

CITY OF MILWAUKEE
DEPARTMENT OF PUBLIC WORKS
MILWAUKEE WATER WORKS
SPECIFICATIONS
FOR
LINNWOOD PURIFICATION PLANT
WP-313: FLOCCULATOR BEARING REPLACEMENT
NORTHEAST AND NORTHWEST COAGULATION BASINS

2012



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GENERAL REQUIREMENTS

PART 1 DEPARTMENT OF PUBLIC WORKS - GENERAL SPECIFICATIONS

NOTE: The Department of Public Works (DPW) General Specifications applies to all contracts. A copy of the DPW General Specifications accompanies this Specification.

PART 2 OFFICIAL NOTICE

The Official Notice as it appears in the Daily Reporter, City Edition, is a part of these Contract Documents. One (1) copy is included with this Specification.

PART 3 SPECIFICATIONS

**WP-313: FLOCCULATOR BEARING REPLACEMENT
NORTHEAST AND NORTHWEST COAGULATION BASINS**

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WP-313 FLOCCULATOR BEARING REPLACEMENT
NORTHWEST AND NORTHEAST BASINS

JOB REQUIREMENTS

- JR-1 **FORM OF BID.** Contractor shall submit a lump sum bid for furnishing the complete job in accordance with Plans and Specifications.
- JR-2 **JOB LOCATION.** Linnwood Purification Plant is located at 3000 North Lincoln Memorial Drive, Milwaukee, Wisconsin 53211.
- JR-3 **GENERAL DESCRIPTION OF WORK.** The work to be performed under the provisions of this Contract as set forth in these Contract Documents consists of: removal, disposal and replacement of the existing roller type bearings with flocculator bearings, modifications to the existing stainless steel baseplate to accept the new bearings, re-use of existing flocculator paddles and attachment hardware, and associated work as shown on the Contract Drawings and specified herein.
- JR-4 **CONTRACT DRAWINGS.** The Contract Drawings upon which the proposal is to be based are listed hereunder. These drawings were issued for a flocculator replacement project completed in 1992. The drawings are assumed to be accurate; however, the Contractor is responsible for field verification of any sizes and/or critical dimensions essential to the work.

<u>Contract Drawing No.</u>	<u>Title</u>
WP-313-01	Location Map & Drawing Index
WP-313-02	Flocculator Bearing Plan & Detail
WP-313-03	Spacer Plate Attachment Plan & Detail

It shall be the responsibility of the successful bidder to verify the dimensions for all components to be furnished.

- JR-5 **REFERENCE DRAWINGS.** The following Reference Drawings were issued for the original construction of the north coagulation basin in 1934 and for a flocculator replacement project completed in 1992. The drawings are assumed to be accurate; however, the Contractor is responsible for field verification of any sizes and/or critical dimensions essential to the work.

<u>Reference Drawing No.</u>	<u>Title</u>
WP-158A-1	General Arrangement Drawing
WP-10-31	N. Coagulation Basin Top Slab Plan
WP-10-33	Coagulation Basins Middle Slab Plans
WP-10-34	N. Coagulation Basin Bottom Slab Plan
WP-196-7 (11685-101)	General Arrangement – Plan View NW Basin
WP-196-10 (11685-104)	General Arrangement – Paddle Wheel Sections
WP-196-11 (11685-105)	General Arrangement - Specifications

- JR-6 PRE-BID MEETING. A “**MANDATORY**” pre-bid meeting for all prospective bidders will be held at the Linnwood Plant Conference Room at 10:00 A.M. on MARCH 6, 2012. Questions about contract forms, and proposed materials and equipment to be used by the Contractor will be addressed. An opportunity to visit the job site will be available after the meeting.
- JR-7 PRE-CONSTRUCTION MEETING. Within fifteen (15) days after Notice to Proceed is issued, a pre-construction meeting will be held at the job site. Construction details of the project will be discussed at the meeting.
- JR-8 JOB SCHEDULE. Within fifteen (15) days after Notice to Proceed is issued, the Contractor shall submit a construction schedule for approval. The schedule shall be made in sufficient detail to indicate dates of each significant operation. The schedule shall be such that the entire job will be completed within the specified completion time. Currently, both the Northeast and Northwest basins are Out Of Service for their normal winter maintenance. Work shall begin immediately after written Notice to Proceed is issued. Contractor shall begin work on the Northeast Basin and then proceed to work for the Northwest Basin.
- The Contractor shall place all orders for materials promptly after award of the Contract. With submittal of the construction schedule, the Contractor shall include a schedule of delivery of all major material and equipment required for the job.
- The Contractor shall immediately notify the City of Milwaukee (City), in writing, of any problems with meeting this schedule. If the construction schedule cannot be met because of materials or equipment deliveries, the Contractor shall be required to submit purchase orders and confirmations of delivery, showing the date the order was placed and the promised date of delivery.
- JR-9 COMPLETION DATE. All work shall be completed by May 4, 2012.
- JR-10 CHARGE FOR INSPECTION. The Contractor will be charged \$350.00 per day per inspector for each and every day inspection is required on this Contract after the date allowed for completion, or after such extension of time as may have been granted. This charge is further defined in Section 2.5.11 of the Department of Public Works (DPW) General Specifications.
- JR-11 PROGRESS PAYMENTS. Within fifteen (15) days after the Notice to Proceed is issued, the Contractor shall submit to the City for approval a schedule showing the breakdown of the Contract with quantities and prices as a basis for checking and computing progress estimates. The values shown in the approved breakdown shall be used for pay purposes only and shall not be used as a basis for additions to or deductions from Contract work.

When the Contractor proceeds properly and with diligence to perform and complete the work on this Contract, the Commissioner of Public Works (Commissioner) may, from time to time as the work progresses, grant to the Contractor an estimate of the amount already earned. In making such progress estimates, there shall be retained 5% of each progress estimate until final completion and acceptance of the work; except that after 50% of the work has been completed and the Commissioner finds that satisfactory progress is being made and all conditions complied with, the Commissioner may authorize any of the remaining progress payments to be paid in full to the Contractor.

In accordance with Charter Ordinance 7.26 as amended 6-1-72, payment for materials delivered to the work or storage site may be authorized by the Commissioner provided the following terms and conditions are met:

- A. The work is progressing properly and such materials as specified are properly stored and suitable for permanent incorporation in the work.
- B. Materials designated for pay in the next progress estimate after delivery shall be limited to fabricated or manufactured components, which are assembled in final form ready for placement in the work.
- C. The following forms shall be submitted with requests for payment:
 - 1. Progress Estimate and Request for Payment for Fabricated Materials or Components Properly Stored.
 - 2. Certification of the Contractor or his duly authorized representative.

The Field Engineer shall verify that material is as specified and is properly stored.

- D. The Contractor shall be responsible for the safeguarding of any such materials against loss or damage whatsoever, and in the case of any loss or damage, the Contractor shall replace such loss or damaged materials at no cost to the City. The Commissioner shall reserve the right to deduct from ensuing progress estimates the value of any lost or damaged materials until such loss or damage is restored by the Contractor.
- E. The Commissioner may limit processing progress estimates to those cases where the amount earned in any pay period for work and materials is \$5,000 or more.
- F. Any materials for which payment has been made shall not be removed from the work or storage site without specific written approval of the Commissioner.

END OF SECTION

SECTION 01010
SUMMARY OF WORK

PART 1 - SCOPE OF THE CONTRACT

This Contract shall include the furnishing of all materials, labor, supervision, products, accessories, tools, equipment, services and transportation to complete the work in accordance with the Plans and Specifications. The work shall consist of the following principal items:

- A. Removal and disposal of existing roller bearings.
- B. Modifications to existing pedestal stainless steel base plate to attach new spacer plate for new flocculator bearings.
- C. Installation of new flocculator bearings.
- D. Re-use of existing flocculator paddles and attachment hardware.

A more detailed listing of work required under this Contract is included in separate sections of these Specifications. All materials, equipment and its installation as part of this Contract shall conform to all applicable codes. It is the Contractor's responsibility to inspect the work site to determine conditions and work to be performed hereunder.

1.0 **QUALIFICATIONS**

The Contract work shall be performed by a Contractor with no less than five (5) years of experience. Upon request by the City of Milwaukee (City), the Contractor shall provide proof of such experience by providing installation lists, brochures, reference lists, etc.

2.0 **SPECIFICATIONS AND STANDARDS**

All materials, general design, design loads, allowable stresses, joint design, shop fabrication and field construction shall conform to the requirements of the following latest standard specifications of any technical society, organization, or association, or to codes of local or state authorities:

- A. ACI, American Concrete Institute
- B. ANSI, American National Standards Institute
- C. ASTM, American Society for Testing and Materials
- D. The Wisconsin Administrative Code
- E. U.S. Department of Labor Occupational Safety and Health Act (OSHA)

The Contractor shall be familiar with the requirements of the above agencies. Any conflict in the contract drawings, these Specifications, the contractor's design or construction methods shall result in the Contractor performing in a manner which conforms to the applicable requirements.

PART 2 - GENERAL CONDITIONS

- A. Linnwood Purification Plant will be in continuous use during this Contract work. The contractor's work shall not interrupt Plant operations. The Northwest basin is currently drained and flushed and will be available for inspection. The Northeast basin is presently in operation and is expected to be drained soon and will not be available for inspection.
- B. The Contractor shall cooperate fully with the Field Engineer in scheduling operations and in maintaining access to the immediate work area.
- C. Storage areas for materials and temporary disposal areas may be made available in and/or adjacent to the building as required by the Contractor. This will in no way waive the contractor's responsibility for safekeeping the material until it is properly installed and accepted.
- D. All operations shall be carried on with a minimum of damage and disturbance. All damages shall be repaired to its original condition to the satisfaction of the Field Engineer.
- E. All removals become the property of the Contractor and shall be disposed of off the site by the Contractor in compliance with all applicable codes and regulations.
- F. Provide temporary ventilation for enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- G. The Contractor shall clean up any debris resulting from this Contract as soon as possible, and at a minimum at the end of each day.
- H. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- I. Protect non-owned vehicular traffic, stored materials, site and structures from damage.
- J. Upon completion of the work, each basin shall be disinfected by the City.

PART 3 - SHOP DRAWINGS

Within three (3) weeks after Notice to Proceed is issued, the Contractor shall submit to the City for approval a minimum of three (3) copies of all shop, fabrication, assembly, and other drawings required by the Specifications; all drawings of equipment and devices offered by the Contractor; all drawings showing essential details of any change in design or construction proposed by the Contractor; and all necessary wiring and piping layouts. Drawings of equipment and devices shall show sufficient detail to adequately depict the construction and operation of each item.

Each shop drawing shall bear the name City of Milwaukee, the name and location of the structure, job number, the name of the Contractor, the date of the drawing, the date of each correction or revision, and the specification numbers and plan sheet numbers applicable thereto.

Three (3) revised copies of each drawing shall be submitted each time a drawing is returned to the Contractor for revision. Upon final approval of a drawing, eight (8) copies shall be submitted to the City for record and distribution to authorized persons.

After approval by the City, all such drawings shall become a part of the contract documents and the work or equipment shown thereby shall be furnished and installed as shown unless otherwise required by the City. No work shall be performed or equipment manufactured until drawings have been approved. The approval of drawings submitted by the Contractor will be for, and will cover only general conformity to the Plans and Specifications and will not constitute a blanket approval of all dimensions, quantities, or details of the material or equipment shown by such drawings, nor shall such approval relieve the Contractor of responsibility for errors contained therein.

At the completion of work and prior to final payment, the Contractor shall provide the City with six (6) sets of "as-built" drawings for the completed job showing all new equipment and piping. All concealed piping, conduit or similar items shall be located by dimensions and elevations. The Contractor will be responsible for the accuracy of these drawings. Two (2) copies of the above "as-built" drawings shall be submitted in an electronic format compatible with the latest edition of MICROSTATION®.

PART 4 – GUARANTEE

Upon completion of the job, the Contractor shall furnish a written guarantee against defective materials and/or workmanship before the final payment is made. The flocculator bearings shall be warranted for one (1) year.

During the guarantee period, the Contractor shall make all needed repairs arising out of defective workmanship and/or materials, which in the judgment of the Commissioner of Public Works shall become necessary during such period.

Whenever defective equipment or materials are replaced, the equipment or materials shall be guaranteed for one (1) year from the date that the replacement is performing satisfactorily.

If within ten (10) days after mailing of a notice in writing to the Contractor, or his agent, the said Contractor shall neglect to make, or undertake with due diligence to make, the aforesaid repairs, the City is hereby authorized to make such repair at the Contractor's expense; providing, however, that in case of an emergency where, in the judgment of the Commissioner, delay would cause serious loss or damage, repairs may be made without notice being sent to the Contractor, and the Contractor shall pay the cost thereof.

END OF SECTION

SECTION 01039**COORDINATION AND MEETINGS****PART 1 - GENERAL**1.1 **SECTION INCLUDES**

- A. Coordination
- B. Alterations
- C. Cutting and patching
- D. Pre-construction conference
- E. Progress meetings
- F. Pre-installation conferences

1.2 **COORDINATION**

- A. Coordinate scheduling, submittals, and work on the various Sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify that the City requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate space requirements and installation of mechanical and electrical work. Follow routing shown for pipes, and conduit, as closely as practicable; place runs parallel with line of structure. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. Coordinate completion and clean up of work of separate Sections in preparation for Substantial Completion.
- E. Coordinate correction of defective work and work not in accordance with Contract Documents, to minimize disruption of the City's activities.

1.3 ALTERATIONS

- A. Materials: As specified in product Sections, match existing products and work for patching and extending work.
- B. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.
- C. Remove, cut, and patch work in a manner to minimize damage and to provide a means of restoring products and finishes to original condition.
- D. Refinish visible existing surfaces to original condition.
- E. Where new work abuts or aligns with existing, perform a smooth and even transition. Patched work to match existing adjacent work in texture and appearance.
- F. When finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to the City.
- G. Patch or replace portions of existing surfaces, which are damaged, lifted, or discolored, or showing other imperfections.
- H. Finish surfaces as specified in individual product Sections.

1.4 CUTTING AND PATCHING

- A. Employ skilled and experienced installer to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements which affects:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant element.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Visual qualities of sight-exposed elements.
 - 5. Work of City or separate contractor.
- C. Execute cutting, fitting, and patching to complete work, and to:
 - 1. Fit the several parts together, to integrate with other work.
 - 2. Uncover work to install or correct ill-timed work.
 - 3. Remove and replace defective and non-conforming work.
 - 4. Remove samples of installed work for testing.
 - 5. Provide openings in elements of work for penetrations of mechanical and electrical work.

6. Execute work by methods that will avoid damage to other work, and provide proper surfaces to receive patching and finishing.
7. Cut rigid materials using masonry saw or core drill.
8. Restore work with new products in accordance with requirements of contract documents.
9. Fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
10. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
11. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
12. Identify any hazardous substance or condition exposed during the work to the City.

1.5 PRECONSTRUCTION CONFERENCE

- A. City will schedule a pre-construction conference after Notice of Award.
- B. Attendance Required: City and Prime Contractor.
- C. Sample Agenda (subject to change):
 1. Submission of executed bonds and insurance certificates (unless previously submitted to DPW).
 2. Submission of list of all subcontractors, Schedule of Values, and project progress schedule.
 3. Designation of personnel representing the parties in Contract.
 4. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders and Contract closeout procedures.
 5. Scheduling and reports.
 6. Use of premises by City and Contractor.
 7. Construction facilities and controls provided by City, if any.
 8. Temporary utilities and controls provided by City, if any.
 9. Security procedures.
 10. Procedures for testing.
 11. Procedures for start-up of equipment.
 12. Requirements for maintaining record documents.
 13. Inspection and acceptance of equipment put into service during construction period.
 14. Conflicts.

1.6 PROGRESS MEETINGS

- A. The City will Schedule and administer meetings throughout progress of the work as required.

- B. The City will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies within three (3) days to the City, participants, and those affected by decisions made.
- C. Attendance Required: Contractor's general superintendent, major subcontractors and suppliers, City, as appropriate to agenda topics for each meeting.
- D. Sample Agenda (subject to change):
 1. Review minutes of previous meetings.
 2. Review of work.
 3. Field observations, problems, and decisions.
 4. Field observations of problems to impede planned progress.
 5. Review of submittals schedule, and status of submittals.
 6. Review of off-site fabrication and delivery schedules.
 7. Maintenance of progress schedule.
 8. Corrective measures to regain projected schedules.
 9. Planned progress during succeeding work period.
 10. Coordination of projected progress.
 11. Maintenance of quality and work standards.
 12. Other business relating to work.

1.7 PREINSTALLATION CONFERENCES

- A. When determined by the City, convene a pre-installation conference at work site prior to commencing work.
- B. Require attendance of parties directly affecting, or affected by work of the specific Section.
- C. Notify all parties four (4) days in advance of meeting date.
- D. Prepare agenda, preside at conferences, record minutes, and distribute copies within two (2) days after conference to participants, with one (1) copy to the City.
- E. Review conditions of installation, preparation and installation procedures, and coordination with related work.

END OF SECTION

SECTION 01500**JOB SITE SECURITY, UTILITIES AND FACILITIES****PART 1 - SCOPE**1.01 INDEX

- A. Scope
- B. Security and safety.
- C. Occupancy during construction.
- D. Electric power.
- E. Water.
- F. Toilet facilities.

1.02 GENERAL CONDITIONS

- A. All operations shall be carried on with a minimum of damage and disturbance. All damages shall be repaired to the original condition to the satisfaction of the Engineering Representative.
- B. All removals become the property of the Contractor and shall be disposed of off the site unless otherwise specified.
- C. Disposal of all waste and debris generated during the removal and installation operations shall be conducted in accordance with the latest edition of all local, state and federal rules and regulations governing the waste product. Copies of any required certificates, forms, manifests, etc. required for proper disposal shall be submitted to the City in accordance with Section 01010, Submittals.

1.03 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.04 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

- B. Protect non-owned vehicular traffic stored materials, site and structures from damage.

1.05 PROGRESS CLEANING

- A. Waste materials, debris, and rubbish shall be removed daily after work. Maintain site in a clean and orderly condition.
- B. Clean and repair damage caused by removals or installations.
- C. Restore existing facilities used during construction to original condition.

PART 2 - SECURITY AND SAFETY

2.01 GENERAL

The Milwaukee Water Works (MWW) consists of a number of facilities that treat and deliver drinking water to the City and surrounding suburban communities. To insure the safety and security of drinking water, the MWW has instituted protocols for visitors and contractors to control entry to these facilities. It is essential that Contractors strictly comply with the security policy outlined in the specification section.

For this project, the Contractor shall continuously coordinate building and site security measures, including accessing the site, with the designated Water Engineering representative or the Water Security Manager, Telephone: (414) 286-2934, Facsimile: (414)-286-2672.

2.02 SCOPE

Any and all City agencies and contractors engaged for work at MWW facilities shall be required to attend a "Pre-Construction Security Briefing" before any contracted work can be initiated. At this meeting, the Contractor and sub-contractors shall have a detailed briefing with discussions regarding the following items:

- A. MWW site security policies and procedures.
- B. Contractor and subcontractor obligations.
- C. Permit system.

2.03 POLICIES

During the "Security Briefing" portion of the "Pre-Construction Meeting," MWW Security staff shall provide the Prime Contractor with site polices to be reviewed by the Prime Contractor and subcontractors. These documents may include:

- A. Lock-out/Tag-out Policy.
- B. Confined Space Entry Procedures.
- C. Evacuation Procedure for Propane, Lox and Ammonia Releases.
- D. Personal Protective Equipment Guidelines.
- E. No Smoking Policy.
- F. Prohibited Materials.

Additionally, the Contractor will be provided:

- A. Contact phone numbers for MWW staff.
- B. On-Site parking location and designated construction entrance.
- C. Site Security Policy and Procedures.

The Prime Contractor shall be required to review these documents and is responsible for conveying the contents of these submittals to their employees, subcontractors, and any other parties working directly or indirectly for them. These policies apply equally to all contractors. Failure to comply with established policies and procedures may result in access privileges being withdrawn.

MWW staff shall provide a "walk-through" session with the Contractor to review area layout and site plans as part of this orientation process and to establish the specific work areas necessary for the Contractors to perform their scope of work. Topics covered in this session include: site overview with hazards, Material Safety Data Sheets (MSDS), fire extinguisher placement, and the storm water protection policy.

2.04 CONTRACTOR RESPONSIBILITIES

Contractors shall provide the following documents no less than seven (7) business days prior to the start of contracted work:

- A. Scope of work to be performed.
- B. Name of Primary Contractor's onsite representative.
- C. Names of all companies subcontracted to do work on the project.

- D Completed "Contract Firm Registration Form" (see attachment 'A') for Prime Contract firm and every subcontract firm.
- E A "Contractor Employee Registration Form" completed for the Contractors and every employee who needs to be granted site access (see attachment 'B').
- F List of items to be stored on-site.
- G MSDS for all chemicals to be used/stored on-site.

NOTE: It is the responsibility of the Prime Contractor to facilitate gathering and submittal of the "Contractor Employee Registration Form" for all sub-contractors working on the project. A subcontractor is defined as an individual or firm hired by the Primary Contractor to perform a specific task as part of the overall project. This would not include an organization making deliveries of supplies or equipment to the job site; procedures for these firms are covered under Part 8, "DELIVERIES."

In the event it is necessary for the Prime Contractor to add additional employees to the list of approved personnel, a minimum of seventy-two (72) hours, or three (3) business days, must be allowed for processing of the request. Site access will be denied to the additional personnel until processing is complete.

Additionally, contract firms are obligated to notify MWW in a timely manner of any site-authorized staff that leaves the employ of the Contractor.

At no time should anyone but the Prime Contractor be contacting MWW employees with issues or access requests. If a request for site access does not come from the Prime Contractor, the request will not be processed.

During the time period that the Contractor is on-site, they must agree to:

- A. Notify the Plant Manager immediately of any significant chemical spills or leaks.
- B. Maintain normal non-toxic breathable air quality, through adequate ventilation, at the work site.
- C. Perform no equipment isolations or tie-ins without the signed approval of site management.
- D. Restrict movement to the specific work areas within the site to perform Contractors scope of work.

During the project, the Contractor is advised that the area surrounding the work site is to be kept as free as possible of dust contamination during removal operations. Contractor is also advised that the area is to be ventilated so that the presence of fumes from the installation operations is kept as low as possible. Additionally, the Contractor is advised that all rules and regulations governing confined space are to be strictly adhered to.

2.05 CONTRACTOR SPECIAL WORK PERMITS

Contractors must notify Engineering/Site Management staff of any welding, torching, or potentially hazardous or operational impact request prior to commencing such operations. Special permits shall be issued to the Contractor, and these must also be displayed at the work site.

Failure to comply with the terms of the special work permits, or provisions that provide for MWW employee safety shall be cause for revocation of such permits, and the Contractor may be forced to discontinue activities at the site.

2.06 CONTRACTOR IDENTIFICATION AND DAILY REGISTRATION

Every day, all Contractors shall be required to show a valid picture ID card, to sign in at the start of work, and sign out at the end of work. A MWW employee or designated security representative shall be on site to ensure compliance. Any identification tags or lanyards issued by MWW are to be worn while on site and returned to Site Management upon completion of contracted work.

2.07 CONTRACTOR GATE ACCESS AND PARKING

Contractors must comply with the terms of entry for the site and park only in the areas designated for parking by the MWW site representative.

NOTE: Parking privileges may be rescinded at any time as site operational requirements dictate.

PART 3 - City OF MILWAUKEE PERMITS

The Contractor shall obtain the necessary permits for this project.

PART 4 - OCCUPANCY DURING CONSTRUCTION

The MWW facility shall be in continuous operation during this Contract. Contractor and subcontractors are to take any and all necessary precautions to insure there is no interference with daily operations or security. MWW personnel shall be continuously occupying the facility. All hours of contractor's operations shall be coordinated with the MWW site or engineering representative.

PART 5 - ELECTRICAL POWER AND TELEPHONE SERVICE

On-site electrical service is available for Contractor use during project duration. Contractor shall provide and maintain all necessary power cords, electrical lighting, heat, ventilation and telephone service, and shall make all necessary connections in accordance with OSHA regulations. Contractor shall provide and pay for his own wireless telephone service.

PART 6 - WATER

Water is available for the Contractor at the site and may be obtained from the fixture(s) so designated by MWW staff or engineering representative. Contractor and subcontractors must provide their own hoses, back flow preventer and any other connection appurtenances required for the Contract.

PART 7 - TOILET FACILITIES

On-site toilet facilities are available for Contractor use during project duration. The specific location of these facilities will be transmitted to the Contractor at the pre-construction meeting. However, if project requirements render the use of on-site facilities impractical, then Contractor shall furnish portable facilities. If portable facilities are required, Contractor shall maintain these toilet facilities in a sanitary condition throughout the duration of the project and shall remove them from site at the end of the project. The placement and location of the temporary portable toilets shall be coordinated with the Plant Manager and Engineering Representative.

PART 8 - DELIVERIES

Contractor shall coordinate the delivery of all equipment, material, dumpsters, portable toilets (and their maintenance) and other required items required for the Contract work with the MWW staff. A minimum of twenty-four (24) hours prior notice in advance of the desired delivery date shall be transmitted to the designated Water Engineering Representative. Contractor shall provide the following information in the notification:

1. Trucking/delivery company.
2. Driver name.

3. Truck license plate number.

The driver of the delivery vehicle is required to display picture identification as a prerequisite for entry to the MWW facility for the delivery. Failure to comply with the above will result in denial of project site access, requiring the Contractor to reschedule delivery.

END OF SECTION

Milwaukee Water Works

Safe, Abundant Drinking Water.

WP-313
Attachment "A"

FORM A

CONTRACT FIRM REGISTRATION FORM

CONTRACTOR: _____

PLANT/SITE: _____

CONTRACT/SERVICE ORDER No. _____

WATER ENGINEERING PROJECT No. _____

PRIMARY CONTACT PERSON: _____

OFFICE PHONE NUMBER: _____

CELL PHONE NUMBER: _____

REQUESTED WORK HOURS (00am – 00pm): _____

NUMBER OF EMPLOYEES TO BE WORKING ON-SITE: _____

**Signature certifies receipt of the materials outlined in
Contract Section 01500, Part 2 – Security and Safety, Section C, Policies.**

SIGNATURE: _____

PRIMARY CONTACT PERSON

DATE: _____

***Accompanying this form should be a complete listing of all
equipment to be stored on site for the duration of the project.***

Milwaukee Water Works

Safe, Abundant Drinking Water.

WP-313
Attachment "B"

FORM B

CONTRACTOR EMPLOYEE REGISTRATION FORM

Contract Firm: _____

Plant/Site/Project: _____

Employee Name (Printed): _____

This certifies that I have received the building site security and safety policies.

EMPLOYEE
SIGNATURE: _____
Required

DATE: _____

ONSITE PARKING

- I will always be driving a Company vehicle.
- I will always be a passenger in a vehicle.
- I will be driving my personal vehicle. If checked here complete and sign the next section.

Contractor Personal Vehicle Liability Waiver

EMPLOYEE VEHICLE
MAKE & MODEL: _____ LICENSE PLATE: _____

I, hereby agree to hold harmless the City of Milwaukee for any and all damage, loss or injury, which may occur as a result of utilizing the contractor onsite parking area.

EMPLOYEE
SIGNATURE: _____
Required

DATE: _____

SECTION 01600
MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 **SUMMARY**

- A. Section Includes:
 - 1. Products.
 - 2. Transportation and handling.
 - 3. Storage and protection.
 - 4. Product options.
 - 5. Substitutions.

1.02 **PRODUCTS**

- A. Material, machinery, components, equipment, fixtures and system shall be new. Assure standardization and uniformity by using products from one manufacturer.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- C. Provide interchangeable components of the same manufacture for components being replaced.

1.03 **TRANSPORTATION AND HANDLING**

- A. Transport and handle Products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct and Products are undamaged.
- C. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement or damage.

1.04 **STORAGE AND PROTECTION**

- A. Store and protect Products in accordance with manufacturer's instructions.
- B. Store with seals and labels intact and legible.

- C. Store sensitive Products in weather tight, climate controlled, enclosures in an environment favorable to Product.
- D. For exterior storage of fabricated Products, place on sloped supports above ground.
- E. Provide off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of Products.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement or damage.
- I. Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

1.05 PRODUCT OPTIONS

- A. Products specified by reference standards or by description only: Any Product meeting those standards or description.
- B. Products specified by naming one or more manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products specified by naming one or more manufacturers with a provision for substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

1.06 SUBSTITUTIONS

- A. City will consider requests for Substitutions only within fifteen (15) days after date established in Notice to Proceed.
- B. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- D. A request constitutes a representation that the Contractor:

1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 2. Will provide the same warranty for the Substitution as for the specified Product.
 3. Will coordinate installation and make changes to other work that may be required for the work to be complete with no additional cost to City.
 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 5. Will reimburse City for review or redesign services associated with re-approval by authorities.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- F. Substitution Submittal Procedure:
1. Submit two (2) copies of request for Substitution for consideration. Limit each request to one (1) proposed Substitution.
 2. Submit shop drawings, product data and certified test results attesting to the proposed Product equivalence. Burden of proof is on proposer.
 3. The City will notify Contractor in writing of decision to accept or reject request.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 01700
CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 **SUMMARY**

A. Section Includes:

1. Closeout Procedures.
2. Final Cleaning.
3. Adjusting.
4. Project Record Documents.
5. Operation and Maintenance Data.
6. Spare Parts and Maintenance Products.
7. Guarantee.

B. Related Sections

1. Section 01500 – Job Site Security, Utilities and Facilities: Progress cleaning.

1.02 **CLOSEOUT PROCEDURES**

- A. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for City's review.
- B. Provide submittals to City that is required by governing or other authorities.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments and sum remaining due.

1.03 **FINAL CLEANING**

- A. Execute final cleaning prior to final inspection.
- B. Clean surfaces exposed to view; remove temporary labels, stains and foreign substances.

- C. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- D. Remove waste and surplus materials, rubbish and construction facilities from the site.

1.04 ADJUSTING

- A. Adjust operating appurtenances and equipment to ensure smooth and unhindered operation.

1.05 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one (1) set of the following record documents; record actual revisions to the work:
 - 1. Contract Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders.
 - 5. Reviewed Shop Drawings, Product Data, and Samples.
 - 6. Manufacturer's instructions for assembly, installation and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by City.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Field changes of dimension and detail.
 - 2. Details not on original Drawings.
- F. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.

3. Changes made by Addenda or Change Orders.
- G. Submit documents to City in the following manner:
1. Submit prior to final Application for Payment.
 2. Documents shall be accompanied with a transmittal letter that includes the following:
 - a) Date.
 - b) City's project title and number.
 - c) Contractor's name and address.
 - d) Title and number of each record document.
 - e) Certification that each document as submitted is complete and accurate.
 - f) Contractor's signature or authorized representative.
 3. Delete Consultant and City's title block from documents. Delete Engineer's seals from documents.
 4. Submit two (2) sets of documents.
 5. Submit one (1) set of reproducible "mylar" Contract Drawings.

1.06 OPERATION AND MAINTENANCE DATA

- A. Submit data bound in 8-1/2 x 11 inch text pages, three D-side ring binders with durable plastic covers. Drawings and diagrams shall be reduced to 8-1/2 x 11 inches or 11 x 17 inches. Where reduction is not practicable, large drawings shall be folded separately and placed in an envelope that is bound into the manuals. Envelope shall bear suitable outside identification.
- B. Prepare binder cover and spine with printed title "OPERATION & MAINTENANCE INSTRUCTION," title of project, project number and subject matter of binder when multiple binders are required.
- C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, typed on 24-pound white paper, in three parts as follows:

1. Part 1: Directory, listing names, addresses, telephone numbers and e-mails of Architect/Engineer, Contractor, Subcontractors and major equipment suppliers.
 2. Part 2: Operation and maintenance instructions arranged by system and subdivided by specification section. For each category, identify names, addresses, telephone numbers and e-mails of Subcontractors and suppliers. Identify the following:
 - a) Significant design criteria.
 - b) List of equipment.
 - c) Parts list and assembly drawings for each component.
 - d) Operating instructions for start-up, normal operation, shutdown and emergency conditions.
 - e) Maintenance instructions for equipment and systems.
 - f) Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 - g) Troubleshooting Guide.
 3. Part 3: Project documents and certificates, including the following:
 - a) Shop drawings and product data.
 - b) Air and water balance reports.
 - c) Certificates.
 - d) Photocopies of warranties.
- E. Submit one (1) draft copy of volumes fifteen (15) days prior to final inspection. This copy will be reviewed and returned with City comments. Revise content of all document sets as required prior to final submission.
- F. Submit four (4) sets of revised final volumes within ten (10) days after receipt of City's comments.

1.07 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Provide spare parts, maintenance and extra Products in quantities specified in individual specification sections.

- B. Deliver to Project site and place in location as directed; obtain receipt prior to final payment.

1.08 WARRANTY AND GUARANTEE

- A. Provide duplicate notarized copies.
- B. Execute and assemble transferable warranty documents from Subcontractors, suppliers and manufacturers.
- C. Provide Table of Contents and assemble in binder with durable plastic cover.
- D. Submit prior to final Application for Payment.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 02220**DEMOLITION****PART 1 - GENERAL**

- 1.1 The Contractor shall completely remove and dispose off site of the existing roller type bearings. The flocculator shafts, paddles, bracing and associated hardware shall be disassembled and saved for re-installation.
- 1.2 The Contractor shall inspect the disassembled shafts and determine if any gouging is present and notify the City. Contractor shall repair and re-machine the gouge to be smooth with the new bearings

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION**3.1 PREPARATION****A. Utilities:**

1. Notify City or appropriate utilities to turn off affected services before starting demolition or alterations.

B. Removal and storage of equipment for reuse:

1. Do not remove equipment and materials without approval of City.
2. Properly store and maintain equipment and materials in same condition as when removed.
3. City shall determine condition of equipment and materials prior to removal.

3.2 DEMOLITION

- A. Drawings define minimum portion of structures to be removed. Unless otherwise shown, rough cuts or breaks may be made exceeding limits of demolition shown.

- B. Remove all materials associated with existing equipment that is to be removed or relocated.

3.3 DISPOSAL

- A. Dispose of debris and other non-salvaged materials.

- B. Disposal of all waste and debris generated during the removal operations shall be conducted in accordance with the latest edition of all local, state and federal rules and regulations governing the waste product. Copies of any required certificates, forms, manifests, etc. required for proper disposal shall be submitted to the City in accordance with Section 01010, Submittals.

3.4 SALVAGE

- A. Equipment and materials, within the limits of demolition, unless otherwise specified, shall become the property of Contractor.

END OF SECTION

SECTION 05500

STAINLESS STEEL SHAFTS

PART 1 – GENERAL

NOTE: THIS SECTION IS PROVIDED FOR REFERENCE INFORMATION ONLY FOR THE PURPOSE OF RE-ALIGNMENT OF THE SHAFTS AFTER INSTALLATION OF THE NEW BEARINGS.

1.1 INSTALLATION CONDITIONS

- A. Allowable roof slab loading on coagulation/mixing basins shall not exceed 50 psf. The methods by which the Contractor removes the existing flocculator bearings & damaged shafts, as well as installation of the new bearings and repaired shafts shall be submitted to the City for approval.
- B. Planking of the entire traveled area over the basins shall be required unless a small four-wheel drive vehicle and/or a four-wheel trailer are used to transport materials. All damage to lawn areas shall be repaired to the satisfaction of the Commissioner.

1.2 DESIGN CRITERIA

- A. The existing flocculator components are based upon the following criteria:

- 1) Inside Mixing Basin Dimensions
 - Parallel to paddle shaft and transverse to basin flow 147'-10"
 - Perpendicular to paddle shaft and in direction of basin flow 75'-0"
 - Water depth – Normal side wall 26'-6"
 - Total depth to top of cover slab 28'-0"
- 2) Maximum basin flow..... 75 MGD
- 3) Design temperature..... 1° C
- 4) Velocity Gradient (at maximum speed)..... 26 fps/ft
- 5) Rotation CW & CCW
- 6) Outside diameter of paddle assemblies..... 16'-0"
- 7) Number of paddle rows 2
- 8) Number of paddle assemblies (each row)..... 9
- 9) Number of submerged shaft bearings (each row)..... 10
- 10) Bearing spacing – Maximum (each row)..... 17'-3"
- 11) Paddle shaft:
 - Maximum total angular deflection 5 degrees
 - Maximum combined unit stress 7500 psi
 - Maximum vertical deflection between bearings 1/600 of span

- B. It is the intent to re-use all existing paddle components. If any components are damaged, they shall be replaced with similar materials. All steel structural members, bracing bars, and other steel devices shall be hot dip galvanized after fabrication and drilling. The weight of zinc coating shall not be less than 2 oz./sq ft as determined from the average of two or more specimens. A 2 oz./sq ft zinc coating is approximately equivalent to 3.5 mils. Any galvanized steel material with a coating thickness less than 3.0 mils will be rejected. All paddle wheel bolting materials shall be 18-8, Type 304 stainless steel. All bolts shall be provided with double nuts to provide a permanently rigid assembly.

PART 2 – PRODUCTS

2.1 SHAFTS

- A. The shafting system for each mechanism shall be sized within stress limitations at full operating load and within deflection limitations under dry load. The maximum shear stress shall not exceed 6,000 psi at any point in the shaft. The maximum shear shall be determined by combining the bending and torsional stresses under full operating load through Mohr's circle stress convention. The maximum vertical deflection of the shafting system shall not exceed 0.033"/ft of shaft between support reactions under dry load.
- B. **All shafting shall be solid type 304 stainless steel, straight and true.**
- C. A 304 stainless steel, split, compression fittings shall be provided for connecting all sections of continuous solid shafting. One coupling shall also be provided on the inside of stuffing boxes for each shaft as shown on the plans.
- D. Coupling halves on solid shaft sections shall have a neck at least 6" long and shall be accurately machine fitted and securely keyed to the shaft. Coupling flanges shall be turned and faced square with the shaft. Each flange coupling shall be bolted together with 304 stainless steel machine bolts, washers, and nuts of ample number, size, and designed for the service intended and secured with suitable lock nuts.
- E. Fabricated 304 stainless steel hubs shall be provided for mounting paddle arms at locations shown on the plans. Hubs shall be firmly keyed to the shaft with keys of adequate size to transmit the maximum torque.
- F. Each entire shafting assembly shall be machined, faced, and matched that it will be straight and in true rotational balance throughout its entire length when assembled in the field on properly aligned bearings and bearing supports.

PART 3 - EXECUTION3.1 **INSTALLATION**

- A. The Contractor shall be responsible for shaft alignment accuracy to within 0.005"/ft of shaft between bearings in any direction.
- B. Each paddle shaft shall be furnished with an approved lifting hook or other type-lifting device at or near each end. All shafting shall be furnished in sections of such length and weight that they can be conveniently handled and installed through existing openings in the basin roof slabs, as shown on the plans.
- C. All shafting in power transmission equipment, and through stuffing boxes and paddle shaft bearings, shall be lathe-turned, ground and polished to a tolerance of -0.0005 to -0.0040 inches. No shims/sleeves will be allowed in coupling installation.

END OF SECTION

SECTION 15545
FLOCCULATOR BEARINGS

PART 1 - GENERAL

1.1 **DESCRIPTION**

- A. This section specifies the replacement of all submerged bearings, seals and Lubrication for the existing flocculator equipment in the Northeast and Northwest coagulation basins.
- B. The existing flocculator system consists of two shafts with diameters ranging from 4-15/16" to 5-7/16". Each shaft has nine (9) paddle sections and ten (10) bearings.

PART 2 – PRODUCTS

2.1 **BEARINGS**

Bearings shall be fabricated from solid Ultra High Molecular Weight Polyethylene (UHMWPE), virgin natural material, conforming to ASTM D-4020 (latest revision) and be FDA compliant. Bearings shall be split pillow block type, designed for water lubrication. Bearings shall be provided with grease fitting and grease groove to provide for rust prevention. The two segments of the pillow block bearings shall be held together using nuts and bolts to allow for maintenance and future replacement of the bearing without removal of the shaft. The bearing shall conform to the following physical properties:

A.	Specific Gravity	0.0336 lb/in ³
B.	Hardness, Shore D	66
C.	Tensile Strength, Ultimate	5,800 psi
D.	Elongation At Break	300 %
E.	Tensile Modulus	100,000 psi
F.	Flexural Modulus	110,000 psi
G.	Compressive Strength	3,500 psi
H.	Compressive Modulus	80,000 psi
I.	Shear Strength	4,800 psi
J.	Coefficient Of Friction	0.12
K.	Melting Point	278° F
L.	Maximum Service Temperature, Air	180° F

2.1.2 ACCEPTABLE PRODUCTS

- A. TIVAR® 1000 UHMWPE
- B. Approved equal.

2.1.3 QUANTITY AND SIZE

As follows:

- A. Type "A": 4-15/16" bore diameter, eight (8) required per basin.
- B. Type "B": 5-7/16" bore diameter, twelve (12) required per basin.

NOTE: There are two basins, Northwest and Northeast for this project.

2.2 LUBRICATION

- A. Each top section of the bearing shall be drilled and tapped to accommodate a "ZERK" type grease fitting with a ¼" diameter NPT base. The drilled hole shall extend completely through the top half of the bearing to facilitate future greasing.
- B. Prior to final assembly of the bearing halves, bearings shall be packed with "**ALITHICON 452000-FM Food Machinery Bearing Lubricant**", a white food grade, water resistant grease, manufactured by Alithicon Lubricants Company.

All bearings shall be cleaned and free of preservatives and contaminants. As the component parts of the bearing are assembled around the shaft, they should be hand coated with grease. The bearing should never be assembled dry and the lubricant injected after the unit is mounted.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Furnish services of an approved Erection Technician during all alignment work and major erection work.
- B. The Contractor shall be responsible for bearing alignment accuracy to within 1/16" between bearings in the vertical and horizontal direction. Each bearing shall also be aligned to within 1/64" end to end and shall be leveled both parallel and perpendicular to the centerline of the shaft in the horizontal plane. The equipment Manufacturer's service manual shall provide procedures for installing and aligning bearings.

END OF SECTION