hours, 8:00 am to 5:00 pm, Monday thru Friday, excluding Holidays. Travel expenses to and from the job site if required is the responsibility of the equipment owner. 8 Additional Exclusions
EEC is not responsible for any failures that are determined by EEC to be caused due to misapplication, misuse or mishandling, of the

equipment. This warranty will not be applicable to any damages or failure that is caused by act of God, environmental contamination, fire riots, civil commotion's, acts of war, radiation, vandalism or any other similar or dissimilar occurrences beyond EEC's control.

9 EEC shall not be held responsible for damage to person or property, consequential loss, loss of profit, losses on goods in store or the like which might arise out of failure of the equipment delivered, irrespective of the cause.

All maintenance procedures are to be performed by "Qualified Personnel" only (as defined by CAL-OSHA), with the enclosure / electrical panel de-energized whenever posible and applicable lock-out / tag-out procedures observed to reduce the risk of electrical shock, injury or death

manufactures manual of individual components for detailed information

The following information on this page is to be considered as general guidelines / recommendations only. Please consult the appropriate

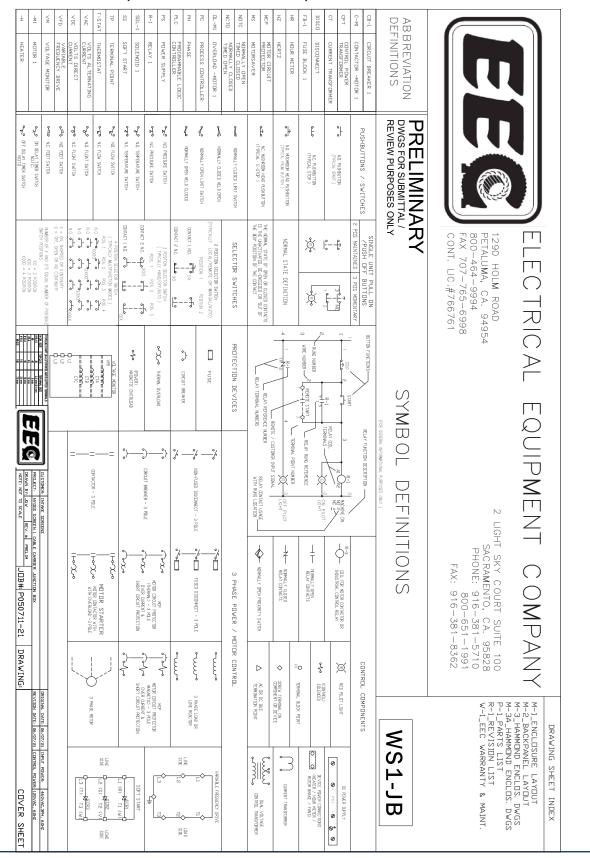
Components by Type - Periodic Specific Maintenance

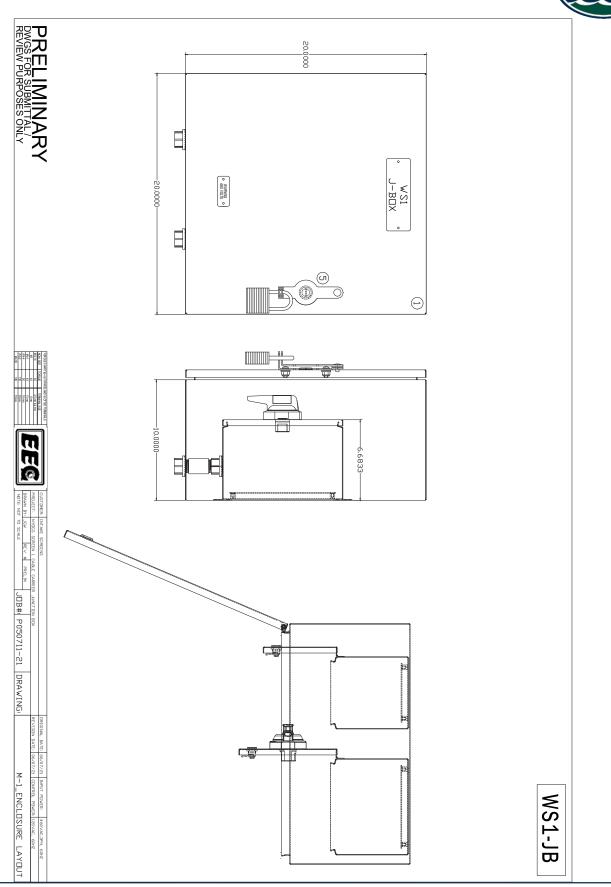
General Panel Maintenance

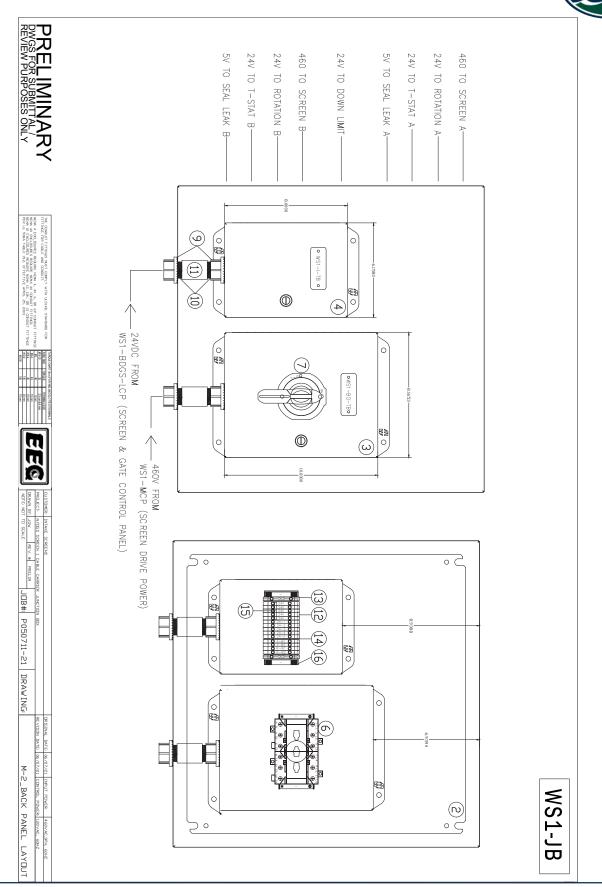
General Inspection - things to look and listen for Outside - durring operation plates physically blocked or broken coming from the panel Are panel fan louver excessively warm or hot Does the panel feel Are the cooling fan(s) Are there any noises buzzing or relay chatter cooling fan bearing or terminal connections Is there excessive dust or Inspect for odd smells and devices out of position Are any of the plug-in corrosion on components Are there signs of and / or moisture in the Are there any signs of Inhabitants' - insects / Inside - power off dry and connections tight Rule of Thumb-Electronics (VFD, Soft Start, PLC, Pwr Sup.) connections for tightness on unit / heat sink Clean heat sinks and and corrosion and / or seasonal moisture Inspect for excessive dust check power and control Keep equipment clean, Electro-mechanical (Mtr. Str., Contactor, Control Rly Inspect contacts condition for Manually test overload trip connections for tightness Check power and coil buzzing or contact chatter Listen for loud relay severe pits or burns - replace as of water using compressed air or shop vac. Seasonal If unit is not in use during frost conditions, it must be emptied To prevent frost damage, the temperature in the water circuit must not fall below +1C /33F anywhere in the system correctly equipment is functioning Insure condensation drainage A/W Heat Exchanger circuit functionality by rotating thermostat adjustment dial off Annually of current set point to above or consistent CFM for adequate Clean filters to ensure then return to set point. force fan to switch on or off, below current temperature to Test thermostat to insure fan panel cooling Panel Fan / Exhaust

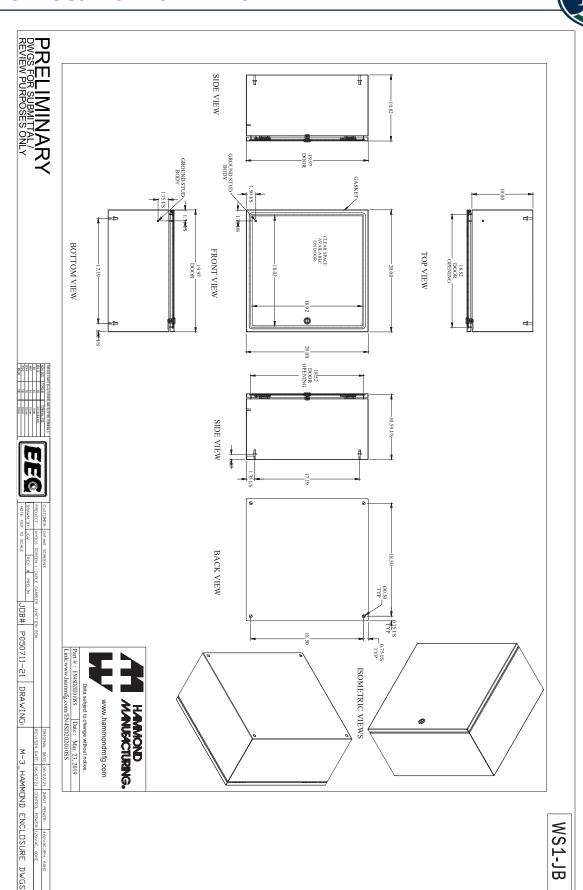


JUNCTION BOX (TYP. FOR WS1-WS4)

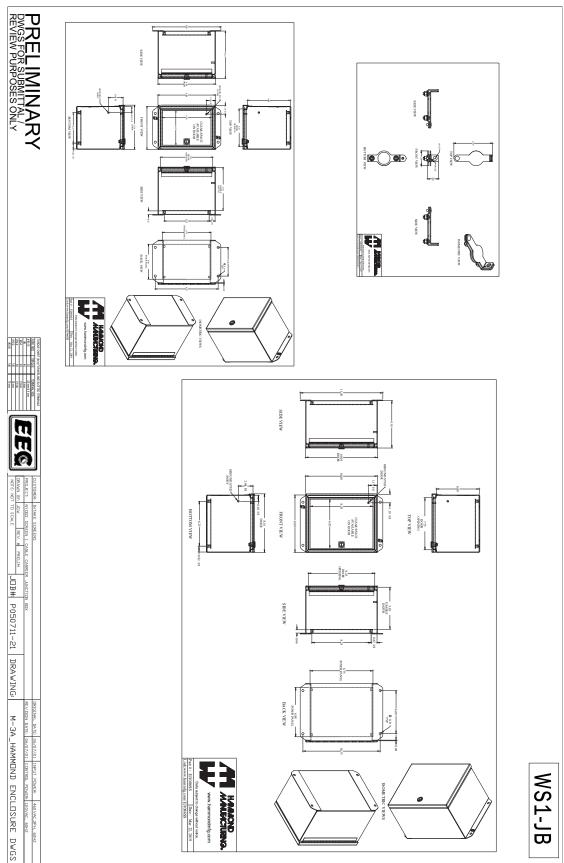


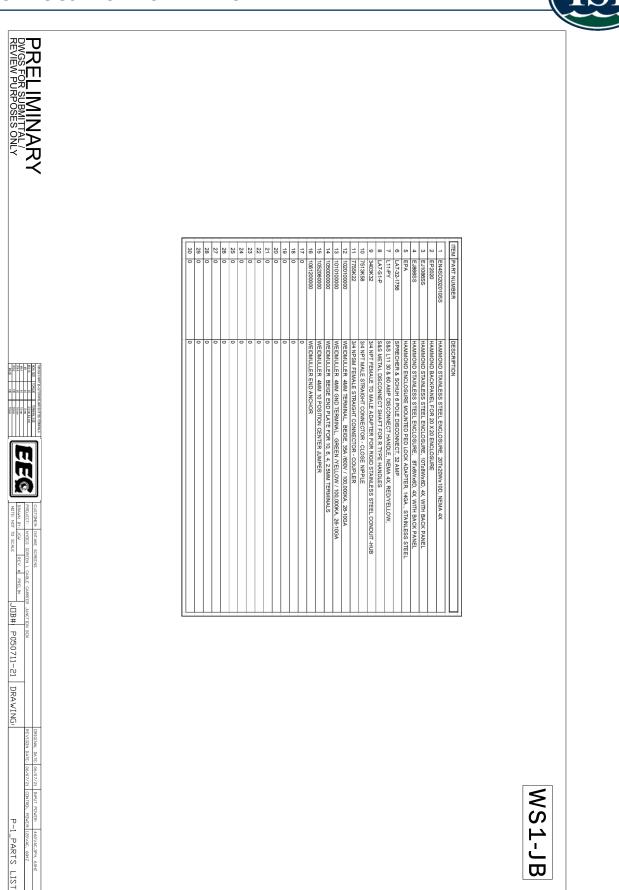














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LEC TRICAL EQUIPMENT COMPANY

1290 HOLM ROAD PETALUMA, CA. 94954 800-464-9994 FAX 707-765-6998 CONT. LIC:#766761

MENT

WARRANTY AND GENERAL

NY, INC

Industrial Control Panels Limited Warranty

Electrical Equipment Company Inc. warrants the construction of Industria

2 LIGHT SKY COURT SUITE 100 SACRAMENTO, CA. 95828 PHONE: 916–381–5710 800–651-1991 FAX: 916–381–8362

- Company Inc . (EEC) to be free of defects in materials or workmanship for
- policy. 5 If the factory opts to repair the equipment owner by EEI no credit will be issued to th the factory warranty
- 6 Written copies of the com ufacturer.
- 7 Warranty Determination Failures determined by EEC to caused or associated with the EEC. All warranty repairs will expenses to and from the job ed to repair the failure ement is the sole option of excluding Holidays. Travel

4 If a replacement component is required scone rhan it will take for the above factory evaluation, the customer may purchase a replacement component from EEC. The failed component must be returned for factory evaluation as per the above paragraph. If the failed component is covered under warranty, and the factory agrees to issue a credit to EEC for the failed component, EEC will at that time issue a credit to the equipment owner for the purchase price less any freight charges.

CAUTION!-

Warranty coverage will be the determination of the manufacturer of the failed component. The failed component must be returned to EEC freight prepaid. EEC will arrange to have the component returned to the manufacturer for warranty evaluation. If the component manufacturer determines the failure to be covered under their warranty policy, a replacement component will be sent to the owner of the industrial Control Panel according to the terms and conditions of the component manufacturer's warranty policy.

Warranty Determination - Component Parts

2 Puration of Warranty The warranty period starts the day the industrial Control Panel ships from our manufacturing facility and extends for twelve months past that date, regardless of when the industrial Control Panel is installed, or commissioned.

1 What is Covered This warranty covers defects in material or workmanship of any industrial control panel manufactured by EEC.

- 8 Additional Exclusions
 EEC is not responsible for any
 equipment. This warranty will
 riots, civil commotion's, acts o or mishandling, of the mental contamination, fire, EC's control.
- 9 EEC shall not be held re-like which might arise out of n goods in store or the

manufactures manual of individual components for detailed information. The following information on this page is to be considered as general guide propriate

All maintenance procedures are to be performed by "Qualified Personnel" only (as defined by CAL-OSHA), with the enclosure / electrical p de-energized whenever posible and applicable lock-out / tag-out procedures observed to reduce the risk of electrical shock, injury or death electrical panel

			- 1										
	working order	secure and tight Is the disconnect in good	Are connecting conduits	light bulbs or panel meters	Are Pilot devices in good working order - switch's,	enclosure.	function or safety of the	compromises the integrity,	—Physical damage that	Outside - durning operation	Outoido di un	General Inspec	Gen
 Are fan / exhaust filters in place or missing 	or broken	— Are panel fan Touver plates physically blocked	 Does the panel feel 	noise	- buzzing fan hearing	— Are there any noises	•	running	— Are the cooling fan(s)	ing operation		General Inspection - things to look and listen for	General Panel Maintenance
conductors	any discoloration of	Are panel fan louver rodents plates physically blocked — Inspect for odd smells and	— Are there any signs of	 Are any or the plug-in devices out of position 	or terminal connections	— Are there signs of	panel	and / or moisture in the	-ls there excessive dust or	- bower or	beide power off	nd listen for	nance
Fit by 35 25mm4 rm Fit 45 25mm4 rm Ext. 45 25mm Fit 45 25mm	TORICIE OHATI (IN-IN) FOR WIEJAND SOTTED TERMINALS	Keep equipment clean, dry and connections tight	casings Rule of Thumb-	— Clean heat sinks and	connections for tightness and corrosion	— check power and control	Annually	on unit / heat sink	and / or seasonal moisture	—Inspect for excessive dust	Monthly	Electronics (VFD, Soft Start, PLC, Pwr Sup.)	Comp
DRAWN BY JOW REV. # PRELIM UTTE NOT TO SCALE DRAWN BY JOW REV. # PRELIM JB# F	CUSTOMER: INTAKE SCREENS	severe pits or burns - replace as necessary	 Inspect contacts condition for 	— Manually test overload trip	connections for tightness and corrosion	— Check power and coil	Annually		buzzing or contact chatter	—Listen for loud relay	Monthly	Electronics Electro-mechanical VFD, Soft Start, PLC, Pwr Sup.) (Mtr. Str. , Contactor, Control Rly)	onents by Type - Peri
9050711-21 DRAWING:	DRIGINAL DA		—If unit is not in use during frost conditions, it must be emptied	anywhere in the system	temperature in the water circuit must not fall below +1C /33F	— To prevent frost damage, the	Seasonal	correctly	equipment is functioning	—Insure condensation drainage	Monthly	A/W Heat Exchanger	Components by Type - Periodic Specific Maintenance
REVISON DATE: 06/07/21 CONTROL POWER 120 VAC. 60HZ W-1_EEC WARRANTY & MAINT	DRIGINAL DATE: 06/07/21 INPUT POWER: 460VAC,39H, 60HZ	or then return to set point.	force fan to switch on or off,	of current set point to above or		— Test thermostat to insure fan	Annually	panel cooling	consistent CFM for adequate	—Clean filters to ensure	Monthly	Panel Fan / Exhaust	nance

only (as defined by CAL-OSHA), with the enclosure / eas cheened to reduce the risk of electrical shock injury
elines / recommendations only. Please consult the app
any failures that are determined by EEC to be caused due to misapplication, misuse or will not be applicable to any damages of failure that is caused by act of God, environment so of war, radation, radmidism or any other similar or dissimilar occurrences beyond EEC sponsible for damage to person or property, consequential loss, loss of profit, losses of fi allure of the equipment delivered, irrespective of the cause.
In . Workmanship To be caused by faulty workmanship will be repaired by EEC. Only the labor required the faulty workmanship is covered in this warranty. The extent of the repair or replacement all the faulty workmanship is covered in this warranty. The extent of the repair or replacement workmanship is covered by the responsibility of the equipment owner.
nponent manufacturers warranty policy are available from EEC or the component manu
ir and return the failed component to the owner in adherence with their warranty policy EC. The equipment owner will be responsible for any freight charges in accordance with
al Control Panels manufactured by Electrical Equipmen r a period of twelve months as outlined below.
ASSEMBLED BY ELECTRICAL EQUIPMENT COMPAN
ENCLOSED ELECTRICAL EQUIPM
MAINTENANCE INFORMATIO



PART 7 - DOCUMENTATION

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WARRANTY

Intake Screens, Inc warrants its goods only as follows:

GENERAL PROVISIONS

INTAKE SCREENS, INC. warrants that products manufactured by INTAKE SCREENS, INC. are free from defects in materials and workmanship for a period of 24 months from commissioning and start up.

INTAKE SCREENS, INC.'s obligation under this warranty is limited to repairing or, at its option, replacing any part returned, transportation prepaid, to our factory, which in our judgment proved defective within the warranty period.

No warranty shall apply to (1) normal maintenance services or adjustments, (2) any goods which shall have been repaired or altered in any way so as, in our judgment, to affect adversely their stability or reliability, nor which have been subject to misuse, negligence, accident, poor assembly or improper installation. To make this warranty effective, any warranty claim must be completed and filed with INTAKE SCREENS, INC. within thirty (30) days after the date of failure.

LIMITATIONS

This INTAKE SCREENS, INC. warranty is expressly in lieu of any other warranties, expressed or implied, including without limitation, warranties of MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, and any other obligation or liability including crop damage or loss of crops, property damage, or liability for incidental or consequential damages on the part of INTAKE SCREENS, INC.

No statement presentation, agreement or understanding, oral or written, made by an agent, by an authorized IN-TAKE SCREENS, INC. dealer, an INTAKE SCREENS, INC. representative or employee which is not contained in this Warranty-Disclaimer will be recognized or enforceable or binding upon INTAKE SCREENS, INC. Only a written statement signed by an officer of INTAKE SCREENS, INC. may modify this Warranty-Disclaimer.

Any action for breach of any INTAKE SCREENS, INC. warranty must be commenced within one (1) year after date on which such cause of action accrued.

Attachment 5



Authorization and Receipt of Additional Services under Contract

This form authorizes the Contractor's performance of contractually defined **Additional Services** which may be necessary to satisfy the below scope of work in conjunction with the <u>attached</u> cost proposal. It may also confirm receipt of goods and/or services by the Authorized User.

Contract	Cost Proposal						
Description:	Location:						
Contract No.:							
Mini-Bid No.:	Proposal Date:						
Scope of Work:							
Justification for Additional Services:							
Authorization for A	Additional Services						
The Contractor is hereby authorized to render the above the appropriateness or approval of the proposed costs to manner inconsistent with the terms of the Contract.	re services. This authorization is not a determination of for invoicing, as Additional Services or otherwise, in a						
Name:	Title:						
Phone:	E-mail:						
Signature:	Date:						
The Authorized User is the designated representative of the Office terms of the contract, may authorize the performance of Additional Se	of General Services who, pursuant to the						
Confirmatio	n of Receipt						
Upon satisfactory completion of the Scope of Work authorized above, the below signature serves as confirmation of receipt. It is the Contractor's responsibility to ensure the Additional Services are invoiced in accordance with the terms and conditions of the contract.							
Name:	Title:						
Phone:	E-mail:						
Signature:	Date:						

This form does not replace or negate any other documentation necessary to meet proper invoicing requirements, such as proof of actual, fair, and reasonable cost or pricing. Invoices submitted without proper documentation will be denied.

IFB #2642 Attachment 6

State Tools and Equipment Use Request

Vendor/Contractor:	

Date of Request	Description of Tool/Equipment	Tool/Equipment Identification # (if applicable)	OGS Approved (Yes/No)	Any OGS Imposed Limitations				
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Vendor Sig	nature:							
OGS Signa	ture:	Date:						
		Changes to Initial Requ	ıest					
Request Da	ate:							
Contractor	Signature:							
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